



Systems Reference Library

**Catalog of Programs for IBM 1240-1401-1420-
1440-1450 and 1460 Data Processing Systems**

(April 1969)

This Catalog contains a complete listing of all programs for the IBM 1240, 1401, 1420, 1440, and 1460 Data Processing Systems available from the Program Information Department, 40 Saw Mill River Road, Hawthorne, New York 10532.

Instructions for ordering programs are contained in the section of the Introduction entitled, "Completion of the IBM Program Order Form".

TABLE OF CONTENTS

	Page
Introduction	iii
Programs Available from PID	iii
Program Update Service	iii
IBM Catalogs of Programs	iii
User Contributed Programs	iii
PID Order Processing Turn-Around Times	iv
Shipping Methods	iv
Completion of the IBM Program Order Form	iv
IBM World Trade Users	viii
Keyword-in-Context (KWIC) Index	viii
Program Classification Codes	viii
Using the Catalog	x
List of New Programs	xi
Program Corrections and Revisions	xi
Deleted Programs	xi
 Keyword-in-Context (KWIC) Index	 xiv
 Abstracts	
IBM Programs	
IBM 1240 Data Processing System	1
IBM 1401 Data Processing System	1
IBM 1420 Data Processing System	26
IBM 1440 Data Processing System	26
IBM 1450 Data Processing System	42
IBM 1460 Data Processing System	42
Contributed Programs	
IBM 1401 Data Processing System	45
IBM 1440 Data Processing System	84

Copies of this and other IBM publications can be obtained through IBM branch offices. Address comments concerning the contents of this publication to IBM, Program Information Department, 40 Saw Mill River Road, Hawthorne, N. Y. 10532

INTRODUCTION

The only authorized IBM agency in the United States for the distribution of programs to IBM users is the DP Program Information Department, 40 Saw Mill River Road, Hawthorne, New York 10532.

PROGRAMS AVAILABLE FROM PID

IBM makes available a wide variety of programs for IBM systems. This selection of programs is defined into two broad categories. The first category of available programs are those which are IBM developed and supported. These are termed Type I and Type II programs. Type I (Programming Systems) and Type II (Application Programs) are provided by the IBM Corporation as part of its service to customers. The programs have been subjected to formal testing and are maintained by IBM. IBM makes no warranty, expressed or implied, as to the documentation, function or performance of these programs and the user of the programs is expected to make the final evaluation as to their usefulness in his own environment.

The second category of available programs are termed Type III and Type IV programs. Type III (IBM Contributed Programs) and Type IV (Customer Contributed Programs) are programs of general interest contributed to the Program Information Department for distribution. These programs and their documents are essentially in the author's original form and have not been subjected to any formal testing. IBM makes no warranty, expressed or implied, as to the documentation, function or performance of these programs and the user is expected to make the final evaluation as to their usefulness in his own environment.

PROGRAM UPDATE SERVICE

Users ordering the basic program packages for Type I and II programs from PID become "users of record". A "profile" is established for each user of record, containing the user's customer number, name and address and other "ship-to" information, and an entry for each Type I and II basic program package ordered. Users of record are provided with the PID Program Update Service based on the entries in these profiles.

The Program Update Service provides users of record with automatic program maintenance (corrections and/or supplements to the basic program material) as soon as they become available. The Program Update Service also provides users of record with

announcement material and ordering information for that class of program maintenance (e.g., new versions, releases, etc.) which must be ordered from PID.

When an orderable replacement package (total or partial) of a Type I or II Program is announced, it is not always essential to order it to remain eligible for Program Update Service. There are situations, however, when continued Program Update Service would not be meaningful unless the replacement package is ordered. In these situations, failure to order results in cancellation of further Program Update Service for this program. A statement specifying the need to order will always be included in the announcement notification which goes to users of record. Program Update Service is not provided for the optional program material for Type I and II programs or for Type III and IV programs.

IBM CATALOGS OF PROGRAMS

Abstracts and detailed ordering instructions for all programs available from PID are found in the IBM Catalogs of Programs and their Supplements, published periodically by PID. These Catalogs are available from the Mechanicsburg Distribution Center as follows:

	CATALOG	SUPPLEMENT
SYSTEM	FORM NUMBER	FORM NUMBER
1240/1401/1420 1440/1450/1460	C20-1601	N20-0013
705/1410/7010/7070 7072/7074/7080/7740/ 7750	C20-1602	N20-0014
1620/1710	C20-1603	N20-0015
704/709/7040/ 7044/7090/7094	C20-1604	N20-0016
System/360 Models 25 and above.	C20-1619	N20-0030
1130/1800	C20-1630	N20-0031
Model 20	C20-1691	N20-1852

USER CONTRIBUTED PROGRAMS

Programs written by customer personnel for submission to the Program Library must conform to established standards and procedures. Copies of the Contributed Program Library Standards Manual and

Submittal Forms, are available on request from PID.

Contributed programs may be withdrawn from availability at any time, at the request of the program author. In addition, contributed programs are reviewed for deletion by PID when the request activity has fallen below 10 requests in any 12-month period. Programs deleted by PID remain available from PID until a deletion notice is printed in the Catalog or Supplement.

PID ORDER PROCESSING TURN-AROUND TIMES

The normal elapsed time which can be anticipated from the time the program order is shipped to PID till the time the order is received may be calculated from the following table:

ACTION	TIME IN DAYS
Order Sent to PID	Average - 4 calendar days in transit
Order Processed at PID	Maximum - 8 working days at PID
Order Sent from PID	Maximum - 4 calendar days in transit

Thus, a three-week cycle should be planned for when ordering programs from PID.

PID SHIPPING METHOD'S

PID uses three methods to ship program packages, depending on destination, weight and urgency. This information may be worthwhile to users who send magnetic volumes to PID.

1. United Parcel Service (air and land) is used whenever possible.
2. U.S. Mail is used for destinations beyond United Parcel territories. Fourth Class Special Delivery is the level of service chosen because it provides service comparable to First Class (4 days maximum to any location in the continental United States) at a much lower rate. Special Handling Service it should be noted, is not the same as Special Delivery Service, and is not as fast. PID insures Fourth Class Special Delivery shipments to provide a means for tracing shipments. A signature at the destination is a requirement

- for insured packages.
3. Air Freight service is used for expedited shipments. To metropolitan centers, overnight delivery can usually be expected. Two day delivery to locations more than 50 miles from a major airport is normal.

COMPLETION OF THE IBM PROGRAM ORDER FORM

INTRODUCTION

The IBM Program Order Form (120-1957) is to be employed for all orders submitted to PID for Type I, II, III and IV programs and for communications with PID relative to the establishment, modification and deletion of PID user profiles. This is the ONLY form to be used for these purposes.

The IBM Program Order Form is a 3-copy form. Copy 3 is retained by the user. Copies 1 and 2 should be forwarded to the IBM Branch Office. After completing Section 5 (see below), the Branch should forward Copy 1 to PID and retain Copy 2 for reference purposes.

THE IBM PROGRAM ORDER FORM CONTAINS 5 SECTIONS:

- Section 1, Program Package Identification, is used to describe the program material required.
- Section 2, Customer and Order Identification, MUST ALWAYS BE COMPLETED.
- Section 3, User Volume Information, is completed when the order requires the submission of user volumes.
- Section 4, User Registration, is completed to register a new PID user, or to modify or delete a user registration.
- Section 5, For IBM Use, MUST ALWAYS BE COMPLETED by an IBM representative.

Instructions for the completion of each section are given below. Refer to the sample form presented at the end of this discussion. See Figure 1.

SECTION 1 PROGRAM PACKAGE IDENTIFICATION

This section is used to describe the program packages being ordered. The instructions which follow, apply to ordering all programs described in this catalog.

A program is packaged and distributed under one program number (e.g., 7090-PR-130, 1410-PR-155, 1130-DP-06X, 1620-01.6.145,

1440-UT-041, etc.) and is fully specified by entries in Columns 1-24 ON ONE LINE of Section 1. A total of 25 ordering lines have been provided on the order form. If more than 25 lines are required, the order may be continued on a second form and then a third, etc.

COLUMN 1 BASIC OR OPTIONAL MATERIAL

The requester specifies, in Column 1, whether the basic or optional program package is required. If both the basic and the optional program packages are required, they must be described separately, on separate lines of the form. The contents of these program packages are described in the abstracts in this manual.

ENTER B or O

COLUMN 2 MACHINE READABLE

The requester specifies, in Column 2, whether or not he wishes the machine readable portion of the program package.

ENTER Y or N

COLUMN 3 DOCUMENTATION

The requester specifies, in Column 3, whether or not he wishes the documentation portion of the program package. PID will send one copy of the basic documentation associated with each Type I and II program ordered, if the documentation is requested. Requests for ONLY the documentation for Type I and II programs, when the machine readable material is not ordered, should be sent to the Mechanicsburg Distribution Center (use Publication Requisition #MO2-0618-3. See Figure 2). Also, requests for multiple copies of documentation for Type I and II programs should be sent to Mechanicsburg.

PID will honor "documentation only" requests for Type III and IV programs and also requests for multiple copies for Type III and IV program documentation, up to 3 copies. If more than 3 copies are required, the user may either reproduce copies locally (this material is not copyrighted) or the IBM Representative may send a letter to PID stating the requirements.

ENTER 0 or 1 for Type I and II Programs

ENTER 0, 1, 2 or 3 for Type III and IV Programs

COLUMNS 4-13 PROGRAM NUMBER

The exact Program Number, as specified in the ordering information portion of the Catalog of Programs abstract should be entered in this field.

ENTER the Program Number (e.g., 7040SI141) in columns 4-12 or columns 4-13, as the length requires. Omit all special characters such as decimal points or hyphens.

COLUMNS 15-20 PROGRAM NUMBER EXTENSION

The Program Number Extension is used in conjunction with the Program Number to completely and uniquely identify orderable items from PID. Program number extensions pertinent to a given program number are described in the ordering information portion of the Catalog of Programs abstract for that program. Whenever a program number requires a program number extension, IT MUST BE ENTERED in Columns 15-20.

ENTER as specified in the Catalog of Programs abstract (left justify).

COLUMN 14 ACTION CODE (TYPE I AND II BASIC PROGRAM PACKAGES ONLY)

Column 14 provides the user with the means to maintain his PID profiles for Type I and II programs in order to make most effective use of the Program Update Service. There are 2 specific actions requiring an entry in Column 14. COLUMN 14 SHOULD BE LEFT BLANK IN ALL OTHER CASES. These two actions are:

1. ORDER AN ANNOUNCED MAINTENANCE PACKAGE

Users of record receive announcements of the availability of orderable maintenance packages for programs automatically from PID.

Users wishing to order an announced orderable maintenance package may do so as follows:

ENTER M in Column 14

The program number and any applicable program number extension which is identified in the announcement material must be entered in Columns 4-13 and 15-20 respectively. The remainder of Columns 1-24 must also be completed as applicable.

2. DELETE A TYPE I OR II PROGRAM FROM THE USER PROFILE

Through the Program Update Service, PID makes extensive distributions of machine readable material and documentation to all users of record of all Type I and II basic programs. It is essential that the PID profiles be kept up to date to facilitate the distribution of this material to active users as well as to avoid the distribution of this material to installations no longer using previously ordered Type I and II programs.

A Type I or II program previously ordered, which is no longer being used, may be deleted from the PID profile as follows:

ENTER D in Column 14

The program number and any applicable program number extension must be entered in Columns 4-13 and Columns 15-20 respectively. No other entries in columns 1-24 are required.

COLUMNS 21-22 DISTRIBUTION MEDIUM CODE
(See Table Below)

The media on which each program is available from PID and the codes to be used, in Columns 21-22, to specify the desired media are identified in the Catalog of Programs abstract for each program.

ENTER the selected medium code.

MEDIUM CODE TABLE

TYPE	DESCRIPTION	CODE
PT	8 channel paper tape.	05
CARDS	80 column punched cards.	15
7/556	Magnetic tape recorded at 7 track, 556 cpi.	22
7/800	Magnetic tape recorded at 7 track, 800 cpi.	24
7DC/800	Magnetic tape recorded at 7 track, 800 bpi. Data convert feature required.	26
9/800	Magnetic tape recorded at 9 track, 800 bpi.	28
9/1600	Magnetic tape recorded at 9 track, 1600 bpi.	29
1316	1316 Disk Pack.	52
2315	2315 Disk Cartridge.	58

NOTE: When a program is available from PID only on 7/556 or 7/800 and no code is specified by the user, 7/800 will be provided. When a program is available only on 7DC/800, 9/800 or 9/1600 and no code is specified by the user, 9/800 will be provided.

COLUMNS 23-24 USER VOLUMES REQUIRED

When the programs ordered require the submission of user volumes (2400' magnetic tape reels/disk devices) the number of user volumes for each program, as specified in the Catalog of Programs abstract, is entered in Columns 23-24 and Section 3 of the order form is to be completed.

ENTER the number of user volumes required for the medium type selected. The number should be entered as two digits (01, 02, etc.)

SECTION 2 CUSTOMER AND ORDER IDENTIFICATION

CUSTOMER NUMBER

Enter the 7-digit Customer Number in the space provided ON EVERY IBM PROGRAM ORDER FORM SUBMITTED TO PID. Do not use the shaded area unless previously advised to do so. The Customer Number MUST BE ENTERED CORRECTLY because the user profile maintenance and the address to which the ordered program material will be shipped by PID will be determined from this number for all registered PID users (See Section 4). Once registered with PID, users are not required to enter their name and address on the order form.

ORDER NUMBER

This number is pre-printed on each form.

PAGE - OF -

If only one form is needed to specify the program order, enter "1 of 1". When more than one form is needed, number the forms "1 of n" "2 of n"... "n of n". Enter the CUSTOMER NUMBER ON EVERY FORM, and staple the forms together when sending to PID.

SECTION 3 USER VOLUME INFORMATION

The total number of user volumes (2400' magnetic tape reels, disk packs or cartridges) required to fill the program order, as identified program by program in Columns 23-24 of Section 1, should be accounted for in this section. These volumes may either be forwarded to PID or ordered from the appropriate IBM location. Complete Section 3 by entering the number of 2400' magnetic tape reels forwarded or ordered, the serial numbers of disk devices forwarded, or the plant order number, quantity and scheduled shipping dates of the disk devices ordered from San Jose.

Copy 1 of the IBM Program Order Form should accompany user volumes forwarded to PID. User volumes forwarded to PID should be externally labelled as follows:

2400' MAGNETIC TAPE REELS	DISK PACKS/ CARTRIDGES
1. Customer Number	1. Customer Number
2. *Order Number (Preprinted)	2. *Order Number (Preprinted)
	3. Disk serial number

It is suggested that tape reels be of the aluminum hub variety

Disk packs should be shipped in the standard disk pack containers (Part #7350520). Disk cartridges should be shipped in the standard cartridge container (Part #7350600).

* If multiple Program Order forms are required to complete the program order, enter the preprinted Order Number from the FIRST FORM on all user volume labels.

In lieu of forwarding tape reels to PID, reels may be purchased in conjunction with ordering programs. To purchase magnetic tape reels, Part #7035113 (10 1/2" diameter, 2400' reel, 3200 FCI, total surface tested, clear front, blue back, solid flanges), contact the IBM representative who can order them directly from PID by sending a completed copy of the Magnetic Tape Order Form #170-1138 to PID together with Copy 1 of the Program Order Form. Part #7035113 is the only part number PID carries. If different tape reels are desired the IBM representative must send orders for them with Copy 1 of the Program Order Form to the Boulder Tape Center. The Tape Center will forward the reels and the Program Order Form to PID. This procedure will of course extend total turnabout time and delay receipt of the program.

Disk packs and disk cartridges may be ordered from San Jose in conjunction with ordering programs. Contact the IBM representative for assistance. Copy 1 of the Program Order Form should be sent directly to PID. Upon receipt of the volumes, PID will fill the order in the normal manner.

SECTION 4 USER REGISTRATION

Section 4 is completed to register a new PID user and to modify or delete previous registrations. Each user must be registered with PID prior to, or simultaneously with, his first program order. Once the user

is registered Section 4 NEED NOT BE COMPLETED AGAIN until the registration data requires modification or deletion.

ACTION CODE

- R: REGISTER a new PID user. All blocks of Section 4 must be completed.
- M: MODIFY a previous registration by changing any or all blocks in Section 4. Each block modified must be completely respecified. Thus, a permanent change in the "Attention To" line of the user's name and address requires re-specification of the entire "Ship To" Information block of Section 4. The other blocks are left blank.
- D: DELETE a previous registration. This action causes the deletion of the entire user profile (identified by the 7-digit Customer Number entered in Section 2) from the PID files. No other information is necessary.
- S: SPECIAL "Ship To" this order only. This action causes a "Ship To" Information substitution for this order only. The "Ship To" Information block must be completely specified. All other blocks are left blank. The permanent user registration data is not affected.

DP BRANCH OFFICE NUMBER/IBM LOCATION

Enter the IBM DP Branch Office number for the IBM customer or DP Branch Office user. Enter the IBM division, location and department codes for IBM users.

MAGNETIC TAPE CAPABILITY

S/360 card programs will be volume shared for distribution on Distribution Tape Reels (DTR's) to S/360 users with magnetic tape capability. These DTR's will have a retriever placed at the front to enable the user to punch the programs out selectively. Enter here the preferred tape recording mode (trackage and density) for these volume shared DTR's. Check "None of These" if not a S/360 user.

"SHIP TO" INFORMATION

Enter the complete shipping address. Do not use only a Post Office Box number since PID uses carriers other than the U. S. Mail. The ZIP CODE must be provided. In the "Attention To" line, if at all possible, enter a position title or

department name/number, rather than the name of an individual.

SECTION 5 FOR IBM USE

IBM CONTACT

Enter the last name and telephone number of the IBM representative familiar with the order. If the representative can be reached on the IBM network, enter NET and the correct seven-digit number. PID will call this person should clarification of any of the information on the Order Form be required.

IBM MANAGEMENT SIGNATURE

Each order should be signed by a member of Branch management or, in the case of internal IBM users, by the department manager. The order form should be dated (MM DD YY) and the Branch Office/Department number entered.

IBM WORLD TRADE USERS

World Trade users should order programs by contacting their IBM representative.

KEYWORD-IN-CONTEXT (KWIC) INDEX

The Keyword-in-Context Index lists all available programs by their search words and keywords. Search words are significant words that describe the program but do not appear in the title. Keywords are significant words which appear in the program title.

Each search word and each keyword is listed alphabetically in a column of the index. Their respective context words are printed to the right of the search word or keyword. There is an index entry for each search word and keyword. Certain words are not accepted as indexing words. They are considered to be too general to be useful for retrieval purposes and are therefore prevented from indexing. Hyphenated words are treated as one index word, with only the first word being significant. Please refer to page xiv.

Note that the # sign always precedes the first word of the title. An * sign precedes a search word. Each print line in the KWIC Index contains 43 positions. A search word group or title that is longer than 43 positions will show only the words that fall to the right of the search word or keyword being highlighted, up to the limits of one line. The remaining words become a separate entry on a different line. The + sign at the end of a line indicates there are more words in the search word

group or title than are shown. The complete title may be found in the title section of the program abstract.

PROGRAM CLASSIFICATION CODES

Included below is a complete listing of classification codes for all types of programs and for each system included in this catalog.

In addition to assisting you in locating the abstract of each program, this list should prove useful in classifying programs written by IBM or customer personnel and contributed to the program libraries.

PROGRAMMING SYSTEMS TYPE I

- /AD/ Autochart
- /AS/ Assembly Systems
- /AT/ Automatic Test
- /AU/ Autocoder
- /CB/ COBOL - Common Bus. Oriented Language
- /CT/ Commercial Translator
- /CV/ Conversion Programs
- /DN/ Diagnostic Programs
- /FO/ FORTRAN - Formula Translation
- /IO/ Input/Output
- /LM/ Library Material
- /MI/ Miscellaneous
- /PR/ Processor - Includes AU, CB, I/O, etc.
- /RG/ Report Generators
- /SI/ Simulator Programs
- /SM/ Sort/Merge
- /SP/ Symbolic Assembly Programs
- /SV/ Supervisory Systems
- /UT/ Utility Programs

APPLICATION PROGRAMMING TYPE II

- Distribution
 - /DP/ Publishing
 - /DR/ Retail
 - /DW/ Wholesale
- Fabrication and Assembly
 - /CN/ Numerical Control Applications
 - /CX/ Other
 - /EE/ Electrical Engineering
 - /EO/ Optics
 - /EX/ Other
 - /ME/ Electrical Machinery
- Process
 - /MP/ Petroleum and Industrial Chemicals
 - /MT/ Textiles and Paper
- Service Industries
 - Finance
 - /FB/ Banking

/FI/ Brokerage and Investment		Programming Systems	2.0
Information Retrieval		Mathematical Subroutines	3.0
/CR/ Information Retrieval		Differential & Integral Equations	4.0
Insurance		Matrix Programs	5.0
/IF/ Fire and Casualty		Statistical Programs	6.0
/IL/ Life		Mathematical Routines	7.0
State and Local Government		Physical Sciences	8.0
/UG/ Government, State and Local		8.1 General Physics	
Transportation		8.2 Nuclear Physics	
/ST/ Transportation		8.3 Geology and Geophysics	
Utilities		8.4 Other	
/SU/ Utilities		Engineering Applications	9.0
Federal Region		9.1 Aeronautical	
/GF/ Government, Federal		9.2 Civil	
Scientific Industries		9.3 Chemical	
Aerospace		9.4 Electrical	
/MA/ Aerospace		9.5 Mechanical	
Education		9.6 Petroleum	
/US/ Secondary Schools		9.7 Other	
Medical		Management Science	10.0
/UH/ Hospital and Medical		10.1 Linear Programming	
Scientific Marketing		10.2 Simulation	
/CA/ Statistical Applications		10.3 Other	
/CO/ Operations Research		Demonstration Programs	11.0
/CP/ Critical Path Scheduling		Guide	12.0
/CM/ Mathematical Applications		12.1 Utility	
/EC/ Civil Engineering		12.2 Assembly	
/MF/ Fabrication and Primary Metals		12.3 Simulation	
Cross Industry		12.4 Other	
Communications		Share	13.0
/SC/ Communications		13.1 Utility	
Simulators		13.2 Assembly	
/CS/ Simulators		13.3 Simulation	
Systems Engineering		13.4 Other	
/SE/ Systems Engineering Techniques		Unclassified	14.0
TYPE III AND TYPE IV PROGRAMS		IBM 1440 Data Processing System	
IBM 1401, 1420 and 1460 Data Processing Systems		Programming Systems	1.0
Utility Programs	1.0	1.0 Preprocessing, Editing	
1.1 Assembly		1.1 Monitoring or Supervisory	
1.2 Sorting - Merging		1.2 Assembly	
1.3 Report Generating		1.3 Compiling	
1.4 Miscellaneous General Purpose		1.4 IOCS	
1.5 Input/Output		1.5 Report Generators	
1.6 Data Transmission		1.6 Sorting, Merging	

1.7 File Organization		10.2 Finance	
1.8 Data Transmission		10.3 Insurance	
1.9 Other		10.9 Other	
Utility Programs	2.0	Public Service Industries Applications	11.0
2.1 Disk		11.1 Business Services	
2.2 Tape		11.2 Communications	
2.3 Duplicators and Listers		11.3 Education	
2.4 Input-Output		11.4 Government	
2.5 Internal Information Transfer		11.5 Medical	
2.6 Data Manipulation-Handling		11.6 Transportation	
2.7 Debugging Aids		11.7 Utilities	
2.8 Houskeeping, Documentation, Programming Aids		11.9 Other	
2.9 Other		Manufacturing Industries Applications	12.0
Simulators, Translators, & Interpreters	3.0	12.1 Aerospace	
3.1 Unit Record Simulation		12.2 Control Systems	
3.2 Computer Simulation		12.3 Fabrication and Assembly	
3.3 Translators		12.4 Numerical Control	
3.4 Interpreters		12.5 Process	
3.9 Other		12.6 Other	
Differential & Integral Equations	4.0	Demonstrations	13.0
Matrix Programs	5.0	Systems Engineering	14.0
Statistical Analysis & Probability	6.0	Unclassified	15.0
6.1 Basic Statistics		USING THE CATALOG	
6.2 Time Series Analysis		To locate a program begin by thinking of the significant words describing the desired program. Then look in the KWIC, Keyword-in-Context, Index for keyword entry. The page number adjacent to the file number will then direct you to the corresponding program abstract. The reference code is set up as follows:	
6.3 Correlation			
6.4 Regression Analysis			
6.5 Analysis of Variance			
6.6 Tests			
6.9 Other			
Mathematical Routines	7.0		
7.1 Functional Subroutines		<u>System</u>	<u>File No.</u>
7.2 Floating Point Arithmetic		1440	CX-07X
7.3 Interpolation & Curve Fitting		1410	06.0.010
7.4 Polynomial Solutions			
7.9 Other		The number of the IBM system for which the program is written.	The IBM Library code for filing and ordering a program.
Social & Physical Sciences, Engineering Applications	8.0		
Management Information	9.0	Now refer back to the illustration in the section entitled, "Keyword-in-Context Index". As you can see, there are two kinds of file numbers: The first consists of an alphabetical and numeric reference; the second is completely numeric in a Dewey Decimal sequence.	
9.1 Inventory Control			
9.2 Scheduling			
9.3 Information Classification & Retrieval			
9.4 Simulators			
9.5 Linear Programming			
9.6 General Problem Solvers			
9.9 Other		Type I and II program abstracts are located in the "IBM Programs" section of this Catalog; Type III and IV program abstracts are located in the "Contributed Programs" section.	
Commercial Industries Applications	10.0		
10.1 Distribution			

The page number listed at the end of the KWIC entry line will direct you to the program abstract. Each abstract describes the relevant program in enough detail to help you determine if the program will meet your requirements.

LIST OF NEW PROGRAMS

This section consists of a list of new Programs added since the last edition of the Catalog of its Supplements.

PROGRAM CORRECTIONS AND REVISIONS

There are two kinds of revisions to programs listed in this Catalog:

1. Changes in the program abstract,
2. Functional changes in the program documentation and/or changes in the card decks and tapes.

Abstract changes for all Types of programs are noted in this Catalog and in the Supplement. The following codes appear at the extreme right-end of the title line for each abstract that is new or has been revised in this edition:

- *N - This symbol indicates a new program.
- *M - This symbol indicates that the text of the abstract has been modified.

Functional changes in program documentation and/or decks or tapes for Type III (IBM Contributed) and Type IV (Customer Contributed) programs are listed in a special table preceding the KWIC Index. This data is listed under four headings: machine area; order number; date the correction was effective; and material changed. If a user has received the program data prior to the date indicated and would like to receive the correction, he must reorder the program. See the section entitled, "Completion of the IBM Program Order Form".

Information concerning functional changes in program documentation and/or decks or tapes for Type I (Programming Systems) and Type II (Application Programs) can be obtained through your IBM Branch Office.

DELETED PROGRAMS

This section consists of a list of programs deleted since the last Supplement to the Catalog and a list of all programs deleted since the last edition of this Catalog. Included is an alphabetical heading "Reason for Removal". Each letter refers to a

key that indicates the specific reasons for removing the program from the Catalog.

Alphabetical Key to Reason for Removal

- A - This Program has been deleted because of low usage.
- B - This Program has been withdrawn at User Organization Direction.
- C - This program has been deleted because of limited usefulness.
- D - This program is obsoleted and replaced by a file number.
- F - This program has been withdrawn by the author.

Programs deleted by the letter "D" are followed by a file number code. This code is the file number of the program that replaces the deleted program. An abstract for the replacement program may be found in the "Abstracts of Available Programs" Sections in this Catalog.

IBMSHIP
TO →

EXPEDITE		
DATE REQUIRED	MONTH	DAY

Publications Requisition

DIV.	BR. OFF. NO. OR LOCATION	DEPT. NO.	REQUISITION NO.
DATE ORDERED		CUSTOMER REFERENCE	BILLABLE 'YES' OR 'NO'

ITEM NO.	FORM NUMBER (OMIT SUFFIX)	QUANTITY ORDERED	U/M*	ORIGINATING OFFICE USE	ITEM NO.	FORM NUMBER (OMIT SUFFIX)	QUANTITY ORDERED	U/M*	ORIGINATING OFFICE USE
1					26				
2					27				
3					28				
4					29				
5					30				
6					31				
7					32				
8					33				
9					34				
10					35				
11					36				
12					37				
13					38				
14					39				
15					40				
16					41				
17					42				
18					43				
19					44				
20					45				
21					46				
22					47				
23					48				
24					49				
25					50				

*U/M

NOTE CORRECT 3-DIGIT IF OTHER THAN 001 (I.E. 025, 050, ETC.) UNIT OF MEASURE CODE AS PER IBM PUBLICATIONS AND PROGRAMS—CURRENT PRICE LIST—Z20-0100 AND THE ACCUMULATIVE SUPPLEMENT TO THE LATEST PRL.

AUTHORIZED SIGNATURE

M02-0618-4

1 - Distribution Center

Figure 2

KEYWORD-IN-CONTEXT (KWIC) INDEX

ABRIDGE

TITLE	PROGRAM NO.	PAGE	TITLE	PROGRAM NO.	PAGE
ABRIDGE CARD KEEPING. #STACK - STORAGE ON+	1401-01.4.107	053	#BILL OF MATERIAL PROCESSOR STRUCTURE+	1440-12.3.001	090
#ACCELERATOR PACK-SYMBOLIC 4K PROGRAMMING+	1401-01.1.016	045	#BILL OF MATERIAL PROGRAMS TO LOAD,+	1440-12.3.003	090
ACCOUNT. #DEMAND DEPOSIT	1440-FB-03X	030	BILL OF MATERIAL PROCESSOR. #1440/1311	1440-ME-02X	032
ACCOUNTING SYSTEM FOR HOSPITAL. #PROPERTY	1440-11.5.005	090	BILLING. #MEDICARE INPATIENT	1440-11.5.004	090
ACCOUNTING. #MORTGAGE LOAN	1440-FB-04X	030	BILLING. #CHAIN AND WHOLESALE	1440-DW-01X	029
ACCOUNTING. #SAVINGS	1440-FB-05X	030	BILLING. #HOSPITAL PATIENT	1440-UH-01X	038
ACCOUNTING. #ON-LINE SAVINGS	1440-FB-07X	031	BINARY SEARCH MACRO. #AUTOCODER SERCH	1401-03.0.036	067
ACCOUNTING. #MOTOR FREIGHT REVENUE	1440-ST-02X	037	BLOCK DIAGRAMMING SYSTEM. #SYMBOLIC	1401-01.4.097	053
ACCOUNTS RECEIVABLE. #RETAIL	1440-DR-02X	028	#BOND TRADE ANALYSIS FOR A BANK.	1401-FB-09X	007
#ACCOUNTS RECEIVABLE FOR HOSPITALS.	1440-UH-02X	038	BPS S/360 SORT/MERGE PROGRAM 8K DISK.	1401-LB-079	015
ACCOUNTS PAYABLE. #HOSPITAL	1440-UH-03X	039	BRaille - TRAN - TRANSLATE ENGLISH TO GRADE+	1401-01.4.230	062
ACCOUNTING. #INSTALLMENT LOAN	1440-10.2.003	088	BRANCH ON OVERFLOW. #ONE CARD 80-80 CARD TO+	1440-02.3.002	086
ACQUISITION PROGRAM. #COMPUTER FOR THE IBM+	1440-11.5.003	089	BRIDGE-IT ON THE 1401. #THE GAME	1401-11.0.010	081
ACTUAL FORM. #CORE DUMP ROUTINE IN	1440-02.7.003	087	#CALCULATE NUMBER OF DAYS BETWEEN TWO+	1401-03.0.011	066
ADDRESS CONVERSION. #GENERAL APPROACH TO+	1401-01.4.034	050	CALCULATING AND PRINTING EVERYTHING.	1401-01.4.010	050
ADDRESS UTILITY. #1401/1311 DISK	1401-01.4.176	057	CALCULATION - MODULOUS 10. #SELF CHECKING+	1401-01.4.121	054
ADDRESS UTILITY. #1440/1311 DISK	1440-02.1.002	085	CALCULATION MODULOUS II. #SELF-CHECKING+	1401-07.0.002	071
ADDRESS REORGANIZATION MAINTENANCE+	1440-12.3.001	090	#CAPERTSIM - COMPUTER ASSISTED PROJECT+	1401-10.2.011	073
ADJUSTMENT OF MONTHLY TIME SERIES.#SEASONAL	1401-06.0.001	067	#CAPITAL INVESTMENT ANALYSIS (8K).	1401-10.3.166	075
ADJUSTMENT - CENSUS METHOD II, X-9 VERSION,+	1401-06.0.009	069	CARD-TO-DISK CONSECUTIVE LOAD PROGRAM.	1401-01.4.159	057
ADJUSTMENT, CENSUS METHOD II, X-9 VERSION,+	1401-06.0.010	069	CARD-TO-DISK CONSECUTIVE LOAD PROGRAM.	1440-02.1.001	085
ADJUSTMENT FOR 1401 VERSIONS OF CENSUS+	1401-06.0.018	070	#CARD-TO-TAPE UTILITY PROGRAM.	1401-07-027	022
#ADMINISTRATIVE TERMINAL SYSTEM.	1440-CX-07X	028	CASH LETTER WRITING. #1240/1440 PROOF OF+	1440-10.2.002	088
#ADMINISTRATIVE TERMINAL SYSTEM.	1460-CX-08X	042	CASUALTY COMPANIES. #AUTO RATING FOR FIRE+	1401-17-01X	009
ADMISSIONS INFORMATION SYSTEM. #COOPERATIVE	1401-10.3.068	080	CENSUS METHOD II, X-9 VERSION, 4K, LONG+	1401-06.0.009	069
AIRCRAFT EVALUATION PROGRAM. #1401 AIRLINE	1401-10.3.069	080	CENSUS METHOD II, X-9 VERSION, 4K, SHORT+	1401-06.0.010	069
AIRLINE AIRCRAFT EVALUATION PROGRAM. #1401	1401-10.3.069	080	CENSUS METHOD II. #DATA TRANSFER - PROGRAM+	1401-06.0.013	070
#ALPHABETIC NAME FILE SEARCHING BASED ON+	1401-01.2.024	048	CENSUS METHOD II. #TRADING-DAY ADJUSTMENT+	1401-06.0.018	070
ALITERATION PROGRAM. #STANDARD NAME	1401-14.0.019	083	CENTERING QUICK REPORT (QUICKRIB). #SELF	1401-01.3.018	049
AMORTIZATION SCHEDULE. #MORTGAGE	1401-10.2.006	072	CENTS DIGITS TO CHECK-FORM WORDS.	1401-14.0.008	082
ANALYTICAL DATA ACQUISITION PROGRAM.	1440-11.5.003	089	CHAIN AND WHOLESALE BILLING.	1440-DW-01X	029
ANALYZE TEACHER-MADE TESTS. #T880 - SCORE+	1401-10.3.070	080	CHART GENERATOR. #FLOGEN - IBM 1401 PLOW	1401-02.0.022	064
ANDAOER FOR PROGRAM FOR S/360 BASIC PRIC	1401-01.4.220	060	CHARTER. #SYSTEMS PLOW	1401-02.0.039	065
#ANTIC A LIST OF CONDENSED CARDS.	1401-01.4.198	059	CHECK AND EDIT.#1401/1460 PACE PRE-ASSEMBLY	1401-01.1.051	046
#APTCO - AUTOMATIC PROGRAMMING, TESTING,+	1401-01.4.094	052	CHECK AND EDIT LISTING.#PACE - PRE-ASSEMBLY	1440-01.0.001	084
ASK - INFORMATION RETRIEVAL PROGRAM FOR+	1401-10.3.009	074	CHECK-FORM WORDS. #SUBROUTINE TO CONVERT+	1401-14.0.008	082
ASSEMBLER. #SPSS - AN IMPROVED SPS -	1401-01.1.036	046	CHECKING PROGRAM. #GENERALIZED TABULATE+	1401-01.4.056	051
ASSEMBLER. #SPSS SINGLE PASS	1401-01.1.052	047	CHECKING NUMBER CALCULATION - MODULOUS 10.	1401-01.4.121	054
ASSEMBLER. #1401 SPS TO SYSTEM/360 BASIC	1401-01.4.195	059	#CHECKPOINT AND RESTART PROCEDURE.	1401-01.4.102	053
ASSEMBLY. #ACCELERATOR PACK-SYMBOLIC 4K+	1401-01.1.016	045	CLASS PENNSYLVANIA COUNTIES. #REAL ESTATE+	1401-14.0.026	083
ASSEMBLY PROGRAM NO. 14043.	1401-01.1.017	045	COLB THROUGH A LOGIC TRACE AND DATA-NAME+	1401-01.4.223	061
ASSEMBLY FOR THE 1401.#TWO - TAPE AUTOCODER	1401-01.1.018	045	#COLB EXPANDER PROGRAM.	1401-02.0.041	065
ASSEMBLY LANGUAGE. #1401/1440 EDIT+	1401-01.1.056	047	COLB.	#1401 1401-CB-070	003
#ASSEMBLY PROGRAM FOR 7750 USING THE IBM+	1401-SP-133	021	#COLB LANGUAGE CONVERSION.	1401-CB-701	003
ASSEMBLY PROGRAM USING THE IBM 1401.	1401-SP-156	021	COLB EDIT. #SYSTEM/360	1401-SE-13X	018
ASSISTED PROJECT EVALUATION AND REVIEW+	1401-10.2.011	073	#COLB FOR IBM 1440/1401/1460.	1440-CB-073	027
ASSISTED INSTRUCTION OPERATING SYSTEM FOR+	1401-14.0.027	083	COEFFICIENTS PROGRAM. #REGAN - 4K+	1401-06.0.008	069
ASSISTED INSTRUTILIZATION ANC PRIC	1440-01.0.001	084	COLLATOR SIMULATOR. #CARD	1401-01.4.212	060
ASSISTED INSTRUCTION OPERATING SYSTEM FOR+	1440-15.0.001	091	COLUMNS ON THE IBM 1401. #REPRODUCE ONLY+	1401-01.4.221	061
ASSISTED INSTRUCTION. #1401/1460 - 1026+	1401-OS-092	015	#COMMERCIAL AND SAVINGS TELLER SIMULATION+	1401-10.2.010	073
ASSISTED INSTRUCTION COURSEWRITER LANGUAGE.	1440-OS-090	033	COMMUNICATION MONITOR FOR 1401/40/60+	1440-SV-090	037
ASSISTED INSTRUCTION. #1440-1026 OPERATING+	1440-OS-091	034	COMMUNICATION MONITOR FOR 1440 BASIC+	1440-SV-091	038
*ATS #ADMINISTRATIVE TERMINAL SYSTEM	1440-CX-07X	028	COMMUNICATION MONITOR FOR 1401 AUTOCODER+	1460-SV-090	044
*ATS #ADMINISTRATIVE TERMINAL SYSTEM	1460-CX-08X	042	COMMUNICATION MONITOR FOR 1401 BASIC+	1460-SV-091	044
#ATTENDANCE RECORDING FOR SECONDARY	1440-US-04X	042	#COMMUNICATIONS IOCS (1026/DDC) FOR THE+	1401-IO-012	011
#AUTO RATING FOR FIRE AND CASUALTY+	1401-IP-01X	009	COMMUNICATIONS UTILITY PROGRAM - IBM 1009.	1401-UT-076	025
#AUTO-TEST.	1401-AT-072	001	#COMMUNICATIONS IOCS.	1440-IO-011	031
AUTO-TEST 8K. #1401/1311	1401-AT-081	001	#COMMUNICATIONS IOCS 1026 (DDC) FOR THE+	1440-IO-012	032
AUTO-TEST 16K. #1401/1311	1401-AT-082	002	COMMUNICATIONS IOCS (1448-DDC). #1460/1401	1460-IO-011	043
#AUTO-TEST 16K.	1440-AT-060	026	COMPARE ERROR PRINT/DUPLICATE. #TAPE	1401-01.4.123	054
#AUTO-TEST 8K.	1440-AT-061	027	COMPATIBILITY MODE. #COPY 1401-AU-008+	1401-14.0.024	083
#AUTOBLOCK II.	1401-02.0.017	063	CONDENSED CARDS. #UNPACK	1401-01.4.067	052
#AUTOCHART.	1401-02.0.031	064	CONDENSED PROGRAM. #PROGRAM TO LOAD+	1401-01.4.134	055
AUTOCODER PROGRAMS. #AUTOEDIT - 1401 EDIT+	1401-01.1.014	045	CONDENSED CARDS. #ANTIC A LIST OF	1401-01.4.198	059
AUTOCODER ASSEMBLY FOR THE 1401.#TWO - TAPE	1401-01.1.018	045	CONDENSING OPERATION. #APTCO - AUTOMATIC+	1401-01.4.094	052
#AUTOCODER PRE-LIST DIAGNOSTIC.	1401-01.1.026	046	CONSECUTIVE NUMBERS ON LABELS. #1401/1460+	1401-01.3.024	049
AUTOCODER SOURCE DECK. #PRE-LIST FOR	1401-01.1.039	046	CONSECUTIVE LOAD PROGRAM. #1401/1311+	1401-01.4.159	057
#AUTOCODER PRE-LIST.	1401-01.1.043	046	CONSECUTIVE LOAD PROGRAM. #1440/1311+	1440-02.1.001	085
AUTOCODER PROGRAM LOGIA DIAGRAMMER.	1401-01.4.128	055	#CONSOLIDATED FUNCTIONS ORDINARY DAILY+	1401-IL-02X	010
AUTOCODER CARD FORMAT. #CONVERT SPS CARD+	1401-01.4.131	055	#CONSOLIDATED FUNCTIONS ORDINARY+	1401-IL-03X	011
AUTOCODER CONDENSED PROGRAM. #PROGRAM TO+	1401-01.4.134	055	CONTROL MONITOR ON DISK.#1401/1440/1460 JOB	1401-01.4.220	060
AUTOCODER. #CONVERSION OF SPS TO	1401-01.4.160	057	CONTROL FIELDS. #GENERALIZED TABULATE WITH+	1401-01.4.226	061
AUTOCODER CONVERTER. #SOPHISTICATED SPS TO	1401-01.4.165	057	CONTROL PROGRAM. #AUTOPROPS II NUMERICAL	1401-CN-03X	004
AUTOCODER SOURCE PROGRAMS - RASP.	1401-01.4.189	058	CONTROL SYSTEM. #INPUT/OUTPUT	1401-IO-065	012
AUTOCODER FOR 1401/1460. #CARD SPS TO	1401-01.4.205	059	CONTROL PROGRAM (IOCP) FOR IBM+	1401-IO-077	013
AUTOCODER SOURCE G, ANDAOER FOR PROGRAM FOR	1401-01.4.220	060	CONTROL PROGRAM. #7040/44-1401 INPUT/OUTPUT	1401-IO-152	013
AUTOCODER SOURCE. #DISASSEMBLER OP+	1401-02.0.035	065	CONTROL SYSTEM. #INPUT/OUTPUT	1440-IO-010	031
AUTOCODER. #TYPEWRITER MACROS FOR+	1401-02.0.040	065	CONTROL SYSTEM. #PROJECT	1440-MX-02X	033
#AUTOCODER SERCH BINARY SEARCH MACRO.	1401-03.0.036	067	#CONTROLLER.	1440-01.1.001	084
AUTOCODER SOURCE PROGRAMS TO 1401. #CONVERT+	1440-03.3.002	088	CONVERSION OF OTHER PUNCHES. #SCOOP I & II+	1401-01.4.012	050
AUTOCODER 2K. #BASIC	1401-AU-005	002	CONVERSION. #GENERAL APPROACH TO AUTOMATIC+	1401-01.4.034	050
AUTOCODER (ON DISK). #1401/1440/1460	1401-AU-008	002	#CONVERSION OF SPS TO AUTOCODER.	1401-01.4.160	057
#AUTOCODER PROGRAM.	1401-AU-037	003	CONVERSION PROGRAM. #1401 FARGO TO+	1401-02.0.036	065
AUTOCODER. #BASIC	1420-AU-001	026	CONVERSION PROGRAM. #DEMAND DEPOSIT	1240-FB-12X	001
AUTOCODER. #BASIC	1440-AU-001	027	CONVERSION. #COLB LANGUAGE	1401-CB-701	003
AUTOCODER 2K. #BASIC	1440-AU-006	027	CONVERSION PROGRAM. #FORTRAN II LANGUAGE	1401-FO-702	009
AUTOCODER ON DISK. #1440-1470 PROCESS+	1440-SV-090	037	#CONVERT SPS CARD FORMAT TO AUTOCODER+	1401-01.4.131	055
AUTOCODER. #1440-1070 PROCESS COMMUNICATION+	1440-SV-091	038	CONVERT DOLLARS AND CENTS DIGITS TO+	1401-14.0.008	082
AUTOCODER (ON TAPE). #1460-1070 PROCESS+	1460-SV-090	044	#CONVERT 1440 AUTOCODER SOURCE PROGRAMS+	1440-03.3.002	088
AUTOCODER 2K. #1460-1070 PROCESS+	1460-SV-091	044	CONVERTER. #SOPHISTICATED SPS TO AUTOCODER	1401-01.4.165	057
#AUTOEDIT - 1401 EDIT FOR 1410 AUTOCODER+	1401-01.1.014	045	#CORPORAIVE ADMISSIONS INFORMATION SYSTEM.	1401-10.3.068	080
AUTOMATIC PROGRAMMED ADDRESS CONVERSION.	1401-01.4.034	050	#COPY 1401-AU-008 SYSTEMS PACK TO TAPE+	1401-14.0.024	083
AUTOMATIC PROGRAMMING, TESTING, AND+	1401-01.4.094	052	CORE DUMP ROUTINE.	1401-01.4.071	082
#AUTOMATIC FLOWCHART TECHNIQUE.	1401-02.0.019	063	CORE DUMP.	1401-01.4.141	056
AUTOMATIC PLOTTING OF RESULTS. #MANAGEMENT+	1401-10.2.007	072	#CORE PRINT.	1440-02.7.002	086
AUTOMATIC SCORING TECHNIQUE. #FAST - FULLY	1401-10.3.041	077	#CORE DUMP ROUTINE IN ACTUAL FORM.	1440-02.7.003	087
AUTOMATIC SCORING TECHNIQUE-PHASE I PROGRAM+	1401-10.3.063	079	#CORE DUMP.	1440-02.7.004	087
AUTOMATIC SCORING TECHNIQUE PHASE 2 PROGRAM+	1401-10.3.064	079	CORE IN PROGRAM LOAD FORMAT. #PUNCH	1440-02.9.003	087
AUTOMATIC SCORING TECHNIQUE. #FAST - FULLY	1401-10.3.066	079	CORE PUNCH PROGRAM. #IBM 1440	1440-02.9.005	087
#AUTOPROPS II NUMERICAL CONTROL PROGRAM.	1401-CN-03X	004	#CORL-I THIRTEEN VARIABLE SIMPLE+	1401-06.0.006	068
AUXILIARY PROGRAMS. #7040/44-1401	1401-UT-153	025	CORRELATION - VARIABLES OF IMPORTANCE+	1401-06.0.005	068
BANDS OF 100 POS. 20 CARDS. #MEMORY DUMP IN	1401-01.4.063	051	CORRELATION. #CORL-I THIRTEEN VARIABLE+	1401-06.0.006	068
BANK DATA PROCESSING SYSTEM. #MICR ENTRY+	1450-FB-20X	042	CORRELATION COEFFICIENTS PROGRAM. #REGAN -+	1401-06.0.008	069
#BANK DOCUMENT SORT PROGRAM.	1240-SM-030	001	COUNT, PRINT.#RGCP - REPRODUCE, GANG-PUNCH,	1401-13.1.009	081
#BANK MANAGEMENT SIMULATOR.	1401-FB-02X	006	COUNTIES. #REAL ESTATE TAX BILL SYSTEM FOR+	1401-14.0.026	083
BANK. #BOND TRADE ANALYSIS FOR A	1401-FB-09X	007	COURSEWRITER LANGUAGE. #OPERATING SYSTEM+	1440-OS-090	033
BILL SYSTEM FOR THIRD CLASS PENNSYLVANIA+	1401-14.0.026	063	#CPI - CREATE PRINT IMAGES.	1401-01.4.228	062

CREATE	TITLE	PROGRAM NO.	PAGE	TITLE	PROGRAM NO.	PAGE
CREATE PRINT IMAGES.	#CPI -	1401-01.4.228	062	*ESCADE - EFFORTLESS SYSTEM OF+	1401-01.4.010	050
CREDIT UNIONS. #INDIVIDUAL LEDGER EXTRACT+		1401-10.3.055	078	ESTATE TAX BILL SYSTEM FOR THIRD CLASS+	1401-14.0.026	083
CREDIT UNIONS. #INDIVIDUAL LEDGER UPDATE+		1401-10.3.056	078	*ESTIMATING COST #LESS IV	1401-10.3.053	078
#CRITICAL PATH SCHEDULER (BASIC 1401).		1401-10.3.013	075	ESTIMATING AND SCHEDULING+	1401-10.3.001	073
#CRITICAL PATH LISTING AND RESOURCE+		1401-10.3.028	076	ESTIMATING AND SCHEDULING 8K, 12K, and 16K.	1401-10.3.002	073
#CRITICAL PATH MANAGEMENT GAME.		1401-10.3.059	079	EVALUATION AND REVIEW TECHNIQUE SIMULATOR.	1401-10.2.011	073
CROSS REFERENCE LIST. #DOCUMENT AND TESTING+		1401-01.4.223	061	EVALUATION PROGRAM. #1401 AIRLINE AIRCRAFT	1401-10.3.069	080
CURVE FIT FOR ECONOMIC ANALYSIS AND+		1401-07.0.003	071	EVALUATOR UTILIZATION ANC PRIC	1401-13.1.009	081
CYCLE PROGRAMS. #CONSOLIDATED FUNCTIONS+		1401-IL-02X	010	EVERYTHING. #ESCADE - EFFORTLESS SYSTEM OF+	1401-01.4.010	050
DAILY CYCLE PROGRAMS. #CONSOLIDATED+		1401-IL-02X	010	EXPANDER PROGRAM. #COBOL	1401-02.0.041	065
DATA-NAME CROSS REFERENCE LIST. #DOCUMENT+		1401-01.4.223	061	EXPLODE IBM FILES. #BILL OF MATERIAL+	1440-12.3.003	090
DATES SUBROUTINE-DTCALC. #CALCULATE NUMBER+		1401-03.0.011	066	EXPONENTIAL SMOOTHING. #FORECASTING BY	1401-10.3.008	074
DATOMIC ANALYSIS OFF RECORDING COMPUTER		1401-10.1.004	072	*EXTENDED PERFORMANCE COMPUTER ASSISTED+	1401-14.0.027	083
DAYS BETWEEN TWO DATES SUBROUTINE-DTCALC.		1401-03.0.011	066	*EXTENDED PERFORMANCE COMPUTER ASSISTED+	1440-15.0.001	091
*DEBUGGING #RAPID SELECTIVE TRACE		1440-01.4.002	085	EXTRACT PROGRAM FOR CREDIT UNIONS.	1401-10.3.055	078
DECISION TABLES. #PRINT		1401-01.4.126	054	EXTRACTION METHOD. #A SQUARE ROOT+	1401-03.0.019	066
DECISION MAKING LABORATORY AUTOMATIC+		1401-10.2.007	072	FACILITATE STATISTICAL ANALYSIS. #METHOD OP+	1401-06.0.011	069
DECISION MAKING LABORATORY. #1401/1440 DISK+		1401-10.2.012	073	FACTORIAL DESIGN. #ANALYSIS OF VARIANCE, 2+	1401-06.0.012	070
#DECISION LOGIC TRANSLATOR PROGRAM.		1401-SE-05X	018	*FALLOUT.	1401-11.0.007	081
DECISION-MAKING LABORATORY. #MANAGEMENT		1401-CS-02X	005	*FARGO ONE-SIXTY-G.	1401-02.0.018	063
#DEMAND DEPOSIT CONVERSION PROGRAM.		1240-FB-12X	001	FARGO TO SYSTEM/360 RPG MODEL 20 CONVERSION+	1401-02.0.036	065
#DEMAND DEPOSIT ACCOUNT.		1440-FB-03X	030	*FARGO - FOURTEEN-O-ONE AUTOMATIC REPORT+	1401-RG-045	017
*DEMONSTRATION #FALLOUT		1401-11.0.007	081	FEATURES. #TRACE THAT NEEDS NO SPECIAL	1401-01.4.133	055
*DEMONSTRATION #THE GAME BRIDG-IT ON THE		1401-11.0.010	081	FEATURES REQUIREMENTS. #FORTRAN+	1401-02.0.025	064
*DEMONSTRATION #MUSIC-MUSIC SIMULATION ON A		1401-11.0.012	081	FIELDS. #GENERALIZED TABULATE WITH OR+	1401-01.4.226	061
DEPOSIT AND CASH LETTER WRITING. #1240/1440+		1440-10.2.002	088	FILE SEARCHING BASED ON PHONETICS.	1401-01.2.024	048
DEPOSIT CONVERSION PROGRAM. #DEMAND		1240-FB-12X	001	FILE ADDRESS REORGANIZATION MAINTENANCE+	1440-12.3.001	090
DEPOSIT ACCOUNT. #DEMAND		1440-FB-03X	030	*FILE UTILITIES.	1401-UT-051	023
DESIGN. #ANALYSIS OF VARIANCE, 2 TO THE N+		1401-06.0.012	070	FILE ORGANIZATION ROUTINES 1401/1460.	1401-UT-052	023
DESIGN DATA. #HIGHWAY EARTHWORK QUANTITIES+		1401-09.2.007	071	*FILE ORGANIZATION ROUTINES.	1401-UT-057	024
DEVELOPMENT. #1440/1311 STERLING REPORT+		1440-RG-720	035	FILE ORGANIZATION ROUTINES. #DISK	1440-UT-040	041
DIAGNOSTIC. #AUTOCODER PRE-LIST		1401-01.1.026	046	FILES PROGRAM. #MATCH AND MODIFY	1401-01.4.231	062
DIAGRAMMER. #1401/1410 AUTOCODER PROGRAM+		1401-01.4.128	055	FILES. #BILL OF MATERIAL PROGRAMS TO LOAD,+	1440-12.3.003	090
DIAGRAMMING SYSTEM. #SYMBOLIC BLOCK		1401-01.4.097	053	*FINANCIAL ANALYSIS PROGRAM.	1401-FI-05X	007
DIGITS TO CHECK-FORM WORDS. #SUBROUTINE TO+		1401-14.0.008	062	FINDER. #1311 DISK RECORD	1401-01.4.187	058
#DISC - 1311/1301 INPUT-OUTPUT SYSTEM FOR+		1401-01.5.002	062	FIRE AND CASUALTY COMPANIES. #AUTO RATING+	1401-IF-01X	009
#DISASSEMBLER OF 1401/1460 PROGRAMS FOR+		1401-02.0.035	065	FIT FOR ECONOMIC ANALYSIS AND FORECASTING.	1401-07.0.003	071
DISK SORT. #IBM 1401/1440/1460/1311		1401-01.2.023	048	*FLOGEN - IBM 1401 FLOW CHART GENERATOR.	1401-02.0.022	064
DISK LOAD. #1401 SORT 7 - 1311		1401-01.2.025	048	FLOW CHART GENERATOR. #FLOGEN - IBM 1401	1401-02.0.022	064
DISK ADDRESS UTILITY. #1401/1311		1401-01.4.176	057	FLOW CHARTER. #SYSTEMS	1401-02.0.039	065
DISK RECORD. #REPAIR		1401-01.4.181	058	FLOWCHART TECHNIQUE. #AUTOMATIC	1401-02.0.019	063
DISK PROGRAM LOADER. #1401/1460-1311		1401-01.4.186	058	*FLOWCHARTING AND DOCUMENTATION AID	1401-02.0.024	064
DISK RECORD FINDER. #1311		1401-01.4.187	058	FORECASTING. #POLYNOMIAL CURVE FIT FOR+	1401-07.0.003	071
DISK PRINT PROGRAM. #1401-1311		1401-01.4.211	060	*FORECASTING BY EXPONENTIAL SMOOTHING.	1401-10.3.008	074
DISK. AUTOCODER SOURCE G, ANDAORR FOR		1401-01.4.220	060	FORTRAN FOR PROGRAM FOR S/360 BASIC PRIC	1440-US-04X	041
DISK PACKS. #1401/1311 MONITOR FOR PROGRAMS+		1401-02.0.021	063	FORTRAN. #CORE DUMP ROUTINE IN ACTUAL	1440-10.2.7.003	087
DISK AUTOCODER. #TYPEWRITER MACROS FOR+		1401-02.0.040	065	FORMAT TO AUTOCODER CARD FORMAT. #CONVERT+	1401-01.4.131	055
DISK MANAGEMENT DECISION MAKING LABORATORY.		1401-10.2.012	073	FORMAT. #PUNCH CORE IN PROGRAM LOAD	1440-02.9.003	087
DISK. #PROGRAM TO LOAD PROGRAMS ON		1440-01.1.002	084	FORR FOR PROGRAM FOR S/360 BASIC PRIC	1401-01.1.018	045
DISK INPUT/OUTPUT SUBROUTINE. #RADIO -+		1440-01.4.001	085	FORR FOR PROGRAM FOR S/360 BASIC PRIC	1401-01.1.051	046
DISK RESIDENT. #SORT 54		1440-01.6.001	085	*FORTRAN MODIFICATION WHICH ELIMINATES+	1401-02.0.025	064
DISK ADDRESS UTILITY. #1440/1311		1440-02.1.002	085	FORTRAN. #MACHBAY 8K 1440	1440-01.3.002	084
DISK SORT PACKAGE. #1440-1311		1440-02.1.003	086	*FORTRAN.	1401-FO-050	008
DISK. #1401/40/60 FORTRAN IV		1401-FO-051	008	FORTRAN IV DISK. #1401/40/60	1401-FO-051	008
DISK SORT/MERGE PROGRAM (16K). #1401/1460+		1401-LM-011	013	FORTRAN IV TAPE. #1401/60	1401-FO-052	008
DISK AND TAPE OPERATING SYSTEMS TAPE+		1401-LM-012	014	*FORTRAN II LANGUAGE CONVERSION PROGRAM.	1401-FO-702	009
DISK. #1401/1460 TILING PROGRAM FOR BPS+		1401-LM-079	015	FOURTEEN-O-ONE AUTOMATIC REPORT GENERATING+	1401-RG-045	017
DISK FILE ORGANIZATION ROUTINES 1401/1460.		1401-UT-052	023	FRIIGHT REVENUE ACCOUNTING. #MOTOR	1440-ST-02X	037
DISK. #UTILITY PROGRAMS FOR THE 1401-1311		1401-UT-053	024	FUNCTIONS ORDINARY DAILY CYCLE PROGRAMS.	1401-IL-02X	010
DISK. #1440-1470 PROCESS COMMUNICATION+		1440-SV-090	037	FUNCTIONS ORDINARY VALUATION PROGRAM.	1401-IL-03X	011
#DISK FILE ORGANIZATION ROUTINES.		1440-UT-040	041	GAME. #CRITICAL PATH MANAGEMENT	1401-10.3.059	079
#DISK UTILITY PROGRAMS.		1440-UT-041	041	GAME BRIDG-IT ON THE 1401. #THE	1401-11.0.010	081
DISK.#1401/1440/1460 JOB CONTROL MONITOR ON		1401-01.4.220	060	GANG PUNCH FOR THE 1401. #SELECTIVE+	1401-01.4.051	051
DISSEMINATION OF INFORMATION SYSTEM.		1401-CR-01X	004	GANG PUNCH SIMULATOR. #REPRODUCE	1440-03.1.001	087
DISTRIBUTION PROGRAM. #GENERAL		1401-IF-02X	009	GANG-PUNCH, COUNT, PRINT.#RGCP - REPRODUCE,	1401-13.1.009	081
DISTRIBUTION PROGRAM FOR A TAPE 1401.		1401-IF-03X	010	GANGPUNCHING OR EMITTING. #FOURTEEN O ONE+	1401-14.0.004	082
DIVIDE SUB-ROUTINE. #1401/1460 SIMULTANEOUS+		1401-03.0.041	067	*GENERALIZED TABULATE AND/OR SEQUENCE+	1401-01.4.056	051
#DOCUMENT AND TESTING AIDS FOR COBOL+		1401-01.4.223	061	*GENERALIZED TABULATE WITH OR WITHOUT+	1401-01.4.226	061
DOCUMENT SORT PROGRAM. #BANK		1240-SM-030	001	*GENERALIZED PLOT PROGRAM.	1401-14.0.002	082
DOCUMENTATION EDITOR. #PAPER AND PROGRAM		1401-01.4.193	059	GENERATING OPERATION. #FARGO -+	1401-RG-045	017
DOCUMENTATION AID PROGRAM.#FLOWCHARTING AND		1401-02.0.024	064	GENERATOR PRE-EDIT. #REPORT PROGRAM	1401-01.3.005	049
DOCUMENTATION AIDS SYSTEM. #IBM		1401-SE-12X	018	GENERATOR. #FLOGEN - IBM 1401 FLOW CHART	1401-02.0.022	064
DOLLARS AND CENTS DIGITS TO CHECK-FORM+		1401-14.0.008	082	GENERATOR 4K. #1401/1460 BASIC REPORT+	1401-RG-022	016
DOS/360 AND TOS/360 TAPE SORT/MERGE+		1401-LM-010	013	GENERATOR (ON DISK) 1401/1460. #1401/1311+	1401-RG-032	016
DUMP IN BANDS OF 100 POS. 20 CARDS. #MEMORY		1401-01.4.063	051	GENERATOR 2K. #REPORT PROGRAM	1401-RG-033	017
DUMP ROUTINE. #CORE		1401-01.4.071	052	GENERATOR. #REPORT PROGRAM	1401-RG-048	017
DUMP. #MODIFIED		1401-01.4.124	054	GENERATOR.#1440 STERLING BASIC REPORT+	1440-RG-721	035
DUMP. #SYMBOLIC CORE		1401-01.4.141	056	GENERATOR 2K. #REPORT PROGRAM	1440-RG-024	035
DUMP. #GENERAL PURPOSE TAPE		1401-01.4.158	056	GPSS-2. #GENERAL PURPOSE SIMULATOR -	1401-10.2.008	072
DUMP ROUTINE IN ACTUAL FORM. #CORE		1440-02.7.003	087	GRADE 2 BRAILLE AND EMOSS ON A 1403+	1401-01.4.230	062
DUMP. #CORE		1440-02.7.004	087	*HIGHWAY EARTHWORK QUANTITIES AND DESIGN+	1401-09.2.007	071
DUPPLICATION. #TAPE		1401-01.4.108	054	*HOMEOWNERS RATING PROGRAM.	1401-IP-05X	010
EARTHWORK QUANTITIES AND DESIGN DATA.		1401-09.2.007	071	HOSPITAL. #PROPERTY ACCOUNTING SYSTEM FOR	1440-11.5.005	090
ECONOMIC ANALYSIS AND FORECASTING.		1401-07.0.003	071	*HOSPITAL PATIENT BILLING.	1440-UH-01X	038
EDIT FOR 1410 AUTOCODER PROGRAMS. #AUTOEDIT+		1401-01.1.014	045	HOSPITAL ACCOUNTS PAYABLE.	1440-UH-03X	039
#EDIT - EDITING DATA INPUT FOR VALIDITY.		1401-01.1.020	045	HOSPITAL INVENTORY PROGRAM.	1440-UH-04X	039
EDIT SYSTEM/360 BASIC ASSEMBLY LANGUAGE.		1401-01.1.056	047	HOSPITAL GENERAL LEDGER.	1440-UH-05X	039
EDIT LISTING.#PACE - PRE-ASSEMBLY CHECK AND		1440-01.0.001	084	HOSPITAL PAYROLL.	1440-UH-06X	039
EDIT. #SYSTEM/360 COBOL		1401-SE-13X	018	HOSPITALS. #ACCOUNTS RECEIVABLE FOR	1440-UH-02X	038
EDIT.#1401/1460 PACE PRE-ASSEMBLY CHECK AND		1401-01.1.051	046	*HYPERTAPE UTILITY PROGRAMS.	1401-UT-067	024
EDIT.K PROGRAMMING SYNCHRONIZER FORR FOR		1401-01.1.051	046	II. #AUTOBLOCK	1401-02.0.017	063
EDITING DATA INPUT FOR VALIDITY. #EDIT -		1401-01.1.020	045	II, X-9 VERSION, 4K, LONG PROGRAM.	1401-06.0.009	069
EDITOR. #PAPER AND PROGRAM DOCUMENTATION		1401-01.4.193	059	II, X-9 VERSION, 4K, SHORT PROGRAM.	1401-06.0.010	069
EFFORTLESS SYSTEM OF CALCULATING AND+		1401-01.4.010	050	II.#DATA TRANSFER - PROGRAM FOR CENSUS+	1401-06.0.013	070
ELIMINATE, REPRODUCE. #REER - REPRODUCE,+		1401-01.4.068	052	II. #TRADING-DAY ADJUSTMENT FOR 1401+	1401-06.0.018	070
ELIMINATES THE MULTIPLY-DIVIDE SPECIAL+		1401-02.0.025	064	II. #SELF-CHECKING NUMBER CALCULATION+	1401-07.0.002	071
ELIMINATES THE ENGLISHASIC PRIC		1401-06.0.001	067	IMAGES. #CPI - CREATE PRINT	1401-01.4.228	062
EMOSS ON A 1403 PRINTER. #1401/1460+		1401-01.4.230	062	*IMPACT SIMULATOR.	1401-01.4.135	056
EMIT, ELIMINATE, REPRODUCE. #REER -+		1401-01.4.068	052	IMPACT. #1311 WHOLESALE	1401-DW-03X	005
EMITTING. #FOURTEEN O ONE OPSET+		1401-14.0.004	082	IMPACT. #1311 WHOLESALE	1440-DW-04X	029
#ENGINEERING SCHEDULING SYSTEM.		1401-EX-01X	006	INCOME TAXES FOR IBM 1401 TAPE SYSTEM.	1401-14.0.012	082
ENGLISHASIC PRIC		1401-02.0.024	064	INDEX. #QUICK KWIC	1401-10.3.035	076
ENGLISH TO GRADE 2 BRAILLE AND EMOSS ON A+		1401-01.4.230	062	*INDEXING #KWIC SYSTEM	1401-10.3.010	074
ENTRY PROGRAM SUPPORTS 1450 BANK DATA+		1450-FB-20X	042	*INDIVIDUAL LEDGER EXTRACT PROGRAM FOR+	1401-10.3.055	078
EQUATION AND MATRIX INVERSION PROGRAM.		1401-05.0.003	067	*INDIVIDUAL LEDGER UPDATE PROGRAM FOR+	1401-10.3.056	078
ERROR PRINT/DUPLICATE. #TAPE COMPARE		1401-01.4.123	051	INFORMATION RETRIEVAL PROGRAM FOR THE 1401.	1401-10.3.009	074
ERROR-DETECTION AIDS. #CARD SYSTEM		1401-AT-017	004	*INFORMATION STORAGE AND RETRIEVAL PROGRAM.	1401-10.3.047	077

INFORMATION

PRE-ASSEMBLY

TITLE	PROGRAM NO.	PAGE	TITLE	PROGRAM NO.	PAGE
INFORMATION SYSTEM. #COOPERATIVE ADMISSIONS	1401-10.3.068	080	HEAT SYSTEM.	#SMI	1440-10.1.001
INFORMATION SYSTEM. #SELECTIVE+	1401-CR-01X	004	#MEDICARE INPATIENT BILLING.		1440-11.5.004
INPATIENT BILLING.	1440-11.5.004	090	#MEMORY DUMP IN BANDS OF 100 POS. 20 CARDS.		1401-01.4.063
INPUT FOR VALIDITY. #EDIT - EDITING DATA	1401-01.1.020	045	#MEMORY PRINT.	#UNIVERSAL	1401-01.4.096
#INPUT PROGRAM FOR 7090/7094 SUPPORT+	1401-UT-938	026	MERGE.	#CARD	1401-01.2.018
INPUT-OUTPUT SYSTEM FOR THE 1401/1440/1460.	1401-01.5.002	062	MERGE.	#8K THREE TAPE SORT	1401-01.2.022
INPUT/OUTPUT SUBROUTINE. #RADIO - RANDOM+	1440-01.4.001	085	#MERGE 7.		1401-SM-061
#INPUT/OUTPUT CONTROL SYSTEM.	1401-IO-065	012	#MERGE 6.		1401-SM-063
INPUT/OUTPUT CONTROL PROGRAM (IOCP) FOR IBM+	1401-IO-077	013	#MERGE 5.		1440-SM-031
INPUT/OUTPUT CONTROL PROGRAM. #7040/44-1401	1401-IO-152	013	METHOD.#LINEAR PROGRAMMING, REVISED SIMPLEX		1401-10.1.004
#INPUT/OUTPUT CONTROL SYSTEM.	1440-IO-010	031	#HIGH ENTRY PROGRAM SUPPORTS 1450 BANK+		1450-PB-20X
#INSTALLMENT LOAN ACCOUNTING.	1440-10.2.003	088	#ENGLISASIC PRIC		1401-06.0.001
INSTITIALIZATION ANC ERIC	1440-01.0.001	084	MODE. #COPY 1401-AU-008 SYSTEMS PACK TO+		1401-14.0.024
INTEGER METHOD. #SQUARE ROOT SUBROUTINE+	1401-03.0.014	066	MODIFICATION WHICH ELIMINATES THE+		1401-02.0.025
INTEGRATED PROCESSING SYSTEM. #PERIPHERAL	1401-PR-925	016	#MODIFIED DUMP.		1401-01.4.124
INTERPOLATION TECHNIQUE (LIMIT). #LOT SIZE+	1401-10.3.024	076	MODIFY FILES PROGRAM.	#MATCH AND	1401-01.4.231
#INVENTORY MANAGEMENT SIMULATOR.	1401-10.2.003	072	MODULAR INVENTORY MANAGEMENT SIMULATOR 12K+		1401-CS-03X
#INVENTORY MANAGEMENT ANALYSIS PROGRAM.	1401-10.3.023	075	MODULOUS 10. #SELF CHECKING NUMBER+		1401-01.4.121
INVENTORY MANAGEMENT INTERPOLATION+	1401-10.3.024	076	MODULUS II. #SELF-CHECKING NUMBER+		1401-07.0.002
INVENTORY SYSTEM.	1401-10.3.049	077	MOMENT REPORTING.	#SOMR - SPUR OF THE	1401-01.3.022
INVENTORY MANAGEMENT SIMULATOR 12K 1401+	1401-CS-03X	005	#MONITOR SYSTEM FOR TAPE.		1401-01.4.039
INVENTORY PROGRAM.	1440-UH-04X	039	MONITOR ON DISK.#1401/1440/1460 JOB CONTROL		1401-01.4.220
INVERSION PROGRAM. #MULTIPLE SIMULTANEOUS+	1401-05.0.003	067	MONITOR FOR PROGRAMS ON DISK PACKS.		1401-02.0.021
INVESTMENT ANALYSIS (8K).	1401-10.3.016	075	MONITOR FOR 1401/40/60 AUTOCODER ON DISK.		1440-SV-090
#IOCP WITHOUT PROCESS OVERLAP.	1420-IO-010	026	MONITOR FOR 1440 BASIC AUTOCODER.		1440-SV-091
IOCP.	1420-IO-011	026	MONITOR FOR FOR PROGRAM FOR S/360 BASIC		1440-US-04X
IOCS (1026/DDC) FOR THE 1401/1460.	1401-IO-012	011	MONITOR FOR 1401 AUTOCODER (ON TAPE).		1460-SV-090
IOCS (ON DISK).	1401-IO-068	012	MONITOR FOR 1401 BASIC AUTOCODER 2K.		1460-SV-091
IOCS.	1440-IO-011	031	MONTHLY TIME SERIES.#SEASONAL ADJUSTMENT OF		1401-06.0.001
IOCS 1026 (DDC) FOR THE 1440.	1440-IO-012	032	#MORTGAGE AMORIZATION SCHEDULE.		1401-10.2.006
IOCS (1448-DDC). #1460/1401 COMMUNICATIONS	1460-IO-011	043	#MORTGAGE LOAN ACCOUNTING.		1440-PB-04X
IV.	1401-10.3.053	078	#MOTOR FREIGHT REVENUE ACCOUNTING.		1440-ST-02X
1401 USINGCH ELIMINATES THE ENGLISASIC PRIC	1401-06.0.001	067	#MULTI-PURPOSE 80-80 REPRODUCING.		1401-01.4.190
#JOB SUPERVISOR #CONTROLLER	1440-01.1.001	084	MULTIPLY DIVIDE SUB-ROUTINE. #1401/1460+		1401-03.0.041
JOB CONTROL MONITOR ON DISK.#1401/1440/1460	1401-01.4.220	060	MULTIPLY-DIVIDE SPECIAL FEATURES+		1401-02.0.025
KEEPING. #STACK - STORAGE ON TAPE TO+	1401-01.4.107	053	#MUSIC-MUSIC SIMULATION ON A 1401 COMPUTER.		1401-11.0.012
#KEYWORD-IN-CONTEXT (KWIC) +	1401-CR-02X	005	NABC MODEL. #COMMERCIAL AND SAVINGS TELLER+		1401-10.2.010
KEYWORD-OUT-OF-CONTEXT (KWOC).	1401-CR-02X	005	NAME FILE SEARCHING BASED ON PHONETICS.		1401-10.2.028
#KWIC SYSTEM.	1401-10.3.010	074	NAME ALTERATION PROGRAM.	#STANDARD	1401-14.0.019
KWIC INDEX.	1401-10.3.035	076	NORMAL EXTRACTION METHOD. #A SQUARE ROOT+		1401-03.0.019
LABEL CAPABILITY. #1401 AND 1460 TAPE+	1401-UT-025	022	NUMBER CALCULATION - MODULOUS 10. #SELF+		1401-01.4.121
LABELS. #1401/1460 PRINT LARGE CONSECUTIVE+	1401-01.3.024	049	NUMBER OF DAYS BETWEEN TWO DATES+		1401-03.0.011
#LABOR AND MATERIAL PROGRAM.	1440-12.3.002	090	NUMBER CALCULATION MODULUS II.		1401-07.0.002
LABORATORY AUTOMATIC PLOTTING OF RESULTS.	1440-10.2.007	072	NUMBERS ON LABELS. #1401/1460 PRINT LARGE+		1401-01.3.024
LABORATORY. #1401/1440 DISK MANAGEMENT+	1401-10.2.012	073	NUMERICAL CONTROL PROGRAM.	#AUTOPROPS II	1401-CN-03X
LABORATORY. #MANAGEMENT DECISION-MAKING	1401-CS-02X	005	OBJECT TO AUTOCODER SOURCE. #DISASSEMBLER+		1401-02.0.035
LAST CARD TEST. #ONE OF ONE - 80X80+	1401-01.4.188	058	ODD INTEGER METHOD. #SQUARE ROOT SUBROUTINE+		1401-03.0.014
LEAST-COST ESTIMATING AND SCHEDULING+	1401-10.3.001	073	OFFSET REPRODUCING AND GANGPOUNCH OR+		1401-14.0.004
LEAST-COST ESTIMATING AND SCHEDULING 8K.+	1401-10.3.002	073	#ON-LINE SAVINGS ACCOUNTING.		1440-PB-07X
LEDGER EXTRACT PROGRAM FOR CREDIT UNIONS.	1401-10.3.055	078	ONE-SIXTY-G.	#FARGO	1401-02.0.018
LEDGER UPDATE PROGRAM FOR CREDIT UNIONS.	1401-10.3.056	078	ONE-WAY ANALYSIS OF VARIANCE.		1401-06.0.014
LEDGER.	1440-UH-05X	039	OPERATING TRAINING OF THE 1401.	#OPTRAIN -	1401-13.4.002
#LESS - LEAST-COST ESTIMATING AND+	1401-10.3.001	073	OPERATING SYSTEM FOR 1401-1026. #EXTENDED+		1401-14.0.027
#LESS - LEAST-COST ESTIMATING AND+	1401-10.3.002	073	OPERATING SYSTEM FOR IBM 1440-1448.		1440-15.0.001
#LESS PROGRAM 4K.	1401-10.3.017	075	OPERATING SYSTEM/360 DISK SORT/MERGE+		1401-LM-011
#LESS IV.	1401-10.3.053	078	OPERATING SYSTEMS TAPE SORT/MERGE PROGRAMS.		1401-LM-012
LETTER WRITING. #1240/1440 PROOF OF DEPOSIT+	1440-10.2.002	088	OPERATING SYSTEM COMPUTER ASSISTED+		1401-OS-092
#LINEAR REGRESSION ANALYSIS.	1401-06.0.002	068	OPERATING SYSTEM COMPUTER ASSISTED+		1440-OS-090
LINEAR REGRESSION ANALYSIS.	1401-06.0.004	068	OPERATING SYSTEM COMPUTER ASSISTED+		1440-OS-091
#LINEAR PROGRAMMING.	1401-10.1.002	071	OPTICAL READER. #IBM INPUT/OUTPUT CONTROL+		1401-TO-077
#LINEAR PROGRAMMING, REVISED SIMPLEX	1401-10.1.004	072	#OPTRAIN - OPERATING TRAINING ON THE 1401.		1401-13.4.002
LINEAR PROGRAMMING.	1401-CO-13X	004	ORDINARY DAILY CYCLE PROGRAMS.		1401-IL-02X
LIST.	1401-01.3.011	049	ORDINARY VALUATION PROGRAM. #CONSOLIDATED+		1401-IL-03X
LIST OVERFLOW.	1401-01.4.130	055	ORGANIZATION ROUTINES 1401/1460. #1401/1311+		1401-UT-052
LIST OF CONDENSED CARDS.	1401-01.4.198	059	ORGANIZATION ROUTINES.	#FILE	1401-UT-057
LIST. #DOCUMENT AND TESTING AIDS FOR COBOL+	1401-01.4.223	061	ORGANIZATION ROUTINES.	#DISK FILE	1440-UT-040
LISTING AND RESOURCE ANALYSIS. #CRITICAL+	1401-10.3.028	076	OVERFLOW.	#CARD LIST	1401-01.4.130
LISTING.#PACE - PRE-ASSEMBLY CHECK AND EDIT	1440-01.0.001	084	OVERFLOW. #ONE CARD 80-80 CARD TO PRINTER+		1440-02.3.002
LISTING.TENDED PERFORMANCE COMPUTER	1440-01.0.001	084	OVERLAP.	#IOCP WITHOUT PROCESS	1420-TO-010
LOAD.	1401-01.2.025	058	#OVERLAP IOCP.		1420-TO-011
LOAD AUTOCODER CONDENSED PROGRAM. #PROGRAM+	1401-01.4.134	055	PAGE PRE-ASSEMBLY CHECK AND EDIT.#1401/1460		1401-01.1.051
LOAD PROGRAM. #1401/1311 CARD-TO-DISK+	1401-01.4.159	057	PAGE - PRE-ASSEMBLY CHECK AND EDIT		1440-01.0.001
LOAD PROGRAMS ON DISK.	1440-01.1.002	084	PACK TO TAPE THEN TAPE TO 360/2311 IN+		1401-14.0.024
LOAD PROGRAM. #1440/1311 CARD-TO-DISK+	1440-02.1.001	085	PACK TO TAPE THEN UTILIZATION ANC PRIC		1401-14.0.025
LOAD FORMAT.	1440-02.9.003	087	PACK-SYMBOLIC 4K PROGRAMMING SYSTEM+		1401-01.1.016
LOAD, MAINTAIN AND EXPLODE IBM FILES. #BILL+	1440-12.3.003	090	PACKAGES FOR IBM SYSTEM/360. #INPUT PROGRAM+		1401-UT-938
LOADER.	1401-01.1.035	046	PACKS. #1401/1311 MONITOR FOR PROGRAMS ON+		1401-02.0.021
LOADER.	1401-01.4.186	058	#PAPER AND PROGRAM DOCUMENTATION EDITOR.		1401-01.4.193
LOAN ACCOUNTING.	1440-10.2.003	088	PASS ASSEMBLER.	#SPS SINGLE	1401-01.1.052
LOAN ACCOUNTING.	1440-PB-04X	030	PATH SCHEDULER (BASIC 1401).	#CRITICAL	1401-10.3.013
LOCAL INCOME TAXES FOR IBM 1401 TAPE+	1401-14.0.012	082	PATH LISTING AND RESOURCE ANALYSIS.		1401-10.3.028
LOGIA DIAGRAMMER. #1401/1410 AUTOCODER+	1401-01.4.128	055	PATH MANAGEMENT GAME.	#CRITICAL	1401-10.3.059
LOGIC TRACE AND DATA-NAME CROSS REFERENCE+	1401-01.4.223	061	PATIENT BILLING.	#HOSPITAL	1440-UH-01X
LOGIC TRANSLATOR PROGRAM.	1401-SE-05X	018	PAYABLE.	#HOSPITAL ACCOUNTS	1440-UH-03X
#LOT SIZE INVENTORY MANAGEMENT+	1401-10.3.024	076	PAYROLL.	#PIECEWORK-TIMEWORK	1401-10.3.015
#MACBAY 8K 1440 FORTRAN.	1440-01.3.002	084	PAYROLL.	#HOSPITAL	1440-UH-06X
MACRO.	1401-03.0.036	067	PENNSYLVANIA COUNTIES. #REAL ESTATE TAX+		1401-14.0.026
MACRO.	1440-MI-702	033	PERFORMANCE COMPUTER ASSISTED INSTRUCTION+		1401-14.0.027
MACROS FOR 1401/1440/1460 DISK AUTOCODER.	1401-02.0.040	065	PERFORMANCE COMPUTER ASSISTED		1440-01.0.001
MAINTAIN AND EXPLODE IBM FILES. #BILL OF+	1440-12.3.003	090	PERFORMANCE COMPUTER ASSISTED INSTRUCTION+		1440-15.0.001
MAINTENANCE PROGRAM.. #BILL OF MATERIAL+	1440-12.3.001	090	#PERIPHERAL INTEGRATED PROCESSING SYSTEM.		1401-PR-925
MANAGEMENT SIMULATOR.	1401-10.2.003	072	PERIPHERAL UTILITY PROGRAM. #7040/7044 -+		1401-UT-157
#MANAGEMENT DECISION MAKING LABORATORY+	1401-10.2.007	072	PERIPHERAL.	#7090/94 1401	1401-UT-158
MANAGEMENT DECISION MAKING LABORATORY.	1401-10.2.012	073	#PERT.		1401-10.3.007
MANAGEMENT ANALYSIS PROGRAM.	1401-10.3.023	075	PHASE I.	#PROJECT PROGRESS REPORT	1401-10.3.044
MANAGEMENT INTERPOLATION TECHNIQUE (LIMIT).	1401-10.3.024	076	PHASE 2 PROGRAM PACKAGE. #PAST - FULLY+		1401-10.3.064
MANAGEMENT GAME.	1401-10.3.059	079	PHUNGEECT EVALUATOR UTILIZATION ANC PRIC		1401-13.1.009
#MANAGEMENT DECISION-MAKING LABORATORY.	1401-CS-02X	005	PHONETICS. #ALPHABETIC NAME FILE SEARCHING+		1401-01.2.024
MANAGEMENT SIMULATOR 12K 1401 VERSION.	1401-CS-03X	005	#PIECEWORK-TIMEWORK PAYROLL.		1401-10.3.015
MANAGEMENT SIMULATOR.	1401-PB-02X	006	PLOT PROGRAM.	#GENERALIZED	1401-14.0.002
#MATCH AND MODIFY FILES PROGRAM.	1401-01.4.231	062	PLOTTING OF RESULTS. #MANAGEMENT DECISION+		1401-10.2.007
MATERIAL PROCESSOR STRUCTURE FILE ADDRESS+	1440-12.3.001	090	#POLYNOMIAL CURVE FIT FOR ECONOMIC+		1401-07.0.003
MATERIAL PROGRAM.	1440-12.3.002	090	#PORTFOLIO SELECTION PROGRAM.		1401-PI-04X
MATERIAL PROGRAMS TO LOAD, MAINTAIN AND+	1440-12.3.003	090	POS. 20 CARDS. #MEMORY DUMP IN BANDS OF 100		1401-01.4.063
MATERIAL PROCESSOR.	1440-ME-02X	032	POWER FACTORIAL DESIGN. #ANALYSIS OF+		1401-06.0.012
MATRIX INVERSION PROGRAM. #MULTIPLE+	1401-05.0.003	067	PRE-ASSEMBLY CHECK AND EDIT.#1401/1460 PACE		1401-01.1.051
MATRIX 1401 USINGCH ELIMINATES THE	1401-06.0.001	067	PRE-ASSEMBLY CHECK AND EDIT LISTING.#PACE -		1440-01.0.001

	TITLE	PROGRAM NO.	PAGE
PRE-EDIT. #REPORT PROGRAM GENERATOR	1401-01.3.005	049	RESEQUENCE AUTOCODER SOURCE PROGRAMS --
PRE-LIST DIAGNOSTIC. #AUTOCODER	1401-01.1.026	046	RESIDENT. #SORT 54 DISK
PRE-LIST FOR AUTOCODER SOURCE DECK.	1401-01.1.039	046	RESOURCE ANALYSIS. #CRITICAL PATH LISTING+
PRE-LIST. #AUTOCODER	1401-01.1.043	046	RESTART PROCEDURE. #CHECKPOINT AND
PRINT LARGE CONSECUTIVE NUMBERS ON LABELS.	1401-01.3.024	049	#RETAIL ACCOUNTS RECEIVABLE.
PRINT. #UNIVERSAL MEMORY	1401-01.4.096	052	RETRIEVAL SYSTEM. #SELECT DATA
#PRINT DECISION TABLES.	1401-01.4.126	054	RETRIEVAL PROGRAM FOR THE 1401. #ASK --
PRINT PROGRAM. #1401-1311 DISK	1401-01.4.211	060	RETRIEVAL PROGRAM. #INFORMATION STORAGE AND
PRINT PROGRAM. #UTILITY	1401-01.4.225	061	REVENUE ACCOUNTING. #MOTOR FREIGHT
PRINT IMAGES. #CPI - CREATE	1401-01.4.228	062	REVIEW TECHNIQUE SIMULATOR. #CAPERTSIM --
PRINT. #CORE	1440-02.7.002	086	REVISED SIMPLEX METHOD.#LINEAR PROGRAMMING,
PRINT.#RGCP - REPRODUCE, GANG-PUNCH, COUNT,	1401-13.1.009	081	#RGCP - REPRODUCE, GANG-PUNCH, COUNT,
PRINT.SIS SCORING TECHNIQUE PHDULINGECT	1401-13.1.009	081	ROOT SUBROUTINE.
PRINT/DUPLICATE. #TAPE COMPARE ERROR	1401-01.4.123	054	ROOT SUBROUTINE USING ODD INTEGER METHOD.
PRINTER. #1401/1460 BRaille - TRAN --	1401-01.4.230	062	ROOT ROUTINE. #SQUARE
PRINTER PROGRAM WITH BRANCH ON OVERFLOW.	1440-02.3.002	086	ROOT SUBROUTINE FOR THE 1401 USING NORMAL+
PRINTING EVERYTHING. #ESCAPE - EFFORTLESS+	1401-01.4.010	050	RPC MODEL 20 CONVERSION PROGRAM. #1401+
PROBLEM. #1401/1311 TRANSPORTATION	1401-10.3.050	078	RPC TO SYSTEM/360 TRANSLATOR. #IBM 1400
PROCESS OVERLAP. #IOCP WITHOUT	1420-10-010	026	SALESMAN. #THE TRAVELING
PROCESS COMMUNICATION MONITOR FOR+	1440-SV-090	037	SAVINGS FELLER SIMULATION USING NABAC+
PROCESS COMMUNICATION MONITOR FOR 1440+	1440-SV-091	038	#SAVINGS ACCOUNTING.
PROCESS COMMUNICATION MONITOR FOR 1401+	1460-SV-090	044	SAVINGS ACCOUNTING. #ON-LINE
PROCESS COMMUNICATION MONITOR FOR 1401+	1460-SV-091	044	SCHEDULE. #MORTGAGE AMORTIZATION
PROCESSING SYSTEM. #MICR ENTRY PROGRAM+	1450-FB-20X	042	#SCHEDULER PROJECT #PERT
PROCESSING UTILITY PROGRAM. #GENERAL	1401-01.4.232	062	SCHEDULER (BASIC 1401). #CRITICAL PATH
PROCESSING SYSTEM. #PERIPHERAL INTEGRATED	1401-PR-925	016	SCHEDULING (4K-SCHEDULING PHASE ONLY).
PROCESSOR STRUCTURE FILE ADDRESS+	1440-12.3.001	090	SCHEDULING 8K, 12K, and 16K. #LESS --
PROCESSOR. #1440/1311 BILL OF MATERIAL	1440-ME-02X	032	#SCHEDULING #LESS IV
PROGRAM.#BILL OF MATERIAL PROCESSOR+	1440-12.3.001	090	SCHEDULING SYSTEM. #SOCRATES STUDENT
PROGRAM.#FLOWCHARTING AND DOCUMENTATION AID	1401-02.0.024	064	SCHEDULING. #TARS - TALLY ANALYSIS+
PROGRAM.PACKET SYSTEM FOR THRAILLE - TRAN -	1401-02.0.024	064	SCHEDULING SYSTEM. #ENGINEERING
PROGRAMMED ADDRESS CONVERSION. #GENERAL+	1401-01.4.034	050	SCHEDULING.#TALLY ANALYSIS REGISTRATION AND
PROGRESS REPORT PHASE I. #PROJECT	1401-10.3.044	077	SCHEDULING.PY 1401-AU-008 SYSTEMS PACK TO
PROJECT EVALUATION AND REVIEW TECHNIQUE+	1401-10.2.011	073	SCHOOL PROGRAMS (STUDENT SCHEDULING).
PROJECT PROGRESS REPORT PHASE I.	1401-10.3.044	077	SCHOOL PROGRAMS (GRADE REPORTING).
PROJECT CONTROL SYSTEM.	1440-MX-02X	033	SCHOOL PROGRAMS (PAYROLL AND PERSONNEL).
PROOF OF DEPOSIT AND CASH LETTER WRITING.	1440-10.2.002	088	SCHOOLS. AND PERSION MONITOR FORTOR FOR
#PROPERTY ACCOUNTING SYSTEM FOR HOSPITAL.	1440-11.5.005	090	SCHOOLS.#ATTENDANCE RECORDING FOR SECONDARY
PUNCH FOR THE 1401. #SELECTIVE REPRODUCE --	1401-01.4.051	051	#SCOOP I & II - SIMPLIFIED CONVERSION OF+
#PUNCH CORE IN PROGRAM LOAD FORMAT.	1440-02.9.003	087	SCORE AND ANALYZE TEACHER-MADE TESTS. #TS80+
PUNCH PROGRAM. #IBM 1440 CORE	1440-02.9.005	087	SCORING TECHNIQUE. #FAST - FULLY AUTOMATIC
PUNCH SIMULATOR. #REPRODUCE GANG	1440-03.1.001	087	SCORING TECHNIQUE-PHASE I PROGRAM PACKAGE.
PUNCH ROUTINES FOR THE 1401-1012. #TAPE	1401-10-074	012	SCORING TECHNIQUE PHASE 2 PROGRAM PACKAGE.
PUNCHES. #SCOOP I & II - SIMPLIFIED+	1401-01.4.012	050	SCORING TECHNIQUE. #FAST - FULLY AUTOMATIC
QUANTITIES AND DESIGN DATA. #HIGHWAY+	1401-09.2.007	071	SCORING TECHNIQUE PHDULINGECT EVALOR
QUICK REPORT (QUICKIE). #SELF CENTERING	1401-01.3.018	049	SEARCH PROGRAM. #TAPE
QUICK KWIC INDEX.	1401-10.3.035	076	SEARCH MACRO. #AUTOCODER SERCH BINARY
#RADIO - RANDOM DISK INPUT/OUTPUT+	1440-01.4.001	085	SEARCHING BASED ON PHONETICS. #ALPHABETIC+
RANDOM DISK INPUT/OUTPUT SUBROUTINE. #RADIO+	1440-01.4.001	085	#SEASONAL ADJUSTMENT OF MONTHLY TIME
#RAPID ASSEMBLY PROGRAM NO. 14043.	1401-01.1.017	045	#SEASONAL ADJUSTMENT - CENSUS METHOD II,+
#RAPID SELECTIVE TRACE.	1401-01.4.207	060	#SEASONAL ADJUSTMENT, CENSUS METHOD II,+
#RAPID SELECTIVE TRACE.	1440-01.4.002	085	#SELECT DATA RETRIEVAL SYSTEM.
RASP. #1401/1440/1460 RESEQUENCE AUTOCODER+	1401-01.4.189	058	SELECTION PROGRAM. #PORTFOLIO
RATING FOR FIRE AND CASUALTY COMPANIES.	1401-IF-01X	009	#SELECTIVE REPRODUCE - GANG PUNCH FOR THE+
RATING PROGRAM. #HOMEOWNERS	1401-IF-05X	010	SELECTIVE TRACE. #RAPID
#REACTION TIMING PROGRAM FOR IBM 1401.	1401-11.0.005	081	SELECTIVE TRACE. #RAPID
READER. #IBM INPUT/OUTPUT CONTROL PROGRAM+	1401-10-077	013	#SELECTIVE DISSEMINATION OF INFORMATION+
READING WRITING. #TAPE	1401-10-040	012	#SELF-CHECKING NUMBER CALCULATION MODULUS+
#REAL ESTATE TAX BILL SYSTEM FOR THIRD+	1401-14.0.026	083	SEQUENCE CHECKING PROGRAM. #GENERALIZED+
RECEIVABLE. #RETAIL ACCOUNTS	1440-DR-02X	028	SERCH BINARY SEARCH MACRO. #AUTOCODER
RECEIVABLE FOR HOSPITALS. #ACCOUNTS	1440-UR-02X	038	SERIES ANALYSIS AND DATA REDUCTION PROGRAM.
RECORD. #REPAIR DISK	1401-01.4.181	058	SERIES.#SEASONAL ADJUSTMENT OF MONTHLY TIME
RECORD FINDER. #1311 DISK	1401-01.4.187	058	SERIES.ATION AND MATRIX I401 USINGCH
RECORDING COMPUTER UTILIZATION AND 3 1401+	1401-06.0.011	069	SIMPLEX METHOD.#LINEAR PROGRAMMING, REVISED
RECORDING COMPUTER UTILIZATION AMC PRIC	1401-10.1.004	072	SIMPLIFIED CONVERSION OF OTHER PUNCHES.
RECORDING FOR SECONDARY SCHOOLS.#ATTENDANCE	1440-US-04X	041	SIMULATION UTILITY PROGRAM. #1401/407
REDUCTION PROGRAM. #TIME SERIES ANALYSIS+	1401-06.0.015	070	SIMULATION USING NABAC MODEL. #COMERCIAL+
REDUCTION. #DATA ANALYSIS AND	1401-CA-04X	003	SIMULATION ON A 1401 COMPUTER. #MUSIC-MUSIC
#REER - REPRODUCE, EMIT, ELIMINATE,+	1401-01.4.068	052	SIMULATOR ROUTINE FOR THE IBM 1401.
REFERENCE LIST. #DOCUMENT AND TESTING AIDS+	1401-01.4.223	061	SIMULATOR. #IMPACT
#REGAN - 4K REGRESSION ANALYSIS AND+	1401-06.0.008	069	SIMULATOR. #CARD COLLATOR
REGISTRATION AND SCHEDULING.#TALLY ANALYSIS	1401-14.0.025	083	SIMULATOR. #INVENTORY MANAGEMENT
REGISTRATION AND SCHEDULING.#TARS - TALLY+	1440-11.3.001	089	SIMULATOR.#CAPERTSIM - COMPUTER ASSISTED+
REGRESSION ANALYSIS. #LINEAR	1401-06.0.002	068	SIMULATOR. #REPRODUCE GANG PUNCH
REGRESSION PROGRAM. #MULTIPLE	1401-06.0.003	068	SIMULATOR 12K 1401 VERSION. #1401/1620+
REGRESSION ANALYSIS. #MULTIPLE LINEAR	1401-06.0.004	068	SIMULATOR. #BANK MANAGEMENT
#REGRESSION ANALYSIS COMPUTER PROGRAM.	1401-06.0.007	069	SIMULATOR - GPSS-2. #GENERAL PURPOSE
REGRESSION ANALYSIS AND CORRELATION+	1401-06.0.008	069	SIMULTANEOUS MULTIPLY DIVIDE SUB-ROUTINE.
#RELOCATABLE TRACE PROGRAM.	1401-01.4.103	053	SIMULTANEOUS EQUATION AND MATRIX INVERSTION+
REORGANIZATION MAINTENANCE PROGRAM.. #BILL+	1440-12.3.001	090	SIZE INVENTORY MANAGEMENT INTERPOLATION+
#REPAIR DISK RECORD.	1401-01.4.181	058	#SKILLS INVENTORY SYSTEM.
#REPORT PROGRAM GENERATOR PRE-EDIT.	1401-01.3.005	049	#SMI MEAT SYSTEM.
REPORT (QUICKIE). #SELF CENTERING QUICK	1401-01.3.018	049	SMOOTHING. #FORECASTING BY EXPONENTIAL
REPORT PHASE I. #PROJECT PROGRESS	1401-10.3.044	077	#SOCRATES STUDENT SCHEDULING SYSTEM.
REPORT PROGRAM GENERATOR 4K. #1401/1460+	1401-RG-022	016	#SOMR - SPUR OF THE MOMENT REPORTING.
REPORT PROGRAM GENERATOR (ON DISK) +	1401-RG-032	016	#SOPHISTICATED SPS TO AUTOCODER CONVERTER.
#REPORT PROGRAM GENERATOR 2K.	1401-RG-033	017	SORT PROGRAM. #THREE TAPE
REPORT GENERATING OPERATION. #FARGO --	1401-RG-045	017	SORT. #TTSRT - TWO TAPE
#REPORT PROGRAM GENERATOR.	1401-RG-048	017	SORT MERGE. #8K THREE TAPE
REPORT PROGRAM. #1440/1311	1440-RG-020	034	SORT. #IBM 1401/1440/1460/1311 DISK
REPORT PROGRAM. #BASIC	1440-RG-021	035	SORT 7 - 1311 DISK LOAD. #1401
REPORT PROGRAM DEVELOPMENT. #1440/1311+	1440-RG-720	035	#SORT 54 DISK RESIDENT.
REPORT PROGRAM GENERATOR. #1440 STERLING+	1440-RG-721	035	SORT PACKAGE. #1440-1311 DISK
#REPORT PROGRAM GENERATOR 2K.	1440-RG-024	035	SORT PROGRAM. #BANK DOCUMENT
REPORTING. #SOMR - SPUR OF THE MOMENT	1401-01.3.022	049	#SORT 7 TIMING PROGRAM FOR 1401/1460.
#REPRO-REPRODUCER SIMULATOR ROUTINE FOR+	1401-01.4.054	051	SORT 5 AND 6 TIMING PROGRAM. #1401/1460
REPRODUCE - GANG PUNCH FOR THE 1401.	1401-01.4.051	051	#SORT 13 AND 14 TIMING PROGRAM FOR+
REPRODUCE, EMIT, ELIMINATE, REPRODUCE.	1401-01.4.068	052	#SORT 3 PROGRAM.
REPRODUCE WITH LAST CARD TEST. #ONE OF ONE+	1401-01.4.188	058	#SORT 4.
#REPRODUCE ONLY CERTAIN COLUMNS ON THE+	1401-01.4.221	061	#SORT 7.
REPRODUCE, GANG-PUNCH, COUNT, PRINT.#RGCP -	1401-13.1.009	081	#SORT 6.
REPRODUCE PROGRAM. #1440/1311 80-80	1440-02.3.003	086	#SORT 62.
#REPRODUCE GANG PUNCH SIMULATOR.	1440-03.1.001	087	#SORT 64.
REPRODUCER FOR 1440/1311. #VARIABLE CARD	1440-02.3.001	086	#SORT 61.
REPRODUCING. #MULTI-PURPOSE 80-80	1401-01.4.190	059	#SORT 5.
REPRODUCING AND GANGPUNCHING OR EMITTING.	1401-14.0.004	082	#SORT 52.
REQUIREMENTS. #FORTRAN MODIFICATION WHICH+	1401-02.0.025	064	#SORT 53.

TITLE	PROGRAM NO.	PAGE	TITLE	PROGRAM NO.	PAGE
#SORT 54.	1440-SM-034	036	THIRTEEN VARIABLE SIMPLE CORRELATION.	1401-06.0.006	068
#SORT 51.	1440-SM-035	037	TIME SERIES.#SEASONAL ADJUSTMENT OF MONTHLY	1401-06.0.001	067
SORT 13.	#IBM 1440 1440-SM-036	037	#TIME SERIES ANALYSIS AND DATA REDUCTION#	1401-06.0.015	070
SORT 13.	#IBM 1440 1440-SM-037	037	TIMING PROGRAM FOR IBM 1401.	#REACTION 1401-11.0.005	081
SORT 14.	#IBM 1460 1460-SM-068	043	TIMING PROGRAM FOR DOS/360 AND TOS/360 TAPE#	1401-LM-010	013
SORT 14.	#IBM 1460 1460-SM-069	043	TIMING PROGRAM FOR IBM BASIC OPERATING#	1401-LM-011	013
#SORT I.	1401-SM-029	019	TIMING PROGRAM FOR SYSTEM/360 DISK AND TAPE#	1401-LM-012	014
SORT/MERGE PROGRAM. #IBM 1401/60 TIMING+	1401-LM-010	013	TIMING PROGRAM FOR 1401/1460.	#SORT 7 1401-LM-060	014
SORT/MERGE PROGRAM (16K). #1401/1460 TIMING+	1401-LM-011	013	TIMING PROGRAM.	#1401/1460 SORT 5 AND 6 1401-LM-062	014
SORT/MERGE PROGRAMS. #1401/1460 TIMING+	1401-LM-012	014	TIMING PROGRAM FOR 1401/1460. #SORT 13 AND#	1401-LM-077	014
SORT/MERGE PROGRAM (2401 THROUGH 2404).	1401-LM-078	015	TIMING PROGRAM FOR S/360 BASIC PROGRAMMING#	1401-LM-078	015
SORT/MERGE PROGRAM 8K DISK. #1401/1460+	1401-LM-079	015	TIMING PROGRAM FOR BPS S/360 SORT/MERGE#	1401-LM-079	015
SORT/MERGE PROGRAM (FOR THE 2415).	1401-LM-080	015	TIMING PROGRAM FOR S/360 BASIC PROGRAMMING#	1401-LM-080	015
SOURCE DECK. #PRE-LIST FOR AUTOCODER	1401-01.1.039	046	TOS/360 TAPE SORT/MERGE PROGRAM. #IBM#	1401-LM-010	013
SOURCE PROGRAMS - RASP. #1401/1440/1460+	1401-01.4.189	058	TRACE PROGRAM.	#RELOCATABLE 1401-01.4.103	053
SOURCE G, ANDAORR FOR PROGRAM FOR S/360	1401-01.4.220	060	#TRACE THAT NEEDS NO SPECIAL FEATURES.	1401-01.4.133	055
SOURCE. #DISASSEMBLER OF 1401/1460 PROGRAMS#	1401-02.0.035	065	TRACE.	#RAPID SELECTIVE 1401-01.4.207	060
SOURCE PROGRAMS TO 1401. #CONVERT 1440+	1440-03.3.002	088	TRACE AND DATA-NAME CROSS REFERENCE LIST.	1401-01.4.223	061
SPS - ASSEMBLER. #SPSS - AN IMPROVED	1401-01.1.036	046	TRACE.	#RAPID SELECTIVE 1440-01.4.002	085
SPS SINGLE PASS ASSEMBLER.	1401-01.1.052	047	TRADE ANALYSIS FOR A BANK.	#BOND 1401-PB-09X	007
SPS CARD FORMAT TO AUTOCODER CARD FORMAT.	1401-01.4.131	055	#TRAINING-DAY ADJUSTMENT FOR 1401 VERSIONS+	1401-06.0.018	070
SPS TO AUTOCODER. #CONVERSION OF	1401-01.4.160	057	TRAINING ON THE 1401. #OPTRAIN - OPERATING	1401-13.4.002	082
SPS TO AUTOCODER CONVERTER. #SOPHISTICATED	1401-01.4.165	057	TRAN - TRANSLATE ENGLISH TO GRADE 2 BRAILLE#	1401-01.4.230	062
SPS TO SYSTEM/360 BASIC ASSEMBLER. #1401	1401-01.4.195	059	TRAN - TRANSLATE ENGLISH ASIC PRIC	1401-02.0.024	064
SPS TO AUTOCODER FOR 1401/1460. #CARD	1401-01.4.205	059	TRANSFER - PROGRAM FOR CENSUS METHOD II.	1401-06.0.013	070
#SPSS - AN IMPROVED SPS - ASSEMBLER.	1401-01.1.036	046	TRANSLATE ENGLISH TO GRADE 2 BRAILLE AND#	1401-01.4.230	062
SPUR OF THE MOMENT REPORTING. #SOHR -	1401-01.3.022	049	TRANSLATE ENGLISH ASIC PRIC	1401-02.0.024	064
#SQUARE ROOT SUBROUTINE.	1401-03.0.010	066	TRANSLATOR. #IBM 1400 RPG TO SYSTEM/360	1401-RG-700	017
#SQUARE ROOT SUBROUTINE USING ODD INTEGER+	1401-03.0.014	066	TRANSLATOR PROGRAM.	#DECISION LOGIC 1401-SE-05X	018
#SQUARE ROOT ROUTINE.	1401-03.0.015	066	TRANSPORTATION PROBLEM.	#1401/1311 1401-10.3.050	078
SQUARE ROOT SUBROUTINE FOR THE 1401 USING+	1401-03.0.019	066	TRAVELING SALESMAN.	#THEE 1401-10.3.039	076
#STACK - STORAGE ON TAPE TO ABRIDGE CARD#	1401-01.4.107	052	#TS80 - SCORE AND ANALYZE TEACHER-MADE#	1401-10.3.070	080
#STANDARD NAME ALTERATION PROGRAM.	1401-14.0.019	083	#TTSRT - TWO TAPE SORT.	1401-01.2.012	047
#STATE AND LOCAL INCOME TAXES FOR IBM#	1401-14.0.012	082	#TYPEWRITER MACROS FOR 1401/1440/1460+	1401-02.0.040	065
STATISTICAL ANALYSIS. #METHOD OF RECORDING+	1401-06.0.011	069	UNIONS. #INDIVIDUAL LEDGER EXTRACT PROGRAM#	1401-10.3.055	078
#STERLING SUBROUTINES.	1440-MI-701	033	UNIONS. #INDIVIDUAL LEDGER UPDATE PROGRAM#	1401-10.3.056	078
STERLING MACRO. #1440	1440-MI-702	033	#UNIVERSAL MEMORY PRINT.	1401-01.4.096	052
STERLING REPORT PROGRAM DEVELOPMENT.	1440-RG-720	035	#UNPAK CONDENSED CARDS.	1401-01.4.067	052
STERLING BASIC REPORT PROGRAM GENERATOR.	1440-RG-721	035	UPDATE UTILITY PROGRAM.	#TAPE 1401-01.4.022	050
STORAGE ON TAPE TO ABRIDGE CARD KEEPING.	1401-01.4.107	053	UPDATE PROGRAM FOR CREDIT UNIONS.	1401-10.3.056	078
STORAGE AND RETRIEVAL PROGRAM. #INFORMATION	1401-10.3.047	077	USINGCH ELIMINATES THE MGLISASIC PRIC	1401-06.0.001	061
STRUCTURE FILE ADDRESS REORGANIZATION#	1440-12.3.001	090	UTILITIES.	#FILE 1401-UT-051	023
STUDENT SCHEDULING SYSTEM. #SOCRATES	1401-10.3.065	079	UTILITY PROGRAM.	#TAPE UPDATE 1401-01.4.022	050
SUB-ROUTINE. #1401/1460 SIMULTANEOUS+	1401-03.0.041	067	UTILITY PROGRAM.	#1401/407 SIMULATION 1401-01.4.150	056
SUBROUTINE-DTCALC. #CALCULATE NUMBER OF+	1401-03.0.011	066	UTILITY.	#1401/1311 DISK ADDRESS 1401-01.4.176	057
SUBROUTINES. #CARD SYSTEM	1401-LM-007	013	#UTILITY PRINT PROGRAM.	1401-01.4.225	061
SUBROUTINES. #STERLING	1440-MI-701	033	UTILITY PROGRAM.	#GENERAL PROCESSING 1401-01.4.232	062
SUPPORTS 1450 BANK DATA PROCESSING SYSTEM.	1450-PB-20X	042	UTILITY.	#1440/1311 DISK ADDRESS 1440-02.1.002	085
SUTOMATIC REPORT GENERATING OPERATION.	1401-RG-045	017	UTILITY PROGRAM.	#MULTIPLE TAPE 1401-UT-019	022
#SYMBOLIC BLOCK DIAGRAMMING SYSTEM.	1401-01.4.097	053	UTILITY PROGRAMS WITH 120 CHARACTER LABEL#	1401-UT-025	022
#SYMBOLIC CORE DUMP.	1401-01.4.141	056	UTILITY PROGRAM.	#TAPE-TO-PRINTER 1401-UT-026	022
#SYMBOLIC PROGRAMMING SYSTEM 1 (SPS-2).	1401-SP-021	021	UTILITY PROGRAM.	#TAPE-TO-CARD 1401-UT-028	023
#SYMBOLIC PROGRAMMING SYSTEM 2 (SPS-2).	1401-SP-030	021	UTILITY PROGRAM FOR IBM 1401 TAPE SYSTEM.	1401-UT-039	023
SYMNIOR FOR FOR PROGRAM FOR S/360 BASIC	1401-01.1.018	045	#UTILITY PROGRAMS FOR THE 1401-1311 DISK.	1401-UT-053	024
SYMNIOR FOR FOR PROGRAM FOR S/360 BASIC	1401-01.1.051	046	#UTILITY PROGRAMS FOR THE 1401-1009.	1401-UT-066	024
TAB-BACK PROGRAM. #GENERAL PURPOSE	1401-01.3.003	048	UTILITY PROGRAMS.	#HYPERTAPE 1401-UT-067	024
TABLES. #PRINT DECISION	1401-01.4.126	054	UTILITY SYSTEM FOR THE 7710.	#TAPE 1401-UT-069	025
TABULATE AND/OR SEQUENCE CHECKING PROGRAM.	1401-01.4.056	051	UTILITY PROGRAM - IBM 1009. #DATA+	1401-UT-076	025
TABULATE WITH OR WITHOUT CONTROL FIELDS.	1401-01.4.226	061	UTILITY PROGRAM. #7040/7044 - 1401+	1401-UT-157	025
#TALLY ANALYSIS REGISTRATION AND	1401-14.0.025	083	UTILITY PROGRAMS.	#DISK 1440-UT-041	041
TALLY ANALYSIS REGISTRATION AND SCHEDULING.	1440-11.3.001	089	UTILITY PROGRAMS.	#TAPE 1440-UT-043	042
TAPE AUTOCODER ASSEMBLY FOR THE 1401.#TWO -	1401-01.1.018	045	UTILITY PROGRAM.	#CARD-TO-TAPE 1401-UT-027	022
TAPE SYSTEM LOADER.	1401-01.1.035	046	UTILITY PROGRAMS.	#CARD SYSTEM 1401-UT-001	022
TAPE SORT PROGRAM. #THREE	1401-01.2.003	047	VALIDITY. #EDIT - EDITING DATA INPUT FOR	1401-01.1.020	045
TAPE SORT.	#TTSRT - TWO 1401-01.2.012	047	VALUATION PROGRAM. #CONSOLIDATED FUNCTIONS+	1401-IL-03X	011
TAPE SORT MERGE. #8K THREE	1401-01.2.022	048	VARIABLE SIMPLE CORRELATION. #CORL-I+	1401-06.0.006	068
#TAPE UPDATE UTILITY PROGRAM.	1401-01.4.022	050	VARIABLE CARD REPRODUCER FOR 1440/1311.	1440-02.3.001	086
TAPE.	#MONITOR SYSTEM FOR 1401-01.4.039	050	VARIABLES OF IMPORTANCE DETERMINED VOID.	1401-06.0.005	068
#TAPE SEARCH PROGRAM.	1401-01.4.058	051	VARIANCE, 2 TO THE N POWER FACTORIAL+	1401-06.0.012	070
TAPE TO ABRIDGE CARD KEEPING. #STACK --	1401-01.4.107	053	VARIANCE.	#ONE-WAY ANALYSIS OF 1401-06.0.014	070
#TAPE DUPLICATION.	1401-01.4.108	054	#VARLIST.	1401-01.4.227	061
#TAPE COMPARE ERROR PRINT/DUPLICATE.	1401-01.4.123	054	VOID. #MULTIPLE CORRELATION - VARIABLES OF+	1401-06.0.005	068
TAPE DUMP. #GENERAL PURPOSE	1401-01.4.158	056	WHOLESALE IMPACT. #1311	1401-DW-03X	005
TAPE SYSTEM. #STATE AND LOCAL INCOME TAXES+	1401-14.0.012	082	WHOLESALE BILLING.	#CHAIN AND 1440-DW-01X	029
TAPE THEN TAPE TO 360/2311 IN COMPATIBILITY+	1401-14.0.024	083	WHOLESALE IMPACT. #1311	1440-DW-04X	029
TAPE THEN UTILIZATION ANC PRIC	1401-14.0.025	083	WORDS. #SUBROUTINE TO CONVERT DOLLARS AND+	1401-14.0.008	082
TAPE.	#1401/60 FORTRAN IV 1401-FO-052	008	WRITING. #1240/1440 PROOF OF DEPOSIT AND#	1440-10.2.002	088
TAPE 1401. #GENERAL DISTRIBUTION PROGRAM#	1401-IP-03X	010	WRITING.	#TAPE PADDING 1401-10-040	012
#TAPE READING WRITING.	1401-IO-040	012	X-9 VERSION, 4K, LONG PROGRAM. #SEASONAL+	1401-06.0.009	069
#TAPE PUNCH ROUTINES FOR THE 1401-1012.	1401-IO-074	012	X-9 VERSION, 4K, SHORT PROGRAM. #SEASONAL+	1401-06.0.010	069
TAPE SORT/MERGE PROGRAM. #IBM 1401/60+	1401-LM-010	013	10. #SELF CHECKING NUMBER CALCULATION --	1401-01.4.121	054
TAPE OPERATING SYSTEMS TAPE SORT/MERGE+	1401-LM-012	014	1026 OPERATING SYSTEM COMPUTER ASSISTED#	1401-OS-092	012
TAPE SORT/MERGE PROGRAM#	1401-LM-078	015	1026 (DCC) FOR THE 1440. #COMMUNICATIONS+	1440-10-012	035
TAPE SORT/MERGE PROGRAM (FOR THE 2415).	1401-LM-080	015	1080 ANALYTICAL DATA ACQUISITION PROGRAM.	1440-11.5.003	089
TAPE UTILITY PROGRAM.	#MULTIPLE 1401-UT-019	022	#1240/1440 PROOF OF DEPOSIT AND CASH+	1440-10.2.002	088
TAPE UTILITY PROGRAMS WITH 120 CHARACTER+	1401-UT-025	022	1285 OPTICAL READER. #IBM INPUT/OUTPUT+	1401-10-077	013
TAPE SYSTEM. #MULTIPLE UTILITY PROGRAM FOR+	1401-UT-039	023	13.	#IBM 1440 SORT 1440-SM-036	037
#TAPE UTILITY SYSTEM FOR THE 7710.	1401-UT-069	025	1311.	#IBM 1440 SORT 1440-SM-037	037
#TAPE UTILITY PROGRAMS.	1440-UT-043	042	1311 DISK LOAD.	#1401 SORT 7 - 1401-01.2.025	048
#TAPE-TO-CARD UTILITY PROGRAM.	1401-UT-028	023	#1311 DISK RECORD FINDER.	1401-01.4.187	058
#TAPE-TO-PRINTER UTILITY PROGRAM.	1401-UT-026	022	#1311 WHOLESALE IMPACT.	1401-DW-03X	005
#TARS - TALLY ANALYSIS REGISTRATION AND+	1440-11.3.001	089	#1311 WHOLESALE IMPACT.	1440-DW-04X	029
TAX BILL SYSTEM FOR THIRD CLASS+	1401-14.0.026	083	#1311/1301 INPUT-OUTPUT SYSTEM FOR THE+	1401-01.5.002	062
TAXES FOR IBM 1401 TAPE SYSTEM. #STATE AND+	1401-14.0.012	082	14.	#IBM 1460 SORT 1460-SM-068	043
TEACHER-MADE TESTS. #TS80 - SCORE AND+	1401-10.3.070	080	14.	#IBM 1460 SORT 1460-SM-069	043
#TEACHER-MADE-TEST PACKAGE.	1401-10.3.067	079	1400 RPG TO SYSTEM/360 TRANSLATOR.	#IBM 1401-RG-700	017
TECHNIQUE-PHASE I PROGRAM PACKAGE. #FAST --	1401-10.3.063	079	#1400-1311 LINEAR PROGRAMMING.	1401-CO-13X	004
TELLER SIMULATION USING NABC MODEL.	1401-10.2.010	073	1401.#TWO - TAPE AUTOCODER ASSEMBLY FOR THE	1401-01.1.018	045
TERMINAL SYSTEM. #ADMINISTRATIVE	1440-CX-07X	028	1401-X PROGRAMMING SYMONITOR FOR THE	1401-01.1.018	045
TERMINAL SYSTEM. #ADMINISTRATIVE	1460-CX-08X	042	1401-14-008 SYSTEMS PACK TO TAPE THEN TAPE+	1401-14.0.024	083
TEST. #ONE OF ONE - 80X80 REPRODUCE WITH+	1401-01.4.188	058	1401-14-008 SYSTEMS PACK TO TAPE THEN	1401-14.0.025	083
TESTING, AND CONDENSING OPERATION. #APTCO --	1401-01.4.094	052	1401-14-009.	#UTILITY PROGRAMS FOR THE 1401-UT-066	024
TESTING AIDS FOR COBOL THROUGH A LOGIC+	1401-01.4.223	061	1401-1012.	#TAPE PUNCH ROUTINES FOR THE 1401-10-074	012
TESTS. #TS80 - SCORE AND ANALYZE+	1401-10.3.070	080	1401-1026. #EXTENDED PERFORMANCE COMPUTER+	1401-14.0.027	083
THEBRAILLE - TRAN - TRANSLATE ENGLISHASIC	1401-02.0.024	064	#1401-1311 DISK PRINT PROGRAM.	1401-01.4.211	060
THEN TAPE TO 360/2311 IN COMPATIBILITY+	1401-14.0.024	083	1401-1311 DISK. #UTILITY PROGRAMS FOR THE	1401-UT-053	024
THEN UTILIZATION ANC PRIC	1401-14.0.025	083	#1401/1311 CARD-TO-DISK CONSECUTIVE LOAD+	1401-01.4.159	057

TITLE	PROGRAM NO.	PAGE
#1401/1311 DISK ADDRESS UTILITY.	1401-01.4.176	057
#1401/1311 MONITOR FOR PROGRAMS ON DISK+	1401-02.0.021	063
#1401/1311 TRANSPORTATION PROBLEM.	1401-10.3.050	078
#1401/1311 AUTO-TEST 8K.	1401-AT-081	001
#1401/1311 AUTO-TEST 16K.	1401-AT-082	002
#1401/1311 REPORT PROGRAM GENERATOR+	1401-RG-032	016
#1401/1311 DISK FILE ORGANIZATION+	1401-UT-052	023
#1401/1440 AUTOCODER PROGRAM LOGIA+	1401-01.4.128	055
1401/1440/1460/1311 DISK SORT. #IBM	1401-01.2.023	048
#1401/1460-1311 DISK PROGRAM LOADER.	1401-01.4.186	058
#1401/1620 MODULAR INVENTORY MANAGEMENT+	1401-CS-03X	005
#1401/40/60 FORTRAN IV DISK.	1401-FO-051	008
1401/40/60 AUTOCODER ON DISK. #1440-1470+	1440-SV-090	037
#1401/407 SIMULATION UTILITY PROGRAM.	1401-01.4.150	056
#1401/60 FORTRAN IV TAPE.	1401-FO-052	008
1401/60 TIMING PROGRAM FOR DOS/360 AND+	1401-LM-010	013
#1401/7740 ASSEMBLY PROGRAM USING THE IBM+	1401-SP-156	021
1403 PRINTER. #1401/1460 BRaille - TRAN -+	1401-01.4.230	062
14043. #RAPID ASSEMBLY PROGRAM NO.	1401-01.1.017	045
#1440-1026 OPERATING SYSTEM COMPUTER+	1440-OS-091	034
#1440-1070 PROCESS COMMUNICATION MONITOR+	1440-SV-091	038
#1440-1311 DISK SORT PACKAGE.	1440-02.1.003	086
1440-1448. #EXTENDED PERFORMANCE COMPUTER+	1440-15.0.001	091
#1440-1470 PROCESS COMMUNICATION MONITOR+	1440-SV-090	037
#1440/1311 CARD-TO-DISK CONSECUTIVE LOAD+	1440-02.1.001	085
#1440/1311 DISK ADDRESS UTILITY.	1440-02.1.002	085
1440/1311. #VARIABLE CARD REPRODUCER FOR	1440-02.3.001	086
#1440/1311 80-80 REPRODUCE PROGRAM.	1440-02.3.003	086
#1440/1311 BILL OF MATERIAL PROCESSOR.	1440-ME-02X	032
#1440/1311 REPORT PROGRAM.	1440-RG-020	034
#1440/1311 STERLING REPORT PROGRAM+	1440-RG-720	035
1440/1401/1460. #COBOL FOR IBM	1440-CB-073	027
1450 BANK DATA PROCESSING SYSTEM. #MICK+	1450-FB-20X	042
#1460-1070 PROCESS COMMUNICATION MONITOR+	1460-SV-090	044
#1460-1070 PROCESS COMMUNICATION MONITOR+	1460-SV-091	044
#1460/1401 COMMUNICATIONS IOCS (1448-DDC).	1460-IO-011	043
2K. #BASIC AUTOCODER	1401-AU-005	002
2K. #REPORT PROGRAM GENERATOR	1401-RG-033	017
2K. #BASIC AUTOCODER	1440-AU-006	027
2K. #1460-1070 PROCESS COMMUNICATION+	1460-SV-091	044
2K. #REPORT PROGRAM GENERATOR	1440-RG-024	035
360/2311 IN COMPATIBILITY MODE. #COPY+	1401-14.0.024	083
4K. LONG PROGRAM. #SEASONAL ADJUSTMENT -+	1401-06.0.009	069
4K. SHORT PROGRAM. #SEASONAL ADJUSTMENT,+	1401-06.0.010	069
4K. #LESS PROGRAM	1401-10.3.017	075
4K. #1401/1460 BASIC REPORT PROGRAM+	1401-RG-022	016
51. #SORT	1440-SM-035	037
52. #SORT	1440-SM-032	036
53. #SORT	1440-SM-033	036
54. #SORT	1440-SM-034	036
61. #SORT	1401-SM-067	021
62. #SORT	1401-SM-064	020
64. #SORT	1401-SM-066	020
#7040/44-1401 INPUT/OUTPUT CONTROL PROGRAM.	1401-IO-152	013
#7040/44-1401 AUXILIARY PROGRAMS.	1401-UT-153	025
#7040/7044 - 1401 PERIPHERAL UTILITY+	1401-UT-157	025
7090/7094 SUPPORT PACKAGES FOR IBM+	1401-UT-938	026
#7090/94 1401 PERIPHERAL.	1401-UT-158	025
7710. #TAPE UTILITY SYSTEM FOR THE	1401-UT-069	025
7750 USING THE IBM 1401. #ASSEMBLY PROGRAM+	1401-SP-133	021
8K, 12K, and 16K. #LESS - LEAST-COST+	1401-10.3.002	073
8K. #1401/1311 AUTO-TEST	1401-AT-081	001
8K. #AUTO-TEST	1440-AT-061	027
80-80 LIST. #ONE CARD	1401-01.3.011	049
80-80 REPRODUCING. #MULTI-PURPOSE	1401-01.4.190	059
80-80 CARD TO PRINTER PROGRAM WITH BRANCH+	1440-02.3.002	086
80-80 REPRODUCE PROGRAM. #1440/1311	1440-02.3.003	086
80X80 REPRODUCE WITH LAST CARD TEST. #ONE+	1401-01.4.188	058

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1240-FB-12X

DEMAND DEPOSIT CONVERSION PROGRAM

DESCRIPTION - The IBM 1240 Demand Deposit Conversion Program designed to convert MICR Paper documents to disk pack records in the format required by the 1440 Demand Deposit Application Program. The program is used in conjunction with the 1440 Demand Deposit Program to do the complete demand Deposit Application on the 1240 System.

FEATURES- It allows sorting of paper documents based on an account number limits table prepared by the user. Other functions are identical to the 1440 Demand Deposit Conversion run.

USE - This program is used in place of the 1440 Demand Deposit Conversion run on the 1240 System. It may be used without modification or may be easily modified if user requirements dictate. Two programs are furnished which allow the use of a buffered or an unbuffered 1443 Printer.

PROGRAM REQUIREMENT - Demand Deposit Accounting for the IBM Data Processing System (1440-FB-03X).

MINIMUM SYSTEM REQUIREMENTS A 1241 Processing Unit Model A4, 1442 Card Read Punch Model 1, 1443 Printer with additional print positions, 1447 Console with sense switches, Two 1311 Disk Storage Drives, models 1 and 2.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up... Reference Manual including program listings.
MACHINE READABLE - Source and program cards.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1240FB12X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION MEDIUM TYPE	USER VOLUME CODE	REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1240-SH-030

BANK DOCUMENT SORT PROGRAM

DESCRIPTION - The IBM 1240 Bank Document Sort Program, provides a complete general purpose sorting program for fine sorting of documents, which is an integral part of demand deposit accounting procedures. The program is specifically designed for this purpose. Documents can be sorted over any valid MICR field of from one to ten digits. The user specifies the field and the digits in the field to be sorted in a control card. The program can sequence check columns previously sorted. The user may specify in the control card modulus 10 or modulus 11 checking when desired. To handle special applications, up to three user routines may be included - (1) A specialized sort routine, (2) A checksum routine to handle check digits derived by a method other than modulus 10 or 11, (3) A reject routine. The user routines are specified by including actual addresses of the routines in the control card.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1240 System with one 1442 Card Read Punch or 1442 Card Reader. The program utilizes the Dash Transmission Features where they are installed. Note-for Autocoder assembly of user routines, a 1443 Printer and Card Punching Facility (1442 or 1444) are required.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up, Specifications and Operating Procedures.
MACHINE READABLE - Card decks, Bank Document Sort Program Deck.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Flowcharts and Program Listing.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1240SM030

	PROGRAM NUMBER EXTENSION	DISTRIBUTION MEDIUM TYPE	USER VOLUME CODE	REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-AT-017

CARD SYSTEM ERROR-DETECTION AIDS

DESCRIPTION - To provide a simple 1401 System for checking out programs. Equipment specifications - No special features required. The programs will provide a control card method for (patching) a 1401 program with instructions that will either; (1) Halt the program at selected times (2) Print selected areas of storage at selected times. Means for conveniently removing the patches are also

provided.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up... Listings...
Flowcharts... Operating procedures.
MACHINE READABLE - Condensed program deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401AT017

	PROGRAM NUMBER EXTENSION	DISTRIBUTION MEDIUM TYPE	USER VOLUME CODE	REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-AT-072

AUTO-TEST

DESCRIPTION - Auto test is a testing program for the IBM 1401 Data processing System. It effectively uses the power of the 1402 System to aid in the testing of Autocoder, Sps, and FARGO programs. Auto-test provides the ability to stack programs and produces, with a minimum of operator intervention, the necessary documentation to evaluate the testing programs.

MINIMUM SYSTEM REQUIREMENTS - 1 1401 Processing Unit (any model with 4000 or more storage positions). Advance Programming Feature, High Low Equal Compare Feature, sense switches, 1 1402 Card Readpunch, 1 1403 Printer (Model 2), 1 tape unit (2 tape units if the RAMAC File Trace and/or snapshot features are utilized).

BASIC PROGRAM PACKAGE -

DOCUMENTATION - Program Write-up, Flowcharts, Operating Instructions, General Information Manual.
MACHINE READABLE - One tape containing the Auto-test System Deck and Autocoder listing with select loading program.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401AT072

	PROGRAM NUMBER EXTENSION	DISTRIBUTION MEDIUM TYPE	USER VOLUME CODE	REQUIREMENT
BASIC	none	MT 7/556	22	01
		MT 7/800	24	01
OPTIONAL	none	none		none

1401-AT-081

1401/1311 AUTO-TEST 8K

DESCRIPTION - An integrated set of utility programs... Auto-Test is designed to provide documentation for program evaluation during a program testing run. It can be used on an IBM 1401/1311 or 1460/1311 system to test programs assembled by the IBM 1401/1311 Autocoder Program. Because test runs can be planned to proceed with a minimum of operator intervention, Auto-test is a useful tool for remove testing. Auto-test 16K permits testing of larger programs than does its companion 8K system.

Functions can be selectively specified... The Auto-test system resides in disk storage during testing. It controls program tests in which the following functions can be selectively specified.

- Clear selected areas of disk storage.
- Load program data from cards into disk storage.
- Print selected areas of disk storage.
- Create tape files prior to the test of each individual program.
- Print fixed or variable-length, blocked or unblocked tape records.
- Create and maintain IBM standard tape labels (120-character).
- Maintain disk labels on the label track of a disk pack.
- Load the program to be tested from cards.
- Print data read from or written in disk storage during program execution.
- Print data from selected areas of core storage at specific times during program execution.
- Print core storage when program execution terminates.
- List punched card input before test and output following test.

Several programs may be stacked for testing in a single run. A convenience card format for patching program decks being tested is provided to facilitate retesting of any program.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 system with... one 1311 Disk Storage Drive... 1402 Card Read Punch...

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1403 Printer Model 2 or 1404 Printer... Advanced Programming and High-Low-Equal Compare or an 8K 1460 system with... one 1311 Disk Storage Drive... IBM 1402 Card Read Punch... One IBM 1403 Printer... Indexing and Store Address Register.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up, System Listings, Specifications and Operating Procedures.

MACHINE READABLE - Card Decks - built Auto-Test System.

Disk Pack: DECKA - initiate program testing.
DECKB - restart.
DECKC - sample test deck.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - System Flowcharts.

MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401AT081

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-AT-082

1401/1311 AUTO-TEST 16K

DESCRIPTION - An integrated set of utility programs... Auto-test is designed to provide documentation for program evaluation during a program testing run. It can be used on an IBM 1401/1311 or 1460/1311 system to test programs assembled by the IBM 1401/1311 Autocoder Program. Because test runs can be planned to proceed with a minimum of operator intervention, Auto-test is a useful tool for remote testing. Auto-test 16K permits testing of larger programs than does its companion 8K system. Functions can be selectively specified...

The Auto-test System resides in disk storage during testing. It controls program tests in which the following functions can be selectively specified.

- Clear selected areas of disk storage.
- Load program data from cards into disk storage.
- Print selected areas of disk storage.
- Create tape files prior to the test of each individual program.
- Print fixed or variable-length, blocked or unblocked tape records.
- Create and maintain IBM standard tape labels (120-character).
- Maintain disk labels on the label track of a disk pack.
- Load the program to be tested from cards.
- Print data read from or written in disk storage during program execution.
- Print data from selected areas of core storage at specific times during program execution.
- Print core storage when program execution terminates.
- List punched card input before test and output following test.

Several programs may be stacked for testing in a single run. A convenient card format for patching program decks being tested is provided to facilitate retesting of any program.

MINIMUM SYSTEM REQUIREMENTS - A 16K 1401 system with... one 1311 Disk Storage Drive... 1402 Card Read Punch... 1403 Printer Model 2 or 1404 Printer... Advanced Programming and High-Low-Equal Compare or a 16K 1460 system with... one 1311 Disk Storage Drive... IBM 1402 Card Read Punch... one IBM 1403 Printer... Indexing and Store Address Register.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up, System Listing, Specifications and Operating Procedures.

MACHINE READABLE - Card Decks - Build Auto-test System.

Disk Pack: DECKA - initiate program testing.
DECKB - restart.
DECKC - sample program test deck.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - System Flowcharts.

MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401AT082

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-AU-005

BASIC AUTOCODER 2K

DESCRIPTION - The 1401 Basic Autocoder 2K Processor accepts source statements written in Basic Autocoder 2K language and produces machine language object programs. Basic Autocoder 2K is a 2-pass system. The source program is processed and the resulting object program is converted by one of two special condensing routines from one-instruction-per-card to condensed card format.

MINIMUM SYSTEM REQUIREMENTS - A 2K 1401 system with... 1402 Card Read Punch... 1403 Printer.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up, Operating Procedures.

MACHINE READABLE - Card Decks - Processor Deck. Pre-List Routine Deck. Post-List Routine Deck. Condensing Routines Deck1 and Deck2. Sample Problem Deck.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Flowcharts, Program Listing.

MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401AU005

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-AU-008

1401/1440/1460 AUTOCODER (ON DISK)

DESCRIPTION - The 1401/1440/1460 Autocoder (on disk), 1401-AU-008, system... (1) enables a program written in 1401/1440/1460 autocoder (on disk) Language to be assembled on a 1401, 1440 or 1460 System... (2) Output is used to execute the program... (3) Offers assembly speeds up to two-and-one half times faster than existing 1401-1440/1311 Autocoders on systems with more than 4K storage.

The source program is punched in cards or as card images on disk storage, is assembled on a 1401/1440, or 1460 System. Input in 1440 Basic Autocoder format can be used. The output object program is the 1401, 1440, or 1460 Machine Language Equivalent. The object program may be in condensed cards, or if "load-and-go" is desired, the object program may be directly loaded from disk storage for immediate execution. Program documentation and diagnostic output are printed by the 1403 or 1443 Printer. A stack of several source programs may be assembled at one time.

In addition to the assembly function there are four other separate options -

- A library option to add, delete, or modify library routines.
- A listing option to obtain a listing of specified library routines, or of the entire library routines, or of the entire library, or a list of the library routine names.
- A System option to create or modify the Autocoder program on the System Disk Pack.
- A library option to relocate the library.

PROGRAMMING SYSTEMS - Written in Autocoder Language.

MINIMUM SYSTEM REQUIREMENTS -

- (1) An IBM 1401 System with 4K storage, a 1311 Disk Storage Drive, a 1402 Card Read Punch, a 1403 Printer, High-Low-Equal Compare Feature or...
- (2) An IBM 1440 System 4K storage, a 1301 Disk Storage Drive, Model 11, 12, 21 or 22 or a 1311 Disk Storage Drive, a 1442 Model I or II Card Read Punch or a 1442 IV Reader and a 1444 Card Punch, a 1443 Printer or...
- (3) An IBM 1460 System with 8K storage, a 1301 Disk Storage Drive, Model 11, 12, 21 or 22, or a 1311 Disk Storage Drive, a 1402 Card Read Punch, a 1403 Printer.

Note - One of the following programs should be obtained to prepare disk storage to store autocoder system.

- (1) 1401/1460 Disk Utility Program 1401-UT-053.
- (2) 1440 Disk Utility Program 1440-UT-041.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up, Autocoder Language Specifications. Listings of Sample Source Program. Operating procedures.

MACHINE READABLE - Card Decks - Autocoder System Deck. IBM-supplied Macros. Sample Program Deck.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Flowcharts, Listing.

MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401AU008

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	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-AU-037

AUTOCODER PROGRAM

DESCRIPTION - Provides more powerful tools for programmers to enable them to concentrate their efforts on the problems of program logic rather than coding. In addition, to provide an extremely fast assembly system.

PROGRAMMING SYSTEMS - Written in Autocoder Language.

MINIMUM SYSTEM REQUIREMENTS - 4000 core-storage positions, 4 (four) 729 II or IV Tape Units 1403 Printer Model 3 1402 Card Read-Punch Advanced Programming features High-Low-Equal Compare.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up, Operating Procedure.
MACHINE READABLE - System tape and listings.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401AU037

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 22 7/800 24	01 01
OPTIONAL	none	none		none

1401-CA-04X

DATA ANALYSIS AND REDUCTION

DESCRIPTION - DARS is a set of programs under its own monitor control which can be used to - selectively extract records from a file base on a variety of conditions, produce statistical analysis and single and multi-column (matrix) tabular reports, rearrange records to any desired format and make conditional or unconditional insertions into records. All of these functions are obtainable in any sequence by using simple control cards.

FEATURES -

- Accepts card or magnetic tape input.
- One or more statistical analyses of tabular reports may be produced from the same input data.
- Reports are produced immediately on the 1403 Printer.
- The system is user-expandable and may be tailored to meet specific needs by program changes, additions, and deletions.

The user selects the programs to be run and specifies the action to be taken by each through the use of control cards.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder Language.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 system with, three magnetic tape units, 1402 Card Read Punch, 1403 Printer, Model 2, and High-Low-Equal Compare, Advanced Programming, Multiply-Divide and sense switches to use variable input control program. A fourth Tape Unit is needed if sorting is necessary.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Application Directory, Sample Problem Output Listing. Application Description H20-0207. Programmers and Operators Manual H20-0214.
MACHINE READABLE - Object program and sample problem.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - System Manual.
MACHINE READABLE - Source code, and the mixed Autocoder output consisting of the assembly listings and object code.

ORDERING INFORMATION: PROGRAM NUMBER 1401CA04X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	DTR	7/556 22 7/800 24	none none
OPTIONAL	none	MT	7/556 22 7/800 24	01 01

1401-CB-070

1401 COBOL

DESCRIPTION - 1401 COBOL is a compiler system for the IBM 1401 Data Processing Systems. 1401 COBOL is used in conjunction with 1401 Autocoder. Therefore, a current

version of Autocoder containing a library updated with COBOL subroutines is required to obtain a valid assembly after the COBOL run has been completed. IOCS one-for-one instructions normally will be generated by the COBOL processor (which requires less time for the generation). However, the user does have the option of the COBOL Processor outputting IOCS macros. A pre-scan diagnostic run is available for the purpose of diagnosing name-associated errors and for analyzing the sentence structure of the source program. These diagnostics are far superior to those contained in the system itself and use of the pre-scan run is strongly recommended.

MINIMUM SYSTEM REQUIREMENTS - 8K storage is required if this option is used. 1401 with 4K storage...4 magnetic tapes...1402 Card-Read Punch...1403 Mod. 2 or 1403 Printer... Advanced Programming feature...Sense Switches. The 1401 system used as the object machine must have at least - 4,000 positions of core storage. Input-output units as required by the source program. Advanced Programming feature. High-Low-Equal compare feature, and any features clearly implied by the source program.

Multiply-Divide feature if either the multiply or divide verb is used in the source program, or if the operator *or/or** is used in an arithmetic expression.

Note - The need to use these verbs or operators may be eliminated by the use of the enter Autocoder statement, with the user supplying the appropriate subroutine.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up, Specifications, Operating Procedures.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Object time subroutine flow diagram.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401CB070

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 22 7/800 24	01 01
OPTIONAL	none	none		none

1401-CB-701

COBOL LANGUAGE CONVERSION

DESCRIPTION - It aids in the transition to System/360 by converting acceptable current COBOL Languages to either System/360 level E COBOL or level F COBOL.
Acceptable Languages -- The COBOL LCP will accept as input -
1401/1440/1460 COBOL 7070/7074 COBOL
1410 COBOL 7070/7074 FOS COBOL
1410/7010 COBOL 704/7080 COBOL
7040/7044 COBOL 7090/7094 COBOL

FEATURES -

- Card or tape input -- both the LCP and the COBOL source programs can be read from either cards or tape.
- Single or stacked program conversion -- a single source program can be processed from one of the three tape units needed in a minimum configuration. Stacked programs can be processed if more than three tape units are used.
- Replacing the environment division -- a control card option allows the user to replace the original environment division with a new customer-written System/360 environment division.
- Card-code conversion for dual BCD characters -- a control card option provides automatic conversion from BCD input code to EBCDIC output code, or vice versa. In this way, the LCP can convert the dual BCD characters, for example, two characters with the same card code, into the proper System/360 card codes.
- Documented listing -- the LCP provides a listing of the source and converted programs. This listing contains numeric codes that document conversion actions and facilitate analysis of the converted program.
- Optional card output -- when specified, the LCP produces a punched-card deck that contains the converted program.
- Optional output on tape -- the user can specify that printed and/or punched output are to be recorded on tape.

Conversion savings - The COBOL LCP will reduce the amount of reprogramming necessary to convert current COBOL programs into System/360 COBOL programs. Use of the LCP will reduce time and money spent on recoding, clerical activities, and program debugging. Although the savings to be realized will vary for the individual source programs, the typical savings will be 50 per cent of the total COBOL program conversion effort consisting of statement conversion, compilation, and debugging.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 system with... a 1402 Card Read Punch... a 1403 Printer Model 2... three Tape Units... the Advanced Programming feature... the High-Low-Equal Compare feature, or an IBM System/360 with 1401 compatibility and corresponding features and I/O devices.

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BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up, Program material list, COBOL Transition Aids Manual.
MACHINE READABLE - LCP object deck.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.
MACHINE READABLE - COBOL Language conversion Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401CB701

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	DTR	7/556 7/800	22 24	none none
OPTIONAL	none	MT	7/556 7/800	22 24	01 01

1401-CN-03X

AUTOPROPS II NUMERICAL CONTROL PROGRAM

DESCRIPTION - AUTOPROPS II is a 1401 computer program for X-Y axis M/C machine tools to compute points and point arrays used in drilling, boring, tapping, stamping, riveting, etc. AUTOPROPS II is expanded to give four decimal output accuracy for machine tools such as jig grinders and jig borers. Anyone having two axes point-to-point M/C machine tools should be interested in the AUTOPROPS II modification resulting from engineering design changes. No new language is necessary to program a part with AUTOPROPS II because the source statements require only simple arithmetical descriptions familiar to everyone. As many as 999 positions in a pattern, such as a bolt circle or matrix, can be programmed with a single input statement. Small parts often loaded in a multiple station loading fixture can be programmed as a matrix and programming time is reduced in many cases over hand methods. A test program and a plot program give the programmer an opportunity to verify his results before machining a part, thereby reducing time and errors to a minimum.

MINIMUM SYSTEM REQUIREMENTS - A 1401 with 4K storage, Card Read Punch and 1403 Printer Mdl 2.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up, Reference Manual Listings.
MACHINE READABLE - Object Program Deck, Sample problem deck.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401CN03X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	CARDS		15	none
OPTIONAL	none	CARDS		15	none

1401-CO-13X

1400-1311 LINEAR PROGRAMMING

DESCRIPTION - Linear Programming is a mathematical programming technique for determining the optimum solution to a system of linear inequalities. This solution may be an optimum allocation of resources (capital, raw materials, manpower, etc.) to specified activities (investments, products, jobs) in order to obtain a particular objective (minimum expense, maximum profit) when there are alternate uses for these resources. Linear programming plays an important role in material allocation, ingredient blending (feed, flour, gasoline, etc.), production scheduling, and distribution and shipping. The system is composed of a number of programs stored on disk. The programs are called by procedure control cards known as AGENDUM cards. The sequence of AGENDUM cards defines the solution procedure by calling the processing agenda for an application.

FEATURES - Data originates from cards in SHARE standard format. Alternate objective functions and right-hand sides are specified by name for optimization. A modified simplex algorithm with bounded variables is used to maximize or minimize the objective function. Full economic analysis of the price-activity-cost relationships for structural variables and of the activity-cost relationship for row constraints is provided. Solution can be interrupted to process higher priority jobs, and continued from the point of interruption. Storing programs on disk enables the system to provide comprehensive solution procedures and post-optimal analysis. Optional features can be used to increase solution speed.

The bounded variables algorithm reduces the matrix size of many LP problems. Upper and lower bounds on variables are handled explicitly so that no "bound rows" are needed.

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Rows may have both high and low limits, further reducing the number of rows required to specify the problem. The problem matrix size may have up to 47 rows and 900 columns on a 4K system and up to 97 rows and 900 columns on an 8K or larger system. The number of rows and columns includes objective functions and right-hand sides.

PROGRAMMING SYSTEMS - Source language is IBM 1401/1440/1460 Autocoder on disk.

MINIMUM SYSTEM REQUIREMENTS -

1401 -- 4K, High-Low-Equal Compare, Advanced Programming, 1402 Card Read Punch, 1403 Printer, one 1311 Disk Storage Drive,

1440 -- 4K, Indexing and Store Address Registers, 1442 Card Read Punch, 1443 Printer, one 1311 Disk Storage Drive,

1460 -- 8K, Indexing and Store Address Registers, 1402 Card Read Punch, 1403 Printer, one 1311 Disk Storage Drive.

Optional features - additional 4K of core storage increases problem capacity to 97 rows. Multiply-divide and direct seek features can be used, if available, to reduce solution time. Sense switches allow the use of the solution interrupt feature and provide a means of in-line correction of input data.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up, Application Description, Users Manual, Operators Manual.
MACHINE READABLE - Sample Problem - Option 1 - Object code for 8K or large 1401, 1440 or 1460 and is specified by using Program Number Extension OPT1. Option 2 - Object code for 4K 1401 or 1440 and is specified by using Program Number Extension OPT2.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - System Manual.
MACHINE READABLE - Source code for 4K-8K.

ORDERING INFORMATION: PROGRAM NUMBER 1401CO13X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	OPT1	CARDS		15	none
	OPT2	CARDS		15	none
OPTIONAL	none	MT	7/556 7/800	22 24	01 01

1401-CR-01X

SELECTIVE DISSEMINATION OF INFORMATION SYSTEM

DESCRIPTION - The IBM 1401 Selective Dissemination Of Information System acts as an electronic screening and distribution agency for information. From the flood of reports, articles, and books received by an organization, the new system selects and routes information to people according to their specific interests and needs.

The 1401 SDI consists of a series of programs and a comprehensive system description to permit a customer to operate a current-awareness program. Users express their interests by lists of keywords called profiles. Abstracts of material to be disseminated (including the author, title, and source and comments) are typed on the IBM 826 Typewriter Card Punch. The Auto-Indexing Program develops index keywords from the abstract text. The profiles are compared with the keywords of the abstracts. When a sufficient number of words match between a profile and an abstract, the abstract is printed on the 1403 and addressed to the user.

FEATURES -

- Allows the SDI user full control over his interest profile.
- Allows a wide combination of logical comparisons, including "weighted" words and multiple profiles for each user. 1-1 Makes available many statistical control reports for operating control and for improving the user's interest profile.
- A new match and print program (SDI 8) which is similar to run 3 except that it will take advantage of 16K memory and Print Storage, if available, to overlap print buffer time with processing to produce far greater throughput.
- The ability to use four line addresses for abstract notices when subscribers are at remote locations.
- The ability to index abstracts on multiple word entries without the need for manual indexing.
- Lends itself to daily processing with minimum effort.
- A facility for creating input to KWIC (Keyword-In-Context) indexing.
- The modification of SDI 6 to permit more user control of the abstract merge.
- SDI 5 now allows processing of cards that are blank in columns 1 through 60.
- Programs SDI 8 and 23 through 29 have been added.

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The program will accept abstracts punched in accordance with the format outlined in the GI manual, "Keyword-In-Context" (KWIC) Indexing, E20-8091. The abstracts are placed on an abstract history tape which may be used for retrospective searching. Any selected group of abstracts up to a limit of 100 may be selected from the history tape for the SDI notice printing run. Some SDI application areas are:

- Current-awareness program for research, engineering, management, and marketing personnel in industry, government banking, universities, publishing, brokerage, trade associations, professional societies, etc.
- Selective updating service for encyclopedias, journals, law books, etc.
- Selective communication system to bind the central office of a large chain with local managers.
- Police modus operandi files - to match details of the crime with the modus operandi file.
- Employment agencies to match skills available with employment requests.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 system with... High-Low-Equal Compare, Advanced Programming, and Sense Switches... 1402 Card Read Punch... 1403 Printer, Model 2... 4 magnetic tape units. Users of this program should obtain the IBM Sort 7, 1401-SM-060.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up. Application Manual User's Manual. Operators Manual. Systems Manual. MACHINE READABLE - Program listing. Source Program Cards. Object Program Cards. Sample Problem Card, all in card image on magnetic tape.

OPTIONAL PROGRAM PACKAGE - None

ORDERING INFORMATION: PROGRAM NUMBER 1401CR01X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 22 7/800 24	02 02
OPTIONAL	none	none		none

1401-CR-02X

KEYWORD-IN-CONTEXT (KWIC) KEYWORD-OUT-OF-CONTEXT (KWOC)

DESCRIPTION - This program will produce two basic KWIC or permuted title indexes. The conventional format is illustrated by the index to the Catalog of Programs. The KWOC format provides full title printout with no fragmentation. Each new keyword is printed in the left hand margin, followed by titles containing that keyword. Keywords may be bold-faced, in both heading and title, utilizing the 1403 over-printing capability. The user enjoys the option of having the program automatically select keywords on the basis of a compare or a no-compare with a pre-assigned list of words. Indexing may be enriched with the addition of manually inserted descriptors and see also references. A statistical count is maintained on all keywords indexed and all words prevented from being indexed. A new type of wrap-around is employed in the keyword entries which saves the maximum amount of context adjacent to the keyword and eliminates undesirable word fragments for increased ease in reading. This program can be used to prepare indexes of published articles, internal reports, special collections (e.g., photographs, paintings, parts lists), procedure manuals, bibliographies, correspondence files. KWIC indexes have been used on foreign language material to prepare indexes and concordances. All that is involved in the preparation of input to the program is the keypunching of cards containing the title to the index. If the user desires, the authors name and source of publication may also be keypunched and would be automatically indexed. These cards can be punched at the rate of 900-1200 per day. The program also provides for tape input of 80 characters card format records. This program can be used to produce KWIC indexes from information placed on tapes from the SDI program, 1401-CR-01X.

MINIMUM SYSTEM REQUIREMENTS - Are a 4K 1401 System with... 4 magnetic tape units if sorting is done on the 1401, if not, 2 units are required for the basic package... and Advanced Programming, High-Low-Equal Compare, Sense Switches, and Read Release feature. The 2-tape configuration will be of particular interest at installations where the 1401 is used as a peripheral equipment for a larger machine on which sorting can be done. If only 2 tapes are attached to the 1401, and a larger machine is not available, sorting can be done at any other available installation.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up. Reference Manual MACHINE READABLE - A Magnetic Tape containing six source programs, six object programs, and the sample problem.

OPTIONAL PROGRAM PACKAGE - None

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ORDERING INFORMATION: PROGRAM NUMBER 1401CR02X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 22 7/800 24	none none
OPTIONAL	none	none		none

1401-CS-02X

MANAGEMENT DECISION-MAKING LABORATORY

DESCRIPTION - The Management Decision-Making Laboratory, often referred to as the management game, is a simulation of a general business economy requiring competitive decisions on the part of the participants. It is designed to provide, in a short period of time, planning and decision-making similar to that normally experienced over a period of several years in actual business practice. The Mathematical Model is incorporated in a program executed on a 1401 Data Processing System. The administrator of the laboratory briefs the participants on features of the model. The participants decisions are then processed by the 1401 system, period by period, producing output on the 1403 printer (or on magnetic tape) to be used in the next decision period.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 system with, 1402 Card Read Punch, 1403 Printer MDL 2, Three Magnetic Tape Units (four if Magnetic Tape output is desired), Card Punch, preferably 26 Printing Card Punch, Advanced Programming, High-Low-Equal Compare and Multiply-Divide Special features.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Material List... Operation, Reference and Participants Manuals. MACHINE READABLE - Magnetic tape containing object code program, sample data which may be used to generate equal starting reports, Autocoder assembly listing and output.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None MACHINE READABLE - Source program on magnetic tape, 80 character records, unblocked.

ORDERING INFORMATION: PROGRAM NUMBER 1401CS02X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 22 7/800 24	01 01
OPTIONAL	none	MT	7/556 22 7/800 24	01 01

1401-CS-03X

1401/1620 MODULAR INVENTORY MANAGEMENT SIMULATOR 12K 1401 VERSION

DESCRIPTION - A modular Inventory Management Simulator to provide pre-testing of inventory control system. Designed for use of understanding, use of modification. Simulator includes first, and third order exponential smoothing.

PROGRAMMING SYSTEMS - Written in FORTRAN

MINIMUM SYSTEM REQUIREMENTS - Approximately 9,500 positions on 12K-16K 1401 12K or 16K Card 1401. That will accept FORTRAN. Hi-Lo-Equal Compare, Multiply-Divide-Advanced Programming. Running time - 2 seconds per demand transaction.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Listings. Flowcharts. MACHINE READABLE - Condensed Deck.

OPTIONAL PROGRAM PACKAGE - None

ORDERING INFORMATION: PROGRAM NUMBER 1401CS03X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-DW-03X

1311 WHOLESALE IMPACT

DESCRIPTION - The IBM IMPACT (Inventory Management Program And Control Techniques) system of scientific inventory management provides the warehouse distributor (or any organization with the same inventory control characteristics) with the information of "when" and "how much" to buy for each inventory item controlled by the

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system. It does this through the means of probability science in conjunction with the many factors influencing the distributors inventory control decisions. Factors considered include- lead time, lead time variability, forecast demand, forecast error, service desired, inventory, carrying costs, purchasing/receiving costs, discount structures, minimums, maximums, shelf life, and pack sizes. The "when and "how much" answers are designed to find the most efficient balance between the cost of carrying inventory, cost of purchasing and receiving, discounts realized, and customer service requirements. The 1311 impact computer program library is designed to provide the distributor who has an IBM 1401/1460/1311 system with the means to successfully implement an IMPACT Inventory Management System with a minimum of effort and expense. Programs are included that perform in the following functional areas- editing, file initialization, estimating, and the control of independent and joint replenishment ordering.

FEATURES The 1311 Program Library performs in the same functional areas as the existing 1401-1405 IMPACT Computer Program Library.

- Edit all input for format.
- Determine the forecast model (horizontal, trend, horizontal-seasonal, or trend-seasonal).
- Determine the ordering strategy to be used and calculate order quantity or order frequency as appropriate for strategy selected.
- Calculate the safety factor required for a prescribed level of customer service.
- Calculate initializing values required for forecast and order models selected.
- Estimate results to be expected from applying the rules and values developed.
- Determine when to order item groups to meet service objectives after the system is operational.
- Calculate the product mix to be ordered within an item group that will meet both service objectives and limitations on total size of order.

In addition, the 1311 programs incorporate improvements over existing programs including -

- Work flow and record formats streamlined.
- Historical demands screened for promotions.
- Base index technique used for forecasting seasonal items.
- Item discounts considered, in addition to vendor discounts, in determining ordering strategies and order quantities.
- Different lead time may be specified for each vendor breakpoint.
- Service may be specified by item for both independent and joint vendors.
- Seasonality considered in ordering both independent and joint vendors.
- A service point and allocation program (SVA) that will take advantage of 8K memory to produce greater throughput.
- An option to force a predetermined order quantity for any item through the SVA program.
- The facility for expressing a conversion factor of 1.0 to the SVA program.
- Printing of the slope and intercept of the least squares lines has been included in the MADP program.
- Punching of the cost strategy records in the OGCL program has been eliminated.
- Provides safety factor (K) based on a lead time plus review time for items in a point vendor. When the peak point option is not satisfied.

The program library includes both initializing programs and operating programs. Initializing programs are designed to be used once to set up an IMPACT system, then periodically (at least once a year) or as required to meet changing conditions. A complete set of programs is provided to perform necessary initializing functions. Operating programs are used in the day-to-day control of the IMPACT system (forecasting and ordering). Library programs are provided to control the ordering of both independent and joint vendors. Instruction and block diagrams are available to help the user in programming the remaining operating programs with a minimum of effort (Implementation Reference Manual).

PROGRAMMING SYSTEMS - Programs in the IMPACT computer program library are written in 1311 Autocoder and 1311 IOCS.

MINIMUM SYSTEM REQUIREMENTS - 1401--4K 1401 System with 1402 Card Read Punch Model 1... 1403 Printer Model 2... two 1311 Disk Storage Drives... Advanced Programming, High-Low-Equal Compare. Two 1316 Disk Packs must be fully available during the operation of 1311 Library programs.

1460--8K 1460 System with 1447 Console Model 1... 1402 Card Read Punch Model 3... 1403 Printer Model 2... Two 1311 Disk Storage Drives... Indexing and Store Address Register. Two 1316 Disk Packs must be fully available during the operation of 1311 Library programs.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up. Users Manual. Operation Manual.

MACHINE READABLE - Object deck. Sample problem deck.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Systems manual which contains the assembly listings of all the 1401/1460 - 1311 IMPACT programs.
MACHINE READABLE - None

ORDERING INFORMATION: PROGRAM NUMBER 1401D003X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USEP VOLUME REQUIREMENT
BASIC	none	CAPDS	15	none
OPTIONAL	none	none		none

1401-EX-01X

ENGINEERING SCHEDULING SYSTEM

DESCRIPTION - The system contains a series of fourteen 1401 programs to automatically perform the dating, loading, and performance evaluation functions of scheduling. It is developed primarily for high volume, short-cycle operations as found in a custom engineering environment; techniques will also be applicable to many other types of project planning and control. The system emphasizes simplified input requirements and presents work-load information in formats designed to be most useful to individual supervisors. Major outputs, under selective control of the user, include - Facility load by time period. - Order status listings (full, or by exception). - Order listing in customer name sequence. - Performance evaluation by facility. - Order history report. - Pre-punched turn-around documents for work reporting

FEATURES

- Skeleton file for retrieval of common work routines.
- Automatic calendar allows user communication using Gregorian dates.
- Automatic start-date calculation allows use of external constraint dates.
- Data entry logs and errata listings.
- System handles up to 1,000 events per project, up to 260 common routings.
- Flexibility in organization of work force.
- Monitor control and a special three-tape scrt minimize operator intervention.

Common routings are defined and used to prepare a skeleton file. A new order can then be entered into the work-in-process file with only one card. During the system run, all work is rescheduled to reflect developments since the preceding run. Output reports then present the work load to facility supervisors in clear, concise form for decisions in work dispatching.

PROGRAMMING SYSTEMS - Written in Autocoder/IOCS

MINIMUM SYSTEM REQUIREMENTS - A 16K 1401 System with Advanced Programming, High-Low-Equal Compare, Multiply-Divide, Sense Switches, and Additional Print Control... 1402 Card Read Punch... 1403 Printer MDL 2... and four magnetic tape units.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up. Application Directory. Application Description. Programmer Manual. Operator Manual. Sample Problem Manual.
MACHINE READABLE - Source deck, object deck, sample problem, and assembly listings.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - System Manual
MACHINE READABLE - Magnetic tape containing Autochart Block Diagrams.

ORDERING INFORMATION: PROGRAM NUMBER 1401EX01X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USEP VOLUME REQUIREMENT	
BASIC	none	MT	7/556 7/800	22 24	01 01
OPTIONAL	none	MT	7/556 7/800	22 24	01 01

1401-FB-02X

BANK MANAGEMENT SIMULATOR

DESCRIPTION - The Bank Management Simulator is an exercise which simulates the effects of management decisions in a \$50 million commercial bank. Each team's objective is to make decisions in the most profitable use of its assets. In one day, the players make decisions similar to those which would be made over a period of several years. This exercise was designed because of the difficulty of exposing officers to asset management decisions in any other way. The computer applies the decisions against a mathematical model of the bank, calculates their effect based on the state of the economy at the time, and calculates changes in the economy that might take place during the particular

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quarter of play. The results are presented to the participants so they may see the interaction of their various decisions. One to nine teams may participate at one time. Teams do not compete against each other, but rather against the economic climate established in the game.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 System with, three tape drives, Card Read, Punch, High-Low-Equal, Advanced Programming and Multiply-Divide Special features.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-Up. Operators Guide. Players and Examiner Instructions
MACHINE READABLE - Card Decks - Initializer phase object program deck. Initializer data deck. Sample problem deck. On tape - Calculation phase object program.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None
MACHINE READABLE - Assembly Listings

ORDERING INFORMATION: PROGRAM NUMBER 1401FB02X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	Cards	15	none
		MT 7/556	22	01
		MT 7/800	24	01
OPTIONAL	none	MT 7/556	22	01
		MT 7/800	24	01

1401-FB-09X

BOND TRADE ANALYSIS FOR A BANK

DESCRIPTION - The Bond Trade Analysis is a management tool designed especially for banks. The Analysis computes the net effect, after tax, of a proposed bond trade in the banks own portfolio. The Analysis program computes time factors, coupon interest income, premium amortizations, capital gains, ordinary and capital gain taxes or tax savings, and sale proceeds applicable to the bonds being considered. Various logical decisions are also made in the program which are related to such items as the type of tax year being experienced by the bank, the type of bonds being considered, and whether or not a call date is involved. The result of these computations and decisions is set forth in terms of dollar return which may be easily interpreted by the banker. This program is designed to provide a comprehensive variety of results which will permit the banker to see the effect of alternate courses of action, and enable the banker to avoid common errors in bond investment planning and execution. The speed and precision of computation, the depth of analysis, and the number of alternatives provided by the program are not available to the banker today. This omission restricts his trading and thereby his profits.

The Bond Trade Analysis is designed to help the banker in the following areas -

- Improving the overall yield of the security portfolio.
- Utilizing tax provisions designed especially for banks.
- Reinvesting funds of near maturities.
- Converting present coupon income to future capital gains.
- Converting future capital gains to present coupon income.
- Comparing alternate trade possibilities.
- Realigning the maturities of the security portfolio.
- Avoiding capital gain and capital loss off-sets.
- Preventing inadvertent short-term sales.
- Accounting for security trades.

The input to effect a single analysis is two cards containing data relevant to a bond presently owned by the bank, which the bank anticipates selling, and one card containing the pertinent data concerning the bond the bank contemplates purchasing. Multiple presently owned bonds may be analyzed against from one to ten contemplated purchases in a single uninterrupted processing. Each individual analysis requires from 2 to 3 seconds of machine processing and printing time. At the end of a sequence of analyses, a recap of the various analyses may be printed if desired. It is significant to note that the cards representing bonds presently owned by the bank would ordinarily be available in the form of the banks security inventory and control program. Therefore, only the card representing the contemplated purchase may have to be prepared. In addition to using the bond trade analysis program on the banks own portfolio, application may be found in the management of large bank trading accounts and as a sales device for additional and new services to correspondent banks.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 with...Advance Programming, High-Low-Equal Compare, Multiply-Divide...1402 Card Read/Punch...1403 Printer.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up, Operating Instructions,

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Reference Manual, Listing.
MACHINE READABLE - Object Deck, Source Program Deck, Sample Program Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401FB09X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-PI-04X

PORTFOLIO SELECTION PROGRAM

DESCRIPTION - The 1401 Portfolio Selection Program (1401-PI-04X) is valuable to banks, mutual funds, trust and insurance companies, estates, and investment department of institutions both public and private.

The program determines optimally diversified portfolios from a given group of securities. These optimal portfolios minimize risk for given levels of return. The program uses a mathematical technique called quadratic programming to minimize the risk for any level of return associated with a security portfolio. It selects optimally diversified portfolios from groups of up to 750 securities, including cash investments. Constraints, such as a maximum holding or a fixed holding, may be applied to any or all of the securities being considered. Output consists of - 1. A set of portfolios -- each with minimum risk for its level of return -- for as many levels of return as the user requests. 2. The individual security parameters -- such as return and risk -- that were used in the computation. 3. The expected return and associated risk for a portfolio consisting of current holdings.

FEATURES -

- Uses the Index or Linear Model, which assumes a linear relationship between return and some single economic indicator.
- Eliminates the need for the user to provide estimates of covariance or correlation between pairs of securities. Using the Index Model, these correlations are derived implicitly by the program from the given input data and are used by the program to minimize risk through the principle of diversification.
- Includes a special subprogram called Data Transformation program, which allows the user to specify any linear function relating security return to the chosen index.
- Includes a standard least-squares technique for fitting a linear function through nine price estimates for each security.
- Furnishes all of the individual security parameters necessary for the quadratic programming portion of the program.

A self-loading program tape is provided. The user provides the data on punched cards in the specified formats, and all reports are automatically produced.

PROGRAMMING SYSTEMS - The source language used is 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 with Advanced Programming, Sense Switches, Multiply-Divide (optional)... 1402 Card Read/Punch MDL 1... 1403 Printer MDL 1... four Magnetic Tape units. The use of the Multiply-Divide feature will reduce considerably processing time.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up, Application Directory, Reference Manual, System Manual.
MACHINE READABLE - Self-Loading Object Program. Source Program. Assembly Listings. The Source and Object Code for the auxiliary program DTP maintenance procedure. Sample problem.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401PI04X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT 7/556	22	01
		MT 7/800	24	01
OPTIONAL	none	none		none

1401-PI-05X

FINANCIAL ANALYSIS PROGRAM

DESCRIPTION - The Financial Analysis program consists of a series of programs which give the professional financial analyst easily accessible, detailed, and analytical information about industrial corporations. The program utilizes the information handling and computational ability of the IBM 1401 to provide the professional financial analyst with tools to help him in screening and appraising

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industrial common stocks. The main input for the program is a magnetic tape containing historical balance sheet, income statement, and market data for a large number of industrial companies. This tape may be prepared by the user or obtained from the organization which makes it commercially available (Standard & Poors Corporation).

By using the program, the analyst may obtain reports providing him with -

1. A list of companies meeting certain standards specified by the analyst.
2. Past financial data and ratios.
3. Comparisons between a company's sales and earnings and GNP PRB index of industrial production.
4. Compound growth rates and stability measures.
5. Comparisons between individual companies and industry performance.
6. Financial and market information for up to five companies on a single report.

FEATURES -

- Provides the analyst with timely information that has previously been impractical to obtain consistently.
- Frees the analyst for more creative tasks by eliminating much of the clerical work he must now perform.
- Allows an analyst to follow closely more companies than is now practical.
- Selects companies which are worthy of further study based on the specified criteria.
- Separate programs allow the analyst to examine only those reports which interest him.

The financial analysis program consists of seven separate 1401 Autocoder programs, six of which may be run independently and are under the control of one executive program. Control cards indicate the program requested and the companies and industries to be analyzed. As many companies as desired may be processed in a single run.

PROGRAMMING SYSTEMS - 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 with four Magnetic Tape units... 1403 Printer MDL 2... 1402 Card Read Punch... Advanced programming, High-Low-Equal Compare, Multiply-Divide, Sense, Switches, Additional Print Control.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up. Application Description Manual. Operation Manual.
MACHINE READABLE - Object Decks, Source Deck, and Assembly Listings.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401FI05X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 7/800	22 24
OPTIONAL	none	none		01 01 none

1401-FO-050
FORTRAN

DESCRIPTION - 1401 FORTRAN makes available to 1401 DPS installations the established FORTRAN programming language, the principal use of which is to describe solutions to scientific and engineering problems. The FORTRAN compiler translates such descriptions, or source programs, into 1401 machine language. Use of the FORTRAN system will produce higher program writing efficiency, i.e., more reliable programs produced more quickly. In addition, because of the machine-independence of the FORTRAN language, programs written in FORTRAN and tested on the 1401 can be applied directly and quickly to any other machine for which a FORTRAN system is available. 1401 FORTRAN features are 1. Fast compiling speed. 2. Operability on a 1401 Card System (no tape required). 3. (LOAD-and-GO) System organization. 4. Variable precision arithmetic. 5. Extensive diagnostic ability.

The users FORTRAN program statements, punched on cards, are entered into the 1401 DPS, followed by the FORTRAN compiler, which may be on cards or tape. The source program is translated by the compiler into the equivalent 1401 machine language program in core storage, ready for execution. The program may be punched out in condensed form prior to execution. A listing is provided during the compilation which includes the source program statements, diagnostic information relating to the intelligibility and consistency of the source program, and other useful information comprising a record of the compilation.

MINIMUM SYSTEM REQUIREMENTS - For compilation of source programs 1 8000 or more Core storage positions advanced programming feature High-Low-Equal Compare feature Multiply-Divide feature 1 1402 Card Read/Punch 1 1403 Printer (Model 1 or 2) one Tape unit may be used if installed to store and load the 1401 FORTRAN compiler. For a 1403 listing

of the object program during various stages of the compilation Sense Switches may be used, if installed. For execution of compiled programs 1 8000 Core storage positions Advanced Programming feature High-Low-Equal Compare feature Multiply-Divide feature 1 1402 Card Read/Punch 1 1403 Printer (Model 1 or 2)*, Tape units only as required for Input and Output data Sense Switches - may be used if installed.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up. Documentation of 1401 FORTRAN. Operating Instructions. Program Flow-Charts.
MACHINE READABLE - Compiler and sample problem. Utility 1 - for preparing a compiler tape. Utility 2 - for adding library functions to the system where Autocoder is required. FORTRAN system symbolic listings.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.
MACHINE READABLE - Contains everything available (on tape mentioned above) in card form.

ORDERING INFORMATION: PROGRAM NUMBER 1401FO050

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 7/800	22 24
OPTIONAL	none	CARDS	15	none

1401-FO-051

1401/40/60 FORTRAN IV DISK

DESCRIPTION - FORTRAN IV for IBM 1401, 1440 and 1460, broadens IBM's FORTRAN language. It provides a FORTRAN IV level language for the 1401/1460 and the first FORTRAN system for the 1440 user. With the powerful FORTRAN IV, 1401, 1440 and 1460 users can easily combine both business and scientific data processing in one low-cost system. Available as a separate program is a tape resident system (NO. 1401-FO-051) for 1401/60 System.

MINIMUM SYSTEM REQUIREMENTS - 12K 1401... one 1311 Disk Storage Drive... one 1402 Card Read/Punch... one 1403 Printer Model 2... Advanced Programming feature.

OR

A 12K 1440... one 1301 Disk Storage, or one 1311 Disk Storage Drive... one 1442 Card Reader... one 1443 Printer... Indexing and Store Address Register feature.

OR

A 12K 1460... one 1301 Disk Storage, or one 1311 Disk Storage Drive... one 1402 Card Read/Punch... one 1403 Printer Model 2... Indexing and Store Address Register feature.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up. Language Specifications. Program Specifications. Operating Procedures Manual.
MACHINE READABLE - The System Control Program, FORTRAN Compiler, the Relocatable Loader, FORTRAN Subroutine Library, Card Bootstraps, Sample source program and various system generation utilities needed to build and operate a disk-resident system.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Source Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401FO051

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-FO-052

1401/60 FORTRAN IV TAPE

DESCRIPTION - FORTRAN IV for IBM 1401, 1440 and 1460, broadens IBM's FORTRAN language. It provides a FORTRAN IV level language for the 1401/1460 and the first FORTRAN system for the 1440 user. With the powerful FORTRAN IV, 1401, 1440 and 1460 users can easily combine both business and scientific data processing in one low-cost system. Available as a separate program is a Disk Resident system (NO. 1401-FO-051) for 1401/40/60 Systems.

MINIMUM SYSTEM REQUIREMENTS - A 12K 1401 or 1460 System with... 1402 Card Read/Punch... 1403 Printer Model 2... Four 7330 or 729 Magnetic Tape units. On the 1401 - High-Low-Equal and Advanced Programming... On the 1460 - Indexing and Store Address Register.

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BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up, Language Specifications, Program Specifications, and Operating Procedures Manual.

MACHINE READABLE - A tape loader program which will punch the sample program deck. The card boot deck, the system control, FORTRAN compiler, the FORTRAN loader decks and the FORTRAN subroutine library decks.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Source Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401FO052

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	DTR	7/556 7/800	22 24	none none
OPTIONAL	none	none	none	none	none

1401-FO-702

FORTRAN II LANGUAGE CONVERSION PROGRAM

DESCRIPTION - The FORTRAN II Language Conversion program aids in the transition to System/360 by converting acceptable current FORTRAN II source programs into FORTRAN IV source programs for the System/360. The FORTRAN II LCP accepts as input-

1401 FORTRAN,
1410 FORTRAN II,
1620 FORTRAN,
1620 FORTRAN II,
1620 FORTRAN with format,
1620 Monitor I FORTRAN II-D,
1620 Monitor II FORTRAN II-D,
1620 FORTRAN II for automatic floating point,
7070 Series FORTRAN (basic and full),
7070 FOS FORTRAN,
0705 FORTRAN,
7080 Processor FORTRAN and
7090/7094 FORTRAN II.

The source programs can be converted to any of the following levels of System/360 FORTRAN --

- Operating System/360 FORTRAN IV (level H).
- Operating System/360 FORTRAN IV (E level subset).
- System/360 Basic Programming Support FORTRAN IV (tape).
- System 360 Basic Programming Support FORTRAN IV (card).
- Basic Operating System/360 with DOS/360.
- Basic Operating System/360 with TOS/360.

FEATURES - The FORTRAN LCP has -

- Card or tape input -- both the LCP and the FORTRAN II source programs can be read from either cards or tape.
- Single or stacked program conversion -- a single source program can be processed from one of the three tape units needed in a minimum configuration. Stacked programs can be processed if more than three tape units are used.
- Card-code conversion for dual BCD characters -- a control card option provides automatic conversion from BCD input code to EBCDIC output code, or vice versa. In this way, the LCP can convert the dual BCD characters, i.e., two characters with the same card code, into the proper System/360 card codes. The dual characters are - plus and ampersand... equal sign and pound sign... apostrophe and the commercial... left parenthesis and percent sign... right parenthesis and the lozenge.
- Documented listing -- the LCP provides a listing of the converted program. This listing contains message codes and tables that document conversion actions and facilitate analysis of the converted program. A listing of the source program is optional.
- Optional card output -- when specified, the LCP produces a punched-card deck that contains the converted program.
- Optional output on tape -- the user can specify that printed and, or punched output are to be recorded on tape.
- Replacement of tape refer. -- The user can specify that tape constants in I/O statements are to be replaced by a variable name or another tape constant.
- Resolution of common-equivalence interaction -- the user can specify that variables in common statements are to be reordered so that a System/360 Compiler will allocate common storage and establish equivalencies in the same manner as the current FORTRAN II compiler.

The FORTRAN II LCP will reduce the amount of reprogramming necessary to convert current FORTRAN II programs into System/360 FORTRAN IV programs. Use of the LCP will reduce time and money spent on recoding, clerical activities, and program debugging. Although the savings to be realized for a single program may be as great as 65 per cent, the overall savings to a customer must be determined on an individual basis.

MINIMUM SYSTEM REQUIREMENTS - 1 1401 Processing Unit (any model with 8000 or more storage positions). Advance Programming Feature, High Low Equal Compare Feature, sense switches, 1 1402 Card Readpunch, 1 1403 Printer (Model 2), 3 tape units.

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BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - System Manual.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401FO702

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	DTR	7/556 7/800	22 24	none none
OPTIONAL	none	MT	7/556 7/800	22 24	01 01

1401-IP-01X

AUTO RATING FOR FIRE AND CASUALTY COMPANIES

DESCRIPTION - The Auto Rating program is a series of subroutines designed to perform the rating calculations involved in issuing a policy covering private passenger automobiles and pickup trucks. Provision is made for calculating such coverages with the limits of liability and deductibles as are published by the national rating organizations. By using a modular programming technique, it is easily adapted to individual requirements. Base rates and factors are utilized, which reduces core storage requirements. Use of tables and a special table lookup technique makes maintenance, caused by rate changes, much simpler. The user selects the routines for the desired coverages, discounts, deviations, etc., combines these with his own I/O routines - adds the desired base rate tables - and processes, using either SPS or autocoder, to produce an object deck. Normally, a separate program is produced for each state, although usually the only change is the base rate tables. Routines are supplied for the states that vary from standard formulas.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 System with Advanced Programming and High-Low-Equal Compare features - 1402 and 1403 MPL 3. Storage requirements vary with system considerations such as coverages, size of state tables, users deviations, and I/O requirements. The normal requirement for rating, policy issue, and statistical coding is 8000 positions of core storage.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Preliminary Reference Manual. Program Write-up. Program Listings.
MACHINE READABLE - SPS Source Program Deck. Object Program Deck. Sample Program Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401IPO1X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-IP-02X

GENERAL DISTRIBUTION PROGRAM

DESCRIPTION - The General Distribution Program for a Card 1401 Data Processing System accomplishes summary reporting without resequencing an input card file. The 1401 General Distribution Program fulfills its purpose by building a table of extracted control fields and respective algebraically added amounts. Specified fields on specified cards can be summarized for selective report writing. When an input file has been exhausted, output cards are punched reflecting the data amassed in the table. Output cards are then used for summary report writing either in the sequence produced or any other sorted sequence desired. If table space is exhausted before the end of input file, an extracted item table is punched out. Overflow items are processed upon completion of the initial run.

In addition to property and casualty insurance for which the program was developed, there are numerous imaginative uses for the General Distribution Program including multiple summarization and selective file searching. A significant flexibility is built into this program giving the user multiple control field designation with a range from 1 to 72 accumulators for each control field in the table. Report writing becomes a relatively simple use of sorted output with no alteration to input file sequence.

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MINIMUM SYSTEM REQUIREMENTS - A 4K, 8K, or 16K 1401 with High-Low-Equal Compare, Advanced Programming, a 1402 Card Read Punch, and a 1403 Printer.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up, Reference Manual, including program listings.
MACHINE READABLE - Program Deck, Sample Problem Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401IP02X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-IF-03X

GENERAL DISTRIBUTION PROGRAM FOR A TAPE 1401

DESCRIPTION - The General Distribution Program for a Tape 1401 Data Processing System (1401-IF-03X) provides file search or summary ability from a tape file without pre-sorting. It is a "LOAD and GO" type program which is activated by simple control cards. For most jobs only four control cards need to be punched. Thus, from random tape records, either blocked or single, it will extract control fields and amount fields, summarize, sequence, and write out these extracted summarized records. The program was developed especially for the property and casualty industry, but it will have wide application in all industries.

The program employs the techniques of building tables in core storage, doing an internal sort, and a 3 tape merge.

Detailed instructions for punching the control cards are given in the reference manual. These cards are placed behind the program deck, the input reel mounted on a tape drive, and the job is ready to run.

MINIMUM SYSTEM REQUIREMENTS - 4K, 8K, or 16K 1401 with High-Low-Equal Compare, Advanced Programming, and Sense Switches. A 1402 Card Read Punch, 1403 Printer, and 3 Tape Drives.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up. Reference Material, Flowcharts, Program Listings.
MACHINE READABLE - Magnetic tape containing - Sample Problem Input... Source Deck in Card Image... Object Deck in Core Image.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401IF03X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 7/800	22 24
OPTIONAL	none	MT	7/556 7/800	22 24

1401-IF-05X

HOMEOWNERS RATING PROGRAM

DESCRIPTION - The IBM 1401 Homeowners Rating Program is a series of subroutines which provides a valuable tool to insurance companies that desire to rate new or renewal policies. It requires as input those factors from which an underwriter would rate the policy. The program has provision for allowing credit for existing insurance, increased or decreased limits, non-standard coverage amounts (interpolation), and rating of many standard endorsements.

Features -
- Reduces clerical effort in the rating, coding, and policy typing areas.
- Flexible, modular program allowing modifications and ease of adaptation.
- Provides an important step in the implementation of an insurance information system.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 (some states require 12K) with Advanced Programming and High-Low-Equal Compare features. Input/Output devices are determined by users requirements. Use of random access (1405 or 1311) can reduce storage requirements to 4K. Rating in form sequence can also appreciably reduce core storage requirements.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Reference Manual (including tables and program listings).

CONTINUED FROM PRIOR COLUMN

MACHINE READABLE - Cards - Source Deck, Object Deck, Sample Problem Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401IP05X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-IL-01X

THE 62 CFO PROGRAM (CONSOLIDATED FUNCTIONS ORDINARY)

DESCRIPTION - This series of fourteen programs is designed to compute net premiums and terminal reserves for most plans of insurance. Compute adjusted premiums and minimum cash values for those plans requiring such values. Store computed results on master rate tapes for use in the computation of legal reserves or non-forfeiture benefits. Print the computed results in report form for visual reference and other purposes. Minimum input is required for most plans of insurance. (A whole life plan requires twenty-six columns of data.) 62 CFO terminal reserve, net premiums, and minimum cash value programs provide extreme flexibility in the calculation of terminal reserves and minimum cash values. They have been used to duplicate correctly the values for hundreds of plans or insurance using a wide variety of benefits, mortality tables, interest rates, and methods of valuation. Use of these programs will provide an economic means of preparing consolidated files for conversion to 62 CFO daily cycle which will be available in the third quarter of 1963. Each plan of insurance must be described using standard forms. The input data is punched from these forms and processed through the appropriate CFO programs. Initial output is in the form of magnetic tape containing the structure of the plan, the premiums, and related policy values. A print program is provided which generates descriptive information and prepares a complete report on each plan of insurance.

PROGRAMMING SYSTEMS - This series of programs was written and assembled using 1401 SPs.

MINIMUM SYSTEM REQUIREMENTS - 12K 1401 Tape System with, 1402 Card Read Punch MDL 1, 1403 Printer MDL 2, four Tape Drives, Advanced Programming, Expanded Print Edit, High-Low-Equal Compare, Multiply-Divide, Print Control Additional, and Sense Switches special features.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up. 62 CFO Volumes I and II.
MACHINE READABLE - Magnetic Tape containing program cards... Mortality tables... Selected twenty-pay life premiums... Selected adjusted life premiums. Card Decks - Tape-to-Card Program Deck... Sample Problem Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401ILO1X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 7/800	22 24
OPTIONAL	none	none	none	none

1401-IL-02X

CONSOLIDATED FUNCTIONS ORDINARY DAILY CYCLE PROGRAMS

DESCRIPTION - The 62 Daily Cycle Programs, 1401-IL-02X, are 31 programs with accompanying actuarial tables designed to meet data processing requirements for ordinary life insurance companies in the following areas - (1) Input preparation to the daily cycle (balance, sort, edit)... (2) Daily cycle processing for all policies contained in the master file (file maintenance, accounting, commission, billing, loan or nonforfeiture calculations and terminations)... (3) Preparation of daily accounting journals... (4) Periodic file updating runs (dividends, cash values, and renewable term premiums). The total system provides for automatic processing of all scheduled transactions and for requested processing of all non-scheduled transactions involving ordinary life contracts. Exceptions will occur only when the policy is issued under extremely unusual arrangements. The system is based upon consolidation of all policy information into a single magnetic tape record and integrates all processing functions within a single computer system. Processing commences with the first premium payment and continues through maturity, expiry, or any other form of termination. Accounting and commission records as well as policy exhibit transactions are generated automatically and brought forward under program control for month-end processing or for valuation purposes.

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FEATURES- /62 CFO Daily Cycle programs will provide life insurance companies using this system with exceptional operational efficiency. The major features of this system are - (1) Daily analysis of all policy records for any form of activity... (2) continuous control of the policy master file... (3) Policy information for accounting journals, commission statements, notification, policyholder service and valuation reports from a single source... (4) Organization of output from the system into meaningful printed reports.

USE - /62 CFO Daily Cycle assumes the development of a complete policy master file by each user. To help in the data gathering necessary for a consolidated file, programs are available (1401-IL-01X) to generate reserve, net premium and minimum cash value rate tapes. Rate tape philosophy has been incorporated into the overall system to facilitate the handling of any type of updating required and in many cases eliminate the necessity for data gathering.

User Responsibility includes the following major areas - (1) Gathering all data necessary to establish a policy master record... (2) Preparation of conversion programs which will convert gathered data into an acceptable format... (3) Preparation of new business programs which will convert new issue data into an acceptable format... (4) Preparation of a print program for premium and anniversary notices... (5) Preparation of cash value and dividend rate tapes, renewable term premium rate cards, agents control records, and commission tables.

Daily Cycle Programs may be used as they are or with slight modification to facilitate auditing newly converted policy records. Dividend, cash value and renewable term updating programs can also be used as conversion programs. Daily Cycle Programs will operate upon any properly converted block of policies on either a daily or periodic schedule.

MINIMUM SYSTEM REQUIREMENTS - 12K 1401 System with 1402 Card Read Punch MDL 1... 1403 Printer MDL 2... five Tape Drives... Advanced Programming, Expanded Print Edit, High-Low-Equal Compare, Multiply-Divide, Print Control additional, and Sense Switches special features.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... /62 CFO Policy Master Record Code Book (Volume 0) and Volumes 3 through 11.

MACHINE READABLE - Card Decks - Object deck designed to add or alter programs on the /62 CFO program tape. Magnetic tape - one reel containing all decks in source program card form... and mortality tables.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401IL02X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 7/800	22 24
				01 01
OPTIONAL	none	none		none

1401-IL-03X

CONSOLIDATED FUNCTIONS ORDINARY VALUATION PROGRAM

DESCRIPTION - The 62 CFO (consolidated functions ordinary) valuation programs, 1401-IL-03X, are a series of 15 programs designed to operate exclusively in the area of valuation and in the preparation of the policy exhibit for ordinary life insurance companies. All of the programs in this series assume a standard 62 CFO record format. Processing may be performed on a standard annual basis or at any more frequently desired cycle such as semiannually, quarterly, or monthly. All information furnished by these programs comes exclusively from paid for business in the file on the valuation date and does not pertain in any way to supplementary files. Policy exhibit and reserves released are based on activity to the policy master file during the reporting period.

FEATURES - The valuation procedures were designed to conform to standard valuation practices and to furnish the maximum amount of information available from a current consolidated policy master file. All reserves and net premiums are stored on machine-generated rate tapes and are associated with each policy record only at the time of valuation, thus eliminating the need to store excessive valuation information as a part of each policy record. The major features of the overall approach are -

- (1) Using the daily cycle programs (1401-IL-02X), control of the policy master file is maintained on a current daily basis for the number of policies, impairments, all forms of deposits, and suspense items, thus eliminating the need for preparatory work prior to the beginning of a valuation.
- (2) All elements other than legal reserves are carried as ledger items. Each detail item needed for a valuation is extracted from the policy master file on an individual basis for reporting purposes, allowing com-

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plete flexibility in reporting technique.

- (3) Reserves are computed for premium paying policies, all forms of paid-up policies, and for each of the various types of supplemental benefits and extra life premiums.
- (4) Deferred and uncollected premiums are computed on both a gross and net basis. In addition, gross advance premiums are calculated.
- (5) In-force amounts of the entire master policy file are computed, maintained, and reported as a part of the valuation procedure.
- (6) Reports are available as a detail listing of each item, by valuation cell, by plan, and by method of valuation, mortality table, and interest rate.

USE - Each valuation may be taken on either a partial basis or a complete basis as of any month end. Minimum results will involve - (1) Loan balances with either accrued or unearned interest adjustments... (2) Amounts on deposit with accrued interest... (3) Suspense totals of unapplied cash or returned items... (4) Life reserves and corresponding premium adjustments... (5) Policy exhibit changes within the reporting period... (6) Summary reports of each of the above items.

Additional results from a full valuation will include all of the above as well as - (1) Deficient reserves... (2) Totals for annual statement page 15 and state policy exhibits, and a detail listing of changes... (3) Reserves released and tabular net premium adjustments... (4) Either summary or detail reports of all valuation items.

MINIMUM SYSTEM REQUIREMENTS - 12K 1401 System with... 1402 Card Read Punch MDL 1... 1403 Printer MDL 2... five Tape Drives... Advanced Programming, Expanded Print Edit, High-Low-Equal Compare, Multiply, Divide, Print Control Additional, and Sense Switches special features.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... /62 CFO Volumes 12 through 16.

MACHINE READABLE - Card Decks - Object deck designed to add or alter programs on the /62 CFO Program Tape. Magnetic Tape - one reel containing source program cards for the 15 component programs.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401IL03X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 7/800	22 24
				01 01
OPTIONAL	none	none		none

1401-IO-012

COMMUNICATIONS IOCS (1026/DDC) FOR THE 1401/1460

DESCRIPTION - This IOCS facilitates the generation of programs to control 1026 communication with 1030, 1050, and 1060. It is compatible with the 1401/1460-1440 communications IOCS for the 1448, thus requiring a minimum of re-programming for growth from 1026 transmission control units to a 1448. Applications can range from single inquiries to sophisticated real-time data operations. Its functions are -

- Control of the 1447 console
- User control of polling, addressing and receiving
- Error detection
- Operation with existing IBM programs for DDC
- Time of day recording with the 1032 digital time unit

The 1401/1460 communications IOCS (1026/DDC) will operate with point-to-point or multi-point common carrier leased or customer-owned communication lines. In addition, the programs will support the automatic answering feature and the automatic calling feature.

PROGRAMMING SYSTEMS - Communications IOCS (1026/DDC) consist of a set of library routines which, when called for in an Autocoder source program by macro instructions, are selected, tailored, and included in the object program. The routines perform the functions necessary to handle basic input/output files, to transmit information to and receive information from remote locations and remote processors, and to provide linkage to users programs. The specific routines generated at assembly time depend largely on the particular specifications contained in the user's source programs.

The library routines for this IOCS is to be placed in the Autocoder System through a library run, using Autocoder (on disk) for 1401, 1440, and 1460, No. 1401-AU-008.

MINIMUM SYSTEM REQUIREMENTS - For program assembly - same as those for the assembly of any program using 1401/1440/1460 Autocoder (on disk) program. The Autocoder

CONTINUED FROM PRIOR PAGE

(on disk) program should be ordered concurrently unless otherwise available.

For object programs - a 4K 1401 with... Advanced Programming and High-Low-Equal Compare features... 1409 Console Auxiliary MDL 2... 1026 Transmission Control Unit attachment feature... 1026 Transmission Control Units (one for each communication line)... I/O units (as required).

OR

An 8K 1460 with... Indexing and store address register feature... 1447 Console MDL 1... 1026 Transmission Control Unit attachment feature... 1026 Transmission Control units (one for each communication line)... I/O units (as required).

In addition - direct Data Channel feature... Interrupt... 1447 Console MDL 2 for 1440 and 1460, MDL 3 for 1401... 1032 Digital Time unit may be present, as desired.

NOTE - Use of DDC with 1026 should specify the interrupt feature (available on 1401 only as RPG) for optimum performance.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up. Operations Instructions.
MACHINE READABLE - Card Deck - Library deck of macros.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Program Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401I0012

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-IO-040

TAPE READING WRITING

DESCRIPTION - Purpose to provide 1401 user's with closed subroutines which are consistent with the applied programming tape standards for tape reading and writing. The subroutines consist of a tape read/write routine, a read routine and a write routine. Included are (1) Error checking procedures (2) Noise record procedures (3) Dumping of unreadable records (4) Statistics concerning retries.

MINIMUM SYSTEM REQUIREMENTS - Are 4K Tape System (Advanced Programming features) necessary only with 1401 Read/Write Tape routine.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Listings... Flowcharts... Program Write-up.
MACHINE READABLE - Card Deck - Condensed Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401I0040

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-IO-065

INPUT/OUTPUT CONTROL SYSTEM

DESCRIPTION - Purpose the 1401 IOCS consists of a set of library routines which, when called for in a 1401 Autocoder source program by MACRO instructions, are selected and tailored and included in the object program. These routines perform I/O functions and provide linkage to the users object program. The specific statements generated at assembly time depend completely on the particular specifications contained in the user's source program. Use of program the 1401 IOCS library routines are to be placed in the 1401 Autocoder System (version 3 or later version) through a librarian run.

MINIMUM SYSTEM REQUIREMENTS - The 1401 IOCS will perform the I/O functions and associated housekeeping for Tape, Card Reader, Card Punch and Printer. The object machine must have, in addition to any of the above I/O units, Advanced Programming features and the High-Low-Equal Compare feature. The amount of core storage required varies widely from program to program and must be determined at assembly time.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Documentation of the 1401 IOCS system including language specifications... Flowcharts... Sample problem.
MACHINE READABLE - Magnetic tape - 1401 Model statements in card image form.

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OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401I0065

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	HT	7/556 7/800	22 24	01 01
OPTIONAL	none	none			none

1401-IO-068

IBM 1401/1460 IOCS (ON DISK)

DESCRIPTION - The IBM 1401/1460 IOCS, (on disk), Version 2, No. 1401-IO-068, (previously named 1401/1311 IOCS) is available to be used on 1401 and 1460 Systems with 1401/1440/1460 Autocoder (on disk), No. 1401-AU-008.

The new version consists of a set of library routines which, when called by by MACRO instructions are selected, tailored and included in the object program. For 1401 and 1460 Systems, these routines perform I/O functions and housekeeping associated with 1311 Disk Storage, 1301 Disk Storage, Magnetic Tape, Card Reader, Card Punch, and Printer. They also provide linkage to the user's object program. The specific statements generated at assembly time depend completely on the particular specifications contained in the user's source program. The 1401/1460 IOCS library routines are to be placed in the 1401/1440/1460 Autocoder (on disk) System through a library run.

MINIMUM SYSTEM REQUIREMENTS - For assembly -- programs incorporating I/O MACRO instructions for 1401 and 1460 Systems may be assembled on - a 4K 1401 System with... one 1311 Disk Storage Drive... 1402 Card Read Punch... 1403 Printer Mdl 2 or 1404 Printer... High-Low-Equal Compare,

OR

An 8K 1460 System with... one 1311 Disk Storage Drive or one Disk Storage Array... 1402 Card Read Punch... one 1403 Printer

OR

A 4K 1440 System with... one 1311 Disk Storage Drive or one 1301 Disk Storage Array... 1442 Card Read Punch Mdl 1 or 2 or 1442 Card Reader Mdl 4 and 1444 Card Punch... 1443 Printer.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up, Library listings... Operating Procedures.
MACHINE READABLE - Cards - Library Card Deck... Sample Source Program for test purposes.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401I0068

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-IO-074

TAPE PUNCH ROUTINES FOR THE 1401-1012

DESCRIPTION - The proper use of these routines will relieve the user of the responsibility of coding the necessary instructions to control 1401-1012 tape punching, error checking, and error correction. The routines are designed to be used as a part of the 1401 Autocoder library. Once part of this library, they may be included in any object program through the use of the appropriate macro-instructions.

MINIMUM SYSTEM REQUIREMENTS - For assembly of source programs - 1401 processing unit (any model with 4000 or more core storage positions) four IBM 729 II, 729 IV, or 7330 magnetic tape units 1403 printer, model 2 1402 Card Read-Punch Advanced Programming feature High-Low-Equal Compare feature Sense Switches. For execution of object programs - IBM 1401 Processing Unit, IBM 1012 Tape Punch, tape units-only as required for other input or output data, IBM 1402 Card Read-Punch-only as required for other input or output data.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up. 1401-1012 tape punch routines. DP processing system bulletin.
MACHINE READABLE - Tape punch routines deck (condensed).

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401I0074

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	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-IO-077

IBM INPUT/OUTPUT CONTROL PROGRAM (IOCP) FOR IBM
1401/1440/1460 WITH THE IBM 1285 OPTICAL READER

DESCRIPTION - Provides support for source document entry applications that use one 1285 Optical Reader attached to a 1401, 1440, or 1460. These subroutines are designed to eliminate the user's need to program logical details associated with 1285 journal roll processing. Record mark and work mark definition of the records in core allows the user to easily transfer them to an output device. IOCP performs these functions -- Reads header information entered from the keyboard... Reads lines of data from a journal roll into a specific area of core... Tests for party errors in reading into core storage... Tests for valid data line length... Makes the necessary branches to the users routines for processing and providing output.

The 1401/1440/1460 - 1285 IOCP consists of the following components - Autocoder symbolic deck... Basic Autocoder symbolic deck. The user decides which of these two decks he desires to use. The deck which is chosen and the user provided program, once assembled, are loaded into main storage from cards. This combined deck (1285 IOCP and the user's program) allows the processing of data read in from the journal roll and effects the reading and writing of other I/O devices which the user may require in his 1285 applications. In a 1285 Optical Reader configuration, throughput will vary with user processing time requirements and other I/O operations. However, the IOCP is designed to make possible the maximum 1285 Optical Reader Throughput. Storage considerations by the user should include 1.2K positions for the IOCP.

MINIMUM SYSTEM REQUIREMENTS - For each System (1401, 1440, and 1460) the requirements for assembling an Autocoder or basic Autocoder program that uses IOCP may be found in the appropriate Autocoder or Basic Autocoder specification publication. For execution -- A 4K 1401, 1440, or an 8K 1460 with one 1402 or 1442 Card Read Punch... One 1285 Optical Reader... Serial I/O Adapter... Output devices specified by the user.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program material list... Listings of Autocoder and Basic Autocoder symbolic decks... Flowcharts... I/O Control Program Specifications and Operating Procedures... IBM 1401/1440/1460 with IBM 1285 Optical Reader Reference Publication.
MACHINE READABLE - Autocoder symbolic code... Basic Autocoder symbolic code.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401IO077

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-IO-152

7040/44-1401 INPUT/OUTPUT CONTROL PROGRAM

DESCRIPTION - This 1401 program permits the I/O devices on a 1401 on channel a of a 7040/7044 to be used as if they were on the 7040/7044. This program accepts control information and data from the 7040/7044 8K or 16/32K. Operating systems and performs on-line tape, basic card read-punch, and printer functions. This program is read into the 1401 by its 1402 Card Reader and operates in conjunction with the 7040/7044 8K or 16/32K IOCS.

MINIMUM SYSTEM REQUIREMENTS - A 1401 Data Processing System used with the 7040/7044-1401 I/O control program must be equipped with the serial I/O adapter (feature code No. 7080) and the 7040/7044 must likewise have a 1401 adapter No. 1034. The 1401 must have at least 4000 positions of core storage, the column binary feature No. 1990, a 1402 card Read-Punch, and the Advanced Programming feature.

Note: Distribution of this program is restricted to users of the 7040/7044 Operating System, Program Number 7040-PR-150.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Listings... Flowcharts.
MACHINE READABLE - Object Program Deck... Symbolic Input Deck.

OPTIONAL PROGRAM PACKAGE - None.

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ORDERING INFORMATION: PROGRAM NUMBER 1401IO152

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-LM-007

CARD SYSTEM SUBROUTINES

DESCRIPTION - To provide a few frequently used arithmetic subroutines. This 1401 program provides multiply I (for storage space economy) multiply II (for speed economy) divide dozens-to-units conversion units-to-dozens conversion note closed subroutine linkage instructions provided.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Listings... Flowcharts
MACHINE READABLE - Condensed deck

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401LM007

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-LM-010

IBM 1401/60 TIMING PROGRAM FOR DOS/360 AND TOS/360 TAPE
SORT/MERGE PROGRAM

DESCRIPTION - This program provides timing estimates for DOS and TOS tape sort/merge program when operating on a System/360 Model 2030 or Model 2040 with a maximum of 256K bytes of main storage, a channel configuration of either one multiplexor channel, one selector channel, or two selector channels, connected to a 2404 Magnetic Tape Unit and Control, a 2804 Tape Control, or a 2816 Switching Unit, and using 2401, 2402, 2403, or 2404 Tape Drives. Timing estimates for the Model 2030 assume a 1.5 microsecond cycle time. The program will provide one multiplexor, one selector or two selector channel sort timing estimates for sorting fixed length records with a single control field. Timings can be obtained for specific record volumes designated by the user, or for a spread of record volumes predetermined by the timing program. In addition, main storage utilization and maximum file size are included in the program output. Control cards are used to supply a description of the system and record/file configuration for which estimates are required. Multiple record/file cards may be used with one system card to estimate times for many file configurations on the same system. Or, many systems cards may be used with one record/file card to estimate the time for sorting one file on several different systems. Multiple control card sets can be stacked to provide multiple estimates at the same time.

MINIMUM SYSTEM REQUIREMENTS - A 16K 1401 System with... one 1402 Card Read Punch Model 1... one 1403 Model 2 or 1404 Printer... High/Low/Equal Compare feature... Multiply/Divide feature... Sense Switches... Advanced Programming feature.

OR

A 16K 1460 system with... one 1402 Card Read Punch Model 3... one 1403 Printer Model 2... Multiply-Divide feature... Indexing and Store Address Register feature... Sense Switches.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Material List... 1401/60 Timing Program for Basic Operating System/360 tape Sort/Merge program (16K) Manual, C24-3439... Tape Sort/Merge (16K) Specifications Manual, C24-3438.
MACHINE READABLE - Object code.

OPTIONAL PROGRAM PACKAGE - None

ORDERING INFORMATION: PROGRAM NUMBER 1401LM010

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-LM-011

1401/1460 TIMING PROGRAM FOR IBM BASIC OPERATING
SYSTEM/360 DISK SORT/MERGE PROGRAM (16K)

DESCRIPTION - The IBM 1401/1460 Timing Program provides timing estimates for the Disk Operating System/360 Disk Sort/Merge program (16K disk) when operating on a System/360 Model 2030 or Model 2040 with a maximum of 256 K bytes

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of main storage, a channel configuration of one multiplexor or selector channel and up to 8 IBM 2311 Disk Storage Drives. Timing estimates for the Model 2030 assume a 1.5 microsecond cycle time. This program will provide sort timing estimates for sorting fixed length records with a single control field. Timings can be obtained for specific record volumes designated by the user, or for a spread of record volumes predetermined by the timing program. In addition, main storage utilization and maximum file size are included in the program output. Control cards are used to supply a description of the computing system, file configuration and record definition for which estimates are required. Multiple record/file cards may be used with one system definer card to estimate times for many file configurations on the same system. Also, many system definer cards may be used with one record/file card to estimate the time for sorting one file on several different systems. Multiple control card sets can be stacked to provide multiple estimates at the same time.

MINIMUM SYSTEM REQUIREMENTS - A 16K 1401 system with... a 1402 Card Read Punch Model 1... a 1403 Model 2, or 1404 Printer... High-Low-Equal Compare feature... Advanced Programming feature... Multiply-Divide feature... Sense Switches...

OR

A 16K 1460 system with... a 1402 Card Read Punch Model 3... A 1403 Model 2 Printer... Multiply-Divide feature... Indexing and Store Address Register features... Sense Switches.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Material List... Timing Program Manual, C24-3445... Disk Operating System Sort/Merge Manual, C24-3444.
MACHINE READABLE - Object code.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401LM011

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-LM-012

1401/1460 TIMING PROGRAM FOR SYSTEM/360 DISK AND TAPE OPERATING SYSTEMS TAPE SORT/MERGE PROGRAMS

DESCRIPTION - 1401/1460 Timing Program for System/360 Disk and Tape Operating Systems tape sort/merge programs provides timing estimates for DOS/360 and TOS/360 sort/merge programs using 2415 Tape Drives with either 800 or 1600 bytes per inch density on System/360 Models 30 and 40 with a maximum of 256K main storage, the multiplexer channel, and either one or two selector channels. This program provides times for sorting fixed-length records with a single ten character control field in fixed-length blocks. Timings can be obtained for specific record volumes designated by the user or for a spread of record volumes. Control cards supply a description of the system and of the files to be sorted. Timing estimates are within 15 per cent of actual sorting times.

MINIMUM SYSTEM REQUIREMENTS - A 16K 1401 system with one 1402 Card Read Punch Model 1, one 1403 Model 2 or 1404 Printer, High-Low-Equal Compare feature, Multiply-Divide feature, Sense Switches, and Advanced Programming feature...

OR

A 16K 1460 System with one 1402 Card Read Punch Model 3, one 1403 Printer Model 2, Multiply-Divide feature, Indexing and Store Address Register feature, and Sense Switches.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... Timing Program Manual, C24-3439
MACHINE READABLE - Object Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401LM012

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-LM-060

SORT 7 TIMING PROGRAM FOR 1401/1460

DESCRIPTION - The Sort 7 Timing Program (No. 1401-LM-060) is a generalized program used to obtain timing estimates for record files to be sorted using 1401 Sort 7 (No. 1401-

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SM-060) on 1401 or 1460 systems. The timing program runs on a 16K 1401 or 1460.
FEATURES - This program will give timing estimates for fixed length records with one control field. Timings can be obtained either for particular record volumes specified by the user, or for a spread of record volumes predetermined in the timing program. Control cards supply the Sort 7 Timing Program with a description of the file(s) for which estimates are required. More than one set of control cards can be placed in the program deck if additional estimates are desired.

MINIMUM SYSTEM REQUIREMENTS - A 16K 1401 system with... 1402 Card Read Punch... 1403 Printer Mdl 2 or 1404 Printer... High-Low-Equal Compare, Advanced Programming, and Multiply-Divide features.

OR

A 16K 1460 system with... 1402 Card Read Punch... one 1403 Printer... Multiply-Divide and Indexing and Store Address Register features.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... 80x80 Listing of the Sort 7 Card Deck... Specifications... Operating Procedures.
MACHINE READABLE - Program Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401LM060

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-LM-062

1401/1460 SORT 5 AND 6 TIMING PROGRAM

DESCRIPTION - The sort 5 and 6 timing program, 1401-LM-062, is an object program for use on an IBM 1401/1460 with 16K core storage. This program gives timing estimates for fixed length records with up to ten control data fields to be sorted by the sort 5 and 6 programs. Timings can either be required for a specific record volume, or can be calculated for a predetermined set of record volumes. Control cards supply the Sort 5 and 6 Timing program with a description of the file(s) to be sorted.

MINIMUM SYSTEM REQUIREMENTS - A 16K 1401 System with... 1402 Card Read Punch... 1403 Printer MDL 2 or 1404 Printer... High-Low-Equal Compare, Advanced Programming, and Multiply-Divide features.

OR

A 16K 1460 System with... 1402 Card Read Punch... 1403 Printer MDL 2... Index and Store Address Register and Multiply-Divide features.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... 80x80 Listings of the Sort 5 and 6 Timing Program.
MACHINE READABLE - Program Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401LM062

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-LM-077

SORT 13 AND 14 TIMING PROGRAM FOR 1401/1460

DESCRIPTION - The 1401/1460 Sort 13 and 14 Timing Program (No. 1401-LM-077) gives timing estimates for sorting fixed length records with up to ten control data fields using the sort 13 or sort 14 programs. The timing program runs on a 16K 1401 or 1460.

FEATURES - Timing can be obtained either for a specific record volume, or for a predetermined set of record volumes. Control cards supply the Sort 13 and 14 Timing Program with a description of the file(s) for which estimates are required. The timing program can be loaded through the card reader or a magnetic tape unit.

MINIMUM SYSTEM REQUIREMENTS - A 16K 1401 system with... 1402 Card Read Punch... 1403 Printer MDL 2 or 1404 Printer... High-Low-Equal Compare, Advanced Programming, Multiply-Divide, and Sense Switches features,

OR

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A 16K 1460 system with... 1402 Card Read Punch... One 1403 Printer Model 2... Indexing and Store Address Register, Multiply-Divide, and Sense Switches features.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... 80x80 Listings of Sort 13 and Sort 14... Specifications... Operating Procedures.

MACHINE READABLE - Sort 13 and 14 Program Decks.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.

MACHINE READABLE - Program in card image.

ORDERING INFORMATION: PROGRAM NUMBER 1401LM077

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	MT	7/556	01
	none	MT	7/800	01

1401-LM-078

1401/1460 TIMING PROGRAM FOR S/360 BASIC PROGRAMMING SUPPORT TAPE SORT/MERGE PROGRAM (2401 THROUGH 2404)

DESCRIPTION - This program provides timing information for one and two channel System/360 Model 30 (1.5 microsecond) and 40 configurations. This program is used with 2401, 2402, 2403 or 2404 Magnetic Tape Units.

These programs provide multiplex, one selector or two selector channel sort timing estimates for System/360 Model 30 and 40 configurations for sorting fixed length records with a single control field of ten characters. Timings can be obtained for specific record volumes designated by the user, or for a spread of record volumes predetermined by the timing program. In addition, main storage utilization and maximum file size are included in the program output. Control cards are used to supply a description of the machine and record file configuration for which estimates are required. Separate machine and configuration cards are used to enable multiple record file configuration cards to be combined with a single machine configuration card or vice versa. Multiple control card sets can be run at the same time or provide additional estimates as desired.

MINIMUM SYSTEM REQUIREMENTS - A 16K, 1401 System with... 1402 Card Read/Punch... 1403 Printer Model 2 or 1404 Printer... High-Low-Equal Compare, Advanced Programming, Multiply-Divide, and Sense Switch features,

OR

A 16K, 1460 System with... 1402 Card Read/Punch... 1403 Printer Model 2... Multiply Divide, Indexing and Store Address Register, and Sense Switch features.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up. Specifications and Operating Instructions.

MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401LM078

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-LM-079

1401/1460 TIMING PROGRAM FOR BPS S/360 SORT/MERGE PROGRAM 8K DISK

DESCRIPTION - The program provides timing estimates for the IBM BOS 360 Sort/Merge (8K disk) when operating on a System/360 Model 2030 or on a Model 2040 with a maximum of 65536 bytes of main storage, a channel configuration of one multiplexor or selector channel with up to 8 2311 Disk Storage Drives.

The program provides Sort Timing estimates for sorting fixed length records with a single control field. Timings can be obtained for specific record volumes designated by the user, or for a spread of record volumes predetermined by the timing program. In addition, main storage utilization and maximum file size are included in the program output. Control cards are used to supply a description of the computing system, file configuration and record definition for which estimates are required. Multiple record/file cards may be used with one system definer card to estimate times for many file configurations on the same system. Or, many system definer cards may be used with one record/file card to estimate the time for sorting one file on several different systems. Multiple

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control cards sets can be stacked to provide multiple estimates at the same time.

MINIMUM SYSTEM REQUIREMENTS - A 16K 1401 System with... one 1402 Card Read/Punch... one 1403 Model 2, or 1404 Printer... High-Low-Equal Compare, Advanced Programming, Multiply-Divide, and Sense Switches features...

OR

A 16K 1460 with one 1402 Card Read/Punch... one 1403 Printer Model 2... Multiply-Divide, Indexing and Store Address Register and Sense Switches features.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Material List. Program Write-up. Specifications Manual. Operating Specifications Manual.

MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401LM079

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-LM-080

1401/1460 TIMING PROGRAM FOR S/360 BASIC PROGRAMMING SUPPORT TAPE SORT/MERGE PROGRAM (FOR THE 2415)

DESCRIPTION - This program provides Timing information for one and two channel System/360 Model 30 (1.5 microsecond) and 40 configurations. This program is used with 2415 Magnetic Tape Units.

These programs provide multiplex, one selector or two selector channel sort timing estimates for System/360 Model 30 and 50 configurations for sorting fixed length records with a single control field of ten characters. Timings can be obtained for specific record volumes designated by the user, or for a spread of record volumes predetermined by the timing program. In addition, main storage utilization and maximum file size are included in the program output. Control cards are used to supply a description of the machine and record file configuration for which estimates are required. Separate machine and configurations cards are used to enable multiple record file configuration cards to be combined with a single machine configuration card or vice versa. Multiple control card sets can be run at the same time to provide additional estimates as desired.

MINIMUM SYSTEM REQUIREMENTS - A 16K, 1401 System with... 1402 Card Read/Punch... 1403 Printer Model 2 or 1404 Printer... High-Low-Equal compare, Advanced Programming, Multiply-Divide, and Sense Switch features,

OR

A 16K, 1460 System... 1402 Card Read/Punch... 1403 Printer Mod. 2... Multiply Divide, Indexing and Store Address Register, and Sense Switch features.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up. Specifications and Operating Instructions.

MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401LM080

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-OS-092

1401/1460 - 1026 OPERATING SYSTEM COMPUTER ASSISTED INSTRUCTION

DESCRIPTION - The Coursewriter Language is a special user language with which a teacher (i.e., "Author") can prepare his course material to accommodate the range of student abilities.

The Operating System consists of -

- A Monitor to supervise writing and instructing simultaneously. An Assembler which enables the course author to communicate with the computer when writing and revising courses.
- Utilities for preparing student and course reports.

It provides the ability -

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- For authors to write and correct course material while students are taking courses.
- For a "proctor" who operates the system, to undertake essential administrative routines.
- To collect data on student responses for later analysis.
- For authors or programmers to add new functional capability to the coursewriter.
- To operate simultaneously up to five courses per 1316 Disk Pack.
- To service up to twelve 1050 point-to-point lines with a 1448 or up to four lines with four 1026 Transmission Control Units.

The word assisted in the term computer assisted instruction is important. This new methodology is not intended to replace the important role of the teacher in the educational process. Instead, it is a new science for assisting the teacher in administering course material and taking fullest advantage of the benefits of CAI.

MINIMUM SYSTEM REQUIREMENTS - For 1401/1026 configuration - A 12K 1401 Models B, C, or E with disk Storage Adapter, High-Low-Equal compare, Advanced Programming, Bit Test, Console Auxiliary Adapter, Sense Switches... 1402 Card Read/Punch Model 1... 1403 Printer Model 1... 1406 Storage Model 2... 1409 Console Auxiliary Model 2... 1311 Disk Storage Drive Models 2 and 4 with Direct Seek... 1026 Transmission Control Unit -- Up to Model 1 maximum. The first 1026 must have the expanded line feature and as many as three additional 1026 Model 1, each with the additional line feature. One must specify text time-out suppression to disable the timer from operating at the normal 9-18 second disconnect. This feature is to be used with the text time-out suppression of the 1051 Control Unit -- 1050 Data Communication System -- as many as four system maximum, each consisting of a 1051 control Unit Model 2 and a 1052 Printer-Keyboard with the 1st Printer feature. (When the text time-out suppression is specified on the 1026 Components, it must be ordered on the 1051).

For 1460/1026 CONFIGURATION - 1441 Processing Unit Model B5 with Disk Storage Control, direct Seek, Indexing and Store Address Register, Bit Test, Transmission Control Unit attachment... 1447 Model 1 with Sense Switches... 1461 Model 1... 1402 Model 3... 1403 Model 2... 1311 Models 1 and 2 with direct Seek... 1026 -- as many as four Model 1. The first 1026 Transmission Control Unit must have the expanded line feature and as many as three additional 1026 Model 1 each with the additional line feature. One must specify text time-out suppression to disable the timer from operating at the normal 9-18 second disconnect. This feature is to be used with the text time-out suppression on the 1051 Control Unit... 1050 Data communication System -- as many as four systems each consisting of a 1051 Control Unit Model 2 and a 1052 Printer-Keyboard with the 1st Printer feature. When the text time-out suppression is specified on the 1026 Components, it must also be ordered on the 1051.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up. Author and Proctor Manual. Coursewriter Description Manual.
MACHINE READABLE - System Control Program. Instruction Function, Initial Load, Utility Program.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Flowcharts. Program Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 14010S092

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-PR-925

PERIPHERAL INTEGRATED PROCESSING SYSTEM

DESCRIPTION - This system is primarily intended for the processing of I-Language output on a 1401. Two Peripheral Processors are subject to a Monitor which controls the operation. The system may be modified by the librarian segment, which can add and delete sections from the system tape.

MINIMUM SYSTEM REQUIREMENTS - 1401 with 4, 8, 12, or 16K Storage... 1403 Printer... 1402 Card Read/Punch... 3 Tape Units... Advanced Programming... Expanded Print Edit... High-Low-Equal Compare... and Print Storage. It is also necessary that the user indicate the storage capacity of the 1401, either 4, 8, 12, or 16K. System Tape, listing of Peripheral Monitor and librarian listing of print only D-program, listing of Print/Punch D-program, specifications and operating procedure.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up. Specifications and Operating Procedure.
MACHINE READABLE - Listings of Peripheral Monitor Librarian, Listings of Print only D-Program, Listings of Print/Punch D-Program, and a

System tape.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401PR925

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 7/800	22 24
				04 04
OPTIONAL	none	none		none

1401-RG-022

1401/1460 BASIC REPORT PROGRAM GENERATOR 4K

DESCRIPTION - IBM 1401 Basic Report Program Generator 4K enables a program written in 1401/1460 Basic RPG Language to be compiled on either a 1401 or 1460 System. The output is used to execute the application on a 1401 or 1460 System. The source program in the 1401/1460 Basic RPG Language, punched in cards, is compiled on either a 1401 or 1460 System. The output object program is in the 1401/1460 Machine Language. The source program may be compiled directly to condensed card output, and/or if load-and-go is desired, it may be directly executed. Additional features included in this program are Automatic Decimal Alignment and Extensive Diagnostics. The program listing, documentation and diagnostic output are recorded by the printer.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 or 8K 1460 System with... 1402 Card Read/Punch one 1403 Printer.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up. Specifications. Operating Procedures.
MACHINE READABLE - Program Deck. Sample Problem Source Program and Data.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Flowcharts. Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401RG022

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-RG-032

1401/1311 REPORT PROGRAM GENERATOR (ON DISK) 1401/1460

DESCRIPTION - IBM 1401/1460 Report Program Generator (on disk), 1401-RG-032, enables the RPG processor to have 1301 Disk Storage system residence at compile time and provides for input, output, or for files on a 1301 Disk Storage Module at object time. Version 1, called "1401/1311 RPG" will not be available since its functions are included in the new version. Version 2 increases the power of the RPG Language through the implementation of disk update function. Included with 1401/1460 RPG (on disk) is a 1401 RPG Translator program enabling a program written for the 1401 RPG Program to be punched in a form that can be compiled on a 1401/1311 System, a 1401/1311 System, or a 1460/1301 System. This system enables a program written in 1401/1440/1460 RPG Language to be compiled and assembled on a 1401/1311, 1460/1311 or 1460/1301 System. The output is used to execute the application on a 1401 or 1460 System.

Object program input is a card file, magnetic tape file, or disk storage file. The output report can be printer and/or punched into cards and/or written on either magnetic tape of disk storage. The source program in the 1401/1440/1460 RPG Language punched in cards is compiled and assembled on a 1401 or 1460 System. The output object program is either the machine language equivalent program or the Autocoder (on disk) language equivalent program. The machine language equivalent object program can be in the form of condensed cards, or it "load-and-go" is desired, the object program can be directly loaded from the system pack or module. The program listing, documentation, and diagnostic output are recorded on the Printer.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 System with... 1402 Card Read/Punch... 1403 Printer Model 2... one 1311 Disk Storage Drive... High-Low-Equal Compare feature.

OR

An 8K 1460 System with... 1402 Card Read/Punch... 1403 Printer... one 1311 Disk Storage Drive or one 1301 Disk Storage Module.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up. Operating Procedures.
MACHINE READABLE - System Deck, Sample Deck. 1401 RPG Translator Program.

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OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Flowcharts, Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401RG032

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-RG-033
REPORT PROGRAM GENERATOR 2K

DESCRIPTION - The 1401 Report Program Generator 2K System enables a program written in 1401 RPG 2K Language to be compiled on a 1401. The output is used to execute the application on a 1401 System. The source program in the 1401 RPG 2K Language, punched in cards, is compiled on a 1401 System. The output object program is on condensed cards in 1401 machine language. The program listing, documentation, and diagnostic output are recorded by the printer.

MINIMUM SYSTEM REQUIREMENTS - A 2K 1401 System with... 1402 Card Read/Punch... 1403 Printer. Although the High-Low-Equal Compare feature is not needed, RPG 2K can use it to advantage if it is installed. The 1401 2K System will take advantage of an additional 2K core storage.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up. Operating Procedures.
MACHINE READABLE - Program Deck. Sample Problem Source Program, Sample Problem Data.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Flowcharts, Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401RG033

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-RG-045
FARGO - FOURTEEN-O-ONE AUTOMATIC REPORT GENERATING OPERATION

DESCRIPTION - Purpose to provide a simple-to-learn, easy-to-use method of converting accounting reports from unit record equipment (602A - 402 - 514 - 604 - 407 - 519 types) to an IBM 1401 Data Processing System. Programming Language 1401 Symbolic Programming System method load 7 go, which means there is no intermediate symbolic assembly operations.

This means that the FARGO condensed program decks with the inserted control cards containing the report specifications are read into the 1401 followed by the report data cards, and the report is begun when the first detail card is read. (1) List or tabulate with or without summary punching. (2) Print one full line of report heading on the 1st line of each page of the report. (3) Print 1 or 2 full lines of columnar or filed headings on each page. (4) Control on a maximum of four fields of any length. (5) Group indicate a maximum of four fields on the first line of each minor control group. (6) Recognize up to 10 types of detail cards by any single column character. If more than one card column must be tested to identify a given type of a card, a patch is required. Note each of the 10 types may be in separate card columns. (7) add, subtract, multiply*, divide* operations may be performed on detail or total lines. These operations require Multiply/Divide feature. (8) Print Multiple lines from one card (MLP).

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up. Listings.
MACHINE READABLE - Condensed System Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401RG045

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-RG-048
REPORT PROGRAM GENERATOR

DESCRIPTION - Purpose 1401 RPG is a programming system which generates report writing programs which are specified by the user in the RPG Language established for IBM 1400-Series Machines. The generated report program will accept

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source data contained in either a card file, magnetic tape file or disk storage file. The language facilitates specifying the classic report writing functions of heading and detail lines, total lines controlled by control field breaks, offset total printing, summary punching, cross-footing and calculation, page and serial numbering, etc. The output report can be obtained at the printer, on cards, on tape, or on any combination of the three. Use of program report specifications, punched on cards, are entered into the 1401 DPS together with the RPG system deck. The output is a punched deck containing the generated report program in symbolic (1401 SPS) Language. This deck is further processed by one of the 1401 Assembly Systems (SPS-1, SPS-2, or Autocoder) to obtain the machine language report writing program ready for loading.

MINIMUM SYSTEM REQUIREMENTS - For Report Program Generation 1 4000 core storage positions - 1 1402 Card Read/Punch 1 1403 Printer. For Report Program execution 1 1403 Processing Unit (any Model-core storage size required depends upon complexity of report) 1 1402 Card Read/Punch Tape Units (Model 729 II, 729 IV, 729 V, 729VI, or 7330). 1403 Printer *Model 1 or 2, 1405 Disk Storage Unit - Only as required for input data file and output report media. Multiply-Divide special feature - may be used if installed. Sense Switches special feature - may be used if installed.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up. Listings, Flowcharts.
MACHINE READABLE - Condensed program Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401RG048

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-RG-700
IBM 1400 RPG TO SYSTEM/360 TRANSLATOR

DESCRIPTION - This program operates on a 1401 or 1460 Data Processing System. The Translator converts source programs written for any of the processors listed below to similar source programs acceptable to System/360 Model 20 RPG, System/360 Basic Programming Support RPG, Basic Operating System/360 RPG, or Operating System/360 TPG.

1400 RPG Processors to be translated include:

- (1) 1401 RPG (2K)
- (2) 1401 Basic RPG (4K)
- (3) 1401 RPG
- (4) 1401/1460 RPG (on disk)
- (5) 1440 RPG (2K)
- (6) 1440 Basic RPG (4K)
- (7) 1440 RPG (on disk)
- (8) 1440 Sterling Basic RPG (4K)
- (9) 1440 Sterling RPG (1311)

The 1401 RPG processor will be handled after the program has first been translated to 1401/1460 RPG (on disk) using the 1401 RPG Translator program. Program input is 1400 series RPG source program cards; output is System/360 RPG source program cards for input, calculation, and output specifications. Non-translatable conditions will be flagged as they are detected by the translator.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 or 1460 with 1402 Card Read Punch... 1403 Printer, Model 2 or Model 3 (on 1460)... three 7330 or 729 Tape Units or one 1311 Disk Storage Drive or one 1301 Disk Storage Unit (on 1460)... Advanced Programming and High-Low-Equal Compare Register feature (on 1460).

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program write-up... Program Material List... Sample Program translation listing... System/360 RPG Translator Manual... Logic Manual.
MACHINE READABLE - Card decks for Translator object program, Sample program System/360 RPG source.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Translator source program.

ORDERING INFORMATION: PROGRAM NUMBER 1401RG700

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	CARDS	15	none	
OPTIONAL	none	MT	7/556 7/800	22 24	01 01

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1401-SE-05X

DECISION LOGIC TRANSLATOR PROGRAM

DESCRIPTION - The Decision Logic Translator program is valuable in the implementation of automated design engineering systems, as well as other areas in which program logic can be effectively expressed in tabular form. The tabular approach to solution of complicated logical problems facilitates the breakup of a program into small, discrete, readily understood units of conditions and actions. This approach fosters modularity of program design which will be of increasing importance with the more widespread use of direct-access storage. Situations not yet anticipated can be introduced into existing programs with a minimum of effort through construction of additional tables. Existing condition-action tables can be easily altered, either as operational procedures change or to study the effect such changes would have on a business environment.

Areas of application of decision tables and 1401 Decision Logic Translator include:

- All types manufacturing operations which produce a wide variety of products from a relatively small pool of components including - electrical parts, motors, turbines, assemblies and sub-assemblies.
- Inventory control programs
- Financial analysis and control applications
- Special purpose simulation models
- Quality control planning
- Cost determination
- Production control and planning
- Real-time applications of information retrieval and decision making.

The 1401 Decision Logic Translator accepts as input decision tables written in a FORTRAN-oriented language. The Translator program sorts the rules to produce as output an efficient FORTRAN II source program. The use of this program can result in savings of up to 50 percent in implementation time and substantial reduction in cost in installation of applications that exhibit complex condition-action relationships.

PROGRAMMING SYSTEMS - Written in FORTRAN.

MINIMUM SYSTEM REQUIREMENTS - A 16K 1401 System with High-Low-Equal Compare, Multiply-Divide, and Advanced Programming... a 1402 Card Read/Punch... 1403 Printer... 2 tape units.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up... Reference Manual.
MACHINE READABLE - Sample problem... Program cards.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Systems Manual.
MACHINE READABLE - Translator source tape.

ORDERING INFORMATION: PROGRAM NUMBER 1401SE05X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	MT	7/556	22
		MT	7/800	24

1401-SE-12X

IBM DOCUMENTATION AIDS SYSTEM

DESCRIPTION - The DA system provides machine-generated documentation aids to users who program in the IBM supported assembly-languages listed below. It provides an accurate, efficient, and inexpensive computer process for producing and maintaining up-to-date program documentation. The DA System consists of four programs and a system controller. They are highly modular and are integrated into a total system so that each program performs certain functions which may be required by other programs operating within the system.

The DA System processes programs written in System/360 Assembler Language, Symbolic Programming System (SPS), Autocoder, Macro Assembly Program (MAP), FORTRAN Assembly Program (FAP), or Symbolic Flowchart Language (SFL) for the System/360, 1401/1440/1460, 1620, 1410/7010, 7040/7044, 7070/7072/7074, 705/7080/and 7090/7094.

The Source Language used in the implementation of all DA System programs is 1401 Autocoder. The DA System objectives are to assist an installation in converting existing programs to System/360: to encourage the user to reprogram in higher level language, e.g., FORTRAN, COBOL, and PL/I. To allow the computer to assume many clerical and routine functions associated with documentation and conversion. To improve and update the documentation of existing programs, thereby reducing maintenance efforts. To improve programming efficiency by the standardization of documentation techniques.

FEATURES -

- The DA System operates directly upon Assembly Language

source statements. No modification is required by the user before using DA System programs.

- Through scanning, the numerous Symbolic Languages are converted to a standard DA System record format. Processing of the DA formatted tape is thus largely language-independent.
- Each program within the DA System has its own control cards and is processed in sequence from the DA System tape, providing advantages normally found in a monitor system.
- The systems concept enables the user to submit a source program deck to the DA System and receive any or all of the source outputs of the system in one processing run.
- Source programs can be sequence checked, resequence numbered and updated. Corresponding listings can be produced.
- Cross-referencing listings, both in program and in label table sequence, as well as analysis of operation type, indexing and operation code usage, are provided by the system.
- A storage map of an object program useful in detecting differences between the source and object programs is available. Overlay patches are identified and listed immediately after the instruction that they modify.
- The flowchart produced is a detailed logic flow of the source program. Flowchart symbols conform to the IBM Corporate Standard and the proposed American Standard Association Standards on flowchart symbols for information processing.

The Symbolic Flowchart Language provides a machine independent, easy-to-use language which may be used in application design and documentation of new and existing programs.

Implementation of the DA System on the 1401 gives the user the opportunity to document assembly programs for any current large-scale system without tying-up that system.

The function of the system controller is to start and end all DA runs as well as provide maintenance capability for the DA System programs. After identifying the machine type and language to be processed, the controller calls in the following programs in the sequence listed:

- An update program which allows insertion, deletion, and replacement of Assembly Language Statements to bring the Source Program up to date.
- An analysis program which scans Assembly Language programs and produces pertinent information about the program scanned. Including cross references.
- A flowchart program which scans Assembly Language programs and produces flowcharts of program logic of designated areas.
- A verification program which produces a storage map of an object deck, noting overlay patch areas. Each program in turn proceeds as requested by DA System Control Cards, transferring control through the system and processing the data until all DA System Control Cards have been processed.

PROGRAMMING SYSTEMS - All DA System programs are written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 or 1460 System with four 729 or 7330 Magnetic Tape Units (see Sales Manual for tape intermix)... Advanced Programming... High-Low-Equal Compare... 1402 Card Read/Punch Model 1... 1403 Printer Model 2 or 3 with 132 Print positions. A 1410, 7010, or System/360 Model 30 or 40 can be used when operating in 1401 Compatibility Mode.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Application Directory... Program Reference Manual, H20-0177.
MACHINE READABLE - Systems Tape.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401SE12X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556	22
		MT	7/800	24
OPTIONAL	none	none	none	none

1401-SE-13X

SYSTEM/360 COBOL EDIT

DESCRIPTION - COBOL Edit operates on a 1401 and will diagnose System/360 COBOL statements for syntactical errors. This will reduce System/360 test time by allowing debugging on the current system.

The System/360 COBOL Edit will accept as input S/360 COBOL D or E source programs in EBCDIC on card or on 7-track tape in card image. It prints a listing of the source program and identifies sequence errors, group marks and record marks. It also flags input characters punched in codes having dual representation in current systems. A dictionary of names is prepared and printed. It will

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indicate any names that are multipdefined, any COBOL reserved words incorrectly used as names and any undefined names. The program will scan the statements for syntax errors and print diagnostic messages if any sentence structure errors are found. Editing is for syntax only; the data attributes are not checked.

FEATURES -

- Gives the user the ability to pre-edit System/360 COBOL Source Programs on the IBM 1401 at his own installation. Thus providing him with better utilization of his S/360 test time.
- Input programs can be stacked by the addition of an end card between programs.
- May be used in conjunction with the IBM S/360 COBOL Language Conversion program (1401-CB-701). The output of LCP will be accepted as input.

PROGRAMMING SYSTEMS - To obtain listings or cards from the tape, the following utilities will be required - IBM 1401 Tape-To-Printer Utility (1401-UT-026)... IBM 1401 Multiple Utility (1401-UT-039).

MINIMUM SYSTEM REQUIREMENTS - 8K 1401, 3 tape units, 1402 Card Read/Punch, 1403 Printer with 132 print positions, High-Low-Equal Compare, Sense Switches and Advanced Programming. Additional core will be utilized by the program. If a fourth tape drive is available, input can be on tape.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Application Directory... Program Reference Manual, H20-0217.
MACHINE READABLE - Object Decks and Sample Program.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.
MACHINE READABLE - Source Decks and Program listings.

ORDERING INFORMATION: PROGRAM NUMBER 1410SR13X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	DTR	7/556 7/800	22 24	none none
OPTIONAL	none	MT	7/556 7/800	22 24	01 01

1401-SM-029
SORT I

DESCRIPTION - Purpose to provide a generalized 2-way SORT program for 1401 users. The program internally sort input records and merges the sorted blocks into sequenced Output Records. Sort 1 may also be used as a merge program if input tapes are already ordered.

MINIMUM SYSTEM REQUIREMENTS - 4000 positions of storage High-Low-Equal Compare. Minimum of four (*4*) Tape Drives.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up... Listings... Flowcharts.
MACHINE READABLE - Object code.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.
MACHINE READABLE - Symbolic card decks.

ORDERING INFORMATION: PROGRAM NUMBER 1401SM029

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-SM-046
SORT 3 PROGRAM

DESCRIPTION - Sort 3 is a generalized sort program which provides the facility to sort records on 1401-1405 System without the use of magnetic tape units. The input file may be on magnetic tape or in disk storage. The user may specify sorting into either ascending or descending sequence, and may specify either magnetic tape 10 Control Data Fields containing a total of up to 193 characters of control information. Program Interruption and Checkpoint Restart features are available under sense switch control.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401 System with 1405 Disk Storage, 1402 Card Read/Punch, 1403 Printer Model 2, High-Low-Equal Compare and Sense Switches special features. At least one Magnetic Tape Unit (729 II, IV, or V, or 7330) is required if tape input or output is desired.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up... Flowcharts... Program Listings... Operating Procedures.

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MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.
MACHINE READABLE - Source deck.

ORDERING INFORMATION: PROGRAM NUMBER 1401SM046

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	CARDS	15	none	
OPTIONAL	none	MT	7/556 7/800	22 24	01 01

1401-SM-047
SORT 4

DESCRIPTION - SORT 4 is a Two- or Three-way Balanced Merge Tape Sorting Program using the Processing Overlap special features. The program will sort fixed or variable length data records written on magnetic tape into either ascending or descending sequence. The program sorts either fixed length or variable length, blocked or unblocked records having up to ten Control Data Fields containing a total of up to 999 characters of control information. The ability to perform full IOCS type tape label handling procedures for 80-character labels is incorporated. Padding records may or may not contain record marks, as specified by the user, and full blocks of padding will be deleted from the final output. Full checkpoint and restart capability in all passes of Phase 2 is included, as are program exits to allow user modification.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 System with... four IBM Magnetic Tape Units (729 II, IV, or 7330)... 1402 Card Read/Punch... 1403 Printer Model 2 (or 1404 Printer)... Advance Programming, High-Low-Equal Compare, Processing Overlap, and Sense Switches.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up... Preliminary Specifications... Flowcharts... Operating Procedures.
MACHINE READABLE - Symbolic listings and System Card Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401SM047

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	MT	7/556 7/800	22 24	01 01
OPTIONAL	none	none			none

1401-SM-060
SORT 7

DESCRIPTION - SORT 7 is a Generalized Tape Sorting Program designed for use on an IBM 1401 Tape System with at least 8,000 positions of core storage. This program provides Label Processing capabilities for the IBM Standard Tape Label (120 character). A Tape-Loadable option is available and when used 100 positions of storage are used. This program sorts fixed length or variable length, blocked or unblocked records into either ascending or descending sequence. Sorting can be controlled by as many as ten Control Data Fields containing a total of up to 999 characters. For four-tape systems on which fixed length records are being sorted, SORT 7 provides an additional capability in the form of a Multiphase Procedure, 15 to 25 percent overall time saving may be realized as compared with the balance merging technique. Interrupt and Restart capabilities are provided in the program.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 or 1460 Tape System... At least four IBM Magnetic Tape Units (729 II, IV, or V, or 7330)... 1402 Card Punch... 1403 Printer Model 2 (or 1404 Printer - 1401 only) High-Low-Equal Compare, Advanced Programming and Sense Switches. An additional tape unit is needed if the Tape-Loadable option is used. The 1460 requires, Indexing and Store Address Register and the Sense Switch feature. SORT 7 can also use, if available, five or six tape units and or 16K Core Storage Capacity.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up... SPECS... and Operating Procedures... Flowcharts.
MACHINE READABLE - Object decks and Assembly listing for both Tape Load and Sort Programs.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.
MACHINE READABLE - Symbolic program decks.

ORDERING INFORMATION: PROGRAM NUMBER 1401SM060

	PROGRAM NUMBER	DISTRIBUTION	MEDIUM	USER VOLUME
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	EXTENSION	TYPE	CODE	REQUIREMENT
BASIC	none	MT 7/556	22	01
		MT 7/800	24	01
OPTIONAL	none	MT 7/556	22	01
		MT 7/800	24	01

	OPTIONAL	none	none	none
1401-SM-063				
MERGE 6				

1401-SM-061
MERGE 7

DESCRIPTION - MERGE 7 is a Generalized Tape Merge Program designed for use on IBM 1401 Tape Systems with at least 8,000 positions of core storage. The user may specify merging input files in either ascending or descending order to an output file of the same order. The program provides label processing capabilities for the IBM Standard Tape Label (120 character).

The program will merge fixed length and variable length blocked or unblocked records. Merging can be controlled by up to ten Control Data Fields of total length as large as 999 characters. MERGE 7 also provides the additional features of reblocking single files and performing a sequence check on a single file or on the output file of normal merge operation. The program provides a wrong length record check for unblocked fixed length, blocked fixed length, and blocked variable length records.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 or 1460 Tape System... 1402 Card Read/Punch... 1403 Printer Mdl.2 (or 1404 Printer - 1401 only). Plus for 1401 - High-Low-Equal compare and Advanced Programming. For 1460 - Indexing and Store Address Register.

MERGE 7 requires from three to six tape units and will use 12K or 16K core storage capacity, if available.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up... Specs, and Operating Procedures... Flowcharts.
MACHINE READABLE - MERGE 7 object deck and the MERGE 7 program listing.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401SM061

	PROGRAM NUMBER	DISTRIBUTION	MEDIUM	USER VOLUME
	EXTENSION	TYPE	CODE	REQUIREMENT
BASIC	none	DTR 7/556	22	none
		DTR 7/800	24	none
OPTIONAL	none	none	none	none

1401-SM-062
SORT 6

DESCRIPTION - SORT 6 is a generative sort program designed for generation and use on an IBM 1401 or 1460 with at least one IBM 1311 Disk Storage Drive, and a minimum of 4000 positions of core storage (8000 for 1460). SORT 6 object programs will sort fixed length, blocked or unblocked, records in Move Mode into either ascending or descending sequence. Sorting can be controlled by as many as ten control data fields of total length up to a maximum of 194 characters. SORT 6 can generate an object program through use of the Autocoder Macro-Generator and parameter cards. It is further classified as a Generalized Program because it can modify itself at object run time according to information punched in control cards by the users.

MINIMUM SYSTEM REQUIREMENTS - Generation and object time use of the 1401 SORT 6 are: 4K 1401 or 8K 1460 System... One 1311 Disk Storage Drive... 1402 Card Read/Punch... One 1403 Printer Model 2, or 1404 Printer (1401 only)... High-Low-Equal compare feature (1401 only). The object program can use, if available, up to 5 Disk Storage Drives and 8K, 12K, or 16K core storage capacity. The following programs are required to implement 1401 SORT 6 -

1401/1440/1460 Autocoder (on disk) #1401-AU-008.
1401/1460 IOCS Version 2 #1401-IO-068.
1401/1311 Disk Utility Programs, #1401-UT-053.

BASIC PROGRAM PACKAGE

DOCUMENTATION - SORT 6 specifications... Operating Procedures... Flowcharts... Listing for library program... Listing for prephase programs.
MACHINE READABLE - Library routine decks... Prephase decks.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401SM062

	PROGRAM NUMBER	DISTRIBUTION	MEDIUM	USER VOLUME
	EXTENSION	TYPE	CODE	REQUIREMENT
BASIC	none	CARDS	15	none

1401-SM-063
MERGE 6

DESCRIPTION - IBM 1401 MERGE 6, #1401-SM-063, is a generative program for 1401/1311 or 1460/1311 systems. Used with 1401/1311 Autocoder and IOCS, Merge 6 will generate specific object programs that are fitted to the users particular merging applications. The object programs generated by Merge 6 are generalized in that they can be modified according to information supplied by the user in control cards. With object programs the user can merge pre-sorted, fixed length, blocked or unblocked records in the move mode into either ascending or descending sequence. The input and output can be on either disk or tape. A one-, two-, three-, or four-way merge can be performed. If specified by the user at generation time, options such as label checking, additions from cards, sequence check and hash total, deletions or selections by class can be incorporated into the object program.

MINIMUM SYSTEM REQUIREMENTS - Object Program Generation - same as for 1401/1311 Autocoder on 1401 or 1460 systems.

Object Program execution - a 4K 1401 system or a 8K 1460 system, each with sufficient core storage to utilize the object program options... a 1402 Card Read/Punch... and, depending upon the object program requirements, a 1403 Printer or 1404 Console Inquiry Station (1401 only) or a 1447 Console Mdl 2 (1460) or 3 (1401)... one to five 1311 Disk Storage Drives and/or one to six magnetic tape units (7330 or 729 II, IV, or V) in combination to provide a minimum of two input files and one output file... High-low-Equal Compare (1401 only).

BASIC PROGRAM PACKAGE

DOCUMENTATION - Specifications... Operating Procedures... Flowcharts... Library Listing... Prephase Assembly Listing.
MACHINE READABLE - Library Program... Prephase Program.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: Program Number 1401SM063

	PROGRAM NUMBER	DISTRIBUTION	MEDIUM	USER VOLUME
	EXTENSION	TYPE	CODE	REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-SM-064
SORT 62

DESCRIPTION - The IBM 1401 sort 62 (1401-SM-064) is a generalized sort program designed for use on an IBM 1401 or 1460.

This program sorts fixed length records in the move mode. The maximum record length that may be sorted varies from 1,200 characters for an 8K system up to 3,000 characters for a 16K system. The sorting can be accomplished in either ascending or descending sequence based upon up to 10 control data fields and 189 characters of control data contained in these fields.

MINIMUM SYSTEM REQUIREMENTS - For use of Sort 62 - 8K 1401 or 1460, one 1311 Disk Storage Drive, 1403 Printer, 1402 Card Read/Punch and High-Low-Equal Compare Special Feature (1401 only).

BASIC PROGRAM PACKAGE

DOCUMENTATION - Object Program Listing, Specification Manual, operating Procedures.
MACHINE READABLE - Object Program Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401SM064

	PROGRAM NUMBER	DISTRIBUTION	MEDIUM	USER VOLUME
	EXTENSION	TYPE	CODE	REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-SM-066
SORT 64

DESCRIPTION - This program sorts fixed length records in the MOVE mode. The maximum length record that may be sorted varies from 1,200 characters for an 8K system up to 3,000 characters for a 16K system. The sorting can be accomplished in either ascending or descending sequence based upon up to 10 control data fields and 189 characters of control data contained in these fields.

MINIMUM SYSTEM REQUIREMENTS - 8K IBM 1401 or 1460 equipped

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with one IBM 1311 Disk Storage Drive, an IBM 1403 Printer, an IBM 1402 Card Read/Punch, High-Low-Equal Compare special feature (1401 only) and the direct Seek special feature. This program has been generated from the 1401 SORT 6 Library, program (1401-SM-062) using the following parameter cards-

CARD LABEL	OPFRANDS
INPUTMEDIA	CARD, TAPE, DISK
OUTPTMEDIA	TAPE, DISK
SELECTDLET	SELDELCLASS, CONTROLDATA
ADDITIONS	CARDS
CHECKS	SEQHASH
DSKLABLOUT	ALL
TAPE	UNLOADIN, UNLOADOUT, SCAN
TAPLABLIN	STANDARD, ALL, B
TAPLABOUT	STANDARD, ALL B
SYSTEMSPEC	DIRBCT

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Listing... Specifications Manual... Operating Procedures Manual.
MACHINE READABLE - Object Program Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401SH066

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-SM-067
SORT 61

DESCRIPTION - This program sorts fixed length records in the MOVE mode. The maximum record length that may be sorted is 400 characters. The sorting can be accomplished in either ascending or descending sequence based upon up to 10 control data fields and 189 characters of control data contained in these fields.

MINIMUM SYSTEM REQUIREMENTS - For use of sort 61 are 4K, 1401, one 1311 Disk Storage Drive, 1403 Printer, 1402 Card Read/Punch and High-Low-Equal Compare special feature.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Object program listing... Specifications Manual... Operating Procedures.
MACHINE READABLE - Object program.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401SH067

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-SP-021

SYMBOLIC PROGRAMMING SYSTEM 1 (SPS-2)

DESCRIPTION - Purpose to provide a basic symbolic programming language and processor for the IBM 1401.

MINIMUM SYSTEM REQUIREMENTS - 1400 positions of storage 1402 Reader-Punch 1403 Printer Model 1.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Listings... Operating Procedures.
MACHINE READABLE - Condensed program.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401SP021

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-SP-030

SYMBOLIC PROGRAMMING SYSTEM 2 (SPS-2)

DESCRIPTION - Purpose to provide a Symbolic Language Processor for machines with greater than 4000 positions of core storage.

MINIMUM SYSTEM REQUIREMENTS - 4000 positions of storage 1402 Reader/Punch 1403 Printer, Model 1...

BASIC PROGRAM PACKAGE
DOCUMENTATION - Listings... Operating Procedures.

CONTINUED FROM PRIOR COLUMN

MACHINE READABLE - Condensed Program.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401SP030

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-SP-133

ASSEMBLY PROGRAM FOR 7750 USING THE IBM 1401

DESCRIPTION - This program assembles 7750 source language statements and produces as output a card deck or a tape suitable for loading into the 7750 through the IBM 1410 or 7000 series data processing systems. Input to the assembly program is to be supplied on cards. The user

may request card output, tape output, or both from the assembly program.

MINIMUM SYSTEM REQUIREMENTS - 1401 system 400 positions of core storage, three IBM 729 II, 729 IV, or 7330 Magnetic Tape Units, Advanced Programming Features, High-Low-Equal Compare Feature, IBM 1403 Printer, Model 2, IBM 1402 Card Read/Punch.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Programming Manual.
MACHINE READABLE - 7750 Assembly Program using the 1401.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Listing of 7750 Assembly Program using the 1401.

ORDERING INFORMATION: PROGRAM NUMBER 1401SP133

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556	22
OPTIONAL	none	MT	7/556	22

1401-SP-156

1401/7740 ASSEMBLY PROGRAM USING THE IBM 1401

DESCRIPTION - The assembled program, if created on a 1311 Disk Storage Drive, can be loaded directly into the 7740 for execution. If the program is produced on tape or in cards, it can be loaded into the 7740 from 1410 or any 7000 series system except the 7072.

FEATURES -

- Operates on 1401 or 1410 in 1401 mode.
- Converts 7740 Source Programs written in Symbolic Language.
- Accepts input from either tape or cards.
- Produces the object program as output on an 1311 Disk Storage.
- Drive, tape, or in cards.
- Provides the user with an assembly listing on the 1402 Printer.
- Provides alternate upper or lower memory disk and host load programs for use on an 8K or 16K 7740. The upper memory loaders on an 8K facilitate the use of additional core storage for object and chain statements.
- Corrects program action in the use of RBC declarative statement.

The program also -

- Provides notification when to replace the input tape if the input is tape.
- Assigns an 8K storage limit if the control card is missing.
- Allows the continuance of the assembly if the 1311 file is not in a "ready condition".
- Provides upper-memory assembly produced loaders for 16K systems.
- Provides an improved corrective action for read errors.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 or 1410 system with...Card Read/Punch...1403 Printer Model 2...four 729 or 7330 Magnetic Tape units...Advanced Programming and High-Low-Equal Compare features. An IBM 1311 Disk Storage Drive is also required if the object program is to be loaded directly into a 7740 operating independently of another IBM computer.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Sample problem Listing... Program Material List... Listings of Load Programs.
MACHINE READABLE - Assembly Program... Sample Problem.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Flowcharts and Program Listings.

CONTINUED FROM PRIOR PAGE

ORDERING INFORMATION: PROGRAM NUMBER 1401SP156

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	MT	7/556	22 01

1401-UT-001

CARD SYSTEM UTILITY PROGRAMS

DESCRIPTION - Utility programs to load or to output programs and data. Programs provided clear storage, card loader, print storage, punch storage, punch-list-sequence check equipment specification.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Listings... Flowcharts.
MACHINE READABLE - Condensed Program.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-UT-019

MULTIPLE TAPE UTILITY PROGRAM

DESCRIPTION - The Multiple Tape Utility Program (120-character label) for IBM 1401 and 1460 systems, No. 1401-UT-019, has the facility to have any one, two, or all three tape utility functions (card-to-tape, tape-to-card, tape-to-printer) occur concurrently, in a manner similar to that of the 1401 Multiple Utility Program.

Two functions available with this program that do not exist in the 1401 Multiple Utility Program are - the ability to create and/or process the IBM standard tape label (120-character), using procedures similar to those available from IOCS. The facility to accommodate blocked records in the card-to-tape and tape-to-card functions.

This is a generalized utility program supplied as a condensed card object deck. The program is controlled for appropriate application by the use of sense switches. Additional information is provided by a control card.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401 or 1460 System with... 1402 Card Read Punch... one 1403 Printer Mdl 2 or 3 (1460) or 1404 Printer (1401)... 729 or 7330 Magnetic Tape Unit (one tape unit is required for each tape operation performed concurrently)... High-Low-Equal Compare and Advanced Programming (1401) or Indexing and Store Address Register feature (1460)... Column Binary (1401) or Bit Test and Binary Transfer features (1460, needed only if binary files are to be accommodated... Sense Switches (1401)... Read Punch Release feature.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Program Listings... Multiple Tape Utility Program Specifications.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Program flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT019

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-UT-025

1401 AND 1460 TAPE UTILITY PROGRAMS WITH 120 CHARACTER LABEL CAPABILITY

DESCRIPTION - These three programs, for 1401 and 1460 Tape Systems, transfer data files from card to tape, from tape to card, and from tape to printer. Output format flexibility is provided through field-selection and exception-record procedures. The programs have the capability of processing the IBM standard tape label (120), using procedures similar to the available from IOCS. These are generalized utility programs, supplied by IBM as condensed card object decks. The programs modify themselves to fit a specific application through the use of control cards.

CONTINUED FROM PRIOR COLUMN

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401 or 8K 1460 System... 1402 Card Read Punch... one 1403 Printer, Model 2 or 3, or 1404 Printer... One 729 or 7330 Magnetic Tape Unit... Sense Switches feature (1401 only). If binary tape records or column binary cards are to be processed, the Column Binary Transfer feature (1460) is required.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Listings... Program specifications... Operating procedures.
MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT025

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-UT-026

TAPE-TO-PRINTER UTILITY PROGRAM

DESCRIPTION - The purposes of this program are - 1. To enable the printing of various tape configurations in many print configurations without the need for specific programs. 2. To simulate the 717, 720 and 730 Off-Line Printers for tapes prepared on 700-7000 series computers.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401 Model C3 1403 Model 2 Printer 1 (one) 729 Model II or IV (1402 Card Read Punch High-Low-Equal Compare) may run on Model D3 if System Tape produced on Model C3. Timing varies according to record types (i.e., fixed length or variable length), and according to spacing and skipping requirements. Fixed length records which are single spaced obtain maximum speed (600 lines/minute). 1. Maximum block size allowable is 1496 characters without editing, 1279 with editing. 2. Multi-reel files and multi-file reels may be handled. 3. Sequence checking and exception testing are provided.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Listings... Flowcharts.
MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT026

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-UT-027

CARD-TO-TAPE UTILITY PROGRAM

DESCRIPTION - The Card-To-Tape Program provides for writing information contained in punched cards onto magnetic tape.

MINIMUM SYSTEM REQUIREMENTS - 1401 Model C3, High-Low Equal Compare, 1402 Model I Card Reader-Punch, one 729 Model II or IV 1403 Model 2 Printer. (Additional Remarks) 1. Input record in from 1 to 99 cards. 2. Rearrangement of input prior to output is allowed. 3. Up to 16 fields may be selected for output. 4. Blocking of 1499 characters of BCD records and 1599 characters for column binary records. 5. Sequence checking of cards and records can be performed. 6. An exception record procedure is provided. 7. Header and trailer labels may be inserted. 8. Column binary records and intermixed column binary and BCD records can be written on tape if the 1401 System being used has the Column Binary device. 9. A count of the number of data cards read and of the records written, exclusive of header and trailer cards and records, is printed out at the end of each file.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-Up... Listings... Flowcharts.
MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT027

PROGRAM NUMBER	DISTRIBUTION	MEDIUM	USER VOLUME

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	EXTENSION	TYPE	CODE	REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-UT-028
TAPE-TO-CARD UTILITY PROGRAM

DESCRIPTION - Purpose to transfer information recorded on Magnetic Tape into Punched Cards, with a variety of output column designations.

MINIMUM SYSTEM REQUIREMENTS - 1401 Model C3 1403 Model 2 Printer 729 Model 2 or 4 Tape Drive 1402 Card Reader-Punch High-Low-Equal Compare Additional Remarks timing varies from 200 to 250 C.P.M., depending upon the number of options desired by the user. 1. Maximum block size allowable 1197 characters. 2. Additional information not contained within the record may be punched. 3. Field sequence checking and field selection is permitted. 4. Multiple file reels are processed according to the users specifications. 5. Exception record processing and card sequence numbering is allowed. 6. Header and trailer labels are optionally treated.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... Listings... Flowcharts.
MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT028

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-UT-039
MULTIPLE UTILITY PROGRAM FOR IBM 1401 TAPE SYSTEM

DESCRIPTION - The purpose of this program is to simulate current off-line processing by 700 Series equipment, and allow any combination of tape-to-card, tape-to-printer and card-to-tape operations to be performed at the same time. Timing maximum speed will be effected when any one single operation is being performed. Tape-to-printer 600 1/PH, card-to-tape 800 C/PH, tape-to-card 250 C/PH. When more than one operation is desired simultaneously, the following time speeds are applicable: Card-to-tape - tape-to-printer, single space printing 510 C&1/PH. Card-to-tape tape-to-printer, 1st character forms control 400 C&1/PH. Card-to-tape - tape-to-card, 310 Card Read, 160 Card Punch/PH. Tape-to-printer - tape-to-card, 325 1/PH, 160 C/PH. Card-to-tape - tape-to-printer, tape-to-card 275 1/PH. 275 Card Read, 140 Card Punch/PH. 1. High and low densities may be intermixed on the several tape drives while running simultaneous operations. 2. Binary and BCD operations may be processed at the same time except that the same operation (i.e., tape-to-card BCD as operation #1, and tape-to-card binary as operation #2) is not permitted. 3. Any combination of the following may be processed at the same time considering the restrictions stated in 2 above tape-to-card BCD, tape-to-card binary, card-to-tape BCD, card-to-tape binary, card-to-tape processing files containing both binary and BCD records, and tape-to-printer. Only tape-to-printer may be blocked and a maximum of 1000 characters. 4. Interrupt (switch E) allows interruption of processing to delete or activate additional functions after which the program continues governed by the new sense switch settings.

MINIMUM SYSTEM REQUIREMENTS - 1401 Model C3 1402 Reader-Punch 1403 Model 2 Printer 729 Model 2 or 4 Tape Unit (as many as user desires for 1, 2, or 3 simultaneous operations) High-Low-Equal Compare, Advanced Programming features, Column Binary feature (if user desires).

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Listings... Flowcharts.
MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT039

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-UT-051
FILE UTILITIES

DESCRIPTION - This is a set of SIC independent programs to perform many common tasks associated with the 1405 Disk Storage. The programs are Clear Disk, Disk to Printer, Tape to Disk, Disk to Tape, Card to Disk, and Disk to Card. User control cards are used to specify the affected portions of the Disk file. Restrictions: The Tape to Disk and Card to Disk are companion programs to the Disk to Tape and Disk to Card programs, and are designed to load the data generated by these programs.

MINIMUM SYSTEM REQUIREMENTS - Memory requirements are from 2K to 4K, depending upon which program is used. Equipment specifications: 1401 Model F, 1402, 1403, 1405; tape drives as required for programs.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Listings... Flowcharts.
MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT051

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-UT-052
1401/1311 DISK FILE ORGANIZATION ROUTINES 1401/1460

DESCRIPTION - 1401-UT-052, supports 1301 and 1311 Disk Storages and the 1401/1460's Console Printer. The package incorporates the additional features of 1301 Disk Storage and Console Printer capabilities, requires 1401/1440/1460 Autocoder (on Disk) for generation of object programs, and provides two complete sets of routines. One set generates object programs for a random file; the other, object programs for a control sequential file - Random file - The object programs for loading and maintaining a random file use the chaining method to load records into disk locations determined by control fields within the records. Records whose control data convert to the same address are linked together by a chain of addresses. Object programs can be generated by the routines to add records or delete them. Control sequential files use a sequence line to add records to the file or delete them, without destroying the sequence. A distribution index built by the programs makes possible quick access to any record. In both techniques, records may be loaded from or unloaded to cards, tape, or disk. The user's file organization routines are generated by 1401/1440/1460 Autocoder (on Disk) from a series of 1401/1460 IOCS (on disk) Version 2 library routines and the Disk File Organization Library routines. By control cards, the user supplies the appropriate parameters for generation.

MINIMUM SYSTEM REQUIREMENTS

GENERATION REQUIREMENTS - Requirements for generation of the user's file organization object programs are the same as those for 1401/1440/1460 Autocoder (on disk, and 1401/1460 IOCS (on disk), Version 2.

EXECUTION REQUIREMENTS - 4K 1401 System for 1311 usage or 8K 1460 System for 1311 or 1301 usage with... 1402 Card Read Punch... 1311 Disk Storage Drive or 1301 Disk Storage Array... 1403 Printer of (1460) 1477 Console Mdl 2 or 4 or (1401) 1407 Console Inquiry Station or 1477 Console Mdl 3 (if a log is to be kept during file loading, additions, or deletions, the 1403 Printer is required., in that case, a console with printer is not required)... Magnetic Tape Unit (required only if tape I/O is used).

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up, Program Listing, Disk File Organization Routines and Operating Procedures.
MACHINE READABLE - Option 1 - Common and random, and is specified by using Program Number Extension OPT1. Option 2 - Common and control sequential, and is specified by using Program Number Extension OPT2. Option 3 - Common, random and control sequential, and is specified by using Program Number Extension OPT3.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT052

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	OPT1	CARDS	15	none
	OPT2	CARDS	15	none

CONTINUED FROM PRIOR PAGE

OPT3	CARDS	15	none
OPTIONAL none	none		none

1401-UT-053

UTILITY PROGRAMS FOR THE 1401-1311 DISK

DESCRIPTION - This system is designed to perform certain frequently required operations without programming effort on the part of the user. The system consists of - Clear-Disk-Storage Program, Disk-to-Tape Program, Tape-to-Disk Program, Disk-to-Card Program, Card-to-Disk Program, Copy-Disk Program, Print-Disk Program, Disk-Record-Load Program, and Disk-Label Program.

Each of the programs is generalized, modifying itself to perform specific operations by information received through control cards. Each of the programs includes an optional disk label checking routine. The programs are designed for use on 4K or larger Systems - 8K or greater is necessary when processing Disk data for which the track record special feature is required. These programs perform such functions as Clear Disk and generate addresses, supply output for file protection purposes, display Disk Storage on the Printer, change data or addresses in Disk Storage, Create the Label track or remove the Label track, and enter, delete, change, display, and punch disk labels.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 System (8K required if track record format is used) with... 1402 Card Read/Punch... 1403 Printer Model 1 or 2... one 1311 Disk Storage Drive... and one IBM Magnetic Tape Unit (729 II, IV, or V, or 7330) required for tape programs only.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Operating Procedures... Preliminary Specifications.
MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Listings... Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT053

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-UT-057

FILE ORGANIZATION ROUTINES

DESCRIPTION - The chaining method of file organization is an efficient method of handling the problem of duplicate file addresses, when control data (item number, man number, etc.) are converted to disk storage addresses. The 1401-1405 File Organization Program will efficiently load and maintain a chained disk file so as to minimize the amount of unused storage, as well as the retrieval time for each record.

1401 File Organization features are (1) An edit program which will edit a symbolic version of the program so as to provide the most efficient program for any size 1401, (2) ability to make additions and deletions to a chained file, (3) Load and add trailer records to a file, (4) Unload a file onto cards or tape for reorganization, (5) An audit list consisting of the control data of records being loaded and their addresses, (6) Input data records may be on card or tape. The load and additions programs are used in conjunction with the edit program. The user provides the specifications of his file and machine in a control card which is examined by the edit program to create a symbolic version of the load and additions programs which meet those specifications. The edited program and the users conversion routine (routine to convert control data to disk address) are assembled with either SPS or Autocoder. The assembled program will then load the users data file (on card or tape) with a given format onto the disk file in the desired area. The program will create the necessary chain linkages. The remaining programs are not edited, but must be assembled with the users conversion routine. The control card is examined at object time and the users data is operated upon according to the specifications in the control card. All of the programs provide for all I/O error checking. The programs utilize one or two access arms depending upon the number available. If there are two arms, and one fails, the program will continue to operate with one arm.

MINIMUM SYSTEM REQUIREMENTS - (1) 4000 Core Storage positions (2) 1402 Card Read/Punch 1403 Printer (Model 1 or 2) 1405 Disk Storage Unit (Model 1 or 2) 1 or 2 Tape Units (Model 729 II, 729 IX, 729 V, or 7330) may be used if data is on tape.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Listings... Flowcharts.
MACHINE READABLE - Object Code.

CONTINUED FROM PRIOR COLUMN

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT057

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-UT-066

UTILITY PROGRAMS FOR THE 1401-1009

DESCRIPTION - The 1401-1009 Utility transmits data to or receives data from another terminal on either cards or magnetic tape. Four uses of the program are: 1. Transmit data from cards - blocks or unblocked. 2. Transmit data from magnetic tape. 3. Receive blocks or unblocked data on cards. 4. Receive data on tape.

MINIMUM SYSTEM REQUIREMENTS - 4000 Core Storage Positions Sense Switches, 1402 Card Read/Punch, 1009 Data Transmission Unit Serial I/O adapter 1 tape unit is optional.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Listing... Flowcharts.
MACHINE READABLE - Condensed program deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT066

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-UT-067

HYPERTAPE UTILITY PROGRAMS

DESCRIPTION - The 1401 Hypertape Utility Programs, No. 1401-UT-067, perform certain frequently required operations on 1401 and 1460 systems without programming effort. The programs included are Card-to-Hypertape, Hypertape-to-Card, 1/2 inch Tape-to-Hypertape, Hypertape-to-1/2 inch tape, Hypertape-to-Printer.

USE - Each program is generalized, modifying itself to perform specific operations through parameters contained on control cards. Each program also includes tape label checking options. The programs perform such functions as preparing tape files for 7074, 7080, and 7090 Hypertape Systems from card files or 729 1/2 inch tape files, creating card files or 729 (1/2 inch) tape files from a hypertape file, and the printing of files from a hypertape file.

MINIMUM SYSTEM REQUIREMENTS - a 4K 1401 System with 1402 Card Read/Punch... 1403 Printer MDL 2 or 1404 Printer... one 7340 Hypertape Drive... Advanced Programming, High-Low-Equal Compare, Hit Test, and Sense Switches Features... one 729 or 7330 Magnetic Tape Unit (if 1/2 inch tape is to be read or written)... Column Binary Feature (if Column Binary Cards are to be read or punched).

OR

An 8K 1460 System with... 1402 Card Read Punch... 1403 Printer... one 7340 Hypertape Drive... Indexing and Store Address Register, and Bit Test Features... one 729 or 7330 Magnetic Tape Unit (if 1/2 inch tape is to be read or written)... binary transfer feature (if column binary cards are to be read or punched).

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Programming Listings... Hypertape Utility Programs Operating Procedures.
MACHINE READABLE - Five individual card decks.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT067

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

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1401-UT-069

TAPE UTILITY SYSTEM FOR THE 7710

DESCRIPTION - This system is designed to control the movement of data between the IBM 1401 with 7710 Data Communication Unit and a Remote Terminal. The Remote Terminal may be any one of the following- 1401-7710, 1401-1009, 7701, 7702, 1013. The programs included in the system are-

- IBM 1401-7710 Tape Transmit Utility Program.
- IBM 1401-7710 Tape Receive Utility Program.
- IBM 1401-7710 Transmit-Receive Utility Program.

Each of the programs provides for tape data input-output operations and for handling of mixed parity tapes.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 System with...7710 Data Communication Unit...1402 Card Read/Punch ...729 II, IV, V, or 7330 Magnetic Tape Unit...Serial I/O Adapter feature. For the IBM 1401-7710 Transmit-Receive Utility Program, the 1401 system must have the above requirements plus advance programming and sense switch features.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Autocoder Listing...Flowcharts...
Instructions to separate card decks...Utility
Programs for the 1401 manual.
MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Autocoder Source Decks...
SPS Source Decks...Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT069

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-UT-076

DATA COMMUNICATIONS UTILITY PROGRAM - IBM 1009

DESCRIPTION - The Data Communications Utility Program, No. 1401-UT-076, consisting of seven independent programs, brings to 1401, 1440, and 1460 users a means to easily accomplish line speed data file communication with a buffered 1009 Data Transmission Unit. The package of seven programs includes -

- Card File Transmission.
- 1311 Disk File Transmission.
- Magnetic Tape File Transmission.
- Card File Reception.
- 1311 Disk File Reception.
- Magnetic Tape File Reception.
- 1403 and 1443 Printer Reception.

Each program provides programmed control of the direction of data flow on the communication line, end of file signalling and recognition, performance of field selection and expansion within individual records, processing of standard header and trailer labels and transmission of blocks and unblocked data. In tape and disk transmit and receive, data transmission times can be overlapped with the performance of a data processing operation. A tape to printer routine is provided. However, the user may elect to supply a routine of his own choosing subject to the timing requirements published in the program specifications. Automatic answer and automatic disconnect service is an option provided in all receive programs. Processing of single or multi-reel magnetic tape file records can be performed in binary, BCD, or mixed binary/BCD mode.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 or 8K 1460 system with... one 1402 Card Read Punch... one 1403 Printer Model 2 or 1404 Printer (1401 only)... one 729 II, IV, V, or 7330 Magnetic Tape Unit (tape programs only)... one 1311 Disk Storage Drive (disk programs only)... one 1009 Data Transmission Unit with Buffer feature... Serial Input/Output Adapter feature... High-Low-Equal Compare feature (1401 only).

OR

A 4K 1440 System with... one 1442 Card Read/Punch Model 1 or 2, or a 1442 Card Reader Model 4 with a 1444 Card Punch... 1443 Printer... one 7335 Magnetic Tape Unit (tape programs only)... one 1311 Disk Storage Drive (disk programs only)... one 1009 Data Transmission Unit with Buffer feature... Serial Input/Output Adapter feature.

BASIC PROGRAM PACKAGE -

DOCUMENTATION - Program Write-up...Specifications
Manual...Operating Procedures.
MACHINE READABLE - Seven decks in object deck
form... tape to print object deck... 1401 4K
and 8K loader decks.. 1440 4K and 8K Loader

decks.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Flowcharts... Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT076

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-UT-153

7040/44-1401 AUXILIARY PROGRAMS

DESCRIPTION - The 7040/7044-1401 Auxiliary Program, 1401-UT-153, support the 7040/7044 Operating System (16/32K), 7040-PR-150. Maintenance of the symbolic master tapes with the 7040/7044-1401 map symbolic updating program requires that a 7040 update run first be made to reduce the blocking factor from nine to a maximum of five.

MINIMUM SYSTEM REQUIREMENTS - Is restricted to users of the 7040/7044 Operating System, Program Number 7040-PR-150.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up...
Programmers Guide...Operators Guide...
System Programmers Guide.
MACHINE READABLE - Symbolic deck...Object
Deck...Autochart listing.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT153

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 22 7/800 24	01 01
OPTIONAL	none	none		none

1401-UT-157

7040/7044 - 1401 PERIPHERAL UTILITY PROGRAM

DESCRIPTION - The 1401 Peripheral Utility Program, using information supplied by a single control card and the sense switches, performs, on an off-line 1401 Data Processing System. The Basic Peripheral Operations associated with the 7040/7044 8K Operating System, thereby saving 7040/7044 machine time.

MINIMUM SYSTEM REQUIREMENTS - Is restricted to users of the 7040/7044 8K Operating System, file number 7040-PR-154.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up...Program Listing.
MACHINE READABLE - Object deck...Symbolic deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT157

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-UT-158

7090/94 1401 PERIPHERAL

DESCRIPTION - The 1401 Peripheral Output Program is a combined tape-to-printer/punch routine utilizing the IBM 1401 Data Processing System. This program reads the system output tape and produces a listing on the IBM 1403 Printer or a deck of column-binary cards on the IBM 1402 Card Read/Punch. If a deck of column-binary cards is punched, it is not necessary that the control cards have a 7, 9 punch in column 1. Select 3 is used for output from this program.

This program acts on data of the following types-

- (1) Print-line images (on magnetic tape) in even-parity mode, blocked by a record mark in the last character position of each print-line, or column-binary card images in odd-parity mode, blocked with a record mark or unblocked.
- (2) Output from the IJOB processor consisting of either of the following- (a) Print-lines (with a maximum of 132 characters including the carriage-control character) with characters translated by the 1401 Data Processing System into characters accepted by the 1403 printer. (b) Column-

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binary card images.

The distinction between these types of data is concerned with the presence or absence of the block control word. If the block control word is present, logical control words are written, if the block control word is not present, the mode is recorded on tape.

MINIMUM SYSTEM REQUIREMENTS - 4,000 Positions of Core Storage, one 729 or 7330 Magnetic Tape Unit, Advanced Programming Feature, High-Low-Equal Compare feature, Sense Switch feature, one IBM 1402 Card Read/Punch with Column Binary feature, one IBM 1403 Printer with 132 Print Positions and the Print Control feature.

The distribution of this program is restricted to users of the 7090/7094 IBSYS Processor, Program Number, 7090-PR-130.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up...
MACHINE READABLE - Print/punch Object Deck...
Card-to-tape Object Deck... Print/punch
Symbolic Deck... Card-to-tape Symbolic
Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT158

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-UT-938

INPUT PROGRAM FOR 7090/7094 SUPPORT PACKAGES FOR IBM SYSTEM/360

DESCRIPTION - The 1401 Input Program is used to read card decks in one form and then prepare an input tape for use by the 7090/7094 Support Package. The tape will consist of card-image records, some of these will be in Binary Coded Decimal (BCD) representation, others in binary mode.

MINIMUM SYSTEM REQUIREMENTS - Is restricted to users of the 7090/7094 support package for the IBM System/360 file number 7090-SE-162.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up.
MACHINE READABLE - Input Program Object Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401UT938

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1420-AU-001

BASIC AUTOCODER

DESCRIPTION - This system is designed to enable a program written in 1420 Basic Autocoder language to be assembled on a 1420 system. The output is used to execute the application on a 1420 system.

USE - The source program in 1420 Basic Autocoder language punched in cards is assembled on a 1420 system. The output object program is punched in 1420 machine language. Program documentation and diagnostic output is printed on the 1403 Printer.

MINIMUM SYSTEM REQUIREMENTS... a 4K 1420 system with... one 1442 card read punch... 1403 printer.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Operating
Instructions... Specifications.
MACHINE READABLE - Basic Autocoder System Deck... Sample
Source Deck Test Assembly.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - System Flow Charts... Listing of system
phases
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1420AU001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1420-IO-010

IOCP WITHOUT PROCESS OVERLAP

DESCRIPTION - The IBM 1420 IOCP without process overlap, program (1420-IO-010) is designed to control the reading of data from paper documents and to queue the printing of this data after it has been processed.

USE-

- Reading of amount and transit/routing fields from paper documents.
- Placing this data in a queue.
- User exit to stacker select decision routines.
- User exit to document printing routine.

MINIMUM SYSTEM REQUIREMENTS - 4,000 positions of core, 1 IBM 1442 Card Read-Punch, Model 1 or 2... 1 IBM 1403 Printer, Model 1 or 2 (selective Tape Lister and numeric chain can be used with the 1403).

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Program Listing...
specifications... Operating Procedures.
MACHINE READABLE - Program decks in (1) 1440/1311
Autocoder Format... (2) 1420 Basic Autocoder Format...
Sample Problem Deck... Object program execution
output.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1420IO010

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1420-IO-011

OVERLAP IOCP

DESCRIPTION - The IBM 1420 Overlap IOCP, #1420-IO-011, controls the reading of data from paper documents and queues the printing of this data after it has been processed

The program has these functions -

- Reading of amount and transit/routing fields or all fields from paper documents.
- User exit to stacker select decision routine.
- User exit to document processing routines.
- User exit to document printing routine.
- User document error routines.

MINIMUM SYSTEM REQUIREMENTS - a JK system with... one 1442 Card Read Punch... 1403 Printer (selective tape listing feature and numeric print chain can be used with the 1403)... Processing Overlap feature.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Program Listings...
Program Flowcharts... Sample Problem Listings...
Specifications... Operating Procedures.
MACHINE READABLE - Overlap IOCP card deck in 1440/1311
Autocoder Format and... 1420 Basic Autocoder Format...
Sample Problem Source Decks and.. Object Program
Output.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1420IO011

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-AT-060

AUTO-TEST 16K

DESCRIPTION - Auto-Test is an integrated set of utility programs designed to provide documentation for program evaluation during a program testing run. It can be used to test programs assembled by the 1440 Autocoder program for any IBM 1440 System. Because test runs can be planned to proceed with a minimum of operator intervention, Auto-Test is a useful tool for remote testing. The Auto-Test System resides in disk storage during testing. It controls program tests in which the following functions can be selectively specified-

1. Clear selected areas of disk storage
2. Load program data from cards to disk storage
3. Print selected areas of disk storage
4. Load the program to be tested from cards
5. Print data from selected areas of core storage at

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specific times during program execution

6. Print data read from or written on disk storage during program execution

7. Print core storage when program execution terminates several programs may be stacked for testing in a single run. A convenient card format for patching program decks being tested is provided to facilitate retesting of any program.

MINIMUM SYSTEM REQUIREMENTS - 16K 1440 System...one 1442 Card Read/Punch...1443 Printer...one 1311 Disk Storage Drive...Indexing and Store Address Register special feature.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up...Listings... Specifications and Operating Procedures.
MACHINE READABLE - (Deck A) build auto-test system disk pack...(Deck B) initiate program testing...(Deck C) used to restart...sample problem test deck and listings.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440AT060

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-AT-061
AUTO-TEST 8K

DESCRIPTION - Auto-Test is an integrated set of utility programs designed to provide documentation for program evaluation during a program testing run. It can be used to test programs assembled by the 1440 Autocoder program for any IBM 1440 system. Because test runs can be planned to proceed with a minimum of operator intervention, Auto-Test is a useful tool for remote testing. The Auto-Test system resides in disk storage during testing. It controls program tests in which the following functions can be selectively specified-

1. Clear selected areas of disk storage
2. Load program data from cards to disk storage
3. Print selected areas of disk storage
4. Load the program to be tested from cards
5. Print data from selected areas of core storage at specific times during program execution
6. Print data read from or written on disk storage during program execution
7. Print core storage when program execution terminates several programs may be stacked for testing in a single run. A convenient card format for patching program decks being tested is provided to facilitate retesting of any program.

MINIMUM SYSTEM REQUIREMENTS - 8K 1440 System...one 1442 Card Read Punch...1443 Printer...one 1311 Disk Storage Drive...indexing and store address register special feature.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up...Listings... Specifications and Operation Procedures.
MACHINE READABLE - (Deck A) build Auto-Test System Disk Pack...(Deck B) Initiate program testing...(Deck C) used to restart program...sample problem test deck and listings.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440AT061

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-AU-001
BASIC AUTOCODER

DESCRIPTION - This system is designed to enable a program written in 1440 Basic Autocoder Language to be assembled on a 1440 system. The output is used to execute the program

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on a 1440 system. The source program in 1440 Basic Autocoder Language, punched in cards, is assembled in a 1440 system. The output object program, in 1440 machine language, is punched one instruction per card in the source program deck. A program load routine is punched with each object program deck. Program documentation and diagnostic output are printed on the 1443 Printer.

MINIMUM SYSTEM REQUIREMENTS - 4K 1440 System with...one 1442 Card Read/Punch...1443 Printer.

BASIC PROGRAM PACKAGE -
DOCUMENTATION - Program Write-up...Preliminary Specifications...Operating Procedures.
MACHINE READABLE - Basic Autocoder System Deck...sample source program for reassembly.

OPTIONAL PROGRAM PACKAGE -
DOCUMENTATION - System Flowcharts and System Listings
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440AU001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-AU-006
BASIC AUTOCODER 2K

DESCRIPTION - The IBM 1440 Basic Autocoder 2K program accepts source statements written in Basic Autocoder 2K language and produces machine language object programs. Basic Autocoder 2K is a 2-pass system. The source program is processed and the resulting object program is converted by one of two special condensing routines from one-instruction-per-card to condensed card format.

MINIMUM SYSTEM REQUIREMENTS - A 2K 1440 System with... 1442 Card Reader Model 4 (Note- a 1442 Model 1 or 2 may be used as the reader in lieu of the 1442 Model 4)... 1444 Card Punch... 1443 Printer.

BASIC PROGRAM PACKAGE -
DOCUMENTATION - Program Write-Up...Operating Procedures.
MACHINE READABLE - Processor deck...Pre-list routine deck... post-list routine deck... condensing routines decks 1 and 2... sample problem deck.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Flowcharts... Program listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440AU006

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-CB-073
COBOL FOR IBM 1440/1401/1460

DESCRIPTION The Disk Resident COBOL for IBM 1440, 1401 and 1460 compiles COBOL (common business oriented language) programs for 1440, 1401 and 1460 Card, Tape, and Disk Systems.

USE - Symbolic programs are automatically compiled from source programs written in the COBOL language, which uses English words and special standard notations. These symbolic programs are then translated to machine language object programs by an autocoder processor. This program operates under the direction of a general system control program which allows the use of available I/O devices assigned by the user. The user specifies the configuration of the processing machine with control cards. The system control program interprets the information, and selects the appropriate I/O routine to handle the input and output during compilation.

MINIMUM SYSTEM REQUIREMENTS - For compiling the COBOL programs are- a 4K 1401 system with... one 1311 Disk Storage Drive with a 1316 Disk Pack... 1402 Card Read/Punch... 1403 Printer Model 2... Advanced Programming feature... High-Low-Equal Compare feature, or a 4K 1440 System with... one IBM 1311 Disk Storage Drive with a 1316 Disk Pack... one 1442 Card Read/Punch... 1443 Printer... Indexing and Storage Address Register feature, or an 8K 1460 System with... one 1311 Disk Storage Drive with a 1316 Disk Pack... 1402 Card Read/Punch... one 1403 Printer... Indexing and Store Address Register. (a 1301 Disk Storage array may be used in lieu of the 1311-1316)... or an 8K 1440 System

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with...one 1301 Disk Storage array...one 1442 Card Read/Punch...1443 Printer...indexing and Store Address Register feature.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Specifications Manual...Operating Procedures.

MACHINE READABLE - COBOL program deck which includes - marketing programming deck, macros deck, write file-protect address deck, system control card modifications deck, update deck and sample programs.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Systems Listings...Flowcharts
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440CB073

	PROGRAM NUMBER EXTENSION	DISTRIBUTION MEDIUM TYPE	CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-CX-07X**ADMINISTRATIVE TERMINAL SYSTEM**

DESCRIPTION - The primary concept of this system is to support a typewriter-like terminal for text processing. Information is entered from the terminals in either free or fixed form. It can be corrected, modified, or rearranged. Output formats are flexible and may be specified from the terminal.

Output may be transmitted to any terminal, stored on disk or tape, printed by an on-line printer, written as card images on tape, or punched. Stored information may be recalled for further processing.

FEATURES - Data correction, modification, and rearrangement by backspacing and retyping during entry... Retyping beginning with a particular word... Replacing a word or phrase... Adding to a line or text unit... Deleting a line or other text unit... Moving of groups of lines or text units... Gathering of stored data in any sequence... Copying of information by transmission to the originating terminal.

Storage and retrieval of data from disk files or tape.

Transmission of data to any terminal.

Output format controlled from the terminal by limiting free-form text line length... Justification of right-hand margin... Intermix of free-form text with fixed format information... Placing specified heading and footing lines on all pages of a document... Automatic Page numbering... Controlled vertical spacing... Halting to allow operator intervention for text insertion or change of print elements.

Desk calculator functions - addition... subtraction... multiplication... division... roots... powers... factorials... evaluation of simple algebraic expressions.

Users may add programs to do simultaneous peripheral operations such as simple tape-to-printer and card-to-tape functions.

An improved disk storage organization scheme will give improved terminal response on requests involving permanent disk storage.

1301 Disk file implementation significantly increases permanent storage capacity.

Improved storage reporting facilities.

Principal application areas of the administrative terminal system are technical manual preparation, proposal writing, test report preparation, financial credit reporting, statistical typing, and similar areas. The system may also be used for source data entry, capturing data directly from a typewriter keyboard. This has particular significance in the computer programming area where program deck control cards and test decks may be selected, modified, combined and made available for running directly from a terminal.

The system, when properly instructed, can save every keystroke made by the operator. To alter the text, the operator directs the system to locate the characters to be changed and instructs it in what manner these are to be altered.

If a copy of a document is requested, the system will produce and transmit it to the terminal.

PROGRAMMING SYSTEMS - The source program language is 1401/1440/1460 Autocoder (on disk).
MINIMUM 1440 SYSTEM REQUIREMENTS - A 16K 1440 with-bit test, console attachment, Direct Seek, Disk Storage Control, Indexing and Store Address Register, Transmission

ControllUnit attachment on the 1441 Processing Unit Model A6... One 1311 Disk Storage Drive Model 1 with Direct Seek... 1447 Console Model 1 with Sense Switches... 1447 Console Model 4... 1448 Transmission Control Unit with 1050/1060 attachment and RPQ E38485 and, as required, common carrier adapter sets or line adapter sets... either a 1442 Card Read/Punch Model 1 or 2 or a 1442 Card Reader Model 4 is required unless another 1401/1440/1460 system is available to load the program on a 1316 Disk Pack.

OPTIONAL 1440 SYSTEM REQUIREMENTS - Translate feature on the 1441 Processing Unit... one to four 1311 Disk Storage Drives Model 2 with direct seek and seek overlap features (at least one 1311 Model 2 is strongly recommended)... one to five modules of 1301 Disk Storage (one 1311 Model 2 is required)... either a 1442 Card Read/Punch Model 1 or 2 or a 1442 Card Reader Model 4 and/or a 1444 Card Punch Model 1... either a 1443 Printer Model 1 or 2 with 24 additional Print Positions, Printer Control, and Print Storage or a 1403 Printer Models 2, 3, or 5 with a 1446 Printer Control... 7335 Magnetic Tape Unit Model 1 or 2... line group features and RPQ 811390, as required, to attach more than 10 lines to the 1448 Transmission Control Unit. If uppercase and lowercase printing with 120 characters of courier type (matching the courier 72 printing element on the terminals) is desired using a 1403 Printer Model 2, ADD-RPQ'S 813148 and 818029 on the 1446 Printer Control... RPQ'S 812033, 812034, 898058, 33 each of RPQ E33255, and part 823380 (the chain) on the 1403 Model 2... RPQ 818019 on the 1441 Processing unit.

TERMINAL REQUIREMENTS - 2741 communication terminals (up to 40), with courier 72 standard electric printing elements, and line adapters if required. ATS supports only the correspondence code 2741 terminals without the interrupt feature.

BASIC PROGRAM PACKAGE -

DOCUMENTATION - Application Directory... Application Description, H20-0129... Terminal Operators Manual, H20-0185... Programmers Manual, H20-0228... Console Operators Manual, H20-0227.
MACHINE READABLE - Object code.

OPTIONAL PROGRAM PACKAGE -

DOCUMENTATION - Systems Manual (program flowcharts).
MACHINE READABLE - 1401/1440/1460 Autocoder (on disk) output file on two 1316 Disk Packs from which source decks and program listings can be created using 1401/1440/1460 Autocoder (on disk) (1401-AU-008).

ORDERING INFORMATION: PROGRAM NUMBER 1440CX07X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION MEDIUM TYPE	CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	1316	52	02

1440-DR-02X**RETAIL ACCOUNTS RECEIVABLE**

DESCRIPTION - This program is a system of sixteen 1440 runs designed to automatically perform receivables maintenance and billing in medium-sized department or specialty stores. The program has been designed as a series of routines which perform specific functions. By selecting and combining these routines, specialized programs for a particular store are developed. Modifications and refinements to parameters of these routines can be made to have them apply to a specific store. The system is designed to accommodate four types of charge accounts. These are- (1) 30-day charge account... (2) flexible revolving account--a monthly payment based on a percentage of the balance (includes option accounts)... (3) fixed revolving account--a fixed monthly payment based on the credit limit of the account... (4) contract account, or deferred payment account--a one time purchase with fixed monthly payments. Any given store will probably not have all four types of accounts. However, runs can be modified to delete those types of accounts which are not needed. Transactions are entered into the system in the form of punched cards. Edit and accounting control functions are performed, and the following major outputs are produced by the system. Adjustments listing, service charge adjustments listing, charge-offs listing, credits listing, cash batch balance listing, transaction register, signal messages, customer statements, delinquent account listing, aged trial balance (ath), and control balance listing.

FEATURES -

- Diagnostic aged trial balance designed specifically for authorization purposes.
- Delinquent listing to automatically select for review and follow-up those accounts requiring credit action.
- Up to 20,000 master accounts can be stored on each disk pack.
- Signal messages prepared as a by-product of file maintenance when special action is required on an account.
- Automatic aging of customer accounts to 150 days.

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- Automatic posting of transactions.
- Operable with either internal or external account numbers.
- IBM punched card customer statements printed two up.
- Automatic re-entry of cash payments through prepunching of the customer statement stub.
- Preparation of labels for promotional mailings on a selective basis.
- Complete and automatic controls.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1440 System with... 1442 Card Read/Punch... 1443 Printer... 1311 Disk Storage Drive... Indexing and Store Address Register, selective stacker, 24 additional print positions, selective character set, 39 character set.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... Reference Manual including listings.
MACHINE READABLE - Object and sample problem.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1440DR02X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1440-DW-01X

CHAIN AND WHOLESALE BILLING

DESCRIPTION - The 1440 Chain and Wholesale Billing program uses either the IBM card order plan or the permanent item code plan for placing orders. Three phases of the billing program result in a customer invoice. Phase 1 sets up order quantities, warehouse numbers, and disk pack addresses. Phase 2 sorts items into warehouse location sequence. Phase 3 prints customers name and address, analyzes and updates stock availability, prices items according to price zones, etc., prints item lines, and stores desired analysis data for subsequent use. Intermediate totals are printed where necessary. Sales analysis and back-up records are provided as a by-product of the billing routine. Although this program was developed for the grocery distributor, it is equally applicable (in total or in segments--purposely designed this way) for other distributors, i.e., drug, hardware, rack jobber, liquor, auto parts, etc.

The Chain and Wholesale Billing program is designed to help install 1440 systems by providing concepts on which a system may be designed and by providing certain programs which may be modified and used in that system in whole or in part. This program provides a main line billing routine plus 6 supporting routines for each type of input (page and line or permanent item code). The billing portion of the program is broken into three phases.

MINIMUM SYSTEM REQUIREMENTS - 4K 1440 system with... 1447 Console Model 2... 1442 Card Read/Punch... 1443 Printer... two 1311 Disk Storage Drives... Indexing and Store Address Registers, Selective Character Set and Sense Switches features. (Card image and bit test features are optional with card order plan input).

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... Reference Manual.
MACHINE READABLE - Source program deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440DW01X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-DW-04X

1311 WHOLESALE IMPACT

DESCRIPTION - The IBM IMPACT (Inventory Management Program and Control Techniques) system or scientific inventory management provides the warehouse distributor (or any organization with the same inventory control characteristics) with the information of "when" and "how much" to buy for each inventory item controlled by the system. It does this through the means of probability science in conjunction with the many factors influencing the distributors inventory control decisions.

Factors considered include- lead time, lead time variability, forecast demand, forecast error, service desired, inventory carrying costs, purchasing/receiving costs, discount structures, minimums, maximums, shelf life,

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and pack sizes. The "when" and "how much" answers are designed to find the most efficient balance between the cost of carrying inventory, cost of purchasing and receiving, discounts realized, and customer service requirements.

The 1311 Impact Computer Program library is designed to provide the distributor who has an IBM 1440-1311 Data Processing System with the means to successfully implement an impact inventory management system with a minimum of effort and expense. Programs are included that perform in the following functional areas: editing, file initialization, estimating, and the control of independent and joint replenishment ordering.

FEATURES - The 1311 program library performs in the same functional areas as the existing 1401-1405 Impact Computer Program Library-

- Edit all input for format.
- Determine the forecast model/horizontal, trend, horizontal-seasonal, or trend-seasonal/.
- Determine the ordering strategy to be used and calculate order quantity or order frequency as appropriate for strategy selected.
- Calculate the safety factor required for a prescribed level of customer service.
- Calculate initializing values required for forecast and order models selected.
- Estimate results to be expected from applying the rules and values developed.
- Determine when to order item groups to meet service objectives after the system is operational.
- Calculate the product mix to be ordered within an item group that will meet both service objectives and limitations on total size of order.

In addition, the 1311 programs incorporate improvements over existing programs including-

- Work flow and record formats streamlined.
- Historical demands screened for promotions.
- Base index technique used for forecasting seasonal items.
- Item discounts considered, in addition to vendor discounts, in determining ordering strategies and order quantities.
- Different lead time may be specified for each vendor breakpoint.
- Service may be specified by item for both independent joint vendors.
- Seasonality considered in ordering both independent and joint vendors.
- A service point and allocation program (SVA) that will take advantage of 8K memory to produce greater throughput.
- An option to force a predetermined order quantity for any item through the SVA program.
- The facility for expressing a conversion factor of 2.0 to the SVA program.
- Printing of the slope and intercept of the least squares lines has been included in the MADP program.
- Punching of the cost strategy records in the OGCL program has been eliminated.
- Provides safety factor (K) based on a lead time plus review time for items in a joint vendor. When the peak point option is not satisfied.

USE - The program library includes both initializing programs and operating programs. Initializing programs are designed to be used once to set up an impact system, then periodically (at least once a year) or as required to meet changing conditions. A complete set of programs is provided to perform necessary initializing functions. Operating programs are used in the day-to-day control of the impact system (forecasting and ordering). Library programs are provided to control the ordering of both independent and joint vendors. Instruction and block diagrams are available to help the user in programming the remaining operating programs with a minimum of effort (implementation reference manual).

PROGRAMMING SYSTEMS - Programs in the Impact Computer Program Library are written in 1311 Autocoder and 1311 IOCS.

MINIMUM SYSTEM REQUIREMENTS - 1440-4K 1440 system with 1447 Console Model 1... 1442 Card Read/Punch... 1443 Printer... two 1311 Disk Storage Drives... Indexing and Store Address Register. Two 1316 Disk Packs must be fully available during the operation of library programs.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... Users Manual... Operators Manual.
MACHINE READABLE - Object deck and Sample problem.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Systems manual which contains the assembly listings of all the 1440-1311 Impact programs.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440DW04X

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	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-FB-03X
DEMAND DEPOSIT ACCOUNT

DESCRIPTION - This application program is designed to accomplish the demand deposit accounting function in a commercial bank. The application is divided into the following program runs- conversions, IBM 1440 SORT 5, stop pay and hold edit, short list and ledger control, transaction journal, posting, statements, exception statements and exception reports.

FEATURES - The user has the option of producing a separate trial balance non-sufficient fund notices are prepared automatically input can be magnetically encoded checks and deposit slips and/or punched cards.

Summary as well as detailed statements can be provided detail statements may be printed either singly or two-up MICR checks and deposit slips and/or punched cards are transaction input to the system. Master records, 1000 characters in length, are posted daily with all items affecting account balances from a transaction file which is under ledger control. A punched card file is maintained to satisfy stop-pay orders and hold requests. Statement writing may be cycled. All accounts within any sequential range of ledger numbers are printed. Users will write the following for insertion to the appropriate run; service charge routines for the posting run; a ledger control table for the conversion run; a utility program to create the master file (an IBM card to disk utility program can be used). Program requirements users of this program should obtain the IBM 1440 SORT 5 program (1440-SM-030) which constitutes run 03 of subject program.

MINIMUM MACHINE REQUIREMENTS - 8K 1440 system with... Indexing and Store Address...two 1311 Storage Drives...a 1442 Card Read/Punch...a 1443 Printer with 24 additional print positions...a 1447 Console with Sense Switches. If magnetically encoded checks and or deposit slips are used, a 1412 magnetic character reader with serial i/o adapter 7080 for MICR conversion is required. Print storage

and selective character set features, although not required, will improve data throughput.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up...Listings...
Sample problem listings.
MACHINE READABLE - Object Program Deck... Sample problem deck.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1440FB03X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	MT 7/556	22	01
		MT 7/800	24	01

1440-FB-04X
MORTGAGE LOAN ACCOUNTING

DESCRIPTION -
1. Daily processing- File Maintenance processes and lists new loans, changes and deletions. Proof listing is produced from debit and credit transaction cards created from payment coupons, journals and advices. Posting of transaction cards to the Master Account Balance File is performed and special conditions are recorded on a report file. Reports of transaction and ledger recap, unprocessed items, payoffs (Final Payments), exceptions and excess items are produced.

2. Delinquency processing- Late notices, delinquency notices and delinquency reports are produced monthly or as desired.

3. Periodic reporting- Trial balance reflecting indicative information, date of last transaction, paid-through date, total payment amount, principal, escrow, late charge, and mortgage life balance for each mortgage is made. Statements are produced semi-annually from the old balance file and excess item cards produced by the daily report run. Coupon books are produced from payment changes, new account cards, and the master balance file. Investor reporting produces collection, past due, prepaid, variation, and paid-off loan reports on those investors specified by the user.

4. Escrow processing- Encompasses periodic escrow file maintenance, escrow analysis and customer advice notifying customer of any monthly payment change resulting from

escrow analysis.

The program provides the user with- Effective control... Delinquent account information... Efficient daily processing... Escrow analysis... Complete detail on daily activity... Loan servicing reports.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1441 Processing Unit, Model A3 with Indexing and Store address Register, Printer Attachment, Disk Storage Control... 1442 Card Read/Punch, Model 1, Card Read/Punch Adapter... 1443 Printer, Model 1, Printer Control, Selective Character Set, 13-Character Print Bar, 52-Character Print Bar... 1447 Console, Model 1, Sense Switches... 1311 Disk Storage Drive, Model 1... 1311 Disk Storage Drive, Model 2.

BASIC PROGRAM PACKAGE
DOCUMENTATION- Program Write-up... Reference Manual...
Listings.

MACHINE READABLE - Object code and sample problem.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1440FB04X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	MT 7/556	22	01
		MT 7/800	24	01

1440-FB-05X
SAVINGS ACCOUNTING

DESCRIPTION - IBM now offers financial institutions a comprehensive 1440 Savings Accounting Program. Savings Accounting functions are accomplished through the use of twelve 1440 processing runs. Master account balance records on all Savings Accounts are stored and maintained daily in disk packs. Master records contain balance data, dividend data, and other significant data on each savings account. Daily transactions--deposits, withdrawals, and share loans (passbook Loans)--are posted to the balance record, and a daily transaction register is produced. Reports on zero balance accounts, passbook differences, and unprocessed transactions are prepared daily. A trial balance is also prepared daily. At the end of a dividend period, dividends are calculated, a dividend period activity report is prepared, mail dividend checks are prepared for selected accounts, and statements are printed. At the end of the year, dividend reporting is accomplished. In addition to the master account balance file, a name and address master file is maintained. This file is used in the preparation of mail dividend checks, statements, and annual dividend reporting.

FEATURES -
- Preparation of transaction cards by conversion of paper tape from window machines or by key-punching from source. Ability to condense master account information and store up to 75,000 accounts per disk pack.
- Verification of account balances to ledger control totals
- Provision for printing uncollected funds, thus presenting an available funds balance for reference.
- Detailed savings journal including previous and new account balances and anticipated dividend.
- Exception report indicating activity on dormant accounts, passbook differences, zero balance accounts, etc.
- Print four accounts to a line on daily trial balance.
- Period-by-period itemization of unreported interest on dividends for teller window posting to passbooks.
- Comprehensive dividend period activity report.
- Automatic preparation of ready-to-mail dividend checks.
- Customer statement of activity economically prepared, which details as well as summarizes activity of the period.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1441 Processing Unit, Model A3 with... Indexing and Store Address Register feature, Printer Attachment feature, Disk Storage Control feature... 1442 Card Read/Punch, Model 1, Card Read/Punch Adapter feature... 1443 printer, model 1, printer control feature, selective character Set feature, 13-Character Print Bar, 52-Character Print Bar... 1447 Console, Model 1, Sense Switches... 1311 Disk Storage Drive, Model 1... 1311 Disk Storage Drive, Model 2.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Reference Manual...
Listings.

MACHINE READABLE - Source Code

ORDERING INFORMATION: PROGRAM NUMBER 1440FB05X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	MT 7/556	22	01

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MT 7/800 24 01

1440-PB-07X

ON-LINE SAVINGS ACCOUNTING

DESCRIPTION - The program offers to Savings banks, Commercial banks, and Savings and Loan Associations a real-time system for use with the 1062 Teller Terminal.

The program provides the user with an On-Line teller system. It has a capacity, with minor modification, for thirty-four 1062 terminals on seventeen lines, one 1052 System Terminal per line, or combinations of both; and the maximum machine capability of five 1311 Disk drives. Five drives will typically store more than 400,000 Account Records. The program, as currently assembled, provides for seven lines and fourteen terminals. Some features are a unique programming technique which develops an 80 per cent increase in rated Disk File capacity... A design which permits one or two 1062 terminals or one 1050 System Terminal per line... Maximum file packing from the use of a variable length format (or unposted and memorandum records)... An efficient model and machine-oriented file organization which keeps 1311 activity and 1441 processing at a minimum... A Disk Record structure and file arrangement which usually allows more than 1000,000 account records to a 1311 pack... A completely programmed analysis of disk drive usage relieving the customer of the need to give attention to either the quantity of drives or the placement of a pack on a specific drive... The option of continuing to operate on line at reduced efficiency without the immediate access pack (degraded service).

To facilitate understanding, it is possible to divide the program into these parts --

Line Control (multiplexing) for terminal service... Lines and terminals demand core... Users who require fewer than the maximum number of terminals have a proportionate share of core released for additional programming or storage. File Control... This service supplies the usual I/O instructions plus the features of flexibility noted above.

Record Processing... Data from transactions affect account records... in addition, they are the sources for messages to the terminals.

As a supplement to the On-Line routines, the package includes programs to help the user in his original conversion and in subsequent reorganizations.

MINIMUM SYSTEM REQUIREMENTS - A 16K 1440 System Configuration as follows: 1441 Processing Unit Model A6 with Disk Storage Control, Expanded Print Edit, Indexing and Store Address Register, Console Attachment, Transmission Control Unit Attachment, Direct Seek, Bit Test 1447 Console Model 4. 1311 Disk Storage Drive Model 1 for First Drive, Model 2 for Second Drive (additional Model 2S as required). 1448 Transmission Control Unit Model 1 with attachment feature, Fixed Time-Out, and as required, Line Group, Line Adapter Set, Common Carrier Adapter Set. 1061 Control Units, Model 1 or 2 with Line Adapter, Off-line feature. 1062 Teller Terminal, Model 1 or 2. 1442 Card Read/Punch Model 1 with Card Read/Punch Adapter.

Recommendations for potential printing needs: Printer Attachment on 1441 Processing Unit. 1443 Printer Model 1 or 2 with Print Storage and Printer Control. To improve the time requirements for the Off-line Runs -- Print Positions (24 Additional) and Selective Character Set (13 Character Set, 39 Character Set). 1446 Printer Control Unit with the appropriate attachment feature Number 1325, 1326, 1327, or 1328. 1403 Printer Model 2,3,5, or 6. If a 4S Model 3 is selected, a 1416 Interchangeable Train Cartridge is an additional requirement.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440PB07X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1440-IO-010

INPUT/OUTPUT CONTROL SYSTEM

DESCRIPTION - The IBM 1440 ICS, 1440-IO-010 (previously named 1440/1311 ICS) is to be used on 1440 systems with the new 1401/1440/1460 Autocoder (on disk), 1401-AU-008.

1440 ICS consists of a set of Library routines which, when called for by macro instructions in a 1401/1440/1460 Autocoder (on disk) source program, are selected, tailored and included in the object program. For 1440 systems,

these routines perform I/O functions and housekeeping associated with 1311 Disk Storage, 1301 Disk Storage, 7335 Magnetic Tape, 1442 Card Read/Punch, 1442 Card Reader, 1444 Card Punch, and 1443 Printer. They also provide linkage to the user/s object program. The specific statements generated at assembly time depend completely on the particular specifications contained in the user/s Source Program.

The previously announced 1440-1301 ICS (p63-129) will not be made available since its functions are included in this 1440 ICS.

The 1440 ICS library routines are to be placed in the 1401/1440/1460 Autocoder (on disk) system through a library run.

MINIMUM SYSTEM REQUIREMENTS - For assembly - programs incorporating I/O macro instructions for 1440 systems may be assembled on a 4K 1440 System with... one 1311 Disk Storage Drive or one 1301 Disk Storage array... 1442 Card Read Punch HDL 1 or 2 or 1442 Card Reader Model 4 and 1444 Card/Punch... 1443 printer, or a 4K 1401 System with... one 1311 Disk Storage Drive... 1402 Card/Read Punch... 1403 Printer Model 2 or 1404 Printer... High-Low-Equal Compare feature, or an 8K 1460 System with... one 1311 Disk Storage Drive or one 1301 Disk Storage Array... 1402 Card Read/Punch... one 1403 Printer. For execution - The 1440 object machine must have any I/O Units required by the User's program. The amount of core storage required varies widely from program to program, and must be determined when it is assembled.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... Library Listings... Operating Procedures.
MACHINE READABLE - Object Code and Sample Problem.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440IO010

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1440-IO-011

COMMUNICATIONS IOCS

DESCRIPTION - The 1440 Communications IOCS /1448/7740/ddc/ consists of a set of library routines which, when called for in an Autocoder (on disk) Source Program by Macro Instructions, are selected, tailored, and included in the object program. These routines perform the functions necessary to handle 1442, 1443, and 1311 Input/Output Files, to transmit information to and receive information from remote locations and remote processors, and to provide linkage to the user's program. The specific routines generated at assembly time depend largely on the particular specifications contained in the user's source program. The new version facilitates the generation of programs to control 1448 Communications with 1050 data communications systems over common carrier leased communication lines using automatic dialing and automatic answering features, and over customer-owned communication lines, with the 1030 data collection system, the 1032 Digital Time Unit, the 357 Data Collection System (via the 1408 Transmission Unit) the 1060 Data Communication System, and AT6T type 83B2 and WESTERN UNION type 115A Telegraph Terminals (utilizing the telegraph attachment feature).

Using the Early Warning program option, the user can transmit large messages without assigning equally large blocks of core storage to hold these messages during transmission. The user can also generate programs to control the transfer of information from a 1440 to another 1440, to a 1401 or 1460 via the direct Data Channel, or from a 1440 to either a 1410 or 7010 via the Expanded serial Input/Output Adapter Channel. Two utility programs (ESIOA Loader and ESIOA Dump) are available to load and dump 1440 Core storage via the 1410 or a 7010.

The Library routines for this IOCS are placed in the Autocoder system through a library run, using Autocoder (on disk) for 1401, 1440, and 1460, version 1, no. 1401-AU-008.

MINIMUM SYSTEM REQUIREMENTS - For program assembly are the same as those for the assembly of any program using the IBM 1401/1440/1460 Autocoder (on disk) program.

For Object Program execution the machine configuration depends upon processing requirements. For communication between remote locations, IOCS requires an 8K 1440 System with... Indexing and Store Address register feature... 1448 Transmission Control Unit... 1447 Console Model 4... 1442 Card Read/Punch... other I/O units as required.

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For communication between a 1440 and another 1440, a 1401 or a 1460, IOCS requires a 4K 1440 system with... Indexing and Store Address Register feature... Serial Input/Output Adapter feature... Direct Data Channel feature... 1442 Card/Read Punch... other I/O Units as required.

For communication between remote locations and between a 1440 and either a 1410 or 7010, IOCS requires an 8K 1440 system with... Indexing and Store Address Register feature... Bit Test feature... 1448 Transmission Control Unit... Expanded Serial Input/Output Adapter Feature... 1442 Card/Read Punch (optional if the expanded serial Input/Output Adapter feature is used due to the availability of the Esioa Loader Utility Program)... other I/O units as required.

Total core storage requirements depend on the specified functions to be served by the program. To handle basic Input/Output files, IOCS requires only those I/O units which are specified for program handling. Although programs can be assembled to handle 1311, 1442, 1443 files only, this IOCS should not be used exclusively for that purpose. Note that for communication between processors, there are two processing systems, each having separate requirements.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Library Listings.
MACHINE READABLE - Appropriate Material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Flowcharts and card deck listings.
MACHINE READABLE - ESIOA Loader and ESIOA Dump Program Decks.

ORDERING INFORMATION: PROGRAM NUMBER 1440IO011

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1440-IO-012

COMMUNICATIONS IOCS 1026 (DDC) FOR THE 1440

DESCRIPTION - This IOCS facilitates the generation of programs to control 1026 communication with 1030, 1050, and 1060. It is compatible with the 1401/1460-1440 Communications IOCS for the 1448, thus requiring a minimum of re-programming for growth from 1026 Transmission Control Units to a 1448. Applications can range from single inquiries to sophisticated real-time data operations.

Its functions are -

- Control of the 1447 Console
- User control of polling, addressing and receiving
- Error detection
- Operation with existing IBM programs for DDC
- Time of day recording with the 1032 Digital Time Unit.

The 1440 Communications IOCS /1026 (DDC) will operate with point-to-point or multi-point common carrier leased or customer-owned communication lines. In addition, the programs will support the Automatic Answering Feature and the Automatic Calling feature.

Communications IOCS (1026/DDC) consist of a set of library routines which, when called for in an Autocoder source program by macro instructions, are selected, tailored, and included in the object program. The routines perform the functions necessary to handle basic input/output files, to transmit information to and receive information from remote locations and remote processors, and to provide linkage to user's programs.

The specific routines generated at assembly time depend largely on the particular specifications contained in the user's source programs.

The library routines for this IOCS is to be placed in the Autocoder system through a library run, using Autocoder (on disk) for 1401, 1440, and 1460, No. 1401-AU-008.

System requirements for program assembly - Same as those for the assembly of any program using 1401/1440/1460 Autocoder (on disk) program. The Autocoder (on disk) program should be ordered concurrently unless otherwise available.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.
MINIMUM SYSTEM REQUIREMENTS - Written in A 4K 1440 with... Indexing and Store Register feature... 1026 Transmission Control Unit Attachment feature... 1447 Console Mdl 1... 1026 Transmission Control Units (one for each communication line)... I/O Units (as required). In addition - Direct Data Channel feature... Interrupt... 1447 Console Mdl 2 for 1440 and 1460, Mdl 3 for 1401... 1032 Digital Time Unit may be present, as desired.

Note - Use of DDC with 1026 should specify the Interrupt feature (available on 1401 only as RPG) for optimum performance.

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BASIC PROGRAM PACKAGE -
DOCUMENTATION - Write-Up... Operating Instructions.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE -
DOCUMENTATION - Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440IO012

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-ME-02X

1440/1311 BILL OF MATERIAL PROCESSOR

DESCRIPTION - Most fabrication and assembly manufacturing organizations are required to maintain large volumes of records that describe the structure or makeup of their products. Product structure records are referenced by various nomenclature, such as bills of material, parts lists, and where-used lists, depending upon individual organization preferences and the arrangement of the data. The requirements for maintaining product structure records are sufficiently similar to allow development of Standard Systems approaches.

The 1440/1311 Bill of Material Processor Package includes-
(1) Generalized programs that organize and maintain product structure data on 1311 Disk files and (2) Logic diagrams explaining the use or retrieval of the product structure information in fundamental applications.

FEATURES -

- This package can be used in a wide range of manufacturing industries where product structure records are maintained
- Product structure records are linked with part number master inventory type records on disk storage.
- Disk chaining is used to organize product structure data in two inherent sequences -

- (1) Assembly or Bill of Material Sequence (i.e., linking the components of an assembly). The user determines maintained sequence of components within the assembly. Typical sequences might be component part number or engineering drawing item number.
- (2) Where-used sequence (i.e., linking the usages of a part number on higher level assemblies). This cross-referenced sequence eliminates the need to (a) maintain a duplicate file in where-used sequence for listing purposes.

- Raw material can be included in the product structure file, providing complete where-used cross reference of each raw material number.
- User designs his own disk record layouts by incorporating his own information plus certain required data into part number master master inventory and product structure records.
- Low level coding is automatically maintained.
- Assembly to sub-assembly continuity is verified. This feature guarantees that the product structure records can be "exploded."
- User builds his own engineering change procedure into the file organization and maintenance programs.

This is a disk-oriented concept that requires a part number master inventory type file (i.e., one record per unique part number) and the product structure file to be on-line simultaneously. The part number master inventory records and an associated part number index file are loaded, added, and deleted using the IBM 1440 Disk-File Organization Routines. The product structure data (recorded as a series of single level assemblies) are loaded, added, deleted, or changed using a single comprehensive file organization and maintenance program. This program simultaneously updates the assembly and where-used sequence chains. All programs are user modified at source level and then assembled, providing an object program tailored to the user's requirements.

The package includes logic diagrams for six fundamental classifications of retrieval programs. They are - (1) One level bill of material or parts list, (2) Next assembly where-used listing, (3) Indented parts list, (4) Indented where-used list, (5) Summarized explosion and (6) summarized implosion. The package is designed so that the logic diagrams can be used by any customer as a guide in the preparation of his own set of programs.

PROGRAMMING SYSTEMS -

1. 1401/1440/1460 Autocoder (on Disk), 1401-AU-008 (Version 1)
2. 1440 IOCS, 1440-IO-010 (Version 2)
3. 1440 Disk File Organization Routines, 1440-UT-040, Group C - Common Random and Control Sequential (Version 2)
4. 1440 Disk Utility Programs, 1440-UT-041.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1440 with Indexing

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and Store Register, 1447 Console Model 2, 1442 Card Read/Punch Model 1, 1443 Printer Model 1, and enough 1311 Disk Storage Drive to contain the part number master inventory records and product structure records on line.

The 1440 Disk-File Organization Routines (Group C - Common-Random and Control Sequential) must be ordered independently of the Bill of Material Processor.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up...Application Directory...Programmer Manual...Operator Manual... System Manual.
MACHINE READABLE - Source Deck for product structure file organization and maintenance program... sample problem source, data and object decks.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440ME02X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-MI-701

STERLING SUBROUTINES

DESCRIPTION - The 1440 Sterling Subroutines, #1440-MI-701, operate on data fields containing representations of Sterling Monetary Values (Pounds, Shillings, Pence, and Decimals of Pence) in any of three formats - (1) Operations for translation, (2) Arithmetic, and (3) Preparation for printing. In addition to being immediately useful for operations on Sterling Fields of the sizes and formats for which they have been programmed, the Subroutines are useful as guides and models for programming by the user of altered, extended, and related subroutines.

The 1440 Sterling Subroutines are provided as 1440 Autocoder symbolic statements in punched cards. Those subroutines desired by the user for a 1440 program may be incorporated in the program and assembled by any version of 1440 Autocoder. If 1440 Basic Autocoder is to be used, the punched cards must be reproduced with columns offset in accordance with Basic Autocoder Input Specification.

PROGRAMMING SYSTEMS - Written in Basic Autocoder for 1440.

MINIMUM SYSTEM REQUIREMENTS - Any 1440 System with Indexing and Store Address Register feature. This feature is used for subroutine entry and exit purposes. It is not required if different coding for subroutine linkage is used. An Alternative Version of one of the subroutines makes use of the Multiply-Divide Feature.

BASIC PROGRAM PACKAGE -
DOCUMENTATION - Program Write-Up...Listings.
MACHINE READABLE - Symbolic Statements.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440MI701

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARD	15	none
OPTIONAL	none	none		none

1440-MI-702

1440 STERLING MACRO

DESCRIPTION - This set of Macro-Instructions, for inclusion in the user's 1440 Autocoder Library on disk, provides for operations on data fields containing representations of Sterling Monetary Values (Pounds, Shillings, pence and decimals of pence) in any of three formats. Operations for translation and arithmetic are provided.

FEATURES - Flexibility in the size of Sterling Fields handled is provided, with variation in the number of pounds positions and the number of decimals of pence. Work-areas are shared as far as possible and the generated code is further reduced by a facility of parameter omission.

Use - The programmer includes the appropriate macro-instruction code at the point in the program when execution of the Sterling operation is required. The subsequent inclusion of a definite macro-instruction, also provided, causes the generation of code to carry out the necessary sterling processing.

PROGRAMMING SYSTEMS - Written in Basic Autocoder for 1440.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1440 System with... 1311 Disk Storage Drive, Mdl 1... 1442 Card Read/Punch... 1443 Printer. Indexing and Store Address Register feature is necessary in addition to the Assembly Requirements.

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Advantage can be taken of the Multiply-Divide feature.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... Specifications Manual... Operating Procedures.
MACHINE READABLE - Object code.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Systems Flowcharts and Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440MI702

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-MX-02X
PROJECT CONTROL SYSTEM

DESCRIPTION - The 1440 Project Control System, 1440-MX-02X, is oriented to the specific needs of a construction company and will provide the backbone for a sales program that can result in net 1440 sales. The Project Control System provides a basic capability related to the planning, scheduling, and control of a project through the use of the critical path method. In the Basic System, the user can initially plan a project, update and modify the project schedule, monitor progress, and investigate alternate approaches.

The Basic System can be expanded by the user to include such related project functions as Estimating and Cost Control.

FEATURES -

- A basic system framework is provided that includes 1440 programs for planning, scheduling, and control of construction projects.
- All programs, including those added by the user, operate under the control of a systems monitor.
- Planning accomplished through conventional arrow diagramming or the new, highly efficient and easier to use precedence diagramming.
- Each project can contain up to 2,000 activities.
- Output in terms of project or calendar days can be displayed as bar charts, exception reports, and progress listings in terms of quantities set, percent complete, or remaining duration.

USE - The system, written in Autocoder and IOCS, operates under its own monitor. The master systems pack, containing the thirty-system programs and any customer programs, resides on one disk drive, the project master file pack resides on a second disk drive. The user specifies processing sequence and output desired through control cards allowing batched processing of a number of projects without operator intervention.

PROGRAMMING SYSTEMS - Basic Autocoder for 1440.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1440 System... two 1311 Disk Storage Drives... 1442 Card Read/Punch... 1443 Printer... Indexing and Store Address Register, Direct Seek, Additional Print Positions... 1447 Console with Sense Switches.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... Application Program Bulletin... Users Manual... Operators Manual... Systems Manual.
MACHINE READABLE - Object Program Deck.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1440MX02X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none
		MT 7/556	22	01
		MT 7/800	24	01

1440-OS-090

OPERATING SYSTEM COMPUTER ASSISTED INSTRUCTION COURSEWRITER LANGUAGE

DESCRIPTION - For many years "Programmed Instruction" has been used to accelerate the learning processes, augment the conventional teaching methods, and provide remedial teaching measures. This technique has taken the physical form of Programmed Instruction Text or teaching machines. In both cases, the objective is to permit the student to progress through course material as fast as his individual

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capabilities will allow. A programmed instruction course presents text material, questions, and answers to a student in a carefully planned sequence. As he participates in the course, the student is continuously aware of his progress. Whenever he responds incorrectly to a question, he is told immediately that he made a mistake, which he is often required to correct. As a consequence, the more capable student moves faster because he makes fewer errors. The slower student receives the practice and reinforcing text he needs to aid him in learning. As each student masters each segment of the entire subject, he progresses through the course in an orderly, disciplined fashion.

The Coursewriter Language is a special user language with which a teacher (i.e., "Author") can prepare his course materials to accommodate the range of student abilities. The Operating System consists of-

1. A monitor to supervise writing and instructing simultaneously.
2. An assembler which enables the course author to communicate with the computer when writing and revising courses.
3. Utilities for preparing student and course reports.

It provides the ability -

1. For authors to write and correct course material while students are taking courses.
2. For a "proctor", who operates the system, to undertake essential administrative routines.
3. To collect data on student responses for later analysis.
4. For authors or programmers to add new functional capability to the coursewriter.
5. To operate simultaneously up to five courses per 1316 Disk Pack.
6. To service up to twelve 1050 point-to-point lines with a 1448 or up to four lines with four 1026 Transmission Control Units.

The word "assisted" in the term "computer assisted instructions" is important. This new methodology is not intended to replace the important role of the teacher in the educational process. Instead, it is a new science for assisting the teacher in administering course material and taking fullest advantage of the benefits of CAI.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1440/1448 configuration is 1441 Processing Unit Model A6 with Console Attachment, Direct Seek, Disk Storage Control, Indexing and Store Address Register, Bit Test, Transmission Control Unit Attachment, and Printer Attachment... 1442 Card Read/Punch Model 1 with Card Read/Punch Adapter... 1443 Printer Model 1 with Selective Character Set and Printer Control... 1447 Console Model 1 with Sense Switches... 1311 Disk Storage Drive Models 1 and 2 with Direct Seek... 1026 Transmission Control Unit Model 1 with 1050 Attachment Feature, Fixed Time-Out.

Features - (new line and line feed) Horizontal Tab; and, as required, Line Group, Line Adapter Set, Common Carrier Adapter Set... one can also optionally specify Text Time-Out Suppression to disable the timer from operating at the normal 9-18 second disconnect when operating with point-to-point systems. This optional feature is to be used with the text Time-Out Suppression on the 1051 Control Unit... 1050 Data Communication System - up to 12 Systems maximum, each consisting of a 1051 Control Unit Model 2 with an "A" terminal identification letter and a 1052 Printer-Keyboard with the 1st Printer feature. (If desired, the Text Time-Out Suppression feature can be ordered on the 1051 as a required companion to the one specified on the 1448.)

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up...Instruction Manual... Author and Proctor Manual...Student Manual.
MACHINE READABLE - Object Code...System Control Program...Computer Assisted Instruction Program... Utility Programs Deck.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Flowcharts...Program Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 14400S091

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-05-091

1440-1026 OPERATING SYSTEM COMPUTER ASSISTED INSTRUCTION

DESCRIPTION - The Coursewriter Language is a special user language with which the teacher can prepare his course materials to accommodate the range of student abilities. The Operating System consists of -

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- A Monitor to supervise writing and instructing simultaneously.
- An assembler which enables the course author to communicate with the computer when writing and revising courses.
- Utilities for preparing student and course reports.

It provides the ability -

- For authors to write and correct course material while students are taking courses.
- For a "proctor", who operates the system, to undertake essential administrative routines.
- To collect data on student responses for later analysis.
- For authors or programmers to add new functional capability to the coursewriter.
- To operate simultaneously up to five courses per 1316 Disk Pack.
- To service up to twelve 1050 Point-to-Point Lines with a 1448 or up to four lines with four 1026 Transmission Control Units.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1441 Processing Unit Model A5 with Direct Seek, Disk Storage Control, Indexing and Store Address Register, Bit Test, Transmission Control Unit Attachment, Printer Attachment, and Interrupt... 1442 Card Read/Punch Model 1 with Card Read/Punch Adapter... 1443 Printer Model 1 with Selective Character Set and Printer Control... 1447 Console Model 1 with Sense Switches... 1311 Disk Storage Drive Models 1 and 2 with Direct Seek... 1026 Transmission Control Unit... up to 4 Model 1 Maximum. The first 1026 must have the Expanded Line feature and as many as three additional 1026 Model 1, each with the additional line feature. One must specify Text Time-Out Suppression to disable the timer from operating at the normal 9-18 second disconnect. This feature is to be used with the Text Time-Out Suppression on the 1051 Control Unit -- 1050 Data Communication System -- as many as four Systems each consisting of a 1051 Control Unit Model 2 and a 1052 Printer-Keyboard with the 1st Printer feature. (When the Text Time-Out Suppression feature is specified on the 1026 components, it must also be ordered on the 1051.)

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-Up...Author and Proctor Manual - Student Manual...Coursewriter Description Manual.
MACHINE READABLE - Object Code...System Control Program...Instruction Function Deck... Initial Load Deck... Utility Programs Deck.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Flowcharts...Program Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 14400S091

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-RG-020

1440/1311 REPORT PROGRAM

DESCRIPTION - 1440/1311 RPG enables a program written in 1401/1440/1460 RPG Language to be compiled and assembled on a 1440/1311 system. Instead of writing a specific program for a report, the user states his problem on fixed form specifications sheets in 1401/1440/1460 RPG Language. The RPG Processor operates on the punched specifications, generating a program to do the specific job. By relieving the user of the machine coding and program testing, RPG permits him to concentrate his efforts on the solution to his particular problem. RPG will generate programs to produce reports of a variety of formats from source data contained in a card file or disk storage file. The output report can be obtained at the printer, on cards, on disk storage, or any combination of the three.

With the RPG and Autocoder (with IOCS Library Routines) in Disk Storage, the problem specification cards are loaded at the card reader. The compilation and assembly are completely automatic. The output object program is either the Machine Language Equivalent Program or the 1440/1311 Autocoder Equivalent Program. The Machine Language Equivalent Object Program may be in the form of condensed cards, or if (load-and-go) is desired, the object program may be directly loaded from the system pack for immediate execution. The program listing, documentation and diagnostic output are recorded on the printer.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - For Report Program Generation-4K 1440 System with...one 1442 Card Read/Punch...1443 Printer...one 1311 Disk Storage Drive. For Report Program

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Execution-1440 System with core storage capacity depending on complexity of report...one 1442 Card Read/Punch...1443 Printer and/or 1311 Disk Storage as required by report. Reference material - 1440/1311 Autocoder, #1440-AU-002; 1440/1311 IOCS, #1440-IO-010; 1440/1311 Disk Utility Programs, #1440-UT-041.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-Up...Listings... Specifications and Operation Procedures.
MACHINE READABLE - Object Code...RPG System Card Deck... Sample Source Program for test purposes.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Listings and flowcharts
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440RG020

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-RG-021

BASIC REPORT PROGRAM

DESCRIPTION - This system is designed to enable a program written in 1440 basic RPG Language to be compiled on the 1440 system. The output is used to execute the application on a 1440 system. The RPG Program has the ability to punch object decks on a 1444 Card Punch as well as to generate object punch routines for it. The space-after-print logic has a delayed space rather than an immediate space instruction. This yields a faster running object program. The source program in the 1440 basic RPG Language, punched in cards, is compiled on a 1440 System. The output object program is in the 1440 machine language. The object program may be in the form of condensed cards, or if load/go is desired, it may be directly executed. The program listing, documentation, and diagnostic output is recorded on the printer.

PROGRAMMING SYSTEMS - Written in 1440 RPG Language.

MINIMUM SYSTEM REQUIREMENTS - The minimum 1440 System Requirements for Generation and Execution are the following 4K 1440 System with...one 1442 Card Read/Punch...1443 Printer.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-Up...Specifications and Procedures...
MACHINE READABLE - Object Code - Program Decks... Sample problem source with data decks...
Option 1 - Program for 4K Systems and is specified by using Program Number Extension OPT1.
Option 2 - Program for 8, 12 or 16K Systems and is specified by using Program Number of Extension OPT2.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Flowcharts and Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440RG021

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	OPT1	CARDS	15	none
	OPT2	CARDS	15	none
OPTIONAL	none	none		none

1440-RG-024

REPORT PROGRAM GENERATOR 2K

DESCRIPTION - The 1440 Report Program Generator 2K will enable a program written in 1440 RPG 2K Language to be compiled on the system. The output is used to execute the application on a 1440 System. The course program in the 1440 RPG 2K Language, punched in cards, is compiled on a 1440 System. The output object program is on condensed cards in 1440 Machine Language, or if "load and go" is desired, the object program may be directly executed. The program listing, documentation, and diagnostic output are recorded by the printer.

PROGRAMMING SYSTEMS - Written in 1440 RPG Language.

MINIMUM SYSTEM REQUIREMENTS - A 2K 1440 System with... 1443 Printer... one 1442 Card Read/Punch, Model 1 or 2 or one 1442 Card Reader, Model 4, and one 1444 Card Punch.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-Up... Operating Procedures.
MACHINE READABLE - Object Code.

OPTIONAL PROGRAM PACKAGE -

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DOCUMENTATION - Flowcharts... Program Listings...
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440RG024

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-RG-720

1440/1311 STERLING REPORT PROGRAM DEVELOPMENT

DESCRIPTION - A development from 1440/1311 Report Program Generator that has the added facility of processing Sterling fields.

USE - as with 1440/1311 RPG, the object program is either the machine language equivalent program or the 1440/1311 Autocoder equivalent program. Extra diagnostic messages are provided appropriate to the Sterling processing. When Sterling fields are not specified, Sterling RPG performs the same functions as 1440/1311 RPG.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1440 system with... 1442 Card Read/Punch... 1443 Printer... one 1311 Disk Storage Drive, Mdl 1. Sterling processing is improved by the presence of Multiply-Divide and the indexing and Store Address Register features on the object machine.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up... Sterling RPG Specifications and Operating Procedures... Basic RPG Specifications Manual... Basic RPG Operating Procedures.
MACHINE READABLE - System Card deck... sample problem and data cards.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Systems flow charts and listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440RG720

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-RG-721

1440 STERLING BASIC REPORT PROGRAM GENERATOR

DESCRIPTION - A development from 1440 basic RPG that has the added facility of processing Sterling data fields.

FEATURES - The handling of Sterling on output. Considerable flexibility is allowed in lengths of Sterling fields and their formats. Column 75 is used to indicate Sterling on data and format specifications; therefore, edit words and constants have one less character available than with 1440 basic RPG.

USE - As with 1440 basic RPG, an object program may be punched in condensed format or the "load and go" option may be used. Extra information appropriate to Sterling is included as part of the print-out. When Sterling fields are not specified, Sterling basic RPG performs the same main function as 1440 basic RPG with the following restrictions - (a) Monthly conversion from single digit input is not available. (b) No printing of sequence error checks in the edit listing takes place.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1440 system with... 1442 Card Read Punch... 1443 Printer.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program write-up... Specifications Manual... Operating Procedures... Basic Report Program Generator Specifications and Operating Procedures.
MACHINE READABLE - 4K System Card Deck... Sample Problem and is specified by using Program Number Extension OPT1. 8,12,16K System Card Deck... Sample Problem (Specifications cards and data), and is specified by using Program Number Extension OPT2.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Systems flowcharts and listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440RG721

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	OPT1	CARDS	15	none
	OPT2	CARDS	15	none

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OPTIONAL none none none

1440-SM-030
SORT 5

DESCRIPTION - Sort 5 is a generative sort program designed for generation and use on an IBM 1440 with at least one IBM 1311 Disk Storage Drive, and a minimum of 4000 positions of core storage. The program now has the ability to use 7335 Magnetic Tape for input/output files and the option to relocate phase four output to the beginning of the work area. It is a generative sort program (also needs 1440-10-010).

FEATURES - Sort 5 object program will sort fixed length, blocked or unblocked, records in move mode into either ascending or descending sequence. Sorting can be controlled by as many as ten control data fields of total length up to a maximum of 189 characters. Sort 5 can generate an object program through use of the Autocoder macro-generator and parameter cards. It is further classified as a generalized program because it can modify itself at object run time according to information punched in control cards.

PROGRAMMING SYSTEMS - The program requires 1401/1440/1460 Autocoder on disk.

MINIMUM SYSTEM REQUIREMENTS - 4K 1440 System... one 1311 Disk Storage Drive... 1442 Card Read/Punch... 1443 Printer. The object program can use, if available, up to 5 disk storage drives and 8K, 12K, or 16K core storage capacity.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up... Specs. and Operating Procedures... Library Deck Listing... Prephase Program Listing.
MACHINE READABLE - Prephase Deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440SM030

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-SM-031
MERGE 5

DESCRIPTION - IBM 1440 Merge 5, 1440-SM-031, is a generative program for an IBM 1440/1311 system. Merge 5 will generate specific object programs that are fitted to the users particular merging applications. The object programs generated by Merge 5 are generalized in that they can be modified according to information supplied by the user in control cards. With object programs the user can merge pre-sorted, fixed length, blocked or unblocked, disk records in the move mode into either ascending or descending sequence. A one-, two-, three-, or four-way merge can be performed. If specified by the user at generation time, options such as label checking, additions from cards, sequence check and hash total, deletions or selections by class can be incorporated into the object program.

PROGRAMMING SYSTEMS - The program requires 1440/1311 Autocoder and IOCS.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1440 System with sufficient core storage to utilize the object program options... One 1442 Card/Read Punch... And, depending upon the object program requirements, a 1442 Printer or 1447 Console Mdl 2, and one to five 1311 Disk Storage Drives.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program write-up... Specifications... Operating procedures... Flow charts... Library listing... Assembly listing.
MACHINE READABLE - Library program deck... Prephase deck.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440SM031

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-SM-032
SORT 52

DESCRIPTION - The IBM 1440 Sort 52, (1440-SM-032) is a generalized sort program designed for use on an IBM 1440 equipped with at least one IBM 1311 Disk Storage Drive and a minimum of 8,000 positions of core storage. This

program sorts fixed length records in the move mode. The maximum record length that may be sorted varies from 1,200 characters for an 8K system up to 3,000 characters for a 16K system. The sorting can be accomplished in either ascending or descending sequence based upon up to 10 control data fields and 189 characters of control data contained in these fields.

MINIMUM SYSTEM REQUIREMENTS - 8K 1440, one 1311 Disk Storage Drive, 1443 Printer, 1442 Card/Read Punch.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Object program listing... Specifications manual... Operating procedures.
MACHINE READABLE - Object Program.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440SM032

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-SM-033
SORT 53

DESCRIPTION - The IBM 1440 Sort 53, (1440-SM-033) is a generalized sort program designed for use on an IBM 1440 equipped with at least one IBM 1311 Disk Storage Drive, a minimum of 4,000 positions of core storage, and the Direct Seek feature. This program sorts fixed length records in the move mode. The maximum record length that may be sorted is 400 characters. The sorting can be accomplished in either ascending or descending sequence based upon up to 10 control data fields and 189 characters of control data contained in these fields.

MINIMUM SYSTEM REQUIREMENTS - 4K 1440, one 1311 Disk Storage Drive, 1443 Printer, 1442 Card/Read Punch, and the Direct Seek feature.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Object Program Listing... Specifications Manual... Operating procedures.
MACHINE READABLE - Object Program.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440SM033

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
		MT	7/556	22
		MT	7/800	24
OPTIONAL	none	none		none

1440-SM-034
SORT 54

DESCRIPTION - This program sorts fixed length records in the move mode. The maximum length record that may be sorted varies from 1,200 characters for an 8K system up to 3,000 characters for a 16K system. The sorting can be accomplished in either ascending or descending sequence based upon up to 10 control data fields and 189 characters of control data contained in these fields.

MINIMUM SYSTEM REQUIREMENTS - 8K IBM 1440 equipped with one IBM 1311 Disk Storage Drive, an IBM 1443 Printer, an IBM 1442 Card Read Punch, and the Direct Seek Feature. This program has been generated from 1440 Sort 5 library, program (#1440-SM-030), using the following parameter cards.

CARD LABEL	OPERANDS
INPUTMEDIA	CARD, DISK
OUTPUTMEDIA	DISK
SELECTLET	SELDELCLASS, CONTRODATA
ADDITIONS	CARD
CHECKS	SEQHASH
DSKLABLOUT	ALL
SYSTEMSPEC	DIRECT

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program write-up... Program Listing... Specifications Manual... Operating procedures.
MACHINE READABLE - Object code.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440SM034

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none

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	BASIC	OPTIONAL	CARDS	15	none
	none	none	none	none	none

1440-SM-035
SORT 51

DESCRIPTION - The IBM 1440 Sort 51, (1440-SM-035) is a generalized sort program designed for use on an IBM 1440 equipped with at least one IBM 1311 Disk Storage Drive and a minimum of 4,000 positions of core storage. This program sorts fixed length records in the move mode. The maximum record length that may be sorted is 400 characters. The sorting can be accomplished in either ascending or descending sequence based upon up to 10 control data fields and 189 characters of control data contained in these fields.

MINIMUM SYSTEM REQUIREMENTS - 4K 1440, one 1311 Disk Storage Drive, 1443 Printer, 1442 Card/Read Punch.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program write-up... Object program listing... Specifications Manual... Operating procedures.
MACHINE READABLE - Object program.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440SM035

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1440-SM-036
IBM 1440 SORT 13

DESCRIPTION - Sort 13 programs are generalized object sort programs capable of sorting fixed length, blocked or unblocked, records in move mode in either ascending or descending sequence. They will accept input from cards, 1301 Disk Storage, or magnetic tape, and will write the final output on 1301 Disk Storage or tape. Sorting can be controlled by as many as ten data fields of total length up to a maximum of 189 characters.

There are two separate programs available. The functions of each one are identical except for label processing. Program number (1440-SM-036) will process tapes with no labels or with IOCS Type B 80 character IBM labels (a tape mark cannot follow labels); Program number 1440-SM-037 will process tapes with no labels or with 120 character IOCS Type A IBM standard labels (a tape mark must follow labels). There is no provision in either program for handling non-standard tape labels.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1440 System with one 1301 Disk Storage Module, either one 1442 Card/Read Punch Mdl 1 or 2 or one 1442 Card Reader Mdl 4, and a 1443

Printer. The program can use, if available, up to five 1301 Disk Storage Modules, one or two 7335 Tape Drives for input/output, and 12K or 13K storage.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program write-up... Operating procedures... Specifications manual... Timing manual.
MACHINE READABLE - Object program.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - System listings... Flow charts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440SM036

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1440-SM-037
IBM 1440 SORT 13

DESCRIPTION - Sort 13 programs are generalized object sort programs capable of sorting fixed length, blocked or unblocked, records in move mode in either ascending or descending sequence. They will accept input from cards, 1301 Disk Storage, or magnetic tape, and will write the final output on 1301 Disk Storage or tape. Sorting can be controlled by as many as ten data fields of total length up to a maximum of 189 characters.

There are two separate programs available. The functions of each one are identical except for label processing.

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Program number 1440-SM-036 will process tapes with no labels or with IOCS Type B 80 character IBM labels (a tape mark cannot follow labels); Program number 1440-SM-037 will process tapes with no labels or with 120 character IOCS Type A IBM standard labels (a tape mark must follow labels). There is no provision in either program for handling non-standard tape labels.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1440 system with one 1301 Disk Storage Module, either one 1442 Card/Read Punch Mdl 1 or 2 or one 1442 Card/Reader Mdl 4, and a 1443 Printer. The program can use, if available, up to five 1301 Disk Storage Modules, one or two 7335 Tape Drives for input/output, and 12K or 13K storage.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Operating procedures... Specifications manual... Timing manual.
MACHINE READABLE - Object program.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - System listings... Flow charts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440SM037

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1440-ST-02X

MOTOR FREIGHT REVENUE ACCOUNTING

DESCRIPTION - Accounting and control of motor freight revenue is one of the largest clerical problems in the motor freight industry. Ever since the industry began extending credit, interlining shipments, and expanding to larger networks serving more and more points, revenue accounting has grown more difficult, more time-consuming, and more costly. Faster, more efficient revenue accounting and control is vitally needed. To meet this need IBM has developed the Motor Freight Industry Revenue Accounting Program, which performs the following functions-

- Editing of daily transaction data.
- Preparation of daily transaction register with simultaneous posting of revenue by freight bill number.
- Preparation of customer statements with simultaneous posting to customer accounts receivable balance.
- Editing of cash remittance source data.
- Application of cash by statement, freight bill number, and customer account number.

This program is adaptable by motor freight carriers who use either centralized statement and collection methods or decentralized terminal level methods. Effective control of freight bills is provided regardless of billing method.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Users of this program should obtain IBM 1440 Sort 5 (1440-SM-030). A 4K 1440 System with two 1311 Disk Storage Drives... 1442 Card Read Punch... 1443 Printer... Indexing and Store Register, Print Control, and Scan Disk.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Application Description Manual... Program Information Manual... Operators Manual... Detailed program documentation.
MACHINE READABLE - Object Program Decks... Sample Problem.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1440ST02X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1440-SV-090

1440-1470 PROCESS COMMUNICATION MONITOR FOR 1401/40/60
AUTOCODER ON DISK

DESCRIPTION - The IBM 1440-1070 PCM, consists of a set of 1401/1440/1460 Autocoder (on Disk) library routines, used to generate process communication programs oriented

to meet the requirements of the 1070 Process Communication System.

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The routines are-

- Monitor Routine - Controls the handling of interrupts and scheduling of line operations on a priority basis. It simulates a real-time clock and up to nine interval timers. In addition, it informs of errors detected and records the status of the lines and of the remote systems.
- Conversion Subroutine - Calibrates the ADC of 1070 systems and converts ADC readings to a standard range.
- Delta/Limit Check Subroutine - Performs limit and/or delta checks on converted ADC readings.
- Contact Sense Subroutine - Compares current contact sense readings with a master mask or previous readings.
- Thermocouple Subroutine - Generates temperature values from converted thermocouple readings.
- Error Locating Routine - Performs output checks on transmission lines and remote systems.

The program is used in conjunction with 1401/1440/1460 Autocoder (On Disk). The PCM is inserted in the Autocoder Library during a library run and called by macroinstructions in the users program. The PCM can be used in conjunction with the 1440 IOCS or 1401/1460 IOCS (on disk).

PROGRAMMING SYSTEMS - 1440 Autocoder on disk.

MINIMUM SYSTEM REQUIREMENTS - Only those features required by 1401/1440/1460 Autocoder (on disk) are needed when assembling a program using the 1440-1070 PCM. For the execution of an object program using the PCM, the following is required- an 8K 1440 or 1460 system with...1447 Console, Model 2...Indexing and Store Address Register...Multiply-Divide (for Conversion and Thermocouple Subroutines)... one 1026 Transmission Control Unit...Interrupt...Time Emitter.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-Up...Specification Manual...Operating Procedures Manual.
MACHINE READABLE - Library Routines Card Deck.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Program Listings...Program Flowcharts.
MACHINE READABLE - None

ORDERING INFORMATION: PROGRAM NUMBER 1440SV090

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-SV-091

1440-1070 PROCESS COMMUNICATION MONITOR FOR 1440 BASIC AUTOCODER

DESCRIPTION - The IBM 1440-1070 PCM, consists of a set of 1440 basic Autocoder routines, used to generate process communication programs oriented to meet the requirements of the 1070 Process Communication System.

The routines are-

- Monitor Routine - Controls the handling of interrupts and scheduling of line operations on a priority basis. It simulates a real-time clock and up to nine interval timers. In addition, it informs of errors detected, and records the status of the lines and of the remote systems.
- Conversion Subroutine - Calibrates the ADC of 1070 systems and converts ADC readings to a standard range.
- Delta/Limit Check Subroutine - Performs limit and/or delta checks on converted ADC readings.
- Contact Sense Subroutine - Compares current contact sense readings with a master mask or with previous readings.
- Thermocouple Subroutine - Generates temperature values from converted thermocouple readings.
- Error Locating Routine - Performs output checks on transmission lines and remote systems.

The program is used in conjunction with 1440 Basic Autocoder. A pre-assembly run is required to tailor the PCM to the users installation and requirements before assembly with the users program.

PROGRAMMING SYSTEM - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Only those features required by 1440 Basic Autocoder are needed when assembling a program using the 1440-1070 PCM. For a pre-assembly run and for the execution of an object program using the PCM, the following is required- an 8K 1440 System with...1447

Console, Model 2... Indexing and Store Address Register...

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Multiply-Divide (for Conversion and Thermocouple Subroutines)...one 1026 Transmission Control Unit...Interrupt...Time Emitter.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-Up...Specifications Manual...Operating Procedures Manual.
MACHINE READABLE - 1440 basic Autocoder Routines and a Pre-Assembly Object Program Deck.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Program Listings...Program Flowcharts.
MACHINE READABLE - None

ORDERING INFORMATION: PROGRAM NUMBER 1440SV091

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-UH-01X

HOSPITAL PATIENT BILLING

DESCRIPTION - The Application Program for Patient Billing consists of fourteen IBM 1440 processing runs to provide for the accounting and control of services rendered to patients of a hospital. Processing is done under a monitor which allows for program interrupt to satisfy interim reports such as discharge/demand bills or patient balances.

FEATURES - Processing programs are kept in disk storage and are called in, as needed, by a unique call card. Processed data is punched into input cards, thus preserving basic and resultant data. Running programs can be interrupted from the console to obtain the status of an account.

USE - at the time a patient is admitted, a master record is created and entered to disk storage. Through-out the patients stay in the hospital, all charges, credits, etc. are accrued to the master file. Interim reports such as census and in-house bills are created. Upon discharge bills can be issued. Final and insurance bills are prepared following the customary three day allowance for late changes to be received at the data processing center. Revenue distribution is available from data retained in disk storage.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS 4K 1441 Processing Unit, Model A3 with:

- Indexing and Store Address Register feature
- 1443 Printer Attachment feature
- Disk Storage Control feature
- Console (1447 Model 2) Attachment feature
- 1442 Card Read Punch
- 1443 Printer, with Printer Control feature
- 1447 Console, Model 2, with Sense Switches
- 1311 Disk Storage Drive, Model 1

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-Up... Program Manual... Listings.
MACHINE READABLE - Card decks - Routine Decks for Reassemblies

OPTIONAL PROGRAM PACKAGE - None

ORDERING INFORMATION: PROGRAM NUMBER 1440UH01X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-UH-02X

ACCOUNTS RECEIVABLE FOR HOSPITALS

DESCRIPTION - The program accomplishes all functions normally required by hospitals to maintain a well controlled accounts receivable operation. It includes establishment of new accounts, cash posting of receipts, aged trial balance reports, inquiry into account status, statement writing and file maintenance to close accounts. Processing programs are kept in disk storage and are called in, as needed, by a call card. They can be interrupted for inquiry and exception reports. Information necessary to construct the accounts receivable record in disk storage is automatically created by the Patient Billing Procedures (1440-UH-01X) when a patient is discharged, or by key-punched data obtained from out-patient accounting procedures. Cash receipts are posted as received. Statements are written at the discretion of the user. This is accomplished by specifying to the system what portion of the accounts receivable file statements are to be written from. Aged trial balance can be written at any desired

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interval to provide uniform load distribution. Accounts may be sequenced to provide selective aging analysis.

Note - This program runs under the monitor contained in the IBM 1440 Hospital Patient Billing (No. 1440-UH-01X) Application Program.

MINIMUM SYSTEM REQUIREMENTS - 4K 1441 Processing Unit, Model A3, with:
 - Indexing and Store Address Register feature
 - 1443 Printer Attachment feature
 - Disk Storage Control feature
 - Console (1447 Model 2) Attachment feature
 - 1442 Card Read Punch
 - 1447 Console, Model 2, with Sense Switches
 - 1311 Disk Storage Drive, Model 1

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Program Write-Up... Program Manual... Listings.
 MACHINE READABLE - Source code.

OPTIONAL PROGRAM PACKAGE - None

ORDERING INFORMATION: PROGRAM NUMBER 1440UH02X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-UH-03X

HOSPITAL ACCOUNTS PAYABLE

DESCRIPTION - Hospital Accounts Payable consists of nine 1440 processing programs to provide for accounting and control of the accounts payable of a hospital. A 1311 Disk Storage Drive with a 1316 Disk Pack is the medium used for storage of all account payable and distribution records and is organized to record an unlimited number of entries for each payable account. When a payable invoice is received, it is posted to the master payable file until managements decision to pay the invoice. At this time, a check run is made against the master payable file and the invoice is flagged as paid. At a later time, the paid invoice record is removed from the master payable file, and the amount of discount taken on the invoice is punched into the initial invoice card which has been keypunched from the original invoice.

Included in Hospital accounts Payable are the following programs: - create new accounts payable records create new account records - create vendor index table - edit invoice and distribution records - post vendor invoices - print cash requirement report - print trial balance - print check and admittance advice - close vendor invoices.

Note - These programs run under the monitor contained in the IBM 1440 Hospital Patient Billing (1440-UH-01X) Application Program.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder

MINIMUM SYSTEM REQUIREMENTS - A 4K 1441 Processing Unit, Model A3, with- Indexing and Store Address Register, Printer Attachment, Disk Storage Control, Console Attachment (1447, Model 2)... 1442 Card Read Punch... 1443 Printer, with Printer Control... 1447 Console, Model 1, with Sense Switches and a 1447, Model 2... 1311 Disk Storage Drive, Model 1.

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Program Write-Up... Program manual including listings.
 MACHINE READABLE - Source code.

OPTIONAL PROGRAM PACKAGE - None

ORDERING INFORMATION: PROGRAM NUMBER 1440UH03X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-UH-04X

HOSPITAL INVENTORY PROGRAM

DESCRIPTION - A perpetual inventory provides for a continuous record of supply receipts, issues, and stock on hand. Items requiring management attention are listed on exception reports. On a periodic basis, transactions posted to the inventory records are transferred to general ledger accounts which reflect the aggregate of receipts and issues posted to individual inventory ledger records. A 1311 Disk Storage Drive with a 1316 Disk Pack is used for storage of all inventory item and open purchase order records. The file is organized and controlled sequentially, and because disk packs are interchangeable, there is

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virtually no limit to the number of items it can handle.

FEATURES -

- Comprehensive external and internal control with audit trail.
- Sequential inventory file organization with 5280 items in 40 cylinders.
- Programs on disk under the control of a monitor.
- Automatic flagging of items below minimum inventory levels or out of stock.
- Meaningful reports for stock status, purchase order, transaction register, general stores invoice, item distribution, and control units.
- Inquiry to inventory item and purchase order records.

Note - These programs run under the Monitor contained in the IBM 1440 Hospital Patient Billing (1440-UH-01X) Application Programs.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1441 Processing Unit Model A3 with - Indexing and Store Address Register, 1443 Printer Attachment, Disk Storage Control, 1447 Console Attachment Model 2... 1442 Card Read Punch... 1443 Printer with Printer Control... 1447 Console Model 2 with Sense Switches... 1311 Disk Storage Drive Model 1.

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Program Write-Up... Reference Manual including Program Listings.
 MACHINE READABLE - Source Program Decks.

OPTIONAL PROGRAM PACKAGE - None

ORDERING INFORMATION: PROGRAM NUMBER 1440UH04X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-UH-05X

HOSPITAL GENERAL LEDGER

DESCRIPTION - The 1440 Hospital General Ledger Program (1440-UH-05X) package reduces the time and effort required by hospitals to program and install a general ledger application. Seven programs are provided which result in three major reports and a uniform chart of accounts. The programs are; Load Master Ledger Accounts, Add and Delete Master Records, General Ledger Posting, Trial Balance Run, Income and Expense Report, General Ledger Inquiry and Cost Analysis Program. Processing Programs are retained in disk storage and called in, as needed, by unique call cards. General ledger account masters are kept and maintained in disk storage with the provision, through the inquiry program, to be displayed on the console typewriter.

Note - The programs in this package run under the Monitor contained in the IBM 1440 Hospital Patient Billing Application Program (1440-UH-01X).

PROGRAMMING SYSTEMS - Written in 1440 Autocoder

MINIMUM SYSTEM REQUIREMENTS - 1441 Processing Unit MDL A3 with Indexing and Store Address Register, 1443 Printer Attachment, Disk Storage Control, Console (1447 MDL 2) Attachment... 1442 Card Read Punch... 1443 Printer with Printer Control... 1447 Console MDL 2 with Sense Switches... 1311 Disk Storage Drive MDL 1.

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Program Write-up... Reference Manual including Program Listings.
 MACHINE READABLE - Object code and Sample Problem.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440UH05X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	Cards	15	none
OPTIONAL	none	none		none

1440-UH-06X

HOSPITAL PAYROLL

DESCRIPTION - Hospital Payroll is designed to accomplish basic payroll functions of a hospital. Recognizing that there are substantial variations in payroll policies among hospitals, the system can be easily modified to specific requirements. Two file data load programs- Employee Load Program and Department Load Program- are used to initialize the payroll disk pack and to set up two-sector employee records for each employee. Three programs are included which perform payroll calculations and printed output. The Payroll Register Program calculates pay for salaried

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employees, paid bi-monthly, and hourly employees, paid weekly. This program prints the payroll register showing the number of hours worked, gross pay, extra earnings, FICA, FIT, total deductions, and new pay. Departmental totals are printed and punched as desired. The Check and Statement Program prints checks and statements while calculating and checking control totals held in disk storage from the payroll register run. The third program prints a deduction register reflecting employee name and number, current gross, current net, and all deductions taken for the payroll period.

Note - These programs run under the monitor contained in the IBM 1440 Hospital Patient Billing (1440-UH-01X) Application Program.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1441 Processing Unit, Model A3, with Indexing and Store Address Register, Printer Attachment, Disk Storage Control, Console Attachment (1447, Model 2)... 1442 Card Read Punch... 1443 Printer, with Printer Control... 1447 Console, Model 1, with Sense Switches and a 1447, MODEL 2... 1311 Disk Storage Drive, Model 1.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... Program Manual including Listings.
MACHINE READABLE - Source Program Decks.

OPTIONAL PROGRAM PACKAGE - None

ORDERING INFORMATION: PROGRAM NUMBER 1440UH06X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1440-US-01X

SECONDARY SCHOOL PROGRAMS (STUDENT SCHEDULING)

DESCRIPTION - Student Scheduling consists of five programs--Course Request Tally, Conflict Matrix, Scheduling, Schedule Printing, and Utility. The Course Request Tally and Conflict Matrix Programs are an aid to the school administrator in building his master schedule. The Tally program counts the student requests and computes the number of sections based on one fixed factor. Only one factor is used for all courses. The Conflict Matrix Program determines the number of potential conflicts for a maximum of 100 single and double section courses. A Matrix is printed showing this information.

The Student Scheduling Program is divided into two phases.

Phase 1 processes the student request cards against the master schedule stored in the disk file to determine conflicts. Student conflicts are printed showing student information, the course causing the conflict and all courses requested by the student. Scheduled information for students is written into the disk file. At this point, depending on the number of conflicts, the program may go to phase 2 or be terminated.

Phase 2 writes the detail course information for each scheduled student into the student master record area. It schedules lunch for the fourth or fifth period and study halls. The Schedule Printing Program prints the student and course information from the disk file onto the schedule. It will print and total course fees where applicable.

FEATURES -

- Will handle 799 courses, 4 sections per period or 3200 sections maximum. (Expandable with more disk storage)
- Uses eight period day and seven student requests 3000 students per disk pack
- Prints schedules and punches grade cards at eight to ten students per minute--can schedule lunch and study halls balances the classes and fills classes to specified seat capacity
- Prints a complete conflict message to provide analysis of the reason for a student conflict.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1440 system with Indexing and Store Address... 1442 Card Read Punch... 1443 Printer with Print Control... 1447 Console with Sense Switches... 1311 Disk Storage Drive.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-Up... Reference Manual Including Program Listings.
MACHINE READABLE - Object Program Decks... Sample Problem Decks.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None

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MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1440US01X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1440-US-02X

SECONDARY SCHOOL PROGRAMS (GRADE REPORTING)

DESCRIPTION - Grade Reporting consists of four programs to aid school personnel in preparing grade reports and in compilation of statistics from the grades received by students. Grade cards are used to prepare the grade reports, update student grade records on disk pack and print an honor list. Grade distribution reports are printed reflecting totals of letter grades given by a teacher as received in a course. Failure lists indicating student and course are printed using those grade cards with failing grades.

FEATURES -

- Will handle up to seven course per student.
- Honor list is automatically available after grade report run.
- 6600 students per disk pack.
- Can print parents name and address on the grade report.
- Prints grade reports at 10 to 15 students per minute.
- Grade distributions speed at 300 cards per minute.
- Failure list printing at up to 150 lines per minute.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1440 System with Indexing and Store Address... 1442 Card Read Punch... 1443 Printer with Print Control... 1447 Console with Sense Switches... 1311 Disk Storage Drive.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Reference Manual including Program Listings.
MACHINE READABLE - Object Program... Sample Problem.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1440US02X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1440-US-03X

SECONDARY SCHOOL PROGRAMS (PAYROLL AND PERSONNEL)

DESCRIPTION - Payroll and Personnel Programs are an aid to school personnel in preparing the monthly salaried payroll, writing payroll checks, printing deduction register and check reconciliation. The teacher contract program prints pertinent teacher data on contract forms. The teacher list program provides school principals with a list of teachers in the school.

FEATURES -

- Will handle up to 10,000 personnel payroll records per disk pack.
- Print payroll register and deduction register at speeds of 50 to 60 employees per minute.
- Print payroll checks at the rate of 35 to 40 per minute.
- Prepare reconciliation report at the rate of approximately 300 checks per minute.
- Prepare teacher contracts at the rate of 30 to 35 per minute.
- Prepare teacher lists at the rate of 150 teachers per minute.
- Sense switch control determines if a pre-payroll or payroll register is desired.
- If a person resigns, his finder card can be held out of the payroll runs to delete him from the payroll. The record will remain on the disk for end of year report writing and can be accessed by replacing the finder card.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1440 System with Indexing and Store Address... 1442 Card Read Punch... 1443 Printer with Print Control... 1447 Console with Sense Switches... 1311 Disk Storage Drive.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Reference Manual including Program Listings.
MACHINE READABLE - Object Program... Sample Problem

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OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1440US03X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1440-US-04X

ATTENDANCE RECORDING FOR SECONDARY SCHOOLS

DESCRIPTION - Attendance Recording consists of an Attendance Register Writing Program which will aid school personnel in the preparation of attendance registers and in compilation of attendance statistics for state and federal agency report requirements. The Attendance Recording Program uses attendance cards, which are marked by the teacher or attendance clerk and then mark sense punched, to prepare an attendance register and calculate attendance totals and percentages. It will also update the student master record on the disk pack.

FEATURES -

- Will handle up to 25-day attendance period.
- Will handle either half day or whole day attendance recording.
- Will update student master record on the disk pack with year-to-date absences and tardies.
- Cards are not marked when students are present.
- Will handle up to 95 attendance cards per minute.
- Automatically calculates - aggregate attendance, aggregate membership, average daily attendance, average membership, percent of attendance. These calculations are performed for male students, female students, and overall student population.
- Calculates attendance figures for each school and for the entire school district.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1440 System with Indexing and Store Address... 1442 Card Read Punch... 1443 Printer with Print Control... 1447 Console with Sense Switches... 1311 Disk Storage Drive.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Reference Manual...
Program Listings.

MACHINE READABLE - Sample Problem... Program Decks.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440US04X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-UT-040

DISK FILE ORGANIZATION ROUTINES

DESCRIPTION - These routines will load and maintain 1301 or 1311 Disk Storage Files on a 1440 system. The new version incorporates the additional features of magnetic tape input/output, 1301 Disk Storage and 1444 Card Punch Output capabilities. There are two complete sets of routines one set generates object programs for a random file; the other set generates object programs for a control sequential file.

The User's File Organization Object Programs are generated by the 1401/1440/1460 Autocoder (on Disk) Macro-Generator from a series of 1440 IOCS, Version 2, Library Routines and the Disk File Organization Library routines. The user supplies the appropriate parameters for generation by means of control cards. The object programs for loading and maintaining a random file use the chaining method. By this technique, records are loaded into a disk location determined by a control field within the record. Records whose control data convert to the same disk address are linked together with a chain of addresses. The routines can generate object programs to add records to and delete records from a file. Records may be loaded or unloaded from or to cards, tape, or disk storage. The object programs for loading and maintaining a control sequential file add records to and delete records from the file without destroying the sequence. A sequence-link is used for this purpose. A distribution index is built by the programs. This index makes possible quick access to any given record in the file. Records may be loaded or unloaded from or to cards, tape, or disk storage.

The requirements for generation of the User's File Organization object programs are the same as those for 1401/1440/1460 Autocoder (on Disk), No. 1401-AU-008, and

CONTINUED FROM PRIOR COLUMN

1440 IOCS, Version 2, No. 2440-IO-010.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - a 4K 1440 system for 1311 usage of 8K 1440 system for 1301 usage with... one 1442 Card Read Punch MDL 1 or 2 or 1442 Card Reader MDL 4... One 1311 Disk Storage Drive or 1301 Disk Storage Array... 1403 Printer MDL 2, 3, 5, 6, 1443 Printer or 1447 Console MDL 2 or 4 (if a log is to be kept during file loading, additions, or deletions, the 1443 Printer is required; in that case, a 1447 Console MDL 1 may be used)... one 1444 Card Punch (required only if punched output is used on a system with 1442 Card Reader MDL 4)... one 7335 Magnetic Tape Unit (required only if tape input or output is used).

Note: The following programs are required - 1401-AU-008; 1440-IO-010; 1440-UT-041.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Listings...
Operating Procedures, C24-3134.

MACHINE READABLE - OPTION 1 - Common and random, and is specified by using Program Extension Number OPT1.
OPTION 2 - Common and control sequential, and is specified by using Program Extension Number OPT2.
OPTION 3 - Common, random and control sequential, and is specified by using Program Extension Number OPT3.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Program Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440UT040

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	OPT1	CARDS	15	none
	OPT2	CARDS	15	none
	OPT3	CARDS	15	none
OPTIONAL	none	none		none

1440-UT-041

DISK UTILITY PROGRAMS

DESCRIPTION - This system is designed to perform certain frequently required operations on 1440 systems with 1311 or 1301 Disk Storage, without programming effort on the part of the user. The programs provided are -

Clear-Disk-Storage	Disk-to-Disk
Print-Disk	Disk-to-Tape
Card-to-Disk	Disk-Record-Load
Tape-to-Disk	Copy-Disk
Disk-Label	

Each program is generalized, modifying itself to perform specific operations by information received through control cards. Each program includes an optional disk label checking routine for use with 1311 Disk Storage. They are designed for use on 4K or larger systems; 8K or greater is necessary when processing disk data for which the Track Record special feature is required. These programs perform such functions as clear disk and generate addresses, supply output for file protection purposes, display disk storage on the printer, change data or addresses in disk storage, and on 1311 Disk Storage create the label track or remove the label track, and enter, delete, change, display, and punch disk labels.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1440 System (8K required if Track Record Format is used) with... 1442 Card Read Punch Model 1 or 2 or a 1442 Card Reader MDL 4 and a 1444 Card Punch... 1443 Printer... one 1311 Disk Storage Drive or one 1301 Disk Storage Array... and one 7335 Magnetic Tape Unit (tape programs only).

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up... Specifications...
Operating Instructions.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Listings and Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440UT041

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

CONTINUED FROM PRIOR COLUMN

1440-UT-043

TAPE UTILITY PROGRAMS

DESCRIPTION - The 1440 Tape Utility Programs includes three programs to transfer data files between cards and tape and from tape to printer.

FEATURES -

- Card-to-Tape Tape-to-Card Tape-to-Printer
- Field Selection - allows selection of up to 16 fields in the input record and arrangement of these fields in any order in the output record.
 - Exception Records - bypasses records identified by the presence or absence of up to 72 constant exception characters.
 - Sequence Checking and Numbering - checks sequence of card input files, generates and punches sequence numbers in card output files.
 - Selective File Processing - searches tape files for the file identified by a particular header label.
 - Options for Off-Line Processing - facilitates off-line tape processing for/from large systems. They are -
 - (1) Group-Mark Conversion - the Card-to-Tape program can convert 1440 group marks in cards to 7080 group marks on tape. The Tape-to-Card Program can convert 7080 group marks on tape to 1440 group marks in cards.
 - (2) Binary Records - the Card-to-Tape and Tape-to-Card programs can process column-binary card files and binary tape files.
 - (3) Even or Odd Parity - tapes can be processed in even or odd parity.
 - (4) First Character Forms Control - the Tape-to-Printer program can print files in which space suppression or spacing/skipping between records is determined by the first character of the record.
 - (5) Tape Labels - files with either no tape labels or with the IBM standard 120-character tape labels can be accommodated by these programs.
 - (6) If tape labels are to be checked by the Tape-to-Card or Tape-to-Printer Program, they must be the IBM standard 120-character labels. However, a non-standard header label can be bypassed and printed (up to 120 characters printed). In this case, trailer labels must be present but are used only to indicate EOR or EOP.
 - (7) Header labels other than the standard 120-character label can be, but need not be, followed by a tape mark. Trailer labels must be preceded and followed by tape marks.

These are Generalized Utility Programs, supplied by IBM as condensed card object decks. The programs modify themselves to fit a specific application through the use of a control card.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1440 system with... 7335 Magnetic Tape Unit... 1443 Printer... one 1442 Card Read Punch MDL 1 or 2 or a 1442 Card Reader MDL 4 and a 1444 Card Punch. If binary tape records or column binary cards are to be processed, the 1442 must be equipped with the Card Image feature.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Program Listings... Specifications... Operating Procedures.
MACHINE READABLE - Program Decks.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440UT043

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1450-FB-20X

MICR ENTRY PROGRAM SUPPORTS 1450 BANK DATA PROCESSING SYSTEM

DESCRIPTION - This program supports the 1450 Bank Data Processing System, which is a product entry for the Small Bank Industry. The 1450 uses the 1259 Eleven Pocket Reader/Sorter. The 1440 Mortgage Loan Accounting (1440-FB-04X), 1440 Savings Accounting (1440-FB-05X), and 1440 Demand Deposit Accounting (1440-FB-03X), Financial Application Programs, are available for use on the 1450 Bank Data Processing System. (1450-FB-02X). The program is to be used in conjunction with the 1440 Demand Deposit Program (1440-FB-03X) to convert MICR paper documents to disk records in the format required to accomplish the complete Demand Deposit Application on the 1450 system.

FEATURES -

- Establishes and maintains control over all items that enter the processing operation.
- Proves each batch of items with its batch control slip.
- Sorts good MICR items into predetermined pockets.

- Segregates rejected items for subsequent correction and re-entry.
- Segregates (no on-us) items.
- Verifies account numbers.
- Verifies transaction codes.
- Captures valid MICR item information on disk packs.
- Prepares batch proof listings.

USE - The program is to be used in place of the 1440 Demand Deposit Conversion run when using the 1450 Bank Data Processing System.

PROGRAMMING SYSTEMS - IBM 1440 Sort 5 (1440-SM-030).

MINIMUM SYSTEM REQUIREMENTS - 1441 Processing Unit Model C4 with cable connected 1259 Reader/Sorter... 1442 Card Read Punch Model 1... 1443 Printer Model 3 or 4 with additional print positions... 1447 Console Model 1 or 2 with sense switches... two 1311 Disk Storage Drives, one Model 6 and one Model 7.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Application Directory... Program Description Manual (B20-0551)... Operations Manual (B20-0552).
MACHINE READABLE - Source code.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1450FB20X

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1460-CX-08X

ADMINISTRATIVE TERMINAL SYSTEM

DESCRIPTION - The primary concept of this system is to support a typewriter-like terminal for text processing. Information is entered from the terminals in either free or fixed form. It can be corrected, modified, or rearranged. Output formats are flexible and may be specified from the terminal. Output may be transmitted to any terminal, stored on disk or tape, printed by an on-line printer, written as card images on tape, or punched. Stored information may be recalled for further processing.

FEATURES -

- Data correction, modification, and rearrangement by - backspacing and retyping during entry... retyping beginning with a particular work... replacing a word or phrase... adding to a line or text unit... deleting a line or other text unit... moving of groups of lines or text units... gathering of stored data in any sequence... copying of information by transmission to the originating terminal.
- Storage and retrieval of data from disk files or tape.
- Transmission of data to any terminal.
- Output format controlled from the terminal by - limiting free-form text line length... justification of right-hand margin... intermix of free-form text with fixed format information... placing specified heading and footing lines on all pages of a document... automatic page numbering... controlled vertical spacing... halting to allow operator intervention for text insertion or change of print elements.
- Desk calculator functions - addition, subtraction, multiplication, division, roots, powers, factorials, evaluation of simple algebraic expressions.
- Users may add programs to do simultaneous peripheral operations such as simple tape-to-printer and card-to-tape functions.
- An improved disk storage organization scheme will give improved terminal response on requests involving permanent disk storage.
- 1301 Disk File implementation significantly increases permanent storage capacity.
- Improved storage reporting facilities.

Principal application areas of the Administrative Terminal System are technical manual preparation, proposal writing, test report preparation, financial credit reporting, statistical typing, and similar areas. The system may also be used for source data entry, capturing data directly from a typewriter keyboard. This has particular significance in the computer programming area where program deck control cards and test decks may be selected, modified, combined and made available for running directly from a terminal. The system, when properly instructed, can save every keystroke made by the operator. To alter the text, the operator directs the system to locate the characters to be changed and instructs it in what manner these are to be altered. If a copy of a document is requested, the system will produce and transmit it to the terminal.

PROGRAMMING SYSTEMS - The source program language is 1401/1440/1460 Autocoder (on disk).

MINIMUM SYSTEM REQUIREMENTS - 16K 1460 with - Bit Test, Console Attachment, Direct Seek, Disk Storage Control,

CONTINUED FROM PRIOR PAGE

Indexing and Store Address Register, Transmission Control Unit Adapter on the 1441 Processing Unit Model B6 and an appropriate Model 1461 Input/Output Control... One 1311 Disk Storage Drive Model 1 Direct Seek... 1447 Console Model 1 with Sense Switches... 1447 Console Model 4... 1448 Transmission Control Unit with the 1050/1060 Attachment Feature and RPQ E38485 and, as required, Common Carrier Adapter Sets or Line Adapter Sets... a 1402 Card Read Punch Model 3 is required unless another 1401/1440/1460 system is available to load the program on a 1316 Disk Pack.

OPTIONAL SYSTEM REQUIREMENTS - Translate feature on the 1441 Processing Unit... one to four 1311 Disk Storage Drives Model 2 with Direct Seek and Seek Overlap (at least one 1311 Model 2 is strongly recommended)... one to five modules of 1301 Disk Storage (one 1311 Model 2 is required)... one to six 729 Magnetic Tape Units Model 2, 4, 5, 6 or 7330 Magnetic Tape Units... 1402 Card Read Punch Model 3... 1403 Printer Model 2 or 3 with the print storage feature on the 1461 Input/Output Control and RPQ M13490... line group features and RPQ 811390, as required to attach more than 10 lines to the 1448 Transmission Control Unit. If uppercase and lowercase printing with 120 characters of courier type (matching the courier 72 printing element on the terminals) is desired using a 1403 Printer Model 2, RPQ/S 813148 and 818029 on the 1461 Input/Output Control... RPQ/S 812033, 812034, 898059, 33 each of RPQ E33255, and part 823380 (the chain) on the 1403 Model 2... RPQ 818019 on the 1441 Processing Unit.

TERMINAL REQUIREMENTS - 2741 Communication Terminals (up to 40), with Courier 72 Standard Electric Printing Elements, and line adapters if required. ATS supports only the correspondence code 2741 Terminals without the Interrupt feature.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Application Directory... Application Description, H20-0129... Terminal Operators Manual, H20-0185... Programmers Manual, H20-0228... Console Operators Manual, H20-0227.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Systems Manual (Program Flowcharts).
MACHINE READABLE - 1401/1440/1460 Autocoder (on Disk) output file.

ORDERING INFORMATION: PROGRAM NUMBER 1460CX08Y

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	1316	52	02

1460-IO-011

1460/1401 COMMUNICATIONS IOCS (1448-DDC)

DESCRIPTION - The 1401/1460 Communications IOCS (1448/7740/DDC) consists of a set library routines which, when called for in an Autocoder (on Disk) source program by macro instructions, are selected, tailored, and included in the object program. These routines perform the functions necessary to handle 1402, 1403, 1404, 1311, 729, and 7330 input/output files, to transmit information to and receive information from remote locations, and remote processors, and to provide linkage to the user's programs. The specific routines generated at assembly time depend largely on the particular specifications contained in the user's source program.

NOTE - The 1448 is not applicable to the 1401.

The new version facilitates the generation of programs to control 1448 Communications with 1050 Data Communications Systems over common carrier leased communication lines using Automatic Dialing and Automatic Answering features, and over customer-owned communication lines, with the 1030 Data Collection System, the 1032 Digital Time Unit, the 357 Data Collection System (via the 1408 Transmission Unit), the 1060 Data Communication System, and AT&T Type 83B2 and Western Union Type 115A Telegraph Terminals (utilizing the Telegraph Attachment feature). Using the early warning program option, the user can transmit large messages without assigning equally large blocks of core storage to hold these messages during transmission. The user can also generate programs to control the transfer of information from 1401 or 1460 to either a 1401, 1440, or 1460 via the Direct Data Channel.

The library routines for this IOCS are placed in the Autocoder system through a library run, using Autocoder (on Disk) for 1401, 1440, and 1460 No. 1401-AU-008.

MINIMUM SYSTEM REQUIREMENTS - Requirements for program assembly are the same as those for the assembly of any program using the IBM 1401/1440/1460 Autocoder (on Disk) program.

For object program execution the machine configuration depends upon processing requirements. For communication between remote locations, IOCS required - an 8K 1460 system

CONTINUED FROM PRIOR COLUMN

with... Indexing and Store Address Register Feature... 1448 Transmission Control Unit... 1447 Console MDL 4... 1402 Card Read Punch... other I/O units as required.

For communication between a 1401 or 1460 and either a 1401, 1440, or 1460, IOCS requires - a 4K 1401 or 8K 2460 with... Indexing and Store Address Register (1460) or Advanced Programming (1401) feature... High-Low-Equal Compare feature (1401)... Serial Input/Output Adapter feature... Direct Data Channel feature... 1402 Card Read Punch... other I/O units as required.

Total core storage requirements depend upon the specified functions to be served by the program. To handle basic input/output files, IOCS requires only those I/O units which are specified for program handling. Although user programs can be assembled to handle IBM 1311, 1402, 1403 and tape files only, this IOCS should not be used exclusively for that purpose.

NOTE - For communication between processors, there are two processing systems, each having separate requirements.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up... Operating Instructions... Library Listing.
MACHINE READABLE - Library Deck of Macros.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - System Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1460IO011

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1460-SM-068

IBM 1460 SORT 14

DESCRIPTION - SORT 14 Programs are generalized object sort programs capable of sorting fixed length, blocked or unblocked, records in move mode in either ascending or descending sequence. They will accept input from cards, 1301 Disk Storage, or magnetic tape, and will write the final output on 1301 Disk Storage or tape. Sorting can be controlled by as many as ten control data fields of total length up to a maximum of 189 characters.

Program No. 1460-SM-068 will process tapes with no labels or with IOCS type B 80 character IBM labels (a tape mark cannot follow labels). There is no provision for handling non-standard tape labels.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1460 system with... one 1301 Disk Storage Module... 1402 Card Read Punch...

one 1403 Printer. The program can use, if available, up to five 1301 Disk Storage Modules, one or two magnetic tape units for input/output, and 12K or 16K Core Storage.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Program Write-up... Operating Procedures... Program Specifications... Timings Manual.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - System Listings... Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1460SM068

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1460-SM-069

IBM 1460 SORT 14

DESCRIPTION - SORT 14 programs are generalized object sort programs capable of sorting fixed length, blocked or unblocked, records in move mode in either ascending or descending sequence. They will accept input from cards, 1301 Disk Storage, or magnetic tape, and will write the final output on 1301 Disk Storage or tape. Sorting can be controlled by as many as ten control data fields of total length up to a maximum of 189 characters.

Program No. 1460-SM-069 will process tapes with no labels or with 120 character IOCS Type A IBM standard labels (a tape mark must follow labels). There is no provision for handling non-standard tape labels.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1460 system with... one 1301 Disk Storage Module... 1402 Card Read Punch... one 1403 Printer. The program can use, if available, up

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to five 1301 Disk Storage Modules, one or two magnetic tape units for input/output, and 12K or 16K core storage.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Program Write-up... Operating Procedures... Program Specifications... Timing Manual.
MACHINE READABLE - Object code.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - System Listings... Flowcharts.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1460SM069

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1460-SV-090

1460-1070 PROCESS COMMUNICATION MONITOR FOR 1401 AUTOCODER (ON TAPE)

DESCRIPTION - The IBM 1460-1070 PCM, consists of a set of 1401 Autocoder (On Tape) library routines, used to generate Process Communication Programs oriented to meet the requirements of the 1070 Process Communication System.

The routines are -

- MONITOR ROUTINE - Controls the handling of interrupts and scheduling of line operations on a priority basis. It simulates a real-time clock and up to nine interval timers. In addition, it informs of errors detected, and records the status of the lines and of the remote systems.
- CONVERSION SUBROUTINE - Calibrates the ADC of 1070 systems and converts ADC readings to a standard range.
- DELTA/LIMIT CHECK SUBROUTINE - Performs limit and/or delta checks on converted ADC readings.
- CONTACT SENSE SUBROUTINE - Compares current contact sense readings with a master mask or with previous readings.
- THERMOCOUPLE SUBROUTINE - Generates temperature values from converted thermocouple readings.
- ERROR LOCATING ROUTINE - Performs output checks on transmission lines and remote systems.

PROGRAMMING SYSTEMS - 1401 Autocoder (On Tape). The PCM is inserted in the library during a library run and called by macro-instructions in the users program. The PCM can be used in conjunction with the 1401 IOCS. A pre-assembly run is required to tailor the PCM to the users installation and requirements before assembly with users program.

MINIMUM SYSTEM REQUIREMENTS - Only those features required by 1401 Autocoder (On Tape) are needed when assembling a program using the 1460-1070 PCM. For a pre-assembly run and for the execution of an object program using the PCM, the following is required- an 8K 1460 system with... 1447 Console Model 2... Indexing and Store Address Register... Multiply Model 2... Indexing and Store Address Register... Multiply-divide (for conversion and thermocouple subroutines)... one 1026 Transmission Control Unit... Interrupt... Time emitter.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Library Routines and pre-assembly object code.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Listings, Flowcharts.
MACHINE READABLE - None

ORDERING INFORMATION: PROGRAM NUMBER 1460SV090

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1460-SV-091

1460-1070 PROCESS COMMUNICATION MONITOR FOR 1401 BASIC AUTOCODER 2K

DESCRIPTION - The IBM 1460-1070 PCM, consists of a set of 1401 Basic Autocoder 2K routines, used to generate Process Communication programs oriented to meet the requirements of the 1070 Process Communication System.

The routines are-

- MONITOR ROUTINE - Controls the handling of interrupts and scheduling of line operations on a priority basis. It simulates a real-time clock and up to nine interval timers.

CONTINUED FROM PRIOR COLUMN

In addition, it informs of errors detected, and records the status of the lines and of the remote systems.

- CONVERSION SUBROUTINE - Calibrates the ADC of 1070 systems and converts ADC readings to a standard range.

- DELTA/LIMIT CHECK SUBROUTINE - Performs limit and/or delta checks on converted ADC readings.

- CONTACT SENSE SUBROUTINE - Compares current contact sense readings with a master mask or with previous readings.

- THERMOCOUPLE SUBROUTINE - Generates temperature values from converted thermocouple readings.

- ERROR LOCATING ROUTINE - Performs output checks on transmission lines and remote systems.

PROGRAMMING SYSTEMS - 1401 Basic Autocoder 2K. A pre-assembly run is required to tailor the PCM to the users installation and requirements before assembly with the users program.

MINIMUM SYSTEM REQUIREMENTS - Only those features required by 1401 Basic Autocoder 2K are needed when assembling a program using the 1460-1-7- PCM. For a pre-assembly run and for the execution of an object program using the PCM, the following is required- an 8K 1460 System with ... 1447 Console, Model 2... Indexing and Store Address Register... Multiply-Divide (for conversion and thermocouple subroutines)... one 1026 Transmission Control Unit... Interrupt... Time emitter.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up, specifications Manual.
Operating Procedures Manual.
MACHINE READABLE - Basic Autocoder 2K Routines and a pre-assembly object program.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - Listings, flowcharts.
MACHINE READABLE - None

ORDERING INFORMATION: PROGRAM NUMBER 1460SV091

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

CONTINUED FROM PRIOR COLUMN

1401-01.1.014

AUTOEDIT - 1401 EDIT FOR 1410 AUTOCODER PROGRAMS

AUTHOR...A. D. Wills

DIRECT TECHNICAL INQUIRIES TO...

A. D. Wills
Associate Systems Engineer
IBM Corporation
110 W. 21st Street
Norfolk 17, Virginia

DESCRIPTION - Program to edit 1410 programs. Checks validity of OP codes and macros. Spreads the operands of instructions. Counts core used by instructions. Performs several more editing functions.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401 with Advanced Programming package, Hi-Low-Equal Compare, with 132 printing positions.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - 1. AUTOEDIT condensed
2. Sample Problem No Errors
3. Sample Problem With Errors
4. AUTOEDIT Source

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401011014

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.1.016

ACCELERATOR PACK-SYMBOLIC 4K PROGRAMMING SYSTEM ASSEMBLY

AUTHOR...J. Nettenstro

DIRECT TECHNICAL INQUIRIES TO...

J. Nettenstro
IBM Corporation
6252 East Telegraph Road
Los Angeles 22, California

DESCRIPTION - The 4K Accelerator Pack is a program for assembling SPS programs for 1.4-4K 1401's on 4K card 1401's. It was developed to eliminate the partially processed cards that are punched out during the first pass of SPS 1 and 2.

PROGRAMMING SYSTEMS - Source language 1401 Symbolic programming system.

MINIMUM SYSTEM REQUIREMENTS - 4K any model - no special features required.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401011016

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.1.017

RAPID ASSEMBLY PROGRAM NO. 14043

AUTHOR...C. L. Borstad

DIRECT TECHNICAL INQUIRIES TO...

C. H. Williams
U.S. Bureau of Public Roads
610 East Fifth Street
Vancouver, Washington

DESCRIPTION - RAP was written primarily to eliminate the intermediate punching of cards when assembling SPS II programs on a card input-output 1401 system. Provision was made to obtain an object listing, with or without an object one-per-card deck and with or without a condensed deck, at the time the program is being assembled. Duplicate labels are detected and printed during the first pass and at conclusion of the second pass a dump of labels and addresses and unreferenced labels is made. The one-per-card object deck may be assembled as a source deck and may be listed without assembly. A mnemonic of EQU has been added to equate a label to a label previously defined.

MINIMUM SYSTEM REQUIREMENTS - 1401 card system with Advance Programming Package, Print Control Additional, High-Low-Equal Compare and Sense Switches.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401011017

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.1.018

TWO - TAPE AUTOCODER ASSEMBLY FOR THE 1401

AUTHOR...R. B. Rosenberger

DIRECT TECHNICAL INQUIRIES TO...

R. B. Rosenberger
IBM Corporation
520 Boylston Street
Boston 16, Mass.

DESCRIPTION - This program will assemble source programs with restrictions outlined below, on 1401 systems with only two tape units. It provides for unlimited reiterations, and produces an assembly listing and a program deck in the autocoder condensed format.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS 1. 1401 with 4K or larger storage. 2. 1402. 3. 1403 with 132 print positions. 4. Two tape units (729 or 7330). 5. High/Low/Equal Compare feature. 6. Advanced Programming feature.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.

Machine Readable - Source Deck.

ORDERING INFORMATION: PROGRAM NUMBER 1401011018

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	MT 7/556	22	01
		MT 7/800	24	01

1401-01.1.020

EDIT - EDITING DATA INPUT FOR VALIDITY

AUTHOR...R. M. Jewell

DIRECT TECHNICAL INQUIRIES TO...

R. M. Jewell
San Francisco Financial
DP Div., No. 393
420 Montgomery Street
San Francisco 4, Calif.

DESCRIPTION - A program for scanning cards at 800 per minute for validity errors- i.e., invalid multiple punches. Useful for checking data files converted at time of installation of a system, or for checking transaction input cards. Prevents interruptions during job processing due to presence of invalid punching that may exist in cards- the edit program identifies such error cards in a prior run, rather than having the cards cause a machine halt during job processing. Invalid cards can be identified in various ways under sense switch control. Can be used for card counting if no other means is available. Card read error latch is tested for each card read and desired action taken on error cards according to sense switch settings.

PROGRAMMING SYSTEMS - Written in 1401 SPS.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401, with Model 2 Printer and sense switches. Core positions 001 thru 1184 used.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401011020

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

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	BASIC	OPTIONAL	CARDS	15	none
	none	none			

1401-01.1.026

AUTOCODER PRE-LIST DIAGNOSTIC

AUTHOR....C. B. Carsten

DIRECT TECHNICAL INQUIRIES TO...

C. B. Carsten
IBM Corporation
1307 South Boulder
Tulsa 19, Oklahoma

DESCRIPTION - A program for making stacked pre-lists of 1401 Autocoder source program decks. The purpose is to provide a memo of preliminary checking where a 1401 tape system may not be available for prelisting as a means of checking prior to assembly to attempt limiting source deck errors. An edit of operation codes and a minor edit of operands is taken and errors are noted. IOCS cards are accepted. Disk, binary, call, incld and actual instructions are not handled.

PROGRAMMING SYSTEMS - Written in SPS, 678 Source Cards, is primarily card to printer with formatting of output and has been tested successfully innumerable times.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401 with Hi-Lo-Equal compare and sense switches - 1403 Model 2 printer - and 1402 Model 1 Card Read/Punch.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401011026

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.1.035

TAPE SYSTEM LOADER

AUTHOR....R. A. Pesceovich

DIRECT TECHNICAL INQUIRIES TO...

R. A. Pesceovich
IBM Corporation
240 Broadway
Paterson, New Jersey

DESCRIPTION - The Tape System Loader permits the 1401 user to place several programs on one system tape. The system loader can select a program for loading, add a new program to the system from condensed cards or from Autocoder loadable tape, delete a program from the system, list all the header control records of the programs on the the system, place itself on the system tape, and duplicate the system onto another tape.

PROGRAMMING SYSTEMS - Written in 1401 Tape Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 8K system with the features and equipment for tape Autocoder. However, it can be easily modified for a 4k 1401 by changing several modify address instructions.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE -
DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1401011035

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-01.1.036

SPSS - AN IMPROVED SPS - ASSEMBLER

AUTHOR....H. J. Koekkoek

DIRECT TECHNICAL INQUIRIES TO...

H. J. Koekkoek
IBM 1401 Users Club
Systems Dept.

P.O. Box 9999
Amsterdam, The Netherlands

DESCRIPTION - Two pass assembly of source programs directly into condensed cards. Pre-and postlist included. No restrictions. extended error checks. Undefined, etc. labels printed after pass 1.
PROGRAMMING SYSTEMS - Written in SPS Language.

MINIMUM SYSTEM REQUIREMENTS - 4K affords possibility for usage of over 250 labels per iteration, 8K of over 800. No special features needed. 4K8K-12K-16K, 1402, 1403.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401011036

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.1.039

PRE-LIST FOR AUTOCODER SOURCE DECK

Robert Stern

Robert Stern
IBM Corporation
40 Saw Mill River Road
Hawthorne, New York 10532

1401-01.1.043

AUTOCODER PRE-LIST

AUTHOR....H. A. Miller, Jr.

DIRECT TECHNICAL INQUIRIES TO...

H. A. Miller, Jr.
IBM Corporation
1120 Connecticut Avenue, N. W.
Washington, D. C.

DESCRIPTION - Audits basic Autocoder statements for page-line sequence, identification, valid mnemonic or actual operation including standard Autocoder/IOCS macros, valid symbolic or actual operands including valid D-modifier to mnemonic relationship, logical instruction length, blanks in card columns 73 - 75, and duplicate or undefined labels within the limits of storage.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Requires 4K 1401, 1402, 1403 Mod. 1 or 2, High-Low-Equal Compare, and Advanced Programming. Label capacity is 666 for 8K, 1333 for 12K and 2000 for 16K. Program has 887 Autocoder source statements occupying 3976 positions of storage.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Appropriate material delivered.

ORDERING INFORMATION: PROGRAM NUMBER 1401011043

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-01.1.051

1401/1460 PACE PRE-ASSEMBLY CHECK AND EDIT

AUTHOR....B. N. Averkamp

DIRECT TECHNICAL INQUIRIES TO...

B. N. Averkamp
IBM Corporation
23 Hitchcock Way
Santa Barbara, California 93105

DESCRIPTION - PACE brings to the 1401/1460 user an efficient and meaningful diagnostic program. It will check and edit 1401 Autocoder and Autocoder/IOCS source programs by detecting undefined labels, format and parameter errors, coding errors and key punch errors. The printed output provides a label table in alphabetical order followed by a listing of the source program with errors underlined by significant special characters. An edit is also performed on DIOCS and DTF entries for acceptability and

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spelling. There are three checks of Autocoder statements pertaining to labels, operation codes and operands. The checking results are equal to an Autocoder assembly. Printed output options are available with sense switches. PACE will allow programmers to become more productive by minimizing program testing. Since it averages between 195 and 265 cards per minute depending upon the machine configuration, it will also eliminate a substantial amount of machine time previously used for assembly and program testing.

PROGRAMMING SYSTEMS - Written in Autocoder.
MINIMUM SYSTEM REQUIREMENTS - 1401/1460 system with a minimum storage of 4,000 positions, 1-1311, High-Lo-Equal Compare and Advanced Programming.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401011051

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-01.1.052

SPS SINGLE PASS ASSEMBLER

AUTHOR....Robert E. Marden

DIRECT TECHNICAL INQUIRIES TO...
Robert E. Marden
The Putnam Management Co.
60 Congress Street
Boston, Massachusetts 02101

DESCRIPTION - This program was designed specifically for 4K card systems, and completely eliminates the card for card punching normally associated with card assemblers. No special features are required to use this program. The source deck being assembled is read twice. The first reading sets up an internal label table, the second time through a condensed deck is punched and the listing printed. A label table is also printed with unreferenced and duplicate labels indicated as such. MA, SAR, SBR, MIZ, MCH, EBE, and indexing cannot be assembled with this program. Tape, disk, and drum instructions of any type cannot be assembled. There is a maximum number of labels that can be processed and this varies from 224-252. DSA, DS, DC and DCW cards are placed in memory where they appear in the source deck.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 (any model), 1402, and 1403 with no special features is required.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401011052

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.1.056

1401/1440 EDIT SYSTEM/360 BASIC ASSEMBLY LANGUAGE

AUTHOR....W. H. Barbee

DIRECT TECHNICAL INQUIRIES TO...
W. H. Barbee
IBM Corporation
P. O. Box 9266
Raleigh, North Carolina 27603

DESCRIPTION - This program edits System/360 Basic Assembly Language on 1401/1440. It produces a program listing, literal listing, and label listing. The program processes BAL statements; it lists BOS and DOS IOPS macros and job control statements as comments. Error messages are interspersed in the program listing.

PROGRAMMING SYSTEMS - Written in Basic Assembly Language.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401/1440 with indexing and Store Address registers, 1402/1442 Card Reader, 1403/1443 Printer, and one (1) 1311 Disk Drive.

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BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401011056

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.2.003

THREE TAPE SORT PROGRAM

AUTHOR....R. Zuidhof

DIRECT TECHNICAL INQUIRIES TO...
R. Zuidhof
Bataafse Inter. Petrol. Maatschappij
Data Processing Center
The Hague
Netherlands

DESCRIPTION - To provide a sort program for 1401 Systems using 3 magnetic tape units. The program consists of four phases and may also be used for merging two tape files which are already in ascending order.

MINIMUM SYSTEM REQUIREMENTS - 4000 positions of core storage, Advanced Programming feature, High-Low-Equal Compare feature, Sense Switches feature, three (3) tape units (7330 or 729 II or IV).

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401012003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.2.012

TTSRT - TWO TAPE SORT

AUTHOR....A. C. Forlenza

DIRECT TECHNICAL INQUIRIES TO...
A. C. Forlenza
IBM Corporation
220 Church Street
New York 13, New York

DESCRIPTION - This program will sort fixed length, fixed block records on a two-tape 1401 provided the control fields are numeric only. Input and output are on tape. User specifies his record size, control fields, etc., on a single control card. Portion of documentation of program is built into listing using comments and comments cards. Up to 5 numeric control fields are allowed. Maximum input volume is one reel of tape, therefore, actual number of records which can be sorted will vary with block size and record length. Maximum input block size is 1200 characters.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - 4K memory size is needed and sense switches are desirable for use of an operating option in the read error routine. No other special features required.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401012012

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.2.018

CARD MERGE

AUTHOR....P. B. Mayo

DIRECT TECHNICAL INQUIRIES TO...

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P. B. Mayo
5622 7th Road South
Arlington, Virginia

DESCRIPTION - This is a card collating program designed to sequence check, sequence check with selection, merge, merge with selection, match, and match with selection. A maximum of 16 parameter controlled fields may be utilized.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - A 1401 with 4K, Hi-Lo-Eq Compare and Advanced Programming features, a 1402 with Punch Feed Read and Read Feed Stacker Delay features and any Model 1403.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401012018

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.2.022

8K THREE TAPE SORT MERGE

AUTHOR....F. Oberembt

DIRECT TECHNICAL INQUIRIES TO...
F. Oberembt
St. Joseph Indian School
Chamberlain, S.D.

DESCRIPTION - The purpose is to provide an alphanumeric sort program for 1401 system using three magnetic tape units. It is a modification of 1401-01.2.003. Input is fixed length blocked unblocked records. Output is ascending sequence only.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Advanced Programming, High-Low-Equal Compare sense switches, three tape units (7330 or 729 II or IV.) and 8000 positions of core.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401012022

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.2.023

IBM 1401/1440/1460/1311 DISK SORT

AUTHOR....A. E. Seymour

DIRECT TECHNICAL INQUIRIES TO...
A. E. Seymour
IBM Corporation
2000 S.W. First
Portland, Ore. 97201

DESCRIPTION - This program is a generalized disk sort and will run on 1440/1460/1401. Darts-2 will sort fixed length blocked or unblocked records in sector mode and fixed length records in track mode. Darts-2 will sort ascending or descending alpha or numeric. Darts-2 will provide exits for job to job linkage, monitor linkage, inquiry linkage, can reside on disk or tape, and uses a very small work area. Input and output areas may be physically the same or addressed the same.

PROGRAMMING SYSTEMS - Written in 1401-1440 Autocoder and consists of 2 Programs.

MINIMUM SYSTEM REQUIREMENTS- 8K, Advanced Programming, Hi-Lo-Eqaul, 1311, 1442-1402.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401012023

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	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.2.024

ALPHABETIC NAME FILE SEARCHING BASED ON PHONETICS

AUTHOR....R. A. Root

DIRECT TECHNICAL INQUIRIES TO...
R. A. Root
IBM Corporation
3424 Wilshire Blvd.
Los Angeles, Calif.

DESCRIPTION - This is a demonstration program for searching alphabetic-keyed name files on disks using phonetic techniques. The package is equipped with a sample name file. It also contains programs which allow the user to generate the specified file format from his own name file. Inquiries can be made from the console, remote 1050, or in batch form from the card reader. Contains file organization and search techniques based on sound of name not spelling. Retrieves direct hits plus near misses. Catches transcription errors and sound-alike-but spelled-different situations. No operator coding. Applicable for insurance, banking, airline, state and local government. Proven results.

PROGRAMMING SYSTEMS - Written in Autocoder with IOCS.

MINIMUM SYSTEM REQUIREMENTS - 1401, 1440, or 1460 (interchangeable). 12K, 1402, 1403, 1407-1447, up to five 1311, one tape drive, ADV PGM, SS, and MPY-DIV. (1448-1050 optional).

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401012024

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	NT	7/556 7/800	22 24	01 01
OPTIONAL	none	none			none

1401-01.2.025

1401 SORT 7 - 1311 DISK LOAD

AUTHOR....F. P. Welch

DIRECT TECHNICAL INQUIRIES TO...
University of California
Group A0-7
Los Alamos Scientific Laboratory
P. O. Box 1663
Los Alamos, N.M. 87544

DESCRIPTION - Sort 7 may be loaded from disk as well as from tape or cards. In this way, a disk drive can be used in place of a fifth tape unit, and Sort 7 may reside on the same disk pack with other programs.

MINIMUM SYSTEM REQUIREMENTS - Same as for Sort 7, except an IBM 1311 disk storage drive is used instead of fifth tape unit.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401012025

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.3.003

GENERAL PURPOSE TAB-BACK PROGRAM

AUTHOR....B. T. Smith

DIRECT TECHNICAL INQUIRIES TO...
B. T. Smith
The Warner Brothers Company
325 Lafayette Street
Bridgeport 1, Conn.

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DESCRIPTION - To provide tabulations or listings of summary cards or initial data cards for control and verification purposes. This program may have the following 1. Card A up to ten, eight column add field descriptions. 2. Card B A/up to ten positive, ten column add fields, or up to ten negative, eight column add fields, B/ up to three classes of comparing of not more than ten columns for each class of comparing, C/ up to four classes of totals. 3479 core positions are required for this program.

MINIMUM SYSTEM REQUIREMENTS - 4K, 1401 card system, with the advanced programming package, and 1403 Printer.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401013003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.3.005

REPORT PROGRAM GENERATOR PRE-EDIT

AUTHORS...J. Melnick C. E. Wyman

DIRECT TECHNICAL INQUIRIES TO...

J. Melnick
IBM Corporation
215 W. State Street
Trenton 8, N. J.

DESCRIPTION - An IBM 1401 program to edit Report Program Generator control, input specifications, data specifications, calculation specifications, and format specification cards for possible clerical and logical errors. The program supplies a card image listing and specific error messages.

PROGRAMMING SYSTEMS - Written in RPG.

MINIMUM SYSTEM REQUIREMENTS - 4K, core, IBM 1401, IBM 1402 and IBM 1403, Model 1 or 2.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401013005

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.3.011

ONE CARD 80-80 LIST

AUTHOR...H. Bardin

DIRECT TECHNICAL INQUIRIES TO...

H. Bardin
New York University
Engineering Research Division
Data Processing & Computation Lab
233 Fordham Landing Road
Bronx 68, New York

DESCRIPTION - To provide a compact card listing program for use on a 100 or 132 position printer, with the carriage being restored at the start of the job and on forms overflow. Operating procedures place deck to be listed behind program card in read hopper. Load program. To bring last card, press start.

MINIMUM SYSTEM REQUIREMENTS - Any 1401 Model with 3 index registers.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401013011

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.3.018

SELF CENTERING QUICK REPORT (QUICKIE)

AUTHOR...N. T. Redfern

DIRECT TECHNICAL INQUIRIES TO...

N. T. Redfern
Package Machinery Company
330 Chestnut Street
East Longmeadow, Mass. 01028

DESCRIPTION - Produce quick geometrically spaced printed report without designing a specific layout, as a listing or tabulation, with or without summary punching, onto one of three specified sizes of paper widths (8 1/2 in., 10 5/8 in., 14 7/8 in.) according to field definition and field control established by preparation of simple control cards.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - A 1401 with 4K storage. No special features required, however, equipment with less than 132 print positions cannot specify use of 14 7/8 in. width paper.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401013018

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.3.022

SOMR - SPUR OF THE MOMENT REPORTING

AUTHOR...G. W. Junkin

DIRECT TECHNICAL INQUIRIES TO...

G. W. Junkin
IBM Corporation
6900 Fannin Street
Houston, Texas 77025

DESCRIPTION - Provides an easy and quick means of producing a printed report from card input. This permits a short response time for one-time requests and provides a stop-gap program to allow additional time for programming a specific job. Saves program storage space for it is only necessary to retain a maximum of eight setup cards for each job instead of an entire program. This program can take the place of many programs for listings and tabulations. Listing, tabulating, and group indicating fields cannot be greater than fourteen fields. Maximum counter size is ten digits in all cases. Minor, intermediate and major breaks are each controlled by one field of thirty columns maximum.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - A 1401 with 4,000 positions of storage and Hi-Low-Equal Compare, 1402 and 1403 Model 1 or 2. Uses 3,988 positions of storage. 275 lines per minute output during a listing job and 400 cards per minute during a tabulate job on a 1401 System without print storage.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401013022

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.3.024

1401/1460 PRINT LARGE CONSECUTIVE NUMBERS ON LABELS

AUTHOR...Paul K. Duerr

DIRECT TECHNICAL INQUIRIES TO...

Paul K. Duerr
IBM Corporation
Dept. 317
Owego, New York 13827

DESCRIPTION - The program was designed specifically to explode the size of consecutive numbers to be printed on

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inch high labels, but any numbers of from one to nine digits may be printed. The numbers printed are all slightly less than 7/8 inch in height. Only digits "0" through "9" and blanks may be printed. A control card is needed for each application. User routines may be easily included.

MINIMUM SYSTEM REQUIREMENTS - The program may be run on any 1401 or 1460. Core size is 1329 locations and no special features are required.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401013024

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.010

ESCADE - EFFORTLESS SYSTEM OF CALCULATING AND PRINTING EVERYTHING

AUTHOR....W. J. Teagarden

DIRECT TECHNICAL INQUIRIES TO...

W. J. Teagarden
Southern Permanente Services
143 South Alvarado Street
Los Angeles 57, California

DESCRIPTION - A utility program which provides rapid conversion of 604, 602, and 528 jobs to the 1401. This load and go program also may be used to reproduce cards as well as gang punching, selective reproducing, sequence numbering, listing or combinations of these operations. Two card routines and end-of-file routine may be developed. The effective working storage of the object program is comprised of 20 counters and 20 Storage Units of ten positions each. Multiplication and division can be executed only from counters. Approximately 1800 positions of core are available to build the three routines of 1,000 positions, 500 positions and 300 positions.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401. Punch Feed Read, Multiply-Divide and High-Low-Equal Compare features are required if program is completely used.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014010

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.012

SCOOP I & II - SIMPLIFIED CONVERSION OF OTHER PUNCHES

AUTHOR....Louis P. Poulin

DIRECT TECHNICAL INQUIRIES TO...

Louis P. Poulin
California-Western State
Life Insurance Co.
2020 1 Street
Sacramento 4, California

DESCRIPTION - To provide a simple method of converting 90 column cards in descending sequence to 80 column cards (or Magnetic Tape) in ascending sequence.

PROGRAMMING SYSTEMS - Written in RPG.

MINIMUM SYSTEM REQUIREMENTS - 1401 with 4,000 positions of storage and Column Binary Device. Scoop II requires the Advanced Programming Package. The interchangeable brush block (RPQ NO. 899287) is not required when using SCOOP.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014012

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

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	BASIC	OPTIONAL	none	none	CARDS	15	none
BASIC	none	none	none	none	CARDS	15	none
OPTIONAL	none	none	none	none	none	none	none

1401-01.4.022

TAPE UPDATE UTILITY PROGRAM

AUTHORS...Jerry Kimball Marvin Bader

DIRECT TECHNICAL INQUIRIES TO...

Jerry Kimball
U. S. Army Strategy & Tactics Anal. Group
4815 Rugby Avenue
Bethesda 14, Maryland

DESCRIPTION - To update a BCD tape of N files, whose records are less than 880 characters. Entire files, or individual records within a file may be deleted, changed, or inserted by the use of control cards and the sense switches.

MINIMUM SYSTEM REQUIREMENTS - Memory 4K Model C 1401 with two Tape Units, 1403 Printer, Advanced Programming, Multiply-Divide, and High-Low-Equal Compare.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014022

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.034

GENERAL APPROACH TO AUTOMATIC PROGRAMMED ADDRESS CONVERSION

AUTHOR....J. L. Sweeney

DIRECT TECHNICAL INQUIRIES TO...

J. L. Sweeney
IBM Corporation
618 South Michigan Avenue
Chicago 5, Illinois

DESCRIPTION - This program will compute a disk address from a control field, such as a part number, employee number, etc., using a generalized method, and will evaluate the efficiency of addressing methods. Maximum size of the control field 20 positions.

MINIMUM SYSTEM REQUIREMENTS - 1401 1. 4000 positions of storage. 2. Advanced Programming. 3. High/Low/Equal Compare. 4. Multiply/Divide. 5. Sense Switches. 1403 Model II 4 Tape Units.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014034

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.039

MONITOR SYSTEM FOR TAPE

AUTHOR....Barron A. McDonald

DIRECT TECHNICAL INQUIRIES TO...

Barron A. McDonald
The Service Bureau Corporation
IBM Plant, Building 10, Room 308
Monterey & Cottle Roads
San Jose, California

DESCRIPTION - The Monitor Program is generated as the first two records of a System Tape. Access to its use is by the load tape button. The primary functions of the monitor are to (1) Add any 1401 program to this tape and, (2) Call any designated program from this tape into core for execution. Additional functions performed by the monitor are (1) To delete any program on this tape and, (2) System maintenance. Another Monitor controlled feature allows for one program on the system tape to call any other program on that tape for execution.

MINIMUM SYSTEM REQUIREMENTS - A 1401 Model C. One or two tape drives, Advanced Programming, High/Low Equal Compare,

CONTINUED FROM PRIOR PAGE

and the Column Binary feature.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014039

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.051

SELECTIVE REPRODUCE - GANG PUNCH FOR THE 1401

AUTHOR....R. G. Harmon

DIRECT TECHNICAL INQUIRIES TO...

R. G. Harmon
D. C. Government
Finance Division
Municipal Center
3rd & Indiana Avenue N. W.
Washington, D. C.

DESCRIPTION - SELRP is a card to card reproduce/gang punch routine with provisions for column splitting. The master gang punch card must be placed behind the program deck whether gang punching or not.

MINIMUM SYSTEM REQUIREMENTS - 1400 Core Storage positions, no special features required.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014051

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.054

REPRO-REPRODUCER SIMULATOR ROUTINE FOR THE IBM 1401

AUTHOR....R. Weber

DIRECT TECHNICAL INQUIRIES TO...

R. Weber
IBM Corporation
1933 W. Wisconsin Avenue
Milwaukee 3, Wisconsin

DESCRIPTION - This program simulates the 514 Reproducer by assembling within core a program to do such operations as (1) Adding Hollerith information to the card; (2) Reproducing and shifting fields of information; (3) Skipping over columns; (4) Sequentially numbering cards; (5) Moving zones from one column to another; and (6) Adding of zones to the desired columns.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - 1401 Model B, with 1402 Reader Punch, no special features.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014054

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.056

GENERALIZED TABULATE AND/OR SEQUENCE CHECKING PROGRAM

AUTHOR....L. R. Debuis III

DIRECT TECHNICAL INQUIRIES TO...

L. R. Debuis III
IBM Corporation
P. O. Box 19627
2640 Canal Street

CONTINUED FROM PRIOR COLUMN

New Orleans, Louisiana

DESCRIPTION - To eliminate the necessity for many individual programs required at a 1401 installation to take control and balance totals. To provide a rapid means of checking sequence of a file of cards prior to a long 1401 program run.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - 1401-1.4K, 1402, 1403 Model 1 or 2.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014056

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.058

TAPE SEARCH PROGRAM

AUTHOR....G. Estep

DIRECT TECHNICAL INQUIRIES TO...

G. Estep
American Airlines M&E Center
Management Research Division
2000 North Hingo Road
Tulsa, Oklahoma

DESCRIPTION - To search tape files for specific records, and emit via printer, card and/or tape any or all such data contained within the selected record's in an organized usable format.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - 8-16K, 2 Tapes, Hi-Lo-Equal Compare, Advanced Programming.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014058

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.063

MEMORY DUMP IN BANDS OF 100 POS. 20 CARDS

AUTHOR....Uri J. Shafir

DIRECT TECHNICAL INQUIRIES TO...

Uri J. Shafir
IBM Israel Ltd.
P. O. Box 2881
Tel-Aviv, Israel

DESCRIPTION - This program will print-out the whole memory in bands of 100 positions, with numbering of locations. The printout format is easily readable and well suited for debugging.

PROGRAMMING SYSTEMS - Written in Actual (Condensed).

MINIMUM SYSTEM REQUIREMENTS - 4K machine only 1402, 1403 Model 1.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014063

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

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1401-01.4.067

UNPACK CONDENSED CARDS

AUTHORS...J. J. Harding W. W. Papciak

DIRECT TECHNICAL INQUIRIES TO...

J. J. Harding
IBM Corporation
7700 Second Boulevard
Detroit 2, Michigan

DESCRIPTION - This program may be used to get a one for one listing of an SPS or autocoder condensed deck. Program will list sequentially all fields in core which possess a high order mark. Program gives location of high order work mark.

PROGRAMMING SYSTEMS - Written in SPS and Autocoder

MINIMUM SYSTEM REQUIREMENTS - Basic 1401 with no special features. However, all routines and sample problems have been assembled with 441 control cards, which produce programs suitable only for an 8K or larger system.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014067

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.068

REER - REPRODUCE, EMIT, ELIMINATE, REPRODUCE

AUTHOR...Evan J. Staudt

DIRECT TECHNICAL INQUIRIES TO...

Evan J. Staudt
E. I. du Pont de Nemours & Co.
Film Department
Programming Group
Brandywine Bldg.
Wilmington 99, Delaware

DESCRIPTION - This program will reproduce cards, emit characters into output card columns, eliminate input card columns from output card columns, and re-arrange input card columns to output card columns.

PROGRAMMING SYSTEMS - Source language 1401 SPS.

MINIMUM SYSTEM REQUIREMENTS - High-Low-Equal Compare, Advanced Programming Package.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014068

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.071

CORE DUMP ROUTINE

AUTHOR...Robert J. Speck

DIRECT TECHNICAL INQUIRIES TO...

Robert J. Speck
IBM Corporation
Civil Programs, PSD
1111 Connecticut Avenue
Washington 6, D. C.

DESCRIPTION - This is a subroutine which enables the user to take core dumps under program control while testing his program. Thus, a special program does not have to be loaded into the machine each time a core dump is needed, nor is it necessary to manually dump the read and punch areas. Test time is thereby more efficiently utilized.

PROGRAMMING SYSTEMS - SPS Source Deck.

MINIMUM SYSTEM REQUIREMENTS - 1401 with Advanced Programming and High-Low-Equal Compare. It uses positions of core.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014071

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.094

APTCO - AUTOMATIC PROGRAMMING, TESTING, AND CONDENSING OPERATION

AUTHOR...Frank T. Moy

DIRECT TECHNICAL INQUIRIES TO...

Frank T. Moy
Raytheon Co.
Equipment Division
Surface Radar and Navigation Operation
Wayland, Massachusetts

DESCRIPTION - APTCO is a load-and-go program designed to minimize programming, testing, and debugging time required for business programs and yet provide the flexibility to handle a wide variety of problems for a Card System 1401, from simple listings, reproductions and gangpunchings to complicated reports requiring extensive use of logic operations. APTCO will automatically handle up to 5 heading lines, 9 total levels, and 198 symbolic labels. In one pass, APTCO will print a listing of the control cards with error indications, print a core dump if desired, and test generated program or run actual details. APTCO will automatically generate multiply/divide subroutine when required and will handle punch feed read problems.

MINIMUM SYSTEM REQUIREMENTS - 4K Storage - Additional storage capacity is entirely available for object program.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014094

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.096

UNIVERSAL MEMORY PRINT

AUTHOR...Louis J. Copits

DIRECT TECHNICAL INQUIRIES TO...

Louis J. Copits
IBM Corporation
370 W. 1st Street
Dayton, Ohio

DESCRIPTION - This program is designed to provide a legible (DOT) memory print. It will automatically modify itself to run on a 1401 of any memory size. Only the 00 bank must be printed from the console. Core from 081 to the upper limit of the object machine is then printed.

PROGRAMMING SYSTEMS - Written in Absolute and SPS.

MINIMUM SYSTEM REQUIREMENTS - 1401, any Model, 1402, 1403, Model 2. No 1401 special features are required. Contains 322 SPS instruction and comment cards in 1 per card format. The condensed object deck contains 96 cards. Checked out on 4K, 8K and 16K systems of varying configurations. A single high order core position (i. e. 3999 on 4K system, 15999 on a 16K system) is destroyed, but a work mark there is unchanged.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014096

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

CONTINUED FROM PRIOR COLUMN

1401-01.4.097

SYMBOLIC BLOCK DIAGRAMMING SYSTEM

AUTHOR....P. J. Hamilton

DIRECT TECHNICAL INQUIRIES TO...

P. J. Hamilton
IBM Corporation
Scientific Computation Laboratory
Monterey & Cottle Roads
San Jose 14, California

DESCRIPTION - The Symbolic Block Diagramming System assembles and prints block diagrams in a manner similar to that in which a symbolic programming system processes programs. The input to the system is cards punched from a "block diagram coding form" which is designed to look much like the finished diagram. The coding specifies the type (shape) of the block to be drawn for each card and the narrative to be printed in the block. Each block may be assigned a label, and changes to the normal flow of the diagram are indicated by referencing the labels of other blocks. Up to three labels can be referenced from a decision block, and one label can be referenced from other blocks. A sample of the coding form is provided with the program writeup. Just as a programmer need not specify core locations when using a Symbolic Programming System, he need not specify the page or position on the page which a block is to occupy when using the Symbolic Block Diagramming System. The system assigns all locations (page and position) in the first phase. In later phases, it prints the label table, the references to all labels, and the diagram itself. Obviously, the diagram can be updated by punching only the cards involved in a change and reprinting the diagram. Since diagrams to be processed are coded separately from the program, there is no machine or language limitation on the diagrams which can be processed. The number of labels and references is limited by object core size - 4K, 265 labels and 290 referenced - 8K, 665 and 690 - 12K, 1065 and 1090 - and 16K, 1465 and 1490. Diagrams of up to 99 pages can be processed.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - IBM 1401 with 4, 8, 12 or 16 thousand positions of core storage Hi-Lo-Eq Compare, Advanced Programming features, a 1403 Model II, a 1402, and at least two Magnetic Tape Units. Sense switches are required for punching re-sequenced input decks and for multiple printings of diagrams.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014097

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.102

CHECKPOINT AND RESTART PROCEDURE

AUTHOR....R. R. Jordison

DIRECT TECHNICAL INQUIRIES TO...

R. R. Jordison
IBM Corporation
2116 Grand Avenue
Des Moines, Iowa

DESCRIPTION - The IBM 1401 Checkpoint and Restart Procedure provides for the writing of checkpoint records on magnetic tape and automatic restart at a later time in the event of program interruption. It is of most value on programs involving excessive running time and where program interruption may be required or unavoidable. The procedure utilizes a 1401 Autocoder Macro to provide the necessary program instructions to write checkpoint records. A separate restart deck is provided which re-creates storage from the checkpoint record, restores all tape drives, provides for restarting any card file, and enters the users program to continue processing.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 8K, 1401 with Advanced Programming, Hi-Lo-Equal Compare, sense switches and one tape drive (four for assembly). Checkpoint and restart routines-310-360 positions of storage.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014102

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.103

RELOCATABLE TRACE PROGRAM

AUTHOR....J. L. Mannaswith

DIRECT TECHNICAL INQUIRIES TO...

J. L. Mannaswith
IBM Corporation
100 South Wacker Drive
Chicago, Illinois

DESCRIPTION - The program traces tape, card RAMAC, binary and standard 1401 commands. It shows steps, data, address registers and index registers. Output is printed on the 1403 with one line per program step executed. This line contains 1. The location of the step being executed, 2. The actual step, 3. Up to 15 characters of the B field before taking the step, 4. The B field after taking the step, 5. The contents of the A and B address registers after the step, 6. The contents of index registers 1, 2, and 3 at the time of execution. The trace program follows an object program one step at a time by extracting your step, placing it in the appropriate trace analysis routine and actually executing your step within the area occupied by trace.

PROGRAMMING SYSTEMS - Written in machine language.

MINIMUM SYSTEM REQUIREMENTS - 1. 8000 positions of core, 2. Advanced Programming, 3. Any features or devices called for in the object program.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014103

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.107

STACK - STORAGE ON TAPE TO ABRIDGE CARD KEEPING

AUTHOR....I. A. Epp

DIRECT TECHNICAL INQUIRIES TO...

I. A. Epp
IBM Corporation
3424 Wilshire Boulevard
Los Angeles 5, California

DESCRIPTION - A set of three programs designed to minimize punched card storage by stacking card files on magnetic tape. Size and format of card files are virtually unlimited. The equivalent of up to ten cases of cards may be placed on one 2400-foot reel of tape at 556 cpi. The set consists of-

1. Card to Tape program (CTTAP).
2. Update program (updat). In addition to adding, deleting, or replacing files, this program will copy the input tape and will furnish a list of the file-titles with the number of records in the files.
3. Search program (SERCH) to retrieve files in punched and/or printed form.

PROGRAMMING SYSTEMS - Autocoder with IOCS.

MINIMUM SYSTEM REQUIREMENTS - Update - 1401 8K, 2 tapes. Search and Card-to-Tape - 4K, 1 tape. All 3 programs require 1402, 1403, sense switches, Advanced Programming and High-Low-Equal Compare features.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014107

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

CONTINUED FROM PRIOR COLUMN

1401-01.4.108

TAPE DUPLICATION

AUTHOR....R. J. Hoynes

DIRECT TECHNICAL INQUIRIES TO...

R. J. Hoynes
IBM Corporation
205 Whitney Avenue
New Haven 10, Connecticut

DESCRIPTION - To duplicate BCD or binary tape records from 13 to 2300 characters in length. With the setting of sense switches it will duplicate single or multiple files, and write a trailer label. The tape to be duplicated is mounted on unit 1 and file protected. The output tape is mounted on unit 2 with a file protect ring. Sense switches are set for the options desired. Tape one is read into core, tested for size, headers, trailers and noise records and written on tape two. The program will not copy records greater than 2300 characters or less than 12 characters.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - A 1401 Model C, 4K system with two tape units, 1402, 1403, Advanced Programming and binary features (optional).

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014108

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.121

SELF CHECKING NUMBER CALCULATION - MODULOUS 10

AUTHOR....M. N. Merrill

DIRECT TECHNICAL INQUIRIES TO...

M. N. Merrill
IBM Corporation
1730 Cambridge Street
Cambridge, Massachusetts

DESCRIPTION - Calculates the self-checking number for base numbers of three to twelve positions. A lead card instructs the program in the size of the base number and desired input and output. Options for input-1. Punch base number and its check digit. 2. Punch and print base number and its check digit. Please refer to IBM Manual G22-8502-0, Account Numbering and Self-Checking Number Systems- series 1200 character sensing equipment for a discussion of the modulus 10 formula and its uses. Formula for modulus 10 check digit. Take the base number, double the units position and alternate position to the left. Add the digits of the results and the even positions of the base number. Subtract the result from 110 (a multiple of 10). The units of answer is the check digit. This program requires 2717 positions of core storage.

PROGRAMMING SYSTEMS - Source Language is SPS.

MINIMUM SYSTEM REQUIREMENTS - A 4K, or higher 1401 data processing system. No special features are required.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401014121

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-01.4.123

TAPE COMPARE ERROR PRINT/DUPLICATE

AUTHOR....G. R. Ohm

DIRECT TECHNICAL INQUIRIES TO...

G. R. Ohm
IBM Corporation
340 Market Street
San Francisco, California

DESCRIPTION - This program will compare or duplicate mixed BCD and binary tapes. On a tape compare, prior programs halted on an error. This program prints out one of the two tapes. 100 characters per line, double spaced, with word marks under each digit failing to compare. This program is useful in development testing, the filing of many tape files on one tape reel and accessing these files, and in daily checking of equipment producing magnetic tape. This program provides for additional programming via program exits, if desired.

PROGRAMMING SYSTEMS - The program is coded in SPS and assembled in Autocoder condensed format using CARAT V.

MINIMUM SYSTEM REQUIREMENTS - A 4K or larger 1401 with two tape drives and indexing, a 1402 Card Read Punch, and a 1403 Printer.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014123

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.124

MODIFIED DUMP

AUTHOR....W. A. Delchamps

DIRECT TECHNICAL INQUIRIES TO...

W. A. Delchamps
General Electric Co.
Apollo Support Department
P. O. Box 294
Huntsville, Alabama

DESCRIPTION - This routine is the standard IBM 1401 DUMP modified to provide the following additional conveniences-

1. Logic indicators included in printout.
2. All group marks are changed to lozenges.
3. Blank blocks of memory (/X00-X99) are not printed.

MINIMUM SYSTEM REQUIREMENTS - Positions 1-80 initially and 81-399 after contents have been printed.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014124

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.126

PRINT DECISION TABLES

AUTHOR....R. J. Evans

DIRECT TECHNICAL INQUIRIES TO...

R. J. Evans
Medical Service Association of Pennsylvania
Camp Hill, Pennsylvania 17011

DESCRIPTION - To print decision tables on 1403 printer. The principle benefits of this method are the ability to quickly update and produce decision tables which are suitable for photographic reproduction. The input cards (one or two per line) identify the line as a title, setup, condition or action line. The decision table to be printed may contain any number of lines and allows for 15 rules and an else rule. If less than 9 entries are all that are needed, only one card need be prepared per line. Extended or limited entry may be used.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - This program uses 1405 positions of core storage. 4K 1401, Hi-Lo-Equal Compare, Advance Programming features, 1402 Card Reader Punch, 1403 Printer with 132 positions.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

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ORDERING INFORMATION: PROGRAM NUMBER 1401014126

PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
EASIC none	CARDS	15	none
OPTICAL none	none		none

1401-01.4.128

1401/1410 AUTOCODER PROGRAM LOGIA DIAGRAMMER

AUTHOR....T. O. Hiltabidle

DIRECT TECHNICAL INQUIRIES TO...

T. O. Hiltabidle
IBM Corporation
2330 St. Paul Street
Baltimore 18, Maryland

DESCRIPTION - This program will machine document the logic of a 1401 or 1410 symbolic program written in the Autocoder language. The diagrammer consists of two passes. Pass 1 builds up a symbol table from the source cards, pass 2 prints the diagram. The maximum number of labels in the source program being diagrammed varies according to object machine size, from a minimum of 125 labels for 1 4K machine to a maximum of 875 labels in a 16K machine. The program analyzes mnemonic OP codes only. Macro instruction analysis cannot be guaranteed correct.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - This program may be run on any 1401 or 1410 card system with a minimum of 4K storage and one tape drive. Also necessary are the Advanced Programming, High-Low-Equal compare, Expanded Print special features. Sense switches are required to process 1410 source cards. The program will use all of the available memory space in the object machine.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014128

PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC none	CARDS	15	none
OPTIONAL none	none		none

1401-01.4.130

CARD LIST OVERFLOW

AUTHOR....H. E. Thompson

DIRECT TECHNICAL INQUIRIES TO...

H. E. Thompson
Beacon Manufacturing Company
Swannanoa, North Carolina

DESCRIPTION - This one card program will list 80 column cards, test for overflow conditions and skip forms to carriage channel 1 if a 12 has been sensed in the carriage tape.

PROGRAMMING SYSTEMS - (This one program, of necessity, was written in actual language utilizing no present program procedures or packages.) The user must press HALT key to stop the 1401.

MINIMUM SYSTEM REQUIREMENTS - Any 1401 configuration will accomplish these results.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014130

PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC none	CARDS	15	none
OPTIONAL none	none		none

1401-01.4.131

CONVERT SPS CARD FORMAT TO AUTOCODER CARD FORMAT

AUTHOR....Richard A. Powers

DIRECT TECHNICAL INQUIRIES TO...

Richard A. Powers

325 Lafayette Street
The Warner Brothers Co.
Bridgeport 1, Conn.

DESCRIPTION - To convert programs previously punched in SPS to Autocoder. Similar routines. IBM 4 tape Autocoder.

PROGRAMMING SYSTEMS - Written in 1401 card Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401 with the Advanced Programming package. 2,008 positions of storage are required for this program. A minimum of 4K 1401 Card System with the Advanced Programming Package and 1403 Printer.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014131

PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC none	CARDS	15	none
OPTIONAL none	none		none

1401-01.4.133

TRACE THAT NEEDS NO SPECIAL FEATURES

AUTHOR....M.N. David

DIRECT TECHNICAL INQUIRIES TO...

M.N. David
IBM Ireland Ltd.
28 Fitzwilliam Place
Dublin 2, Ireland

DESCRIPTION - This track program is an aid for debugging programs. It can be used on a basic 1401 system, through a program using most special features can be traced. It is specifically meant for systems without advanced programming, as there is no other trace program for these systems. It will print out the I address, instruction, the contents of the A field, and the contents of the B field both before and after every instruction in the program to be traced. Procedure description the method involves placing each working area, and printing out the contents of the A and B fields for every program involving data transfer.

PROGRAMMING SYSTEMS - Written in SPS. It can also be used directly in machine language.

MINIMUM SYSTEM REQUIREMENTS - Basic 1401 DPS no special feature required. Requires 700 to 1,300 core locations depending on refinements.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014133

PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC none	CARDS	15	none
OPTIONAL none	none		none

1401-01.4.134

PROGRAM TO LOAD AUTOCODER CONDENSED PROGRAM

AUTHOR....Kenneth E. Branch

DIRECT TECHNICAL INQUIRIES TO...

Kenneth E. Branch
IBM Corp.
1130 South Sixth Street
Springfield, Ill.

DESCRIPTION - The program will accept condensed program cards from 1401 Autocoder and load them on tape making a tape loadable program tape. The significant advantages of this program are- 1) minimum usage of storage, 2) ability to handle any number of groupmarks in the object program, and 3) ability to handle execute type instructions with paper overlaps. A search program is generated to lookup the requested program on a five character field. The

program will add or delete programs under sense switch control.

PROGRAMMING SYSTEMS - Autocoder. The load instructions in the condensed cards are overlaid by a tape instruction to load the cards from tape. This uses position 40 through 86 of core. These are the only positions occupied by the load program.

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MINIMUM SYSTEM REQUIREMENTS - 4K or larger Model C3 Advanced Programming HI-LO-EQ compare sense switches one or two 7330 or 729 Tape Drives.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014134

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.135

IMPACT SIMULATOR

AUTHOR....Barbara A. Hobbins

DIRECT TECHNICAL INQUIRIES TO...
Barbara A. Hobbins
IBM Corp.
1048 Union Street
San Francisco, Calif.

DESCRIPTION - A 1401 program which simulates the results of an impact operating system. Accompanying program description outlines need for program and method of gathering data required. The simulator calculates initial values of forecast, MAD and economic order quantity. Demand data is operated upon as in an Impact system and for each item simulated the percentage of service rendered and average total inventory achieved during simulation is indicated.

PROGRAMMING SYSTEMS - Written in 1401 SPS.

MINIMUM SYSTEM REQUIREMENTS - 1401 8K Card System with High-Low-Equal compare.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014135

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.141

SYMBOLIC CORE DUMP

AUTHORS...Laron Jacobsen Michael R. Nekora

DIRECT TECHNICAL INQUIRIES TO...
Laron Jacobsen
IBM Corp.
ASDD
Dept. 940, Bldg. 078
Monterey & Cottle Rds.
San Jose, Calif.

DESCRIPTION - This program prints the contents of core storage in either a data or instruction format as determined by internal context. All possible 64 BCD characters are printed on conventional equipment. Instructions resemble Autocoder free form with decimal addresses. Core is restored after printout.

PROGRAMMING SYSTEMS - Written and assembled in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 8K or larger memory, one Tape Drive, and Advanced Programming and HI-LO-EQ compare features.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014141

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.145

SELECT DATA RETRIEVAL SYSTEM

AUTHORS...R.A. Regan K.P. Swallow

DIRECT TECHNICAL INQUIRIES TO...
R.A. Regan
Organization & Methods Div.
Standard Oil Co. of California
225 Bush St.
San Francisco, Calif. 94120

DESCRIPTION - Retrieve information from magnetic tape files. It will (s)earch, (e)xtract and sort, (l)ist, (e)dit, (c)ount and (t)otal. Search, extract and sort, list, edit, count and total. It compiles an extract program and a report writing program and combines them with sort to form a complete system. Permits up to nine reports from one pass of tape file with up to 5,000 characters in the input record. Features- English language specification statements, multiple reports per pass, automatic editing, fast compiler, unlimited levels of criteria, multi-reel files, single or blocked record, with or without labels, good diagnostics, automatic security check, restart procedures, users exits.

MINIMUM SYSTEM REQUIREMENTS - An IBM 1401 with 8K memory, Adv. Prog., HI-LO-EQ, and 4 tape units.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401014145

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	DTR 7/556	22	none

1401-01.4.150

1401/407 SIMULATION UTILITY PROGRAM

AUTHOR...Raymond F. Obrien

DIRECT TECHNICAL INQUIRIES TO...
Raymond F. Obrien
IBM Corp.
New Circle Rd.
Lexington, Ky.

DESCRIPTION - This program was written to simulate the 407 accounting machine when it was being replaced by the 1401. This program will accomplish most of the functions of the 407 and eliminates the need to write many programs that simply list and total decks of cards. It is especially useful for one-shot listings or tabulations or jobs that are seldom run. After the program is read in, the control cards set word marks, set move and add instructions, compare instructions, etc. If a sense switch is turned to the on position, the control card that the switch controls must be present. A process light will occur if a switch is on and the corresponding control card is not present. The program will print up to fifteen (15) different fields from input cards, four of which will print totals. The four total fields can be edited only with a minus (-) to indicate a credit.

PROGRAMMING SYSTEMS - 1401 Autocoder. No special macro instructions are used and IOCS is not used.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 with 1402 Card Reader, Printer, High-Low-Equal compare, and Sense Switches B, C, D, are necessary to the operation of it.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014150

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.158

GENERAL PURPOSE TAPE DUMP

AUTHOR...D.L. Weimer

DIRECT TECHNICAL INQUIRIES TO...
D.L. Weimer

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E.S. Preston & Assoc., Ltd.
1620 E. Broad Street
Columbus, Ohio 43203

DESCRIPTION - This operation will print in a highly legible format the contents of BCD tape records. A maximum of a hundred characters on a line are printed with periods defining left and right margins. The core capacity of the computer is determined at object time and a maximum of (memory size) characters can be dumped from each tape record. The character count of each record is displayed alongside the printed record and a record count is displayed upon each end-of-file. Sense switch options permit arbitrary suppression of printing and halts on end-of-file. Parity error diagnostics are very complete. When a record cannot be correctly read after a cleaning procedure has been utilized, it is printed as it read into core along with an error warning message.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - One magnetic tape drive... 1403 Printer -(132 positions)... 1402 Card Reader... additional Sense Switches... High-Low-Equal Compare... 4K or greater core... Advanced Programming... Modify-Add Instruction... 1407 Inquiry Station (optional).

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014158

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.159

1401/1311 CARD-TO-DISK CONSECUTIVE LOAD PROGRAM

AUTHOR...D.A. Hauser

DIRECT TECHNICAL INQUIRIES TO...
D.A. Hauser
IBM Corp.
P.O. Box 567
Riverside, Calif. 92502

DESCRIPTION - A LOAD-and-GO program for converting present card files to consecutive 1311 Disk files without any repunching of card files into a prescribed format. The program will handle up to 6 User Specified Card formats and build them into a user Specified Disk Record format. Formats of card input and disk record output are specified in control card form and supplied to the program on a load-and-go basis. Up to 10 data fields from each card format specified can be assembled into single disk records. Program will assemble files in either blocked or unblocked form.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - The program will operate on any 1401-1311 System having at least 4K, modify address, Store B register and Index Registers. With a 4K machine 500 character disk records are the longest records that can be processed. On an 8K machine the maximum record length is 4500 positions.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014159

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.160

CONVERSION OF SPS TO AUTOCODER

AUTHOR...James W. Harper

DIRECT TECHNICAL INQUIRIES TO...
James W. Harper
IBM Corp.
1512 Genesee Street
Utica, N.Y.

DESCRIPTION - A program designed to convert 1401 symbolic programs to the Autocoder format. Input-output commands and DSA'S will not be converted. Special attention should

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be paid to SS and CC commands to see that their format is acceptable to the Autocoder for a specific machine. Output may be printed only, or printed and punched. All special "OP" codes will be converted so that the output should be ready for an Autocoder assembly once the I/O commands and DSA'S are changed. The program should take care of about 98 percent of the conversion effort. This program was designed primarily for 1401 card systems, but should be helpful in the conversion of tape and RAMAC Systems if the programs were written in SPS.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - 1401-A3, 1402, 1403 (Model 2 for full printout), sense switches.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014160

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.165

SOPHISTICATED SPS TO AUTOCODER CONVERTER

AUTHOR...C.F. Wilkes

DIRECT TECHNICAL INQUIRIES TO...

C.F. Wilkes
1550 Elmsford Avenue
La Habra, Calif. 90632

DESCRIPTION - Two programs are included. SPSAC is designed to convert a program in the SPS Source Language to a program in the Autocoder Source Language, which is compatible with the basic Autocoder produced by the IBM Dallas Data Center. An extremely sophisticated Autocoder program is produced, designed to be as close as possible to a program originally written in Autocoder. CONAC is designed to reproduce an SPS condensed card format object program into an Autocoder condensed card format object program, when no Source Language program is available, and it is desirable to have all object programs in only one format.

PROGRAMMING SYSTEMS - Written in SPS Source Language.

MINIMUM SYSTEM REQUIREMENTS - 1401 4K, card system.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401014165

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-01.4.176

1401/1311 DISK ADDRESS UTILITY

AUTHOR...R.J. Taylor

DIRECT TECHNICAL INQUIRIES TO...

R.J. Taylor
IBM Corp.
1776 John F. Kennedy Blvd.
Philadelphia, Pa. 19103

DESCRIPTION - This program was written to handle 1311 Disk Maintenance requirements not covered heretofore in any Library Program, but which occur in most 1311 installations. With the use of this program, it is now possible to change the addressing structure of a disk pack to any natural or unnatural range without altering the data written on the pack. Unnaturally addressed packs, such as the system pack for Autocoder, 1401-AU-008 may now be copied; label

tracks may also be copied. The standard disk utility programs do not provide these operations.

Options elected by control cards are- Change addresses without disturbing data, - Change addresses and clear data,- Copy one disk pack to another, and- Compare one disk to another.

PROGRAMMING SYSTEMS - Written in Autocoder.

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MINIMUM SYSTEM REQUIREMENTS - 4K system with High-Low-Equal compare and Advanced Programming Features and will copy a full pack in approximately six minutes.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014176

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.181

REPAIR DISK RECORD

AUTHOR....Sidney Wald

DIRECT TECHNICAL INQUIRIES TO...
Sidney Wald
Fischer and Porter Co.
7826 Spring Avenue
Elkins Park, Pa. 19117

DESCRIPTION - To alter the contents of a 1311 Disk Sector, using a control card which contains -a The disk address of the sector, -b The low order position of the portion of the sector to be changed, -c The number of characters to be altered, and -d The replacement data. Any number of such changes may be made with one loading of the program. Control cards may be in any order.
PROGRAMMING SYSTEMS - Written in Fixed/Float Language.

MINIMUM SYSTEM REQUIREMENTS - 1600 position, IBM 1401 with 1403 Printer, 1402 Card Reader and 1 - 1311 Disk Drive.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014181

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.186

1401/1460-1311 DISK PROGRAM LOADER

AUTHOR....M.A. Moore

DIRECT TECHNICAL INQUIRIES TO...
M.A. Moore
IBM Corp.
206 Main St.
Johnstown, Pa.

DESCRIPTION - The Disk Loader provides the user with means of storing his programs on disk and calling them into core for execution with one card. This card is a one card program which brings in the Loader from disk, which in turn brings in users program from disk. The Loader is almost identical to the Condensed Card Loader except that the Loader reads disk records in the condensed format instead of cards, also it is not relocatable. Overlays are handled the same as with the Condensed Card Loader. Approximately 9 sectors of disk storage are needed for every 800 core positions of program. Programs and Loader need not be on the same pack. Loading is 25 percent faster than with Card Loader. One call card replaces object deck. Loader uses Core Locations 1-330 and Read, Punch and Print Areas can be cleared after program has been loaded. There is no Group Mark Word mark restriction. Call card is compatible with job stacking because a seldom used special character, Card Code 0-6-8, is in column 80.

PROGRAMMING SYSTEMS - Written in 1401-1311 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401 with modify address instruction - at least one 1311 - Printer - 1402 Reader Punch. If modify address feature is not available program modification is necessary.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014186

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	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.187

1311 DISK RECORD FINDER

AUTHOR....S. Wald

DIRECT TECHNICAL INQUIRIES TO...
S. Wald
7826 Spring Avenue
Elkins Park, Pa. 19117

DESCRIPTION - To search an IBM 1311 Disk File for records whose control field matches a search argument punched in a control card. Each such record, together with its disk sector address, is printed in block style. Records must be fixed length, multiples of 5 characters and up to 125 characters long. The control field may range in length from 1 to 64 consecutive characters.

PROGRAMMING SYSTEMS - Written in Fixed/Float Language.

MINIMUM SYSTEM REQUIREMENTS - approximately 5,000 positions. An IBM 1401 with 1403 Printer, 132 print positions, one 1311 Disk Drive with Direct Seek Feature.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014187

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.188

ONE OF ONE - 80180 REPRODUCE WITH LAST CARD TEST

AUTHOR....T. J. Carney

DIRECT TECHNICAL INQUIRIES TO...
T. J. Carney
9th D.P.P. H & S Co.
2nd Serv. Bn.
2nd Mar. Div.
Camp LeJeune, North Carolina

DESCRIPTION - This one card program reads a card and moves the data into the punch area before it punches insuring that the first card out is a valid reproduction of the first data card in. The program does not have to be reloaded if more reproducing is desired. This one card program contains a list card test that will process the last card and give a program halt, eliminating the continuous cycling of the 1402.

MINIMUM SYSTEM REQUIREMENTS - No special features required and uses only 400 positions of storage. Speed is 192 cards per minute.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014188

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.189

1401/1440/1460 RESEQUENCE AUTOCODER SOURCE PROGRAMS - RASP

AUTHOR....J. Sinclair

DIRECT TECHNICAL INQUIRIES TO...
J. Sinclair
Programmer-Data Processing Division
Pocket Books, Inc.
One West 39th Street
New York, New York 10018

DESCRIPTION - At various times, it becomes necessary for a resequenced source program deck to be obtained. RASP was devised to permit resequencing before, and completely

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independent of, valuable assembly processing time. RASP uses 31 core storage positions for actual program operation as well as the read and punch storage areas.

The resultant output deck contains the original source card information from column 6 through 72 and the new sequence numbers in columns 1 through 4, starting with "0101" in the first, or "job".

MINIMUM SYSTEM REQUIREMENTS - 1401/1440 or 1460 with no special features.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014189

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.190

MULTI-PURPOSE 80-80 REPRODUCING

AUTHOR....R. E. Descheneaux

DIRECT TECHNICAL INQUIRIES TO...
R. E. Descheneaux
IBM Company Ltd.
1255 Laird Blvd.
Montreal, P.Q.
Canada

DESCRIPTION - This 80/80 Reproducing Program will reproduce each input card into one, two, or three output cards and staker select the output cards. This is an advantage over single card reproducing programs since the handling time for getting several copies out of an input card deck is considerable reduced. Execution time is 73 CPM read in when triple reproducing, 100 CPM read in when double reproducing and 200 CPM read in when single reproducing.

PROGRAMMING SYSTEMS - Language used - Absolute.

MINIMUM SYSTEM REQUIREMENTS - Any size 1401 Central Processing Unit with Sense Switches and a 1402 Card Read Punch.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014190

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.193

PAPER AND PROGRAM DOCUMENTATION EDITOR

AUTHOR....J. S. Dibble

DIRECT TECHNICAL INQUIRIES TO...
J. S. Dibble
IBM Corporation
447 E. Broad Street
Columbus, Ohio 43214

DESCRIPTION - This is a program to read punched cards containing a text in free form, pack it to close up gaps caused by deletions, expand it to accommodate insertions, and print it so as to occupy an 8 1/2 by 11 inch page in continuous form. New paragraphs, pages, and other functions are handled automatically or by the use of control codes within the text itself. After the first copy is printed, revisions may be made by punching additional cards in a prescribed change format.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401 with at least 4K storage, Advanced Programming, H-L-E Compare, 1402 and any Model 1403 Printer.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014193

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	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.195

1401 SPS TO SYSTEM/360 BASIC ASSEMBLER

AUTHOR....W. J. Barry

DIRECT TECHNICAL INQUIRIES TO...
W. J. Barry
IBM Corporation
Seven Penn Center Plaza
Philadelphia, Pa.

DESCRIPTION - A program designed to assist in the reprogramming of 1401 SPS symbolic programs into S/360 Basic Assembler Language.

Translation is made of common 1401 statement into their S/360 equivalent, with flags inserted if generation is questionable.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401 or 1460... 8000 positions... Advanced Prog... Hi-Lo-Equal... Sense Switches... 1402 Card Read/Punch... 1403 Printer.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401014195

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-01.4.198

ANTIC A LIST OF CONDENSED CARDS

AUTHOR....B. Eneemark

DIRECT TECHNICAL INQUIRIES TO...
B. Eneemark
EDB-Centralen
Gyldenloevesgade 15
Copenhagen K, Denmark

DESCRIPTION - ANTIC translates condensed cards of either Autocoder or SPS into single-instruction print. Constants are - to a high degree - separated from instructions. OP-Codes are translated into Autocoder or SPS mnemonics, addresses converted to indexed number and - in Autocoder - some digit modifiers are built into the mnemonics - BCY, BW, BSS, BPCB, A. S. O.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401 Model 3, 1402 Reader, 1403.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014198

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.205

CARD SPS TO AUTOCODER FOR 1401/1460

AUTHOR....N. E. Patton

DIRECT TECHNICAL INQUIRIES TO...
N. E. Patton
IBM Corporation
1330 Summit Avenue
Fort Worth, Texas

DESCRIPTION - This program will convert 1401 SPS source statements to 1401, 1440, or 1460 full Autocoder. SPS

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source must be in standard SPS source format. It prints a source listing of the SPS statement and the new Autocoder statement side by side, and punches the Autocoder statement with a new sequence No.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401 or 8K 1460, 1402, 1403 with no special features. Program occupies 3205 positions. There are 576 source statements.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014205

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.207

RAPID SELECTIVE TRACE

AUTHOR....L. E. Cohen

DIRECT TECHNICAL INQUIRIES TO...

L. E. Cohen
IBM De Mexico, S.A.
Insurgentes Sur 100
Mexico, D.F.

DESCRIPTION - This is a powerful debugging, documentation and teaching aid that accurately simulates the functioning of the 1401 under control of any object program and prints out complete information about what the program is doing in an easy-to-read format.

The instruction address, A and B address register contents at the beginning of the execution phase, the instruction, index register contents and up to 18 positions of the A-field and the B-field both before and after instruction execution are given on a single print line. RST operates more rapidly than other similar programs by calculation the A-address only when necessary. Minimum restrictions apply to the traced program. Loaders supplied permit use of trace object program in standard load card or tape formats.

PROGRAMMING SYSTEMS - Basic Autocoder 2K. Any Autocoder processor can be used for assembly.

MINIMUM SYSTEM REQUIREMENTS - 1385 core positions, High-Low-Equal and Advanced Programming. Can be used with 4K machines.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014207

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.211

1401-1311 DISK PRINT PROGRAM

AUTHOR....J. P. Olson

DIRECT TECHNICAL INQUIRIES TO...

J. P. Olson
IBM Corporation
6900 Fannin
Houston, Texas 77025

DESCRIPTION - This program provides the following disk-print capabilities-print intermixed move and load modes automatically, omit printing blank sectors, with options to summarize them on a single line or ignore them completely, option to summarize on a single line all contiguous sectors written in same mode and either blank or non-blank, permit spacing option - single or double spacing, and either solid block of 90 or 100 characters or split into blocks of 10 characters.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder, Au-008.

MINIMUM SYSTEM REQUIREMENTS - 8K, 1402, 1403 with 132 positions, 1311, Advanced Programming, and Hi-Low-Equal Compare.

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BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Appropriate material delivered.

ORDERING INFORMATION: PROGRAM NUMBER 141014211

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-01.4.212

CARD COLLATOR SIMULATOR

AUTHOR....J. E. Cain

DIRECT TECHNICAL INQUIRIES TO...

J. E. Cain
IBM Corporation
Box 3467
Santa Barbara, Calif. 93105

DESCRIPTION - This program will perform the collator functions of sequence check, straight merge, merge selecting equals, merge replacing equal, merge equals only, watch equals, or pull equals. The control field is designated by a lead card. It may be broken down into 18 sub-fields which may contain 80 columns of a card in any order. Both files are sequenced check, and the control fields may be alphabetic.

PROGRAMMING SYSTEMS - Written in Basic Autocoder 2K.

MINIMUM SYSTEM REQUIREMENTS - 3,244 positions of storage, Hi-Low-Equal Compare, Punch Feed Read, and the Read Stacker Select Delay Device, RPQ No. W92210.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014212

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.220

1401/1440/1460 JOB CONTROL MONITOR ON DISK

AUTHOR....N. E. Patton

DIRECT TECHNICAL INQUIRIES TO...

N. E. Patton
IBM Corporation
P.O. Box 1039
Fort Worth, Texas

DESCRIPTION - JOBCO is a program that resides on 1311 Disk Storage. JOBCO can monitor user program execution by the use of control cards. JOBCO loads user programs on disk in core-image form in the area assigned by the user and can control 1311 Disk Drive on the system and uses file protected addresses to prevent destruction of user programs on disk. JOBCO uses the high order 600 positions of core storage for permanent and transient routines. These routines have the ability to load programs on disk, call programs from disk, delete programs on disk, simulate the load button for execution of card deck programs, and print a core dump as directed by the user. Cylinder overflow is handled by JOBCO. JOBCO allows stacked jobs to be executed as directed by the user.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401/1440/1460 Systems that have 8, 12, or 16K with Hi-Low-Equal, Indexing, Store Registers with at least 1 card reader, 1 printer, and 1 1311 Disk Drive.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014220

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none

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OPTIONAL none none none

1401-01.4.221

REPRODUCE ONLY CERTAIN COLUMNS ON THE IBM 1401

AUTHOR...D. E. Erickson

DIRECT TECHNICAL INQUIRIES TO...

D. E. Erickson
109 Fercliff Lane
Hemersonville, North Carolina

DESCRIPTION - To reproduce only certain card columns using the 1402 as a Versatile Auxiliary Card Reproducer. There are no restrictions on this program. Any number of columns up to and including 80, adjacent or non-adjacent, can be reproduced by using a control card. This program is set

up so that you can reproduce a series of decks. When one deck has been reproduced, place another deck with the proper header card in the read hopper and press start.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014221

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.223

DOCUMENT AND TESTING AIDS FOR COBOL THROUGH A LOGIC TRACE AND DATA-NAME CROSS REFERENCE LIST

AUTHOR...L. Green

DIRECT TECHNICAL INQUIRIES TO...

L. Green
IBM Corporation
Asylum Avenue
Hartford, Conn. 06105

DESCRIPTION - A series of three programs - 1401 Autocoder Card to Tape Sort on any computer, and 1401 Autocoder Tape to Print will produce a logic trace and data-name cross reference listing to aid in the documentation, maintenance, and testing of COBOL Programs. The first part of the listing is an alphabetical list of all sections and paragraphs contained in the procedure division of a COBOL Program and all directives to them. The directives will indicate the preceding section or paragraph name, and go to, go to depending on, perform, perform thru instructions and their associated paragraph name, that refer to the section or paragraph name listed. The second part of the listing is an alphabetical list of all COBOL words and/or data-names used in the procedure division and, the paragraph name they were used in. A user option is provided to eliminate the printing of any COBOL words or data names not desired on the listing.

PROGRAMMING SYSTEMS - Written in COBOL.

MINIMUM SYSTEM REQUIREMENTS - 4K - 1401, Hi-Lo-Equal, Indexing, 1402, 1403, 1 tape drive.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014223

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.225

UTILITY PRINT PROGRAM

AUTHOR...J. S. Williams

DIRECT TECHNICAL INQUIRIES TO...

J. S. Williams
Memorial Sloan-Kettering
444 E. 68th Street
New York, New York 10021

DESCRIPTION - This program allows the user to detail list any card file in any desired print format, print edit any or all card fields, accumulate any or all printed fields

for: (a) Totaling on control break. (b) Overall totals at end of job, including a card count, sequence check input file, print headings on page overflow, extra space after printing, bypass detail list and print minor summary totals on control break and page overflow on control break. Print capacity - no more than 99 positions of output per line. Card field capacity - maximum of eight (8) fields of printing from card, any number of card columns per field. Sequence checking requires Hi-Low-Equal compare feature and control break on one of eight fields.
MINIMUM SYSTEM REQUIREMENTS - 4K 1401 with High-Low-Equal Compare.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014225

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.226

GENERALIZED TABULATE WITH OR WITHOUT CONTROL FIELDS

AUTHOR...E. Staudt

DIRECT TECHNICAL INQUIRIES TO...

E. Staudt
Avisun Corporation
River Road
New Castle, Del. 19720

DESCRIPTION - The purpose of the program is to eliminate the necessity for many individual programs required at a 1410 installation to tabulate control and balance totals and to provide for up to three control fields total indications as well as a final total. A maximum of five fields per any given card file can be tabbed with or without control field totals and a final total. The user may specify up to three control field levels. The user may also list each card (control fields) with the associated tab fields.

PROGRAMMING SYSTEMS - Written in Basic Autocoder for 4K 1401, compiled with AU-005 with Condense 2.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014226

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.227

VARILIST

AUTHOR...E. Giegler

DIRECT TECHNICAL INQUIRIES TO...

G. Kinble
Director of Data Processing
Carleton College
Northfield, Minn.

DESCRIPTION - VARILIST - A load and go processor for generating fast running listing programs. Uses a single control card plus heading cards.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401 with sense switches, Expanded Print Edit, and 120 print positions.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014227

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-01.4.228

CPI - CREATE PRINT IMAGES

AUTHOR....R. A. MacKinnon

DIRECT TECHNICAL INQUIRIES TO...

R. A. MacKinnon
IBM Corporation
112 E. Post Road
White Plains, New York 10601

DESCRIPTION - CPI processes 1401/1460 Autocoder source decks to create new source programs in which all references to the 1403 are replaced by linkage instructions and parameters. Linkage is made to a subroutine which CPI inserts into the converted source program. This subroutine emulates printer activity by writing 133-character print images onto a magnetic tape. When a users program is converted and reassembled, the resultant object deck performs exactly as the original except a print tape replaces the 1403. This tape is built with 1401 D-Modifier forms control characters and can be printed on System/360 in a multi-programming environment. Sample programs are included to accomplish tape-to-printer processing on a 1401 or a System/360 operating under the Disk Operating System.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - An 8K 1401/1460 or System/360 Feature/Emulator is required. Sense switches, Advanced Programming, Index Registers, and one tape unit are also needed. If available, an additional tape and 1407/1447/1052 (with proper 1407 Subfeature) can be used. When reassembled, the converted object program will need one additional tape unit, SBR Instruction, Modify Add, and 700-1100 additional core positions because of CPI-inserted linkage and the tape subroutine. If available, a 1407/1447/1052 will be used.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014228

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.230

1401/1460 BRAILLE - TRAN - TRANSLATE ENGLISH TO GRADE 2
BRAILLE AND EMBOSS ON A 1403 PRINTER

AUTHORS...T. Reifsnnyder J. T. Ferro

DIRECT TECHNICAL INQUIRIES TO...

T. Reifsnnyder
IBM Corporation
9045 Lincoln Blvd.
Los Angeles, Calif. 90045

DESCRIPTION - Description of a set of two 1401 programs which require only 4K of core and no special features. The first program takes input from edited English text punched into cards and produces an intermediate deck. The second program uses the intermediate deck as input and embosses Grade 2 Braille directly on a 1403 which has had the ribbon removed and the hammers converted with a strip of soft material. If editing and keypunching are correct, perfect Grade 2 Braille is produced without post-edit. Once a translation has been made, any number of copies can be produced from this one deck. The program is capable of translating and embossing books of text.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - IBM 1401/1460 with 4,000 positions of core storage, 1402 Card Read/Punch, 1403 with 132 print positions.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014230

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.231

MATCH AND MODIFY FILES PROGRAM

AUTHOR....W. Buffa

DIRECT TECHNICAL INQUIRIES TO...

W. Buffa
IBM Corporation
112 E. Post Road
White Plains, New York 10601

DESCRIPTION - The Match and Modify Files Program is a self-modifying program which will process any tape file against any other tape file (subject to size limitations) comparing records from one file to records on the other, including the ability to table-search one of the input files. Based on the comparisons and/or table search the program can generate two output files in the same format as the input or reformatted as the user desires.

PROGRAMMING SYSTEMS - Written in 1401/1460 Autocoder Language and has been assembled on the 1460 Disk Autocoder Processor.

MINIMUM SYSTEM REQUIREMENTS - 16K 1401 or 1460 with four 729 Tape Drives, a 1402 Card Reader, a 1403 Printer with 132 print positions, Advanced Programming and High-Low-Equal Compare.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014231

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.4.232

GENERAL PROCESSING UTILITY PROGRAM

AUTHOR....W. Buffa

DIRECT TECHNICAL INQUIRIES TO...

W. Buffa
IBM Corporation
112 E. Post Road
White Plains, New York 10601

DESCRIPTION - The General Processing Utility Program performs many simple utility jobs often called for in a computer installation and is intended to reduce the number of individual utility programs that have to be maintained, each of which performs only one or a few of these jobs. It does card to card, card to printer, card to tape, tape to tape, tape to printer, and tape to card operations in a total of twenty-six options each of which is called for by a combination of sense switch settings. The program is card or tape loadable and is self-initializing between jobs without re-loading.

PROGRAMMING SYSTEMS - Written in 1401/1460 Autocoder Language and has been assembled on the 1460 Disk Autocoder Processor.

MINIMUM SYSTEM REQUIREMENTS - 8K, 12K or 16K 1401 or 1460 with at least one, and up to five, Tape Drives, a 1402 Card Reader and Punch, a 1403 Printer with 132 Print Positions, and High-Equal-Low Compare.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401014232

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-01.5.002

DIOS - 1311/1301 INPUT-OUTPUT SYSTEM FOR THE 1401/1440/1460

AUTHOR....Jerome S. Meach

DIRECT TECHNICAL INQUIRIES TO...

Jerome S. Meach
IBM Corporation
7700 Second Boulevard
Detroit 2, Michigan

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DESCRIPTION - A complete Autocoder Macro System for the IBM 1311 and/or 1301. All disk operations are handled in both the Move and Load Mode with the exception of sector count overlay. Primary considerations are the minimum use of core storage and ease of programming. One macro statement established the DIOS mainline in high core. Core requirements are 204 or 245 with Standard Seek and 383 or 428 with Direct Seek on the 1311 Disk Drives. The 1301 does not require Direct Seek as no Seek Calculations are required. An error halt list is included in the user's Autocoder listing. Ten core positions are generated for each GET, PUT, SEEK or SCAN. An automatic exit between the Write Disk and Write Disk Check is provided when desired by the user.

PROGRAMMING SYSTEMS - Written in 1401-1130 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Indexing and Store Registers, and High-Low-Equal Compare.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401015002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-02.0.017

AUTOBLOCK II

AUTHOR...W. C. Milihoff

DIRECT TECHNICAL INQUIRIES TO...

W. C. Milihoff
IBM Corporation
1955 The Alameda
San Jose, California

DESCRIPTION - AUTOBLOCK II automatically produces cross-reference tables and a documented block diagram, using new symbols in accordance with ASII standards. It provides three different tables, one of which is the branch-from table, and accepts an unlimited number of branch points, since the program takes full advantage of core size. In addition to the common instructions, AUTOBLOCK II handles IOCS, Macros, Overlays, and the execute instruction. AUTOBLOCK II is an extension and revision of AUTOBLOCK I.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 4K Minimum, four-tape, Advanced Programming, High-Low-Equal-Compare.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Appropriate material delivered.

ORDERING INFORMATION: PROGRAM NUMBER 1401020017

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-02.0.018

FARGO ONE-SIXTY-G

AUTHOR...D. L. Fernandez

DIRECT TECHNICAL INQUIRIES TO...

D. L. Fernandez
IBM Corporation
Wilshire Boulevard
Los Angeles, California

DESCRIPTION - FARGO One-Sixty-G for the 1401, 1460, and 14016 is a greatly expanded new version of a load and go report generator which gives all the capabilities of Basic FARGO plus - (a) Up to six header lines which can be modified at any time within object time. (b) Multiply-Divide with or without the feature. (c) Multiple and/or if/not conditions in defining up to ten card types. (d) Sequence check of input file at any level (if High-Low-Equal is installed). (e) Up to four split control fields with or without stripped zones for defining each of four total level. (f) Total force heading or heading force total, divorced minor and suppress compare of a card type at any total level. (g) And more.....the program is fully

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compatible with the FARGO-Forty program by C. P. Doolittle, the latest version of FARGO for the 1440.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - Listings.
MACHINE READABLE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401020018

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-02.0.019

AUTOMATIC FLOWCHART TECHNIQUE

AUTHORS...F. D. Lewis W. N. Moll

DIRECT TECHNICAL INQUIRIES TO...

F. D. Lewis
IBM Corporation
Dept. 867
Neighborhood Road
Kingston, New York

DESCRIPTION - A program which produces flowcharts from a language similar to 1400 Series Autocoder. All information pertaining to one symbol is contained on one keypunch form line. Free form coding of text information is used. The program floats and centers the text within the symbol, thus relieving the writer of this tedious task. Page and connector numbers are assigned automatically by the program. Twelve unique symbols are available, all of which have been approved by the American Standards Association. Flow charts produced are machine independent. By use of special comment cards, line text information may be produced with options for centering, left, right a full justification.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401 4K, two magnetic tapes and Advanced Programming feature.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Appropriate material delivered.

ORDERING INFORMATION: PROGRAM NUMBER 1401020019

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-02.0.021

1401/1311 MONITOR FOR PROGRAMS ON DISK PACKS

AUTHOR...J. C. Sassaman

DIRECT TECHNICAL INQUIRIES TO...

J. C. Sassaman
698 Delaware Avenue
Buffalo, New York 14209

DESCRIPTION - This program consists of two parts. The first, SR01, loads user's programs on disk packs and creates an entry in a program table stored on the first four sectors of a disk pack. The table is checked before a program is loaded to prevent overlap with programs already stored on the disk pack. The second, SR02, provides for standard dates to be used by the user's programs, inquiries, (both direct address and scan type), program pull-down through use of sentinel card, copying of programs and table to new pack on disk-to-disk updating jobs, and a log of program activity on an IBM 1407.

PROGRAMMING SYSTEMS - Written in 1401/1311 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Advanced Programming, High-Low-Equal Compare, SCAN Disk SP is optional for SCAN inquiries. Storage used - approx. 2K.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401020021

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	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-02.0.022

FLOGEN - IBM 1401 FLOW CHART GENERATOR

AUTHOR....J. R. Buchert, Jr.

DIRECT TECHNICAL INQUIRIES TO...

J. R. Buchert, Jr.
IBM Corporation
1120 Connecticut Avenue, N. W.
Washington, D. C. 20036

DESCRIPTION - This 1401 program will produce a printed flowchart with block text, comments, block labels, and decision block connector conditions. The program processes single card entries for each block and is capable of producing successive charts of fifty (5 by 10) blocks. A simplified coding system is employed which produces flow charts of ASA approved symbols for any programming system in a form such like 7074 Autochart.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - An 8K with Model 2 Printer and Advanced Programming feature is required.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401020022

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-02.0.024

FLOWCHARTING AND DOCUMENTATION AID PROGRAM

AUTHOR....F. D. Lewis

DIRECT TECHNICAL INQUIRIES TO...

F. D. Lewis
IBM Corporation
Dept. 867
Kingston, New York

DESCRIPTION - This program provides facility for computer preparation of flowcharts and textual documentation by means of an easy to learn and use problem oriented Charting Language. The flowchart matrix is 3 x 10 blocks and all block connection are computer generated. Symbols conform to ASA standards and normal flowcharting conventions. Pages of text contain 57 characters character spacing. The Flowcharting Language is compatible with the language used in another program now available from the type III Library under Catalog Number 2.0.019.

PROGRAMMING SYSTEMS - Source Language is 1401 Autocoder - not including IOCS.

MINIMUM SYSTEM REQUIREMENTS - 1401 with 8K Storage, 4 Tapes, Hi-Lo-Equal Compare, Advanced Programming and Sense Switches.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401020024

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 22	01
		MT	7/800 24	01
OPTIONAL	none	MT	7/556 22	01
		MT	7/800 24	01

1401-02.0.025

FORTRAN MODIFICATION WHICH ELIMINATES THE MULTIPLY-DIVIDE SPECIAL FEATURES REQUIREMENTS

AUTHOR....R. Steffanson, Jr.

DIRECT TECHNICAL INQUIRIES TO...
R. Steffanson, Jr.
Potlatch Forests, Inc.
Lewiston, Idaho

DESCRIPTION - By inserting this change into the 1401 FORTRAN II Compiler, programs coded in FORTRAN may be compiled and run on 1401 Machines not having the Multiply-Divide special feature. The only programming consideration necessary is that the address in the parameter card should be approximately 1000 positions less than the machine core capacity. Operating convenience is not seriously affected. These advantages of the FORTRAN Compiler are retained - Rapid compile time (around 2 minutes)... Diagnostics... Compile-and-go capability... Optional punched object deck (ready to use)... Compiler may be on cards or tape. Core required for the subroutine reduces by approximately 1000 positions the core available for compiling the source program.

PROGRAMMING SYSTEMS - Written in FORTRAN.

MINIMUM SYSTEM REQUIREMENTS - FORTRAN with this change requires 8K, Hi-Lo-Equal Compare, Advanced Programming, Reader-Punch, and Printer.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401020025

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-02.0.031

AUTOCHART

AUTHORS...Josephine Carter William Johnson
Peter Fondis Hedy Stoy

DIRECT TECHNICAL INQUIRIES TO...

Josephine S. Carter
IBM Corporation
40 Saw Mill River Road
Hawthorne, New York

DESCRIPTION - This program gives 1401 users the ability to produce flowcharts similar to those which currently can only be produced on the IBM 7070/74. The program has ten phases plus a supervisor. It will also accept input prepared for the IBM 7070/74 Autochart Programs. File Maintenance of the input has not been included in the program. Initial timing runs indicate that the production of each flowchart takes approximately one-half minute, including printing. Restart procedures are included so that the program can be interrupted at the end of any phase and continued at a later time. System tape creation is also included. The program uses the Autochart language for input. It is an easily learned language and is machine independent. The output is a printed chart, standardized for clarity and readability and suitable for reproduction. This is a tool to help the user maintain better program documentation by providing flowcharts which conform to both IBM Corporate Standards and to the proposed American Standards Association Flowchart Standards. It is also very useful in producing various types of graphics and other charts. Assembly output for object deck and listing, sample problem input data, and source deck are basic program material.

PROGRAMMING SYSTEMS - Written in Autochart Language

MINIMUM SYSTEM REQUIREMENTS - It requires an 8K 1401 with four Tape Drives, 1402, 1403, Advanced Programming Package, Sense Switches, High-Low -Equal Compare, and Multiply-Divide Features.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401020031

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 22	01
		MT	7/800 24	01
OPTIONAL	none	none		none

CONTINUED FROM PRIOR COLUMN

1401-02.0.035

DISASSEMBLER OF 1401/1460 PROGRAMS FROM OBJECT TO AUTOCODER SOURCE

AUTHOR....Mr. R. Mackinnon

DIRECT TECHNICAL INQUIRIES TO...

Mr. R. A. Mackinnon
IBM Corporation
112 East Post Road
White Plains, New York 10601

DESCRIPTION - This group of 4 programs was written to assist documentation and conversion efforts where the user has only an object deck from which to work. It converts an object program into meaningful Autocoder source statements, suitable for assembly or flowcharting.

The final output is a listing (a punched deck is optional) in which the statements are labelled as required in the form BX-BXXXX for instructions, referencing the OP Code location, and CX-CXXXX for constants, referencing the units position. The instruction operands reference these labels.

PROGRAMMING SYSTEMS - Source - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Are an 8K 1401/1460 with 4 Tape Drives, Sense Switches, Advanced Programming, High-Low-Equal Compare, a 1402 Card Read/Punch, and a 1403 Printer with 132 print positions. If a larger machine is available, the fourth program (Phase III) can be reassembled to take advantage of the larger core, thus cutting down the processing time. The program will utilize a 1407 if one is on line, but does not require it.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401020035

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 22	01
		MT	7/800 24	01
OPTIONAL	none	none	none	none

1401-02.0.036

1401 FARGO TO SYSTEM/360 RPG MODEL 20 CONVERSION PROGRAM

AUTHORS...Fred M. Haney Stephen M. Lichter
S. Edmonston

DIRECT TECHNICAL INQUIRIES TO...

Mr. Gus Conoscente
IBM Corporation
330 Madison Avenue
New York, New York

DESCRIPTION - This program converts IBM 1401 Fargo Control Cards to System/360 Model 20 RPG specification cards. This program can be of great value when converting from 1401 to IBM System/360. Input may be any Fargo program which conforms to the specifications in Fargo for IBM 1401 (C24-1462). Output consists of System/360 Model 20 RPG specification cards and a listing of Fargo specifications which were not converted by the programs.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - The object program requires 16K, Advanced Programming Feature, and 2 tape units.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401020036

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/566 22	01
		MT	7/800 24	01
OPTIONAL	none	none	none	none

1401-02.0.039

SYSTEMS FLOW CHARTER

AUTHOR....Mr. D. L. Fisher

DIRECT TECHNICAL INQUIRIES TO...

Mr. D. L. Fisher
IBM Corporation
Monterey & Cottle RoadsBldg. 051
San Jose, California

DESCRIPTION - The Program is a 16K 1401 Systems Flow Charter. The machine must have (1) Index Registers, (2) Hi-Lo-Eq Compare, (3) Advanced Programming (4) 1402, (5) 1403 and (6) 1 Tape (using card program) or 2 tapes using loadable tape. The program will draw systems flow charts, create a "Systems table and program-file cross-reference". The symbols drawn are Clerical Operation, Storage Bin, Wide Program, Off-Page Connector, Adding Machine, Transmittal Tape, Multiple Card File, Tape, Random File, Card, Document, Graphic Display, Terminal, Keyboard, Paper Tape, Comments and Sequence of File. The program has been successfully emulated on an IBM S/360 Model 30. Basic 1401 Autocoder was used except for the TOVLY macro. The program is tape loaded using the tape generated by the Autocoder Assembler.

PROGRAMMING SYSTEMS - Written in Autocoder

MINIMUM SYSTEM REQUIREMENTS - Program requires a 1401 with 16K Memory, Advanced Programming, SBR and Indexing, sense switches, two tapes, a 1403 Printer and 1402 Card Reader.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401020039

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 22	01
		MT	7/800 24	01
OPTIONAL	none	none	none	none

1401-02.0.040

TYPEWRITER MACROS FOR 1401/1440/1460 DISK AUTOCODER

AUTHOR....A. P. DeLoach

DIRECT TECHNICAL INQUIRIES TO...

A. P. DeLoach
IBM Corporation
450 James Robertson Parkway
Nashville, Tenn. 37202

DESCRIPTION - These two Macros were designed with the idea of making the console typewriter very easy to use. The MSG Macro allows the user to type out a message by simply coding MSG in the OP-Code field and the actual message in the operand field. The E0J Macro types out "E0J" on the typewriter and comes to a dead halt with 999 in the A and B stars. As an option, the user may type a message out instead of "E0J" by simply writing the actual message in the operand field. Program material includes macros to insert in the macro library and a sample program to assemble to test their operation.

PROGRAMMING SYSTEMS - Source language is Disk Autocoder Macro Language.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401/40/60 with one 1311 and Disk Autocoder (1401-AS-008). A console typewriter is required for execution.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401020040

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-02.0.041

COBOL EXPANDER PROGRAM

AUTHOR....J. G. Tate

DIRECT TECHNICAL INQUIRIES TO...

J. G. Tate
IBM Corporation
1013 E. Colonial Drive
Orlando, Florida

DESCRIPTION - The COBOL Expander Program permits the user to code COBOL Programs in a very abbreviated form. This program expands the abbreviations used and punches a deck ready for the COBOL Compiler. Current use indicates a savings of 25 to 60 percent of coding and keypunching effort. A standard COBOL coding sheet is used.

CONTINUED FROM PRIOR PAGE

Abbreviations and substitutions may be chosen by the user. Applicable for COBOL for any machine. Will convert percent, lozenge, pound sign, at sign and ampersand to S/360 characters open parenthesis, close parenthesis, equal mark, quote mark and plus sign if desired. Will resequence and identify output decks. Programs may be stacked. Permits exploitation of inherent self documenting facility of COBOL without voluminous coding and keypunching effort normally required.

PROGRAMMING SYSTEMS - Written in SPS.
MINIMUM SYSTEM REQUIREMENTS - 4K or above 1401 card system, using Advanced Programming Feature, Hi-Lo-Equal and sense switches.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401020041

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-03.0.010

SQUARE ROOT SUBROUTINE

AUTHOR....Richard D. Barker

DIRECT TECHNICAL INQUIRIES TO...
Richard D. Barker
ITEK Corporation
Lexington, Massachusetts

DESCRIPTION - This program will calculate the square root of any six-digit number.

MINIMUM SYSTEM REQUIREMENTS - 600 positions are required to store the program. 403 of these positions are used to store the divide subroutine. 1401 - Any model.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401030010

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-03.0.011

CALCULATE NUMBER OF DAYS BETWEEN TWO DATES SUBROUTINE-DTCALC

AUTHOR....William B. Morgan

DIRECT TECHNICAL INQUIRIES TO...
William B. Morgan
IBM Corporation
99 Park Avenue
New York, New York

DESCRIPTION - This subroutine calculates the number of calendar days between two dates providing accurate accounting for leap year day. Dates may be in separate adjacent centuries, but cannot be more than 199 years and 365 days apart.

PROGRAMMING SYSTEMS - Source language SPS.

MINIMUM SYSTEM REQUIREMENT - 395 positions plus 24 positions for each time a subroutine is used. 1401 - Any model, no special features are required.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401030011

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-03.0.014

SQUARE ROOT SUBROUTINE USING ODD INTEGER METHOD

AUTHOR....Burr Preston

DIRECT TECHNICAL INQUIRIES TO...
Burr Preston
IBM Corporation
520 North Dearborn Street
Chicago 10, Illinois

DESCRIPTION - This generalized, closed subroutine extracts the square root of any non-negative number. If the argument is negative, the square root of the absolute value of the argument is generated, and control transfers to the main program via an error return. The argument size is variable and limited only by available core. The root contains half a many digits as the argument. An extremely general and easy to use linkage allows the programmer to have no knowledge of the work areas or symbolic labels used by the subroutine.

MINIMUM SYSTEM REQUIREMENTS - 285 positions are required for a 10 digit argument. In general, 255 & 31 positions are required for an argument of length 1. Advanced Programming (index registers, Move Record, Store A and B Registers), High-Low-Equal Compare, and Modify Address. The latter two features may be eliminated by minor program modifications.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401030014

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-03.0.015

SQUARE ROOT ROUTINE

AUTHOR....M. J. Kenny

DIRECT TECHNICAL INQUIRIES TO...
M. J. Kenny
IBM Corporation
7321 Lake Street
River Forest, Illinois

DESCRIPTION - A closed SPS Square Root Routine using no Execution time estimated at 20 to 30 milliseconds depending on the sum of digits in radicand. Method of successive subtractions based on formula $S(N)$ equals $(N \cdot N \cdot N) / 2$. Fixed point arithmetic giving a sex significant digit answer. Range, largest number is 99999880000036, irrespective of where decimal point is located in the number. Routine has been used on sample problems and a wide range of customer data.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - 262 positions of core. Operates on any 1401.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401030015

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-03.0.019

A SQUARE ROOT SUBROUTINE FOR THE 1401 USING NORMAL EXTRACTION METHOD

AUTHOR....George F. Wardin

DIRECT TECHNICAL INQUIRIES TO...
Diann C. Hansen
IBM Corporation
340 Market Street
San Francisco, California

DESCRIPTION - The purpose of this writeup is to present a flexible subroutine for taking the Square Root of any size number using the normal extraction method. Does not require Multiply-Divide and can be used with (method I) or without (method II) Advanced Programming. Method I

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requires 183 positions of core and method II requires 254 positions of core. The sample program included in the writeup is for a 14 digit radicand with a 7 digit root. The writeup also includes explanation of terminology used in the subroutine, comments on how to adjust to any size radicand, a chart of how the method actually works, flow charts, SPS source decks, program decks and listings of test data and results.

MINIMUM SYSTEM REQUIREMENTS - 1401-Any size, method I-Advanced Programming-Method II-no additional features.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401030019

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-03.0.036

AUTOCODER SERCH EINARY SEARCH MACRO

AUTHOR....R. T. Steffanson

DIRECT TECHNICAL INQUIRIES TO...

R. T. Steffanson
Potlatch Forests, Inc.
Lewiston, Idaho 83501

DESCRIPTION - Binary Search is a highly efficient method of table look-up and has nothing to do with column binary or binary arithmetic. Serch Macro generates an open subroutine to conduct a binary search of a table. Serch does not set up the table, it merely searches the table and exits to the next sequential instruction if the data record is matched, or exits to an address supplied as a parameter if the data is not matched. Index register 3 contains the address of the table entry which compared equal. Emphasis is on ease of use. Serch uses a Macro-generated address table to divide the table of entries into successively smaller halves and does not require the Multiply-Divide Special Feature. All entries must be of same length and in ascending sequence. Size and number of entries in the table is restricted only by core storage available.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Storage requirements - varies. Typical requirements are 107 positions for 31 entry table, 149 positions for 4095 entry table. 8 additional positions if modify address is not available. Equipment specifications - Advanced Programming, Hi-Lo-Equal Compare. Assembly requires 1401 Autocoder system.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401030036

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-03.0.041

1401/1460 SIMULTANEOUS MULTIPLY DIVIDE SUB-ROUTINE

AUTHOR....E. D. Spraker

DIRECT TECHNICAL INQUIRIES TO...

E. D. Spraker
IBM Corporation
1439 Peachtree Street, N. E.
Atlanta, Georgia

DESCRIPTION - This programmed sub-routine provides the ability to multiply and divide simultaneously in one operation with algebraic sign control and decimal control up to five additional places. Both the multiplication and division in any combination is accomplished in approximately half the time it takes to use two separate multiply and divide routines. This routine allows use of either multiplication, or division or the combination with complete linkage to users program. It provides for the multiplicand, divisor and multiplier/dividend to be up to 10 positions each and supplies a 20 position signed answer and 10 position remainder.

MINIMUM SYSTEM REQUIREMENTS - Uses less than 260 positions

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of any 1401-1460 with Advanced Programming.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401030041

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-05.0.003

MULTIPLE SIMULTANEOUS EQUATION AND MATRIX INVERSION PROGRAM

AUTHOR....H. J. Myers

DIRECT TECHNICAL INQUIRIES TO...

H. J. Myers
IBM Corporation
2330 St. Paul Street
Baltimore 18, Maryland

DESCRIPTION - Up to 37 simultaneous equations are solved. Matrices up to 38 x 38 may be inverted as will be the coefficient matrix of the simultaneous equations. All calculations are carried out in eight-digit precision. No rounding is performed.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - The program requires the High-Low-Equal Compare, Multiply-Divide and Advanced Programming features and 4, 8, 12 or 16K positions of core storage.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401050003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-06.0.001

SEASONAL ADJUSTMENT OF MONTHLY TIME SERIES

AUTHOR....Fabio Tomchinsky

DIRECT TECHNICAL INQUIRIES TO...

Fabio Tomchinsky
IBM Corporation
230 S. 15th Street
Philadelphia, Pennsylvania

DESCRIPTION - Computes a preliminary seasonally adjusted series following the conventional ratio to moving average technique. Then it utilizes a weighted fifteen-month moving average as the estimate of the trend cycle curve used to obtain the final seasonally adjusted series. Computes the irregular, cyclical and seasonal components. The program will handle up to 15 years of monthly data with one data card for each year. Each card must have information for all 12 months of a calendar year.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - Card 1401-4K no special device SHISKIN method.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401060001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

CONTINUED FROM PRIOR COLUMN

PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
1401-06.0.002			
LINEAR REGRESSION ANALYSIS			
AUTHOR...M. Turoff	BASIC none	CARDS 15	none
DIRECT TECHNICAL INQUIRIES TO... M. Turoff IBM Corporation 520 Boylston Street Boston 16, Massachusetts	OPTIONAL none	none	none
DESCRIPTION - A Two Pass 1401 FORTRAN Program that will accommodate eight independent variables.			
MINIMUM SYSTEM REQUIREMENTS - 1401 8K system. Easily modified to increase the number of variables for use on a larger system 1401 8K.			
BASIC PROGRAM PACKAGE DOCUMENTATION - Write-up. MACHINE READABLE - Appropriate material delivered.			
OPTIONAL PROGRAM PACKAGE - None.			
ORDERING INFORMATION: PROGRAM NUMBER 1401060002			
PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC none	CARDS	15	none
OPTIONAL none	none		none
1401-06.0.003			
MULTIPLE REGRESSION PROGRAM			
AUTHOR...Federal Reserve Bank of Kansas City			
DIRECT TECHNICAL INQUIRIES TO... Research Department Federal Reserve Bank of Kansas City Federal Reserve P. O. Station Kansas City 6, Missouri			
DESCRIPTION - A Multiple Regression Analysis designed to handle up to 10 variables. Computes partial regression and standardized partial regression coefficients, standard errors, T values, partial and multiple correlation coefficients, and the Durbin Watson ratio.			
MINIMUM SYSTEM REQUIREMENTS - 1401 card system with 8K memory, Multiply-Divide, Indexing, Store Address Register, Hi-Lo-Equal Compare, Expanded Print Edit.			
BASIC PROGRAM PACKAGE DOCUMENTATION - Write-up. MACHINE READABLE - Appropriate material delivered.			
OPTIONAL PROGRAM PACKAGE - None.			
ORDERING INFORMATION: PROGRAM NUMBER 1401060003			
PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC none	CARDS	15	none
OPTIONAL none	none		none
1401-06.0.004			
MULTIPLE LINEAR REGRESSION ANALYSIS			
AUTHOR...Mary Ann Fisher			
DIRECT TECHNICAL INQUIRIES TO... Charles Yurasek IBM Corporation 570 Broad Street Newark, New Jersey			
DESCRIPTION - This program is designed to accomplish a regression analysis of up to 14 independent variables on the smallest 1401 with FORTRAN capabilities. It sacrifices speed and elegance to accommodate larger problems than any other such program now available. Easily modified by user with FORTRAN knowledge. The method used is Least Squares and Statistics are calculated for the evaluation of overall fit and individual components. Data format may be modified by user.			
PROGRAMMING SYSTEMS - Written in FORTRAN.			
MINIMUM SYSTEM REQUIREMENTS - Requires 8K 1401 with FORTRAN features.			
BASIC PROGRAM PACKAGE DOCUMENTATION - Write-up. MACHINE READABLE - Appropriate material delivered.			
OPTIONAL PROGRAM PACKAGE - None.			
ORDERING INFORMATION: PROGRAM NUMBER 1401060004			
PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC none	CARDS	15	none
OPTIONAL none	none		none
1401-06.0.005			
MULTIPLE CORRELATION - VARIABLES OF IMPORTANCE DETERMINED VOID			
AUTHOR...Dr. J. R. Johnson			
DIRECT TECHNICAL INQUIRIES TO... Dr. J. R. Johnson Industrial Engineering Dept. R. J. Reynolds Tobacco Co. Winston-Salem, North Carolina			
DESCRIPTION - To determine the order of importance of the independent variables in a Multiple Correlation Problem, to find the coefficients of Multiple Correlation for the Variables as they are introduced, to find F-tests of significance of these coefficients, to find the coefficients of the regression equation for the variables selected, and (if deserved) to calculate predicted values of the dependent variable. Wherry-Doolittle Method. This program is intended to replace a similar program of identical title dated June, 1963. Up to 100 variables with 220 observations, where the number of observations must exceed the variables. By changing the dimension statement in phase 1, one can add two observations for every variable not needed.			
MINIMUM SYSTEM REQUIREMENTS - Storage requirements - 16,000 positions. Modulus is 5 and Mantissa is 8. Equipment Specifications - IBM 1401, 16K with the following features - Advanced Programming, High-Low-Equal Compare, and Multiply-Divide, three tape drives, 1402 Card Reader and Punch, 1403 Printer, and High-Speed Sorter. A card reproducer is helpful.			
BASIC PROGRAM PACKAGE DOCUMENTATION - Write-up. MACHINE READABLE - Appropriate material delivered.			
OPTIONAL PROGRAM PACKAGE - None.			
ORDERING INFORMATION: PROGRAM NUMBER 1401060005			
PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC none	CARDS	15	none
OPTIONAL none	none		none
1401-06.0.006			
CORL-I THIRTEEN VARIABLE SIMPLE CORRELATION			
AUTHOR...Rupert J. Lissner			
DIRECT TECHNICAL INQUIRIES TO... Rupert J. Lissner Post Office Box 7256 Stanford University Stanford, California			
DESCRIPTION - CORL8 will correlate up to Thirteen Variables and print the correlation coefficients along with headings specified by the user. Through header cards, the user specifies number of variables (12-13), title of each variable (for identification on printed report), and data card location of variables. An optional header card will print up to 78 columns of information at the top of the report. Number of data cards cannot exceed 99,999. If input data is not on cards, the SPS language source deck should be requested, as modifications will be necessary. PROGRAMMING SYSTEMS - Written in SPS.			
MINIMUM SYSTEM REQUIREMENTS - IBM 1401 with Multiply-Divide. 1401 Card Reader/Punch, 1403 Printer. 4K core storage.			
BASIC PROGRAM PACKAGE DOCUMENTATION - Write-up. MACHINE READABLE - Appropriate material delivered.			
OPTIONAL PROGRAM PACKAGE - None.			
ORDERING INFORMATION: PROGRAM NUMBER 1401060006			
PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC none	CARDS	15	none
OPTIONAL none	none		none

CONTINUED FROM PRIOR COLUMN

1401-06.0.007

REGRESSION ANALYSIS COMPUTER PROGRAM

AUTHOR....Joseph J. Ott

DIRECT TECHNICAL INQUIRIES TO...

Joseph J. Ott
U. S. Department of Commerce
Bureau of Public Roads
Washington 25, D. C.

DESCRIPTION - To provide a program for the solution of simple and multiple regression equations involving from 2 to 26 variables and from 2 to 9999 observations. Data to be entered must be in 10 digit form with the decimal point assumed to be between the fifth and sixth digits. No check is made of the matrix to see if there are identical rows or columns

MINIMUM SYSTEM REQUIREMENTS - 16000 positions of core storage. IBM 1401 (or with Compatibility Switch). Advanced Programming Package. Four Tape Units.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401060007

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 7/800	22 24
				01 01

OPTIONAL none none none

1401-06.0.008

REGAN - 4K REGRESSION ANALYSIS AND CORRELATION COEFFICIENTS PROGRAM

AUTHOR....L. E. Hanneman

DIRECT TECHNICAL INQUIRIES TO...

L. E. Hanneman
IBM Corporation
2116 Grand Avenue
Des Moines 12, Iowa

DESCRIPTION - REGAN computes simple correlation coefficients and performs a linear regression analysis utilizing a minimum amount of core space. The program handles up to one hundred observations, and accepts up to eight independent variables and one dependent variable.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - A 4K 1401 with advanced Programming is required. The program instructions occupy core positions 0100-3098. The matrix occupies positions 3100-3999. Positions 0100-0132 are cleared before printing occurs.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-Up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401060008

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-06.0.009

SEASONAL ADJUSTMENT - CENSUS METHOD II, X-9 VERSION, 4K, LONG PROGRAM

AUTHOR....E. C. Christ

DIRECT TECHNICAL INQUIRIES TO...

E. C. Christ
Federal Reserve Bank of Philadelphia
Department of Research
Philadelphia, Pennsylvania

DESCRIPTION - To adjust seasonally monthly time series and to provide additional measures as aids to analyzing the data. The basic procedure may be found in ELECTRONIC COMPUTERS AND BUSINESS INDICATORS by Julius Shiskin, published by the National Bureau of Economic Research as Occasional Paper 57. The X-9 Version is generally described in BUSINESS CYCLE DEVELOPMENTS, March 1962, published by the Bureau of the Census, U. S. Department of Congress. Maximum of 15 years of monthly data. Each year must be

complete, with no minus or zero values. Monthly values not to exceed 6 digits. Any consecutive 12 months must total less than 10,000,000.

PROGRAMMING SYSTEMS - Written in Fixed/Float Relocatability.

MINIMUM SYSTEM REQUIREMENTS - 4K, 132 Print Positions, Card System, no special feature.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401060009

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-06.0.010

SEASONAL ADJUSTMENT, CENSUS METHOD II, X-9 VERSION, 4K, SHORT PROGRAM

AUTHOR....E. C. Christ

DIRECT TECHNICAL INQUIRIES TO...

E. C. Christ
Federal Reserve Bank of Philadelphia
Department of Research
Philadelphia, Pennsylvania

DESCRIPTION - To seasonally adjust monthly time series and to chart the original and the seasonally adjusted data. The basic procedure may be found in ELECTRONIC COMPUTERS AND BUSINESS INDICATORS by Julius Shiskin, published by the National Bureau of Economic Research as Occasional Paper 57. The X-9 Version is generally described in BUSINESS CYCLE DEVELOPMENTS, March 1962, published by the Bureau of the Census, U. S. Department of Congress. Maximum of 15 years of monthly data. Each year must be complete, with no minus or zero values. Monthly values not to exceed 6 digits. Any consecutive 12 months must total less than 10,000,000.

PROGRAMMING SYSTEMS - Written in Fixed/Float Relocatability.

MINIMUM SYSTEM REQUIREMENTS - 4K, 132 Print Positions, Card System, no special features.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401060010

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-06.0.011

METHOD OF RECORDING COMPUTER UTILIZATION AND 3 1401 PROGRAMS TO FACILITATE STATISTICAL ANALYSIS

AUTHOR....J. W. Syrotchen

DIRECT TECHNICAL INQUIRIES TO...

J. W. Syrotchen
IBM Corporation
7700 Second Boulevard
Detroit, Michigan

DESCRIPTION - This program explains in detail the basic concepts and requirements of a console operations log, specifically oriented to 1401-1410 Systems, but is general enough to be adapted for any installation. To supplement the method outlined, three 1401 4K programs are provided to enable a means of analyzing the cards punched from the log. Eight reports are illustrated.

PROGRAMMING SYSTEMS - Written in Basic SPS.

MINIMUM SYSTEM REQUIREMENTS - No special features or devices are used except sense switches and 132 print positions. Basic system configuration necessary to utilize programs, 4K 1401, 1402 and 1403.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

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ORDERING INFORMATION: PROGRAM NUMBER 1401060011

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-06.0.012

ANALYSIS OF VARIANCE, 2 TO THE N POWER FACTORIAL DESIGN

AUTHOR....Dr. J. Robert Johnson, Jr.

DIRECT TECHNICAL INQUIRIES TO...

Dr. J. Robert Johnson, Jr.
Industrial Engineering Department
R. J. Reynolds Tobacco Company
Winston-Salem, North Carolina

DESCRIPTION - Analysis of Variance of Data for a 2 to the N Power Factorial Design. As given in Manual of EXPERIMENTAL STATISTICS by Freund, Livermore, and Miller, Prentice - Hall, 1960. For N, the number of factors, 2 less than N less than 5. The number of replications must be more than one and less than 26. (There is ample room in storage for expanding the limits on the restrictions.) 9300 positions. Modulus is 5, mantissa is 8.

PROGRAMMING SYSTEMS - Written in FORTRAN.

MINIMUM SYSTEM REQUIREMENTS - 1401, 12K or 16K, with the following features - Advanced Programming, High-Low-Equal Compare, and Multiply-Divide - Card Reader and Punch - 1403 Printer.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401060012

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-06.0.013

DATA TRANSFER - PROGRAM FOR CENSUS METHOD II

AUTHOR....Lawrence Salzman

DIRECT TECHNICAL INQUIRIES TO...

Lawrence Salzman
IBM Corporation
590 Madison Avenue
New York, New York

DESCRIPTION - The program takes the final seasonally adjusted series generated by the 4K 1401 versions of Census Method II, a seasonal adjustment program, applies a Spencer Fifteen-Term Smoothing Formula, and punches out results which are input for the 16K 1401 program titled Polynomial Curve Fit for Economic Analysis and Forecasting, file number 07.0.003. The Spencer Smoothing is applied to adjust for the irregular component, thereby leaving a trend-cycle component series for final analysis.

MINIMUM SYSTEM REQUIREMENTS - Any IBM 16K 1401 for which a FORTRAN compiler has been written.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401060013

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-06.0.014

ONE-WAY ANALYSIS OF VARIANCE

AUTHOR....M. M. Johnson

DIRECT TECHNICAL INQUIRIES TO...

M. M. Johnson
The Bendix Corporation
Pioneer-Central Division
Hickory Grove Road

DESCRIPTION - Computation of "F Ratio" for One Way Analysis of Variance. The program is designed for both variable and constant sample sizes per column.

PROGRAMMING SYSTEMS - Written in FORTRAN.

MINIMUM SYSTEM REQUIREMENTS - The program is limited to a matrix of 99 columns and 999 rows. Equipment specifications - 8K 1401 Card System with a 132 position Printer, and standard FORTRAN configuration.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401060014

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-06.0.015

TIME SERIES ANALYSIS AND DATA REDUCTION PROGRAM

AUTHOR....R. A. Kopp

DIRECT TECHNICAL INQUIRIES TO...

R. A. Kopp
IBM Corporation
Product Forecasting
Harrison, New York

DESCRIPTION - Performs data reduction and smoothing of time series functions by classifying series data into runs or groups of points having positive or negative rates of change or trend. Repeated averaging of runs produces smoothing and reduces the number of observations in a series to a level where major trends can be reasonably isolated. Uses methodology from the paper THE ANALYSIS OF ECONOMIC TIME SERIES FOR PROBABILITY FORECASTING AND CONTROL, Z. Z. Szatrowski, July 1963. Accommodates series with fixed or variable time intervals and provides for assignment of constant or variable weighting factors to each series observation. Output is on tape and printer.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Autocoder program uses 8K 1401 with four tape drives, Advanced Programming, Sense Switches, Multiply/Divide, and 1403 Mod. 2 or 3.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401060015

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-06.0.018

TRADING-DAY ADJUSTMENT FOR 1401 VERSIONS OF CENSUS METHOD II

AUTHOR....L. Salzman

DIRECT TECHNICAL INQUIRIES TO...

L. Salzman
IBM Corporation
590 Madison Avenue
New York, New York 10022

DESCRIPTION - This 8K-1401 FORTRAN Program is an adaption of the BUREAU OF THE CENSUS TRADING-DAY ADJUSTMENT which will be included in the X-11 Version of CENSUS METHOD II. The subject program was written to be completely compatible and automated with the X-9 and original versions of CENSUS METHOD II available from the 1401 General Program Library. Specifically, it takes the original and final seasonally adjusted series as input (both available in the proper card format from the CENSUS METHOD II programs mentioned above); develops the irregular component; further develops trading-day adjustment factors for each month in a series; adjusts the original series for trading-day variations; and prints and punches output which become input to the seasonal adjustment programs so that the various measures and factors can be computed after correction for trading-day variations.

PROGRAMMING SYSTEMS - Written in FORTRAN.

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MINIMUM SYSTEM REQUIREMENTS - An 8K-1401 with at least one tape drive for which a FORTRAN compiler has been written.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401060018

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-07.0.002

SELF-CHECKING NUMBER CALCULATION MODULUS II

AUTHOR....Mrs. Nancy N. Merrill

DIRECT TECHNICAL INQUIRIES TO...
Mrs. Nancy N. Merrill
IBM Corporation
1730 Cambridge Street
Cambridge, Massachusetts

DESCRIPTION - Calculates the self-checking number for base numbers, 3-15 positions. A lead card instructs the program in the size of the base number and the desired input and output.

Options for input -

- 1) Generate base numbers from 1 to 95.
- 2) Generate between specified numbers.
- 3) Read specific numbers from cards.

Options for output -

- 1) Punch base number and its check digit.
- 2) Print and punch base number and its check digit.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - 4K, 1401.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401070002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-07.0.003

POLYNOMIAL CURVE FIT FOR ECONOMIC ANALYSIS AND FORECASTING

AUTHOR....Lawrence Salzman

DIRECT TECHNICAL INQUIRIES TO...
Lawrence Salzman
IBM Corporation
590 Madison Avenue
New York, New York 10022

DESCRIPTION - This program is written in FORTRAN for a 16K-1401 and is compatible with the 16K-1401 version of the Data Transfer Program for CENSUS METHOD II, No. 06.0.013. These two programs in conjunction with the 4K-1401 versions of CENSUS METHOD II No. 06.0.009 form an automated package for forecasting. This program takes time-series data and fits a first, second and/or third degree polynomial to the series. It computes the function, fitting points to the equation and subtracting and dividing the fitted from the observed data. This gives the deviations about an assumed trend which tends toward the cycle for those series that have a cycle. As an option, the trend can be projected 24 time periods into the future, i.e., if monthly data are used this gives a 2-year projection. The coefficients are computed by the least squares technique. The calculations utilize FORTRAN Floating Point Arithmetic. A modified Gaussian elimination technique is used to solve the resulting set of linear equations.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

CONTINUED FROM PRIOR COLUMN

ORDERING INFORMATION: PROGRAM NUMBER 1401070003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-09.2.007

HIGHWAY EARTHWORK QUANTITIES AND DESIGN DATA

AUTHOR....David Denzer

DIRECT TECHNICAL INQUIRIES TO...

David Denzer
State of Illinois
Division of Highways
Bureau of Research & Planning
State Office Building
Springfield, Illinois

DESCRIPTION - The purpose of the program is to compute cut and fill quantities, mass diagram ordinates, and critical template offsets and elevations, for subv projects as highways, levees, and channels, from ground cross sections expressed either by rods and offsets or by elevations and offsets, a profile grade line, and a roadway template of not more than 20 points on each side of centerline. Two cut slopes and three fill slopes of any selected rate of slope may be used. All template points are defined by vertical and horizontal offsets from the preceding point, so that the dimensions of any point may be changed at any cross section station without affecting the relative position of other unchanged points on the template. The program may be used for multiple roadways so long as one-half width can be defined by not more than 20 template points.

MINIMUM SYSTEM REQUIREMENTS - IBM 1401 Computer System with 16K Memory.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401092007

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.1.002

LINEAR PROGRAMMING

AUTHOR....R. Cabell

DIRECT TECHNICAL INQUIRIES TO...

R. Cabell
IBM Corporation
6210 North Atlantic Avenue
Cocoa Beach, Florida

DESCRIPTION - The program maximizes a linear objective function of N variables, subject to M constraints. The values for M & N must be specified by the user for each problem. The Simplex method is used, but is revised to permit the basis to be carried as only a column matrix.

PROGRAMMING SYSTEMS - Written in SPS-2

MINIMUM SYSTEM REQUIREMENTS - The program requires 1500 positions. 1401 CPU 2K, 4K, 8K, 12K, or 16K. 1402 Card Reader, 1403 Model I or Model II Printer. No special features are required.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401101002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

CONTINUED FROM PRIOR COLUMN

1401-10.1.004

LINEAR PROGRAMMING, REVISED SIMPLEX METHOD

AUTHOR....Dr. J. Robert Johnson, Jr.

DIRECT TECHNICAL INQUIRIES TO...
 Dr. J. Robert Johnson, Jr.
 Industrial Engineering Department
 R. J. Reynolds Tobacco Company
 Winston-Salem, North Carolina

DESCRIPTION - To solve a general linear programming problem. Revised Simplex method, product form of the inverse. FORTRAN. Up to 108 equations with any number of unknowns. Storage requirements 16000 positions. Modulus is 5 and mantissa is 8.83 minutes or 21 equations in 53 unknowns (30 iterations). The time is more largely a function of the number of variables involved and of the number of iterations than of the number of equations.

MINIMUM SYSTEM REQUIREMENTS - 1401, 16K with the following features Advanced Programming, High-Low-Equal Compare, and Multiply/Divide- three 7330 Tape Drives - Card Reader and Punch - 1403 Printer. 1402 Card Read/Punch.

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Write-up.
 MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401101004

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.2.003

INVENTORY MANAGEMENT SIMULATOR

AUTHOR....K. Kimball Holland

DIRECT TECHNICAL INQUIRIES TO...
 K. Kimball Holland
 Barrows Hall
 Oberlin College
 Oberlin, Ohio

DESCRIPTION - 1401 Inventory Management Simulator is a small size basic inventory management simulator which offers an easy method of simulating the behavior of various inventory policies using historical sales data. Many different policy options are available and the routines are easily modifiable.

MINIMUM SYSTEM REQUIREMENTS - Memory 4K 1401 processor
 1402 Card Reader/Punch 1403 Model (132 Print Positions).

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Write-up.
 MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401102003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.2.006

MORTGAGE AMORIZATION SCHEDULE

AUTHOR....Hartley Fredrickson

DIRECT TECHNICAL INQUIRIES TO...
 Hartley Fredrickson
 IBM Corporation
 348 East South Temple
 Salt Lake City, Utah

DESCRIPTION - This program will be written to amortize a mortgage and print a schedule of this amortization. The printed items for a given date would include - date of each payment, and number of remaining payments. At the end of the program it will print the amount of principal and interest paid. The variables that the user can specify will be - principal amount- interest rateamount of payment, and date of first payment. The program will have the ability to stop it on a certain date, after a certain amount of payment is reached. or until the mortgage is completely amortized. Extra principal payments may be included is desired.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401 High-Low-Equal Compare, Mult. & Divide and 132 print positions.

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Write-up.
 MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401102006

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.2.007

MANAGEMENT DECISION MAKING LABORATORY AUTOMATIC PLOTTING OF RESULTS

AUTHOR....Stephen B. Lucas

DIRECT TECHNICAL INQUIRIES TO...
 Stephen B. Lucas
 IBM Corporation
 520 N. Dearborn
 Chicago, Illinois

DESCRIPTION - MADMAP is a program utilizing history and decision cards from each period of play to automatically generate nine graphs of laboratory results on the 1403 Printer. By using this program, the Decision Making Laboratory Administrator eliminates the need for personnel to manually graph results. Any combination of graphs can be selected by sense switches and additional copies made without reloading the program or data. 1401 requirements are the same as those for the IBM 1401 Management Decision Making Laboratory. The object program can be on cards or tape. Graphs available are-- price by area, marketing by area, total marketing, total dollar sales and unit sales, research and development and unit cost, production quantity and production as percent of capacity, income, assets and return on assets. In addition, a summary report of income, assets, and return is also written for the use of the administrator.

PROGRAMMING SYSTEMS - Written in Autocoder

MINIMUM SYSTEM REQUIREMENTS - 1401 Processing Unit with 4000 positions of storage, Advanced Programming feature, Hi-Low-Equal Compare feature, Sense Switches feature, Multiply-Divide Feature, 1402 Card-Read/Punch, 1403 Printer - 729 or 7330 Magnetic Tape Units (2).

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Write-up.
 MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
 DOCUMENTATION - None.
 MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401102007

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-10.2.008

GENERAL PURPOSE SIMULATOR - GPSS-2

AUTHORS...D. F. Bright G. Tate

DIRECT TECHNICAL INQUIRIES TO...
 G. Tate
 IBM WTC Corporation
 P. O. Box 2557
 Wellington, New Zealand

DESCRIPTION - This program is based on the 7090 application program, General Purpose Systems Simulator. It contains most features of GPSS II except FORTRAN-type expressions. It is limited to 75 blocks, 15 facilities, 15 storages, 10 queues, 10 logic switches, 20 SAVEY locations, 10 functions, 10 tables, with 150 transactions in the system concurrently. The 1401 General Purpose Simulator is useful for demonstrations, educations, preliminary simulation studies or simulation of complete small systems.

PROGRAMMING SYSTEMS - Written in Autocoder

MINIMUM SYSTEM REQUIREMENTS - For a 16K 1401 with one Tape, Advanced Programming and High-Low-Equal Compare, for general purpose systems simulation.

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Write-up.
 MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

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ORDERING INFORMATION: PROGRAM NUMBER 1401102008

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.2.010

COMMERCIAL AND SAVINGS TELLER SIMULATION USING NABAC MODEL

AUTHORS...J. V. Spikes, Jr. Robert Sykoba

DIRECT TECHNICAL INQUIRIES TO...

J. V. Spikes, Jr.
IBM Corporation
112 East Post Road
White Plains, New York 10601

DESCRIPTION - Program simulates teller operation, providing summary statistics which reflect levels of customer service and teller utilization. Model was developed by NABAC. The simulator utilizes Monte Carlo technique of random selection in the assignment of transaction type and processing time to simulated customers. Customer arrivals are generated assuming arrival within time period fits a poisson distribution function. The user is allowed a maximum of 5 window types, total windows not to exceed 30, and maximums of 29 time periods, 20 transaction types, queue length of 9. Program requires NABAC'S Teller Performance Standards to determine processing time for each customer by transaction type. It is suggested that data on customer arrivals and transaction mix be gathered by a separate program, Teller Simulation Data Conversion and Summarization Program for IBM 1401.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder IOCS

MINIMUM SYSTEM REQUIREMENTS - 8K, 1401, 2 Tape Drives, 1402, 1403, Advanced Programming, H-L-E, Multiply Divide.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401102010

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-10.2.011

CAPERTSIM - COMPUTER ASSISTED PROJECT EVALUATION AND REVIEW TECHNIQUE SIMULATOR

AUTHOR...R. L. Risley

DIRECT TECHNICAL INQUIRIES TO...

R. L. Risley
Allison Division
General Motors Corporation
Dept. 8895
Indianapolis, Indiana

DESCRIPTION - To train personnel in the use of PERT network as (1) A planning and control device for complex projects. (2) To enable students to experience the significance of time-cost trade-offs. (3) To acquaint students with the use of the computer as an aid to management.

Method - A PERT Network is read in followed by control card followed by the student changes to the PERT network. Analysis of the student changes is made, the PERT network is updated, the change in cost is computed and the network is PERTED and a negative slack sort is printed.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - IBM 8K 1401 with advanced Programming, Multiply/Divide, 1402 and 1403.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401102011

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.2.012

1401/1440 DISK MANAGEMENT DECISION MAKING LABORATORY

AUTHOR...S. B. Lucas

DIRECT TECHNICAL INQUIRIES TO...

S. B. Lucas
IBM Corporation
520 N. Dearborn Street
Chicago, Illinois

DESCRIPTION - This program makes available the Management Decision Making Laboratory on a 1401/1311 or 1440/1311 Disk System. The program uses the same economic model and generates the same reports as the present 1401 tape version. In addition, parameters and initial history are stored on disk. Program and running history can be stored on disk or run with card Input/Output. Change card formats are used to easily alter parameters and history on disk. The business index can be increased or decreased and additional industry and confidential reports can be written by sense switch selection. At the end of any decision run, results stored on disk can be plotted, eliminating the need for post-laboratory graphing.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - The minimum 1311 System consists of an 8K 1401 or 1440 with Advanced Programming, High-Low-Equal Compare, and Sense Switches. One 1311 Drive and one 1316 Disk Pack for laboratories in progress are required. 2569 source statements.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401102012

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-10.3.001

LESS - LEAST-COST ESTIMATING AND SCHEDULING (4K-SCHEDULING PHASE ONLY)

AUTHORS...Lou J. Granato Jim Borden

DIRECT TECHNICAL INQUIRIES TO...

Lou J. Granato
IBM Corporation
631 Cooper Street
Camden 2, New Jersey

DESCRIPTION - Program is a high speed method of determining critical jobs and related information (float times, etc.) for projects where scheduling is important. Program will handle 574 events (nodes) with any number of arrows (jobs). The length of the critical path cannot exceed 6 digits (999999).

PROGRAMMING SYSTEMS - Written in SPS II.

MINIMUM SYSTEM REQUIREMENTS - 1401 Card System, 4K Memory, no special features required.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.002

LESS - LEAST-COST ESTIMATING AND SCHEDULING 8K, 12K, and 16K

AUTHORS...Lou Granato Joe Rose Jim Borden

DIRECT TECHNICAL INQUIRIES TO...

Lou Granato
IBM Corporation
631 Cooper Street
Camden 2, New Jersey

CONTINUED FROM PRIOR PAGE

DESCRIPTION - This program is a high speed method of determining critical path and related information (float time etc.) for problems where scheduling is important. The program will handle 8K Memory - 985 events (12K Memory - 1555 events) 16K Memory - 2125 events). Any number of jobs (arrows) can be handled. Length of the critical path cannot exceed 7 digits (9999999). Will handle 1000 arrows in approximately 12 minutes including card handling time. This is a three (3) phase, two (2) pass program.

PROGRAMMING SYSTEMS - Written in SPS II

MINIMUM SYSTEM REQUIREMENTS - 1401 card system with 8, 12 or 16K Memory, Multiply Divide feature, Hi-Lo-Equal Compare.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.007
PERT

AUTHOR....J. F. Borden

DIRECT TECHNICAL INQUIRIES TO...
J. F. Borden
IBM Corporation
Philadelphia Education Center
230 South 15th Street
Philadelphia 2, Pa.

DESCRIPTION - To aid in the planning, coordination and control function of projects where schedules are important. Evaluates and sequences jobs within the overall project with respect to their effect on the overall project and other jobs within the project. Similar to the LESS programs for 1401 and also the existing PERT programs. Provides for the use of three (3) time estimates but does not calculate PR, i.e., the probability associated with meeting predetermined schedule dates.

PROGRAMMING SYSTEMS - Written in SPS; Assembled with Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401 Model C-3,4,5 or 6 with, Multiply Divide feature Hi-Low-Equal Compare feature 1402 Card Read/ Punch 1403 Printer, Model 2 729 Model II or IV Tape Units.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103007

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.008

FORECASTING BY EXPONENTIAL SMOOTHING

AUTHOR....Jack F. Miess

DIRECT TECHNICAL INQUIRIES TO...
Jack F. Miess
IBM Corporation
P. O. Box 1608
340 W. Washington Avenue
Madison, Wisconsin

DESCRIPTION - This program is used to find the correct smoothing parameter for each of a firms products and then used to forecast monthly demand for one, two, three, and four months in advance for these products. The exponential smoothing method of forecasting is used with optional features of adjustments for seasonal variation and varying number of days in a month.

PROGRAMMING SYSTEMS - Written in 1401 Symbolic Language and Fixed Point Arithmetic was used throughout.

MINIMUM SYSTEM REQUIREMENTS - 1401 with 4K storage 1402 Model 1 1403 Model 2 (132 printing positions) no other special features are required.

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BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103008

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.009

ASK - INFORMATION RETRIEVAL PROGRAM FOR THE 1401

AUTHOR....Donald Herman

DIRECT TECHNICAL INQUIRIES TO...
Donald Herman
Computing Center
IBM Corporation
1120 Connecticut Avenue, N. W.
Washington, D. C.

DESCRIPTION - ASK is an information retrieval program. It will select records from tape that satisfy ranges, and, and not, or, or not, conditions. Free form inquiry format is used and multiple inquiries may be processed with one pass of the master tape. Significant features are the ability to make multiple inquiries, the use of free form inquiry, and the omission of any necessity for control cards.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - 4K, 1401, two tape drives, Advanced Programming package, Hi-Low-Equal Compare feature 1402 Card Reader 1403 Printer.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103009

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.010

KWIC SYSTEM

AUTHORS...C. M. Lobron D. R. Myers

DIRECT TECHNICAL INQUIRIES TO...
C. M. Lobron
IBM Corporation
230 S. 15th Street
Philadelphia, Pa.

DESCRIPTION - The six programs, runs 1 through 6, together with a programming systems Sort package, will permit the preparation of a publication consisting of a bibliography, KWIC Index, and personal author index.

PROGRAMMING SYSTEMS - Written in SPS II.

MINIMUM SYSTEM REQUIREMENTS - IBM 1401 System - 4K memory, 6 sense switches, 2 tape drives, Hi-Lo-Equal Compare feature, Advanced Programming feature (indexing, move record, store A and B), 1402 Card Read/Punch, and 1403 Printer.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None
MACHINE READABLE - Appropriate material delivered.

ORDERING INFORMATION: PROGRAM NUMBER 1401103010

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-10.3.013

CRITICAL PATH SCHEDULER (BASIC 1401)

AUTHOR...Henry M. Steele

DIRECT TECHNICAL INQUIRIES TO...
Henry M. Steele
IBM Corporation
2830 Victory Parkway
Cincinnati 6, Ohio

DESCRIPTION - A program for critical path scheduling on any 1401 system with a 1402 and 1403. Purpose was to use a card input format compatible with the 1620 LESS Program and to expand and improve upon the 1401 LESS program. Some of the many changes to 1401 LESS include - Missing node numbers permitted, elimination of memory to nines card preparation for phase 1. Elimination of header and trailer cards for job card input decks, and many report format changes. A four phase program. Phase 1 computes late finish time. Phase 2 computes early start time. Phase 3 computes early finish time. late start time, total float, free float, and the critical path. Phase 4 accumulates project cost and edits fields into report format. Restrictions and range critical path may not exceed 99,999 time units. The maximum event of node number is 711 on a 4K system, 311 on 2K, and 191 on 1.4K.

PROGRAMMING SYSTEMS - Written in SPS

MINIMUM SYSTEM REQUIREMENTS - 1402 and 1403 on system. No special features are used. Written for a 4K system, but requires only four patches to phase 1 to operate on 2K or 1.4K system. Program requirements uses all storage available on 1.4K, 2K, and 4K systems.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103013

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.015

PIECEWORK-TIMEWORK PAYROLL

AUTHOR...Marilyn M. Jensen

DIRECT TECHNICAL INQUIRIES TO...
Marilyn M. Jensen
IBM Corporation
3223 Wilshire Boulevard
Santa Monica, California

DESCRIPTION - The Piecework-Timework Payroll Program, Phase 1, computes employee earnings to first gross, and prints a preliminary payroll register for supervisory audit. It provides for an employee working a combination of piecework with a special rate for every job, and timework with either a special rate for every job, or with either a special or regular time rate. Shift differentials are calculated if the work was performed on other than first shift- total hours worked (piecework plus timework) are adjusted if unequal to timecard hours- and lost labor is computer if productive earnings are less than guaranteed earnings. Phase 2 produces the error register. Remaining core may be used to develop more sophisticated error diagnostic routines.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Without modification, the program requires a 1401 System with 8K, 2-7330 Tape Drives, 1405, 1407, Multiply-Divide, H-L-E Compare, and Advanced Programming. Phase 1 requires 6643 positions of core and 1015 source statements. Phase 2 requires 2211 positions of core with 369 source statements

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103015

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.016

CAPITAL INVESTMENT ANALYSIS (8K)

AUTHOR...F. A. Christopher

DIRECT TECHNICAL INQUIRIES TO...
F. A. Christopher
IBM Corporation
401 Grand Avenue
Oakland 10, California

DESCRIPTION - A 1401 program to calculate the rate of return of an investment based on the discounted cash flow method. This program provides a standard technique for ranking proposed capital expenditures, or, the rate of return may be compared with a minimum acceptable rate to help determine whether or not a proposed project should be undertaken.

PROGRAMMING SYSTEMS - Program is Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Written for an 8K 1401 with Multiply-Divide, Advanced Programming and Sense Switches.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103016

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.017

LESS PROGRAM 4K

AUTHOR...W. C. Millhoff

DIRECT TECHNICAL INQUIRIES TO...
W. C. Millhoff
IBM Corporation
1955 The Alameda
San Jose 26, California

DESCRIPTION - This program revises the 1401 LESS 4K program, #10.3.001, by Lou Grant, Jim Borden, and Joe Rose to include a fourth phase which prepares a Gantt Chart. This revision includes changes to phase 1, 2, and 3 to provide punched output from phase 3 for subsequent preparation of Gantt Chart Pictorial Schedules in phase 4. The maximum number of events has been reduced from 575 to 544. Other features of referenced program, 10.3.001 remain the same - any number of arrows-jobs and a 6 digit limit on the length of the critical path. Detailed schedules in phase 4 cannot exceed 93 days.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - Basic 1401 with a 1402 and a Model 2 1403 Printer. No special features are required. Phase 1 573 core positions, phase 4 1018 core positions.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103017

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.023

INVENTORY MANAGEMENT ANALYSIS PROGRAM

AUTHOR...Charlotte Scott

DIRECT TECHNICAL INQUIRIES TO...
Charlotte Scott
IBM Corporation
425 Park Avenue
New York, New York

DESCRIPTION - The Inventory Management Analysis Program provides analysis and classification by investment value and profit standing. Also, the program provides for the calculation of EOQ, number of orders per year based on order quantity, fixed order points and projected turnover ratios. Individual analysis is made for each inventory type, i.e., finished goods, purchases parts, manufactured parts and raw material. This program provides a means for selecting data for inventory management simulation,

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by defining the area of greatest potential return.

Stratification of inventory items may be made by correlating demand, cost and net profit. There are many other factors which should be considered for a complete analysis such as storage capacity, obsolescence, shelf life, movement inventory and seasonal demand.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Requirements - IBM 1401 Card System, 4K, Mult./Divide, 132 Print Positions.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103023

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.024

LOT SIZE INVENTORY MANAGEMENT INTERPOLATION TECHNIQUE (LIMIT)

AUTHORS...J. D. Barty G. W. Plossal
O. W. Wight W. J. Abramson

DIRECT TECHNICAL INQUIRIES TO...

J. D. Barty
Stanley Tools
111 Elm Street
New Britain, Conn.

DESCRIPTION - Lot-size Inventory Management Interpolation Technique (LIMIT) is a program which attacks the problem of inventory carrying cost found in the classical EOQ formula by distributing a department or plants setup hours in a more reasonable manner. Output is the best order quantity for all times withing the limitation of a prescribed setup cost and matrix for graphing showing the relationship of inventory to set up cost for various points.

PROGRAMMING SYSTEMS - Written in symbolic language.

MINIMUM SYSTEM REQUIREMENTS - Required 4K, Model 2 1403, Multiply-Divide, advanced programming, and Hi-Low-Equal. References Apics Research Project No. 1 for more details.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103024

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.028

CRITICAL PATH LISTING AND RESOURCE ANALYSIS

AUTHOR....R. J. Blair

DIRECT TECHNICAL INQUIRIES TO...

R. J. Blair
IBM Corporation
9250 Wilshire Blvd.
Beverly Hills, Calif.

DESCRIPTION - This program performs two major functions. First, it lists critical path output in any card format. Second, it performs preliminary analysis of resource requirements prior to resource simulation. This analysis determines the reasonableness of the resource requirements. These requirements may be revised as a result of this analysis before proceeding with resource simulation.

The program has four options:

- Include total float, free float, resource analysis.
- Include total float, resource analysis.
- Include total float, free float,
- List input cards.

The program options and data field locations are specified by a control card. The program can handle stacked networks.

PROGRAMMING SYSTEMS - Source language SPS II.

MINIMUM SYSTEM REQUIREMENTS - Machine configuration IBM

4K 1401 with advanced programming, Multiply/Divide, and a 1403 with 132 print positions. Program storage requirements 3569 positions of core used.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103028

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.035

QUICK KWIC INDEX

AUTHOR....J. M. Bain

DIRECT TECHNICAL INQUIRIES TO...

J. M. Bain
IBM Corporation
1123 Beaver Hall Hill
Montreal, Quebec, Canada

DESCRIPTION - This is a one pass program to produce a simple KWIC index from cards using only one card for each entry to the index. Previous programs have generally required several machine runs to produce a KWIC index.

PROGRAMMING SYSTEMS - The program is written in Autocoder and uses the full 4000 memory positions.

MINIMUM SYSTEM REQUIREMENTS - The program requires a 4K 1401 with 1402 and 1403 and 4 tape drives. Advanced programming and High-Low-Equal compare features are required.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103035

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.039

THE TRAVELING SALESMAN

AUTHOR....M. O. Duke

DIRECT TECHNICAL INQUIRIES TO...

M. O. Duke
IBM Corporation
1933 Fifth Avenue
Seattle, Washington 98101

DESCRIPTION - A program to solve the traveling salesman problem, where it is desired to find the minimum distance required to visit a number of cities and return. The program uses an algorithm developed by the author, which selects an initial continuous path, and searches for improvements that can be made that will not destroy continuity. Maximum problem size for an 8K 1401 is 11 cities, which can be solved in less than 3 minutes. Computations are done in fixed point arithmetic.

PROGRAMMING SYSTEMS - The program was written in FORTRAN, and has been compiled and tested on the 1620, the 1410, the 709, and the 7094.

MINIMUM SYSTEM REQUIREMENTS - Computations are done in Fixed Point Arithmetic. Multiply-Divide, Hi-Low-Equal Compare, and Advanced Programming are required. Program is structured to use all available memory. Additional core may be used to solve problems of up to 45 cities with 16K core.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103039

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

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1401-10.3.041

FAST - FULLY AUTOMATIC SCORING TECHNIQUE

AUTHOR....Mr. C. F. Wilkes

DIRECT TECHNICAL INQUIRIES TO...

Mr. C. F. Wilkes
1550 Elmsford Avenue
La Habra, California 90632

DESCRIPTION - A complete system of test scoring and reporting. The system uses the IBM 1401 Card Data Processing System. The input source document is a mark-sense test answer card. Method- basically, table lookup and computation. Will score up to ten different tests for an individual student, using all normal formula's or scoring techniques. Up to sixteen raw score points summarized into a single output card per student.

PROGRAMMING SYSTEMS - Written in Card Autocoder (Basic).

MINIMUM SYSTEM REQUIREMENTS - 4K storage, card system, Column Binary, Advanced Programming, High-Low-Equal Compare, sense switches, 1403 Printer Model 2, 1402 Card Read Punch.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103041

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.044

PROJECT PROGRESS REPORT PHASE I

AUTHOR....Mr. E. E. Lambert

DIRECT TECHNICAL INQUIRIES TO...

Mr. E. E. Lambert
Computer Coordinator
Deere & Company
Moline, Illinois 61265

DESCRIPTION - This program evaluates the progress of projects by individuals with totals for individuals, groups and the entire report. Completed projects can be entered for history and man-days early or late are computed. Future projects can be entered for information and are picked up as current projects when the start date is passed. Current projects are checked, warnings printed on condition, and projected completion dates and man-days deviation from the scheduled completion date and calculated and printed on another condition. Six monthly projections of man-day work load are computed for current and future projects for each individual.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401 8K, Multiply-Divide, Advanced Programming Package and High-Low-Equal Compare. Program uses 5900 position of core. 1402 Card Reader 132 position 1403 Printer.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103044

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.047

INFORMATION STORAGE AND RETRIEVAL PROGRAM

AUTHOR....D. Prentice A. Smith
G. De Graw I. A. Warheit

DIRECT TECHNICAL INQUIRIES TO...

I. A. Warheit
IBM Corporation
Dept. 599
Bldg. 064
Systems Development Division
Monterey & Cottle Roads
San Jose, California

DESCRIPTION - The Information Storage and Retrieval (ISR) System is also known as the Combined File Search System

(CFSS). The system is general purpose, it accommodates large files, it offers an elaborate set of search options, it has an unusually fast search, and it is designed to graduate into more elaborate systems. CFSS is tested, operations, and ready for immediate use. Its significance is that it utilizes a low cost, small computer configuration, yet provides sophisticated functions coupled with very economical operating times. These characteristics are possible because of the file structure and the search technique. The file structure and the search technique are closely interrelated elements of the total system, each necessary to the other.

The master file is structured according to the concept of coordinate indexing, using independent terms as the basic descriptive elements. However, CFSS provides for subterms, that is, dependent adjectives to the terms, and for associating numerical values with any terms or subterms. This facility makes possible another dimension in both file indexing and file searching. Any given document can thus be described to a considerable depth and to a fine degree of precision, and this can be done independent of the level of description in other documents.

The search technique itself is a synthesis of the traditional serial file and inverted file methods, retaining the strengths of each and avoiding their weaknesses. This successful synthesis extends the power of the search and at the same time achieves a significantly greater efficiency in operating time. The method of the combined file search basically used the inverted file to drastically reduce the domain of interest and performs the actual, detailed search on the resultant reduced serial file. It thus circumvents the incompatibility between the search request, which contains desired characteristics, and the serial file, which is organized by file record identity. This incompatibility requires that every request look at every record, a gross and inherent inefficiency. At the same time, the method avoids the limitations of the inverted file in that it makes its final determination on the individual file record with a facility for depth and precision not attainable on the inverted file. For example, the subterms, numerical values, and links and roles accommodated in CFSS are impossible or cumbersome in a strict inverted file search. The generality of the file structure is attested to by the accommodation of files in engineering parts, medical library material, personnel records, etc. The structure is also flexible, permitting the addition of special functions while leaving the basic structure intact, an example of which is the incorporation of the links and roles function. The file thus allows breadth and depth but permits indexing and searching to take place at any desired level according to the requirements of the individual document and the individual search request. The impact of CFSS then resides in the achievement of power, flexibility, generality, and efficiency in a single system. These characteristics are rooted in the file structure and the search method which represent an advance to a more accurate conformity to the inherent nature of ISR.

A further importance of CFSS is that it is not a theoretical approach, but a concept translated into an operating system, available to those with ISR needs. This program also permits truncation of subdescriptors, allows for larger search questions (up to 2200 characters), allows card or tape input (search), allows up to 16 scope notes in dictionary program (maximum size permissible by Sort II or Sort VII), provides input print program in utilities section and adds a MAINT 7 which provides for duplication of master file, merging of multiple master files and reconstruction of descriptor file from master file.

MINIMUM SYSTEM REQUIREMENTS - Operates on an IBM 8K, 1401 with the Advanced Programming package, sense switches, 4 tape units, a card reader, and a printer. To improve throughput in the search one 1311 may be used on an optional basis.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103047

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	HT	7/556 22	01
		HT	7/800 24	01
OPTIONAL	none	none		none

1401-10.3.049

SKILLS INVENTORY SYSTEM

AUTHOR....Mrs. B. K. Pavelle

DIRECT TECHNICAL INQUIRIES TO...

S. M. Bailes
IBM Corporation
ASDD

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2651 Strang Blvd.
Yorktown Heights, New York

DESCRIPTION - The Skills Inventory System is an information retrieval system which allows access to precoded data concerning employee skills and background. The system has the ability to select employees meeting the qualifications for available positions. Statistical analyses may also be performed. A file coded employee information is built which can be updated, searched and retrieved in uncoded form (English rather than codes).

MINIMUM SYSTEM REQUIREMENTS - 8K 4-tape 1401 with Advanced Programming package and High-Lo-Equal Compare.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103049

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 22	none
		MT	7/800 24	none
OPTIONAL	none	none		none

1401-10.3.050

1401/1311 TRANSPORTATION PROBLEM

AUTHOR....Mr. C. E. Root

DIRECT TECHNICAL INQUIRIES TO...
C. E. Root
IBM Corporation
1307 S. Boulder
Tulsa, Oklahoma

DESCRIPTION - The Transportation Problem optimizes the cost of shipping a product from a number of warehouses (suppliers) to a number of retailers (demanders). This class of problem includes personnel assignment, production scheduling, distribution problems, contract awards, etc. The maximum problem size is 300 suppliers by 999 demanders. The time required to solve a problem depends upon the problem size and the number of iterations taken. A 15X23 problem ran in 10 minutes. A 50X400 ran 7 hours.

PROGRAMMING SYSTEMS - The source language is Autocoder.

MINIMUM SYSTEM REQUIREMENTS - The program is written for a 16K 1401 with Advanced Programming, Multiply-Divide feature and one 1311 Disk Drive with Direct Seek.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401103050

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-10.3.053

LESS IV

AUTHOR....M. C. Kalnitz

DIRECT TECHNICAL INQUIRIES TO...
M. C. Kalnitz
IBM Corporation
2651 Strang Blvd.
Yorktown Heights, N. Y.

DESCRIPTION - To convert the output from 1401 LESS (Least Cost Estimating and Scheduling) 8K, 12K, 16K - presently in an elapsed day format, to an actual calendar date format. This program starts at any preselected day, includes weekends and holidays or eliminates the selectively. Elapsed duration cannot exceed 36 months.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401 card system with 8K, Multiply-Divide feature and Hi-Lo-Equal Compare.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

CONTINUED FROM PRIOR COLUMN

ORDERING INFORMATION: PROGRAM NUMBER 1401103053

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.055

INDIVIDUAL LEDGER EXTRACT PROGRAM FOR CREDIT UNIONS

AUTHOR....J. A. Atkinson

DIRECT TECHNICAL INQUIRIES TO...
J. A. Atkinson
IBM Corporation
Monterey and Cottle Roads
San Jose, California

DESCRIPTION - This program produces member's statements covering dividend accounting periods. At the start of a new dividend period a new record is started for each account with share and loan balances carried forward. Dividends are calculated and posted. Insurance premiums are calculated. Program occupies 13141 positions and locations 7003 to 10410 and 10666 to 10740 are used for input - output. There are 1783 source statements. This program should be used in conjunction with individual ledger update program for credit unions.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - The program requires 16K, 1401 Processor, 1402 Card Reader, 1403 Printer (132 positions), 3 tape units, High-Low-Equal Compare, Advanced Programming and sense switches.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401103055

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-10.3.056

INDIVIDUAL LEDGER UPDATE PROGRAM FOR CREDIT UNIONS

AUTHOR....John A. Atkinson

DIRECT TECHNICAL INQUIRIES TO...
J. A. Atkinson
IBM Corporation
Monterey and Cottle Roads
San Jose, California

DESCRIPTION - This program will post all transactions to each member's account. Will automatically calculate interest to principal for loan repaid monthly. Provides for share to share transfers if accounts involved have the same basic serial number. Program occupies 12837 positions and locations 7574 - 7648 and 7730 11138 are used for input - output. There are 1783 source statements. This program should be used in conjunction with individual ledger extract program for credit unions.

PROGRAMMING SYSTEMS - Written in 1401 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Program requires 16K 1401 Processor, 1402 Card Reader, 1403 Printer, 132 positions), 3 tape units, High-Low-Equal Compare, Advanced Programming and sense switches.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1401103056

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

CONTINUED FROM PRIOR COLUMN

1401-10.3.059

CRITICAL PATH MANAGEMENT GAME

AUTHOR....D. G. Douglas, Jr.

DIRECT TECHNICAL INQUIRIES TO...

D. G. Douglas, Jr.
IBM Corporation
570 Broad Street
Newark, New Jersey 07102

DESCRIPTION - The Critical Path Management Game consists of three programs which can be used for teaching and demonstrating the techniques of less critical path scheduling. At selected stages during the game participants vary activity durations by manipulation of resources. The objective is to complete project with minimum expenditure. Phase I prepares a master tape used by Phase III. Phase II computes project schedules with output similar to that produced by less programs. Phase III simulates the game project and reports on the status of all activities. The game project is restricted to 100 activities and minor restrictions on node numbering and maximum duration.

PROGRAMMING SYSTEMS - Written in FORTRAN.

MINIMUM SYSTEM REQUIREMENTS - Requires 12K, 1401 with advanced programming, Multiply-Divide, High-Low-Equal Compare, 1402 Card Reader, 1403 Printer and at least two magnetic tape units. Phase III requires 11,152 positions.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103059

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.063

FAST - FULLY AUTOMATIC SCORING TECHNIQUE-PHASE I PROGRAM PACKAGE

AUTHOR....Mr. C. F. Wilkes

DIRECT TECHNICAL INQUIRIES TO...

Mr. C. F. Wilkes
IBM Corporation
112 E. Post Road
White Plains, New York

DESCRIPTION - FAST programs are designed to accept-fast-test answer cards, a vertically oriented, two-column per side mark-sense card on which a test subject marks his responses. This type of response will be scored within the computer. In addition, key punched or 1230/534 punched raw scores can be accommodated. Regardless of input method, raw scores are converted to derived scores, listed in various sequences, printed on pressure-sensitive labels, and produce profile cards. A five-point frequency distribution can be produced.

PROGRAMMING SYSTEMS - Autocoder

MINIMUM SYSTEM REQUIREMENTS - Can be run on 1401, 1440 or 1460 Systems, with 8K, one 1311 Disk Drive, Advanced Programming, High-Low-Equal Compare, Bit-Test, and any 1401/40/60 I/O hardware. If fast mark-sense cards are used, must have Column Binary or Card Image feature. One additional 1311 Drive required if disk records are sorted for additional listing sequences.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103063

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.064

FAST - FULLY AUTOMATIC SCORING TECHNIQUE PHASE 2 PROGRAM PACKAGE

AUTHORS...C. F. Wilkes M. N. Samuel

DIRECT TECHNICAL INQUIRIES TO...

Mr. C. F. Wilkes

IBM Corporation
112 E. Post Road
White Plains, New York

DESCRIPTION - This package contains two programs. The first prints and plots a unit point frequency distribution. A normal curve is overlaid for comparative purposes. Statistics include the mean, standard error of the mean, mean deviation, standard deviation, variance, G1, median, G3, and up to 15 modes. Abscissa is scaled on Z-scores to 0.05 sigma, and the ordinate is scaled on the mode frequency. Unit frequencies and local percentiles included for each score. Can punch conversion tables for use with FST21 to add local norms to student records. The second program prints a matrix of covariance correlation coefficients. Up to 15 scores can be correlated simultaneously, with output of a 14X14 triangular matrix.

PROGRAMMING SYSTEMS - Written in Autocoder.

Note - Fast-Fully Automatic Scoring Technique-Phase I is a necessary prerequisite for the use and understanding of this program. If not already in the users possession it should be ordered from PID by requesting file number.

MINIMUM SYSTEM REQUIREMENTS - Both programs run on a 1401, 1440 or 1460 with 8K, one 1311, Advanced Programming, High-Low-Equal Compare, bit test, and any I/O hardware.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103064

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-10.3.065

SOCRATES STUDENT SCHEDULING SYSTEM

AUTHOR....C. F. Wilkes B. J. Nevil
J. R. Cottrell M. N. Samuel
J. N. Kesselman

DIRECT TECHNICAL INQUIRIES TO...

Charles F. Wilkes
IBM Corporation
112 E. Post Road
White Plains, New York 10601

DESCRIPTION - Socrates provides an in-house system for scheduling secondary school students into classes of grades seven through twelve. The system schedules periods zero through ten for two regular semesters simultaneously, or one split-week semester. Features include ability groupings, teacher selection, grade range selection, sex selection, alternate course requests, study hall scheduling, blocked courses, and maximum class balancing consistent with minimum rejects. Includes a complete series of programs to simplify data collection, corrections, scheduling and analysis. File maintenance programs permit individual or mass changes. Output reports include verification listings, simple tally, conflict matrix, analysis of rejects, class load analysis in sequence by room, teacher, period and course, and students schedule listing with card output option. Comprehensive edit programs assure clean data prior to scheduling.

PROGRAMMING SYSTEMS - Autocoder on disk.

MINIMUM SYSTEM REQUIREMENTS - Minimum 8K 1401/40/60 with Bit Test, High-Low-Equal Compare, Advanced Programming, one 1311 Disk Drive, and any I/O configuration.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103065

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	1316	52	01
OPTIONAL	none	none		none

1401-10.3.066

FAST - FULLY AUTOMATIC SCORING TECHNIQUE

AUTHOR....Charles F. Wilkes

DIRECT TECHNICAL INQUIRIES TO...

Charles F. Wilkes

CONTINUED FROM PRIOR PAGE

CONTINUED FROM PRIOR COLUMN

IBM Corporation
112 E. Post Road
White Plains, New York 10601

DESCRIPTION - This program produces a test item analysis for up to five valid responses, plus omits or invalids for each test question. Individual response tallies are printed on a single line for three groupings of students within each test part - total students, the upper 27 per cent and the lower 27 per cent. The report prints the question number, identifies the correct response, and shows the count and percentage of students selecting each possible response for the three groups. This permits evaluation of item difficulty and discrimination, or use with a table for determining the normalized bi-serial coefficients of correlation.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401/40/60 with 8K, two 1311 Disk Drives, Advanced Programming, High-Low-Equal Compare, Column Binary or Card Image, Bit Test, and any I/O hardware. FAST cards must have been used with the FAST Phase One Program package, file number 1401-10.3.063.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103066

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-10.3.067

TEACHER-MADE-TEST PACKAGE

AUTHORS...Mr. D. W. Taylor Mr. C. W. Cozad

DIRECT TECHNICAL INQUIRIES TO...

Mr. D. W. Taylor
IBM Corporation
525 So. Flower Street
Los Angeles, California 90017

DESCRIPTION - The Teacher-Made-Test program provides a simple and accurate way for the teacher to make use of data processing facilities for the scoring and analysis of tests administered in the classroom. The program not only accomplishes the scoring function, but also the preparation of meaningful test result analyses to aid the teacher in determining individual and class needs. Multiple choice and/or true-false types of objective tests of up to 100 questions can be processed. Input consists of one mark-sense test answer card per student. Output consists of 1. score listing with right or wrong response record, 2. item count, and 3. unit-point frequency distribution. Program can also be used to analyze results of opinion surveys and class elections.

PROGRAMMING SYSTEMS - 1401/40/60 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 8K, 1401/40/60 with Column Binary or Card Image, High-Low-Equal Compare, Advanced Programming, and one 1311 Disk Drive.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103067

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-10.3.068

COOPERATIVE ADMISSIONS INFORMATION SYSTEM

AUTHOR...Mr. R. H. Glover

DIRECT TECHNICAL INQUIRIES TO...

Mr. R. H. Glover
College Entrance Examination Board
475 Riverside Dr.
New York, New York 10027

DESCRIPTION - The system provides an effective and comprehensive means of assembling applicant information, retrieving the information in standardized report formats, obtaining detailed descriptions of applicant academic qualifications, assembling summary data, communicating

admissions and financial aid decisions and records of college achievement to secondary schools, and furnishing access to applicant and class information for longitudinal and comparative studies. The system includes two update runs, creating an applicant master file and a transcript master file, and six report runs which produce the reports previously described.

PROGRAMMING SYSTEMS - The programs are written in Autocoder Language.

MINIMUM SYSTEM REQUIREMENTS - 12K or 8K (depending on Data Processing runs) 1401 with Indexing, Storage Address Register, Move Record, High-Low-Equal Compare features... 1406 core storage unit, Model 2... 4-729 Tape Units... 1403 Printer, Modes 2 600 LPM, 132 characters... 1402 Card Read Punch, Model 1.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1401103068

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	DTR	7/556 7/800	22 24	none none
OPTIONAL	none	MT	7/556 7/800	22 24	01 01

1401-10.3.069

1401 AIRLINE AIRCRAFT EVALUATION PROGRAM

AUTHOR...Mr. J. C. Gilman

DIRECT TECHNICAL INQUIRIES TO...

Mr. J. C. Gilman
IBM Corporation
520 Boylston Street
Boston, Mass. 02116

DESCRIPTION - This program aids in deciding which new aircraft are best suited to the traffic and routes of an airline, also how to allocate existing aircraft and where schedule changes may be warranted. User supplied aircraft parameters are used in a formula to obtain more realistic cost figures than with a single plane-mile or block-hour cost. The route data is treated as two types - low density and high density segments. The latter assumes variability of service frequency to suit the aircrafts capacity. Expected revenue and cost figures are computed for a range of assumed hours-per-day utilizations and load factors (144 cost combinations for each segment). Special characters indicate where aircraft capacity has been exceeded or where costs exceed revenue. Assessment of sensitivity of cost to utilization, break even load factors, and experimentation with many route and aircraft combinations are possible.

PROGRAMMING SYSTEMS - Written in Autocoder.
MINIMUM SYSTEM REQUIREMENTS - 8K 1401, 1402, 1403, Advanced Programming, High-Low-Equal Compare.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103069

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-10.3.070

TS80 - SCORE AND ANALYZE TEACHER-MADE TESTS

AUTHOR...Mr. C. G. Badner

DIRECT TECHNICAL INQUIRIES TO...

Mr. C. G. Badner
New Trier Township High Schools
385 Winnetka Avenue
Winnetka, Illinois 60093

DESCRIPTION - The purpose of this program is to take punched responses from tests scored on an IBM 1230 Test Scoring Machine and analyze and evaluate the test by means of a 1401 computer. Responses extracted are stored on disk, then analyzed and evaluated.

Restrictions are- no more than 80 items, maximum weighted

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score - 700, speed - approximately 1000 tests per hour.

MINIMUM SYSTEM REQUIREMENTS - 1401 8K, 1402 Reader, 1403 Printer, one 1311 disk, Indexing, and High-Low-Equal Compare.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401103070

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-11.0.005

REACTION TIMING PROGRAM FOR IBM 1401

AUTHORS...L. R. Debuys J. P. Naughton

DIRECT TECHNICAL INQUIRIES TO...

L. R. Debuys
IBM Corporation
2640 Canal Street
New Orleans 19, Louisiana

DESCRIPTION - The Reaction Timing Program for the IBM 1401 is designed primarily as a demonstration. However, the program can be used to measure reaction time as a function of waiting time.

PROGRAMMING SYSTEMS - Written in SPS.

MINIMUM SYSTEM REQUIREMENTS - 1401 - 1. 4K (sense switches desirable) 1402, 1403 Model 1 or 2.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401110005

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-11.0.007

FALLOUT

AUTHOR...Thomas P. Callahan

DIRECT TECHNICAL INQUIRIES TO...

Thomas P. Callahan
IBM Corporation
701 West Broad Street
Bethlehem, Pennsylvania

DESCRIPTION - FALLOUT is a package of demonstration programs designed to emphasize audience participation and visual impact while demonstrating 1401 capabilities. FALLOUT is designed to demonstrate 1401 capabilities to anyone, particularly persons with no Data Processing knowledge whatsoever. Some capabilities demonstrated are output printing speed, internal storage capacity, internal arithmetic speed, decision-making ability, computer logic, and computer flexibility.

PROGRAMMING SYSTEMS - Source language - SPS.

MINIMUM SYSTEM REQUIREMENTS - 4K card 1401 with sense switches required for basic package.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401110007

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-11.0.010

THE GAME BRIDGE-IT ON THE 1401

AUTHOR...Gunter Wenzel

DIRECT TECHNICAL INQUIRIES TO...

Gunter Wenzel
IBM Deutschland DP Basic Research
Internationale Buero Maschinen GmbH
Sindelfingen/Wurttemberg, Germany

DESCRIPTION - This demonstration program plays the game Bridge-it. It must have the first move and will then succeed in every case against the opponent. The winning strategy is from Oliver Gross, Rand Corporation.

MINIMUM SYSTEM REQUIREMENTS - 1401, 4K no special features required. The input choice between 1402 and 1407 is possible.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401110010

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-11.0.012

MUSIC-MUSIC SIMULATION ON A 1401 COMPUTER

AUTHOR...M. J. Peskin

DIRECT TECHNICAL INQUIRIES TO...

M. J. Peskin
The Mitre Corporation
Box 208
Bedford, Massachusetts

DESCRIPTION - MUSIC is a 1401 program which demonstrates a technique for producing music on the 1403 printer. The distributed deck is set up to play Ravel's Bolero. This write-up describes the procedures by which any desired music may be produced.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - MUSIC will load and operate in 1401s of any size. The object machine, however, must be sense switches and advanced programming.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401110012

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1401-13.1.009

RGCP - REPRODUCE, GANG-PUNCH, COUNT, PRINT

AUTHOR...B. J. Manring

DIRECT TECHNICAL INQUIRIES TO...

B. J. Manring
8621 Georgia Avenue
Silver Spring, Maryland

DESCRIPTION - To reproduce cards, performing operations which would otherwise entail wiring a separate reproducer board, to list cards where a reformatting of the card image is desired, and to serially number cards and/or lines on a page.

MINIMUM SYSTEM REQUIREMENTS - 4K 1401, 1402, 1403 Model 2, sense switches B-D, Advanced Programming Feature, High-Low-Equal Compare.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401131009

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

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	BASIC	OPTIONAL	CARDS	15	none
	none	none	none	none	none

1401-13.4.002

OPTRAIN - OPERATING TRAINING ON THE 1401

AUTHOR....Sy Berlin

DIRECT TECHNICAL INQUIRIES TO...
 Sy Berlin
 Research Analysis Corp.
 6935 Arlington Road
 Bethesda 14, Maryland

DESCRIPTION - This program thru a random selection of 6 subroutines, puts the operator thru most situations which are programmable. It attempts to make the operator alert on the peripheral gear and tests his knowledge of bit configurations on the console. It is our belief that a good foundation on this computer will be advantageous and expedite training on larger computers where required.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 8K 1401 with Indexing, sense switch B and two tape drives.

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Write-up.
 MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401134002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-14.0.002

GENERALIZED PLOT PROGRAM

AUTHORS...H. W. Van Ness R. D. Waring

DIRECT TECHNICAL INQUIRIES TO...
 H. W. Van Ness
 IBM Corporation
 1212 S. W. 6th Avenue
 Portland, Oregon

DESCRIPTION - The 1401 Generalized Plot program has been written to take data from cards, and prepare a graphic representation of that data. It plots to linear scales for both axes with dependent variable (Y-axis) being plotted parallel to the print chain of the 1403. Up to five pieces of data may be plotted on one run and can be taken from numerous configurations of data on the card. Control cards are prepared for the program to indicate scales, origin values, increments data field locations on the card, and heading information.

PROGRAMMING SYSTEMS - The program is written in SPS, and utilizes the Divide Subroutine.

MINIMUM SYSTEM REQUIREMENTS - A basic 1401 with 4000 positions of core storage and 132 print positions on the 1403 is required. Provision has been made for plotting at 10 lines to the inch if this special feature is available. Program requirements- phase 1 uses 3024 locations, phase 2 uses 3916 locations.

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Write-up.
 MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401140002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-14.0.004

FOURTEEN 0 ONE OFFSET REPRODUCING AND GANGPUNCHING OR EMIITING

AUTHOR....A. H. Toreson

DIRECT TECHNICAL INQUIRIES TO...
 A. H. Toreson
 Aerojet General Corporation
 Nimbis, California

CONTINUED FROM PRIOR COLUMN

DESCRIPTION - To provide a generalized program for the following functions, Straight 80-80 offset reproducing, straight or offset reproducing with gang punching, producing predetermined quantities from single masters. The program as written utilizes Modulus 16 arithmetic for address modification. Models with only 4,000 positions of storage will have to make several program changes, explained in the write-up, to satisfy the requirements of Modulus 4 arithmetic. The program will not accommodate processing involving selection or interspersing.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 4000-16,000 position Core Storage, High-Low-Equal Compare, sense switches.

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Write-up.
 MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401140004

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-14.0.008

SUBROUTINE TO CONVERT DOLLARS AND CENTS DIGITS TO CHECK-FORM WORDS

AUTHOR....F. M. Edwards

DIRECT TECHNICAL INQUIRIES TO...
 F. M. Edwards
 IBM Corporation
 215 West State Street
 Trenton, New Jersey

DESCRIPTION - A subroutine which converts numerical values of dollars and cents to the traditional spelled-out check form. Values up to and including \$9999.99 can be converted.

PROGRAMMING SYSTEMS - Subroutine is written in 1401 Autocoder and could be included in the systems tape library as a closed subroutine.

MINIMUM SYSTEM REQUIREMENTS - The subroutine requires 1401 with Advanced Programming and High-Low-Equal Compare. The program utilizes 735 positions of core storage (statements).

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Write-up.
 MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401140008

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-14.0.012

STATE AND LOCAL INCOME TAXES FOR IBM 1401 TAPE SYSTEM

AUTHOR....J. W. Wilson

DIRECT TECHNICAL INQUIRIES TO...
 J. W. Wilson
 IBM Corporation
 303 N. Lake Street
 Aurora, Illinois

DESCRIPTION - A program for IBM 1401 4 Tape System with Advanced Programming and High-Low-Equal Compare, which computes all state and local (city) income taxes for a weekly payroll application. Each state tax routine is handled as a separate entity through the use of overlays. By altering constants, bi-weekly, semi-monthly and monthly payrolls can be handled.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Program occupies 8K when written in Autocoder using IOCS, Version 2, Level 2. Without IOCS, user may modify for use on a 4K system. Through the use of execute commands, program is applicable to card systems.

BASIC PROGRAM PACKAGE
 DOCUMENTATION - Write-up.
 MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE

CONTINUED FROM PRIOR PAGE

DOCUMENTATION - None.
MACHINE READABLE - Appropriate material delivered.

ORDERING INFORMATION: PROGRAM NUMBER 1401140012

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	MT	7/556 7/800	22 24
OPTIONAL	none	MT	7/556 7/800	22 24
				03 03 01 01

1401-14.0.019

STANDARD NAME ALTERATION PROGRAM

AUTHOR....M. F. Lynds

DIRECT TECHNICAL INQUIRIES TO...

M. F. Lynds
IBM Corporation
1107 Myra Street
Jacksonville, Florida

DESCRIPTION - This subroutine will convert names that are last name first or last name last in a free format to any configuration in a fixed format. The user is given the addresses of the areas which contain the first name, first initial, middle initial, last name, and suffix. All output is left justified in the respective areas. The subroutine will accommodate eight of the more common prefixes to last names and fourteen of the more common suffixes. The option exists to place the suffix one position to the right of the last name. The subroutine is easily modifiable to insert any extra suffixes or prefixes which are desired.

PROGRAMMING SYSTEMS - Utilizes Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401 with 4K High-Low-Equal and Advanced Programming.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401140019

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-14.0.024

COPY 1401-AU-008 SYSTEMS PACK TO TAPE THEN TAPE TO 360/2311 IN COMPATIBILITY MODE

AUTHOR....J. A. Winger

DIRECT TECHNICAL INQUIRIES TO...

J. A. Winger
IBM Corporation
1211 South Harrison Street
Fort Wayne, Indiana

DESCRIPTION - This program will copy a 1401-AU-008 Autocoder Systems Pack to tape in odd parity on a 1440 or 1401 and by changing sense switch settings will copy tape to disk on either 1400 series or any 360 equipped with compatibility. Records are read and written on disk in the track sector format. MOVE mode records are written onto tape without modification. LOAD mode records are written onto tape in MOVE mode with an additional record which indicates word mark locations. Because the systems pack contains word-separator characters, current IBM utility programs will not work. There are many different combinations of information on a 1401-AU-008 Systems Pack; therefore, the author has made the program general enough to handle any situation.

PROGRAMMING SYSTEMS - 1401-AU-008 Autocoder and 1440-IO-010 ICOS.

MINIMUM SYSTEM REQUIREMENTS - Program requires 8K, Advanced Programming, Sense Switches, 120 print positions, 1 disk and 1 tape. Direct Seek is used if available.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401140024

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none

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OPTIONAL none none none

1401-14.0.025

TALLY ANALYSIS REGISTRATION AND SCHEDULING

AUTHOR....Alice D. Peters

DIRECT TECHNICAL INQUIRIES TO...

Alice D. Peters
IBM Corporation
150 Grand Street
White Plains, New York

DESCRIPTION - Tally, Analysis, Registration, and Scheduling (TARS - 1401). The programs produce aids to master schedule building (tally and conflict matrix) and, using a master schedule prepared by the school, process student course requests to create student schedules and an updated master schedule.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Designed for an 8K, 1 disk, 1401 System.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Appropriate material delivered.

ORDERING INFORMATION: PROGRAM NUMBER 1401140025

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1401-14.0.026

REAL ESTATE TAX BILL SYSTEM FOR THIRD CLASS PENNSYLVANIA COUNTIES

AUTHOR....J. G. Walterick

DIRECT TECHNICAL INQUIRIES TO...

J. G. Walterick
IBM Corporation
413 W. State Street
Trenton, New Jersey

DESCRIPTION - This program calculates and prints real estate tax bills given the assessment and millage rates to provide summary cards during calculation time for later generation of monthly reports.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1401, 4K, 1403, 1402, Advanced Programming.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1401140026

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1401-14.0.027

EXTENDED PERFORMANCE COMPUTER ASSISTED INSTRUCTION OPERATING SYSTEM FOR 1401-1026

AUTHORS...Judith Miller W. S. Wengert

DIRECT TECHNICAL INQUIRIES TO...

Judith Miller
IBM Corporation
1825 K Street, N.W.
Washington, D.C. 20036

DESCRIPTION - This system of Autocoder programs is an expansion of the IBM 1401, 1440 or 1460 CAI Operating System providing extended capabilities for course generation and system control, including support for audio/visual devices, additional language features, a card input system, additional administrative control and improved system performance. The system includes all support programs necessary to generate the system pack, initialize the system, extract and print recordings and perform various off-line operations such as printing course material and/or

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student information.

PROGRAMMING SYSTEMS - All programs are coded in the disk Autocoder source language.

MINIMUM SYSTEM REQUIREMENTS - A 12K 1401-1026 with Advanced Programming, bit test, High-Low-Equal Compare, and sense switches. One 1311 Disk Drive, Direct Seek, one 1026 and 1 1050. Drives will be required if the main program is recompiled.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.

MACHINE READABLE - Appropriate material delivered.

ORDERING INFORMATION: PROGRAM NUMBER 1401140027

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	MT	7/556 7/800	22 24
				01 01

1440-01.0.001

PACE - PRE-ASSEMBLY CHECK AND EDIT LISTING

AUTHOR...B.W. Averkamp

DIRECT TECHNICAL INQUIRIES TO...

B.W. Averkamp
IBM Corp.
23 Hitchcock Way
Santa Barbara, Calif. 93105

DESCRIPTION - PACE brings to the 1440 user an efficient and meaningful diagnostic program. It will check and edit 1440 Autocoder and Autocoder/IOCS source programs by detecting underdefined labels, format and parameter errors, coding errors and keypunch errors. The printed output provides a label table in alphabetical order followed by a listing of the source program with errors by significant special characters. An edit is also performed on DIOCS and DTF ENTRIES FOR ACCEPTABILITY AND SPELLING. There are three checks of Autocoder statements pertaining to labels, operation codes and operands. The checking results are equal to an Autocoder Assembly.

PROGRAMMING SYSTEMS - Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1440 4K, one 1311 and Indexing and Store Address Register. Printed output options are available with sense switches.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Object code.

OPTIONAL PROGRAM PACKAGE

DOCUMENTATION - None.

MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1440010001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1440-01.1.001

CONTROLLER

AUTHOR...Robert J. Macartney

DIRECT TECHNICAL INQUIRIES TO...

Robert J. Macartney
IBM Corp.
6252 Telegraph Rd.
Los Angeles 22, Calif.

DESCRIPTION - The 1440 Controller is a Job Supervisor System consisting of a group of 1401 programs designed to provide (a) Disc Storage of programs, subroutines, overlays, etc. (b) Control card call down of programs (c) Program call down of programs, subroutines, overlays, etc. with a minimum of programming effort. Restrictions/Range:

1. All programs, subroutines, overlays, etc. originate at POS.
2. Maximum number of user programs is 53.
3. Controller systems pack must be on drive 0.
4. All user programs must be in the 1440 Autocoder card format.

PROGRAMMING SYSTEMS - Source Language- 1440 Autocoder.

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MINIMUM SYSTEM REQUIREMENTS - 1440 Controller is designed to operate on the following minimum machine configuration- 1441 4K storage, 2-1311 Disk Drives, Indexing and Store Address Register feature, 1440 Reader Punch, 1443 Printer. Program Requirements- MLINK occupies 111 positions of high core. In addition, during an overlay operation, positions 90-741 are used by MCALL. The area from 345-741 will eventually contain the beginning of the users routine- however, all data common to both sections of a program must be no lower than pos. 742.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440011001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-01.1.002

PROGRAM TO LOAD PROGRAMS ON DISK

AUTHOR...Robert B. Sawyer

DIRECT TECHNICAL INQUIRIES TO...

Robert B. Sawyer
IBM Corp.
447 E. Broad St.
Columbus, Ohio 43215

DESCRIPTION - A program to load core image of programs onto disk for use either as monitor programs or as overlays. Using only the restriction of no groupmark--wordmarks in the initial assembly, the users program can be located anywhere in any disk. The object program requires approximately 125 core positions and has the option of putting this routine anywhere in core by reassembling. The object program requires a parameter card describing where the program is to be loaded, its length, and where the DCF required to write the program out is located.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - No special features.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440011002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-01.3.002

MACBADDY 8K 1440 FORTRAN

AUTHORS...R. B. Baden W. E. Messmann

DIRECT TECHNICAL INQUIRIES TO...

R. B. Baden
IBM Corporation
112 East Post Road
White Plains, New York

DESCRIPTION - MACBADDY is a modification of IBM 1401 FORTRAN, Version II.

PROGRAMMING SYSTEMS - Written in Autocoder. There are 3262 core positions available for user code. The compiler is card or disk resident.

MINIMUM SYSTEM REQUIREMENTS - An 8K IBM 1441, Store Address Register feature, Indexing feature, IBM 1442 Card Read Punch, and IBM 1443 Printer.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440013002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-01.4.001

RADIO - RANDOM DISK INPUT/OUTPUT SUBROUTINE

AUTHOR....J. W. Weaver

DIRECT TECHNICAL INQUIRIES TO...

J.W. Weaver
Gateway Data Systems
500 No. 1 Gateway Center
Pittsburgh, Pa. 15222

DESCRIPTION - An Autocoder Library Macro which handles 1311 Disk I/O functions and error routines. It can handle cyl. overflow and use Direct Seek, Scan Disk, and Track Record, if available, on up to five drives. The subroutine is generative, providing only the routines called for. It is intended to replace IOCS random giving the user greater ease of programming and flexibility. The routine was patterned after the PAL wholesale grocery macro UFP10 to include special features, Cylinder Overflow, Same Cylinder Test, and IOCS Type Coded Halt. The routine does not do any label checking. The disk control field must be set by the user and is restored after the operation. The SCAN routine can scan 999 sectors in one operation. Storage requirements - from 369 pos. to 841 depending on features used.

MINIMUM SYSTEM REQUIREMENTS - 4K-1440 1442-Model 1 1443 Model 1, one 1311 Disk Drive Indexing and Store Address REGISTER special feature.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440014001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-01.4.002

RAPID SELECTIVE TRACE

AUTHOR....Lawrence E. Cohen

DIRECT TECHNICAL INQUIRIES TO...

Lawrence E. Cohen
IBM Corporation
Insurgentes Sur 100
Mexico, D.F., Mexico

DESCRIPTION - The Rapid Selective Trace Program is a powerful debugging, documentation and teaching aid that accurately simulates the functioning of the 1440 under control of any object program and prints out complete information about what the program is doing in an easy-to-read format. The instruction Address, the Instruction, A, and B Address Register contents at the beginning of the execution phase, Index Register contents and up to 18 positions of the A-field and the B-field (the latter both before and after instruction execution) are given on a single print line. All addresses are given in decimal form. Complete dumps of records read, written or moved, with associated word marks, are produced. RST operates at approximately 100 instruction per second while outside of the limits supplied by a control card and at maximum 1403 or 1443 printing speed within limits. This speed is achieved by calculating the old A-address for chaining only when needed.

PROGRAMMING SYSTEMS - Written in Basic Autocoder 2K. Disk Autocoder can be used for assembly.

MINIMUM SYSTEM REQUIREMENTS - 1310 core positions, Indexing and Store Address Register Special feature. Ready for use with 4K machines.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440014002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-01.6.001

SORT 54 DISK RESIDENT

AUTHOR....Richard S. Heiser

DIRECT TECHNICAL INQUIRIES TO...

Richard S. Heiser
IBM Corporation
6900 Fannin
Houston, Texas 77025

DESCRIPTION - A modified SORT 54 Resident on 1311 Disk Storage. The SORT is stored in the load mode in a self-loading format. It required 1540 consecutive sectors on any drive, and can be file-protected. The program loader resides in the highest 4K of core. Program loading is accomplished in about 15 seconds. The SORT is a tailored version of SORT 5 for disk-to-disk sorting without disk label checking. This improves performance 20 to 30 percent.

MINIMUM SYSTEM REQUIREMENTS - Compatible with 1440 Controller. 12K memory, 1311 Disk Drive, Direct Seek, Console Typewriter, Sense Switches.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440016001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-02.1.001

1440/1311 CARD-TO-DISK CONSECUTIVE LOAD PROGRAM

AUTHOR....D. A. Hauser

DIRECT TECHNICAL INQUIRIES TO...

D. A. Hauser
IBM Corporation
P.O. Box 567
Riverside, California

DESCRIPTION - A Load-and go Program for converting present card files to consecutive 1311 Disk Files without any repunching of card files into a prescribed format. The program will handle up to 6 user specified card formats and build them into a user specified disk record format. Formats of card input and disk record output are specified in control card form and supplied to the program on a load-and-go basis. Up to 10 data fields from each card format specified can be assembled into single disk records.

MINIMUM SYSTEM REQUIREMENTS - The program will operate on any 1440-1311 system having at least 4K, Modify Address, Store B Register and Index Registers. With a 4K machine 500 character disk records are the longest records that can be processed. On an 8K machine the maximum record length is 4500 positions.

BASIC PROGRAM PACKAGE

DOCUMENTATION - Write-up.

MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440021001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-02.1.002

1440/1311 DISK ADDRESS UTILITY

AUTHOR....R.J. Taylor

DIRECT TECHNICAL INQUIRIES TO...

R.J. Taylor
IBM Corporation
1776 John F. Kennedy Blvd.
Philadelphia, Pennsylvania 19103

DESCRIPTION - This program was written to handle 1311 disk maintenance requirements not covered heretofore in any library program, but which occur in most 1311 installations. With the use of this program, it is now possible to change the addressing structure of a disk pack to any natural or unnatural range without altering the data written on the pack. Unnaturally addressed packs, such as the system pack for Autocoder, 1401-AU-008 may now be copied; label tracks may also be copied. The standard disk utility programs do not provide these operations. Options elected

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by control cards are - 1-Change addresses without disturbing data, 2-Change addresses and clear data, 3-Copy one disk pack to another, and 4-Compare one disk to another.

MINIMUM SYSTEM REQUIREMENTS - 4K system with Indexing and Store Address Registers and will copy a full pack in approximately six minutes.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440021002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-02.1.003

1440-1311 DISK SORT PACKAGE

AUTHOR....Mr. J. C. Loomis

DIRECT TECHNICAL INQUIRIES TO...
Mr. J. C. Loomis
IBM Corporation
1222 N. Main Avenue
San Antonio, Texas

DESCRIPTION - A set of three programs which will provide a specialized sort for frequently run jobs. The first program interprets a control card and produces a file of random control fields to test the sort, then punches a series of cards. These cards are merged into the second program which is in Autocoder Source Format. Assembly of this second program produces an object sort. The third program tests the sort to insure correct assembly by sequence conditions with their location if the file. Run times are considerably faster than for sort 5, particularly for short records. Ten thousand records, thirty characters long are sorted in less than thirteen minutes. Input and output records must be blocked within the first eighteen sectors of each track.

MINIMUM SYSTEM REQUIREMENTS - Requires 8K, 2 Disk Drives, Advanced Programming, and Hi-Lo-Equal. 1139 source statements.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440021003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-02.3.001

VARIABLE CARD REPRODUCER FOR 1440/1311

AUTHOR....John F. Cole

DIRECT TECHNICAL INQUIRIES TO...
John F. Cole
IBM Corporation
2911 Cedar Springs Road
Dallas, Texas 75219

DESCRIPTION - A Load-and-Go Control Card Oriented program for reproducing cards on a 1440 disk system which has only one card read-punch. Card images are first written on disk, then read from disk and punched into blank cards. Simple control card provision allows for relocating fields, omitting fields, and/or emitting characters. Optional print control card provides printed analysis of control cards, listing input deck and/or listing output deck. Deck listings included card counts and column-number headings.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440023001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none

OPTIONAL none none none

1440-02.3.002

ONE CARD 80-80 CARD TO PRINTER PROGRAM WITH BRANCH ON OVERFLOW

AUTHOR....J. G. O Reilly

DIRECT TECHNICAL INQUIRIES TO...
J. G. O Reilly
155 Honey Lane
Waltham Abbey, Essex
England

DESCRIPTION - This program lists cards and branches to channel one on sensing channel twelve. Storage requirements 181 positions.

MINIMUM SYSTEM REQUIREMENTS - 1440 with 1443 and 1442/1402.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440023002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-02.3.003

1440/1311 80-80 REPRODUCE PROGRAM

AUTHOR....W. T. Batten

DIRECT TECHNICAL INQUIRIES TO...
W. T. Batten
IBM Corporation
Test Center
570 Broad Street
Newark, N. J. 07102

DESCRIPTION - This program will enable 1440/1311 users with only one 1442 on line to reproduce punched card decks. Behind the program object deck place the cards to be reproduced, followed by an end-indicator-card, followed by blank cards. The program loads the master cards onto a natural zero scratch pack on drive zero. Immediately after the end-indicator-card is reached and loaded, the reproduced cards are punched out. As many copies as desired of the original cards can be obtained simply by pressing start on the console without reloading the program or masters. The number of cards that can be accommodated is limited only by the number of sectors available on the scratch pack starting at address 000000 and allowing one sector per card.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - Any size 1440 with one 1442 Reader-Punch and one 1311 drive zero on line. Object deck consists of 14 cards and uses about 500 core positions.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440023003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-02.7.002

CORE PRINT

AUTHOR....P. G. Landolt

DIRECT TECHNICAL INQUIRIES TO...
P. G. Landolt
IBM Corporation
600 Eglinton Ave., E
Toronto 12, Ontario

DESCRIPTION - This program will give a 4K, 8K, 12K or 16K core print. No Advanced Programming is required. All group marks are changed to lozenges. Index registers are printed separately. Core position indicators are supplied for output above 501. Word marks are printed as one's below the data line. Core positions 001 to 100 must be printed manually. This program will be useful for non-

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disk users and to overcome the 4K-12K autotest shortcomings. The program can also be used as an utility program for production runs. 1440 core print can be used on all 1440 systems 4K to 16K.

PROGRAMMING SYSTEM - The program has been written in machine language in order to bypass the need for a program loader.

MINIMUM SYSTEM REQUIREMENTS - 4K, 8K, 12K, 16K system with a 1442 and 1443.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440027002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-02.7.003

CORE DUMP ROUTINE IN ACTUAL FORM

AUTHOR....Paul D. Hamilton

DIRECT TECHNICAL INQUIRIES TO...
Paul D. Hamilton
IBM Corporation
1500 N. 2nd Street
Harrisburg, Pa.

DESCRIPTION - This is a program in actual 1440 Machine Language to provide core dumps of any size memory 1440 on a 1443 Printer. A separate memory address index line is printed for each 100 positions starting with location 101. Word marks are printed on a separate line as a number 1. Group marks 12-7-8 are replaced and printed as a programmers blank 2-8. The program destroys only the first 86 positions of core. Print out is also given of index register contents last compare status and sense switches on. Blank 100 position bands with no w/m are not printed.

PROGRAMMING SYSTEM - Written in actual machine language.

MINIMUM SYSTEM REQUIREMENTS - This program can be used without modification on any 1440 with Index Registers and Store Address Register Special feature. 4K and 8K with 1443 Model 1 and 2 Printers.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440027003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-02.7.004

CORE DUMP

AUTHOR....W. C. Worthington

DIRECT TECHNICAL INQUIRIES TO...
W. C. Worthington
IBM Corporation
180 South Main Street
Providence, R. I. 02903

DESCRIPTION - This program gives a core dump for 4K, 8K, 12K or 16K 1440 systems. It was designed because most of the existing memory dumps destroyed a part, or parts, of storage as they were loaded. This program uses only the first eighty initially and prints all remaining positions of storage. Word marks are printed as ones on the line following each data bank of storage. Group marks are printed as G's in the data line and W or M in the word mark line depending on the presence or absence of an associated word mark. There are two decks available - a 4K deck and one for 8K and larger systems.

PROGRAMMING SYSTEM - To facilitate the loading of the program and the conservation of core used, the program has been written in self-loading, Machine Language.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

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ORDERING INFORMATION: PROGRAM NUMBER 1440027004

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-02.9.003

PUNCH CORE IN PROGRAM LOAD FORMAT

AUTHOR....Jean M. Harvey

DIRECT TECHNICAL INQUIRIES TO...
Jean M. Harvey
IBM Corporation
1200 Fifth Ave.
Seattle, Washington

DESCRIPTION - The 1440 Punch Dump program will punch in the condensed loader format, core storage starting with location 321. The primary purpose of the program is to provide for disaster - restart procedures for a 1440 disk system. If a program fails to get to end of job, core can be dumped into cards. This core image can be reloaded (with necessary modifications) thereby saving total accumulations, disk status and input/output information. This allows for additional operator independence, saves possible lengthy reruns and preserves disk information intact.

PROGRAMMING SYSTEMS - The program is written for a 1440 equipped with a Card/Read punch in Autocoder Language.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440029003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-02.9.005

IBM 1440 CORE PUNCH PROGRAM

AUTHOR....J. G. VonJess

DIRECT TECHNICAL INQUIRIES TO...
J. G. VonJess
IBM Corporation
400 Wyman Street
Waltham, Mass. 02154

DESCRIPTION - This program is used in conjunction with the existing 1440 object programs in order to create a new object deck which incorporates patches to the original deck. The program also resequences the new deck. The prime use of this program is to provide better back-up for those people who have patched decks without source decks. The program required 300 positions of core and was written to reside in the upper 300 positions of an eight (8) K memory. Minimum changes are required to alter the location.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder on Disk.

MINIMUM SYSTEM REQUIREMENTS - 1440 CPU (300 positions) and 1442 Reader/Punch.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440029005

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-03.1.001

REPRODUCE GANG PUNCH SIMULATOR

AUTHOR....Dennis P. Lee

DIRECT TECHNICAL INQUIRIES TO...
Dennis P. Lee
C/O Commodity Service Co. (Ja.) ltd.
7-9, Harbour Street
Kingston, Jamaica

CONTINUED FROM PRIOR PAGE

DESCRIPTION - This program has been designed to perform any/all of the functions of an IBM 519 without programming effort on the users part. The system on which the object program is to be run must have at least 4000 positions of core storage with no special features.

PROGRAMMING SYSTEMS - Source Language is Autocoder.

MINIMUM SYSTEM REQUIREMENTS - One IBM 1442 Card Read-Punch. One IBM 1443 Printer. If the reproducing phases are desired the object program also requires one IBM 1311 Disk Storage Drive.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440031001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1440-03.3.002

CONVERT 1440 AUTOCODER SOURCE PROGRAMS TO 1401

AUTHOR....Mr. C. F. Russ

DIRECT TECHNICAL INQUIRIES TO...
Mr. C. F. Russ
IBM Corp.
110 W. 21st St.
Norfolk, Va. 23517

DESCRIPTION - This is a 1440 Autocoder program designed to convert Autocoder source decks from the 1440 to the 1401. The program may be used to convert itself to run on a 4K 1401 with one 1311 Disk Drive. As the 1440 source deck (to be converted) is read, 1442 and 1443 commands and ORG and EX statements are 80/80 listed on the 1443. 1402 and 1403 instructions and addresses are substituted for those of the 1442 and 1443 and merged with the other autocoder instructions to create a sequential disk file. A resequenced 1401 source deck may be punched on the 1442.

PROGRAMMING SYSTEMS - V1-M12 of AU-008 Autocoder, and V2-M11 of 1440-IO-010 IOCS.

MINIMUM SYSTEM REQUIREMENTS - 1440-4K storage... Advanced Programming feature... 1-1311 Disk Drive... 1442 Reader Punch... 1443 Printer.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440033002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1440-1C.1.001

SHI MEAT SYSTEM

AUTHORS...Mr. R. Sharer Mr. R. Grottko

DIRECT TECHNICAL INQUIRIES TO...
Mr. R. Sharer
Arthur Andersen and Co.
69 W. Washington St.
Chicago, Ill. 60602

DESCRIPTION - The system prepares management reports containing cost, sales distribution and efficiency information of retail meat departments in a supermarket chain. The system also prepares reports for purchasing and profit planning. There are about 39 object decks in the system.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 8K 1440 with a 1442, 1443 or 1403/120 Print Positions, Console Typewriter, 2-1311's, Advanced Programming features, no Multiply-Divide.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up
MACHINE READABLE - Appropriate material delivered

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

CONTINUED FROM PRIOR COLUMN

ORDERING INFORMATION: PROGRAM NUMBER 1440101001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	MT	7/556 7/800	22 24
				01 01

1440-10.2.002

1240/1440 PROOF OF DEPOSIT AND CASH LETTER WRITING

AUTHOR....J. L. Brooks

DIRECT TECHNICAL INQUIRIES TO...
J. L. Brooks
IBM Corp.
618 S. Michigan Ave.
Chicago, Ill.

DESCRIPTION - Deposits, checks, cash slips, control slips and substitute documents are entered into the 1412 or 1240. An in-proof journal is prepared, a primary distribution of the documents is performed, and good data recorded in

disk storage. The data recorded in disk storage is then read and cash letters for kill-pockets prepared. There are 1944 source statements.

PROGRAMMING SYSTEMS - For correct compilation of the source programs IBM 1440-AU-008 Autocoder must be used.

MINIMUM SYSTEM REQUIREMENTS - 1440 - A 1441-A4 8K CPU with no. 4631 Index Registers and Store Registers... No. 5561 Printer Attachment... No. 3321 Disk Storage Control... No. 7080 Serial I/O Adapter... No. 2260 Console Attachment. A 1442-1 or 2 Card Read Punch with No. 1632 Card Read Punch Adapter. A 1443-2 Printer with No. 5567 Printer Control... No. 5559 Print Positions, 24 additional... No. 5585 Print Storage... No. 6401 Selective Character Set... A 1447-1 Console with No. 7600 Sense Switches... A 1412 Magnetic Character Reader with 1311-1 Disk Storage Drive... 1311-2 Disk Storage Drive.

MINIMUM SYSTEM REQUIREMENTS - 1240 - A 1241 A4 8K CPU with no. 4631 Index and Store Registers... No. 5561 Printer Attachment... No. 3321 Disk Storage Control... No. 2260 Console Attachment. A 1442 1 or 2 Card Read Punch with No. 1632 Card Read Punch Adapter. A 1443 2 Printer with No. 5567 Printer Control... No. 5559 Print Positions Additional 24... No. 5585 Print Storage... No. 6401 Selective Character Set. A 1447-1 Console with No. 7650 Sense Switches. A 1311-1 Disk Storage Drive 1311-2 Disk Storage Drive.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440102002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none	none	none

1440-10.2.003

INSTALLMENT LOAN ACCOUNTING

AUTHOR....Mr. Ernest Wong

DIRECT TECHNICAL INQUIRIES TO...
Mr. Ernest Wong
IBM Corp.
420 Montgomery St.
San Francisco, Calif. 94104

DESCRIPTION - The complete installment loan accounting for a small to medium sized bank can be accomplished on the IBM 1440 Data Processing System with this package of 15 program runs. The runs are in 3 main categories, and consist of new loan, daily, and periodic processing. The handling of new loans is done in 4 runs which edit and convert from card to file, print a new loan journal, print an alphabetic reference card, and procure coupons and covers. Daily processing involves master file maintenance, batch proof, posting to master and dealer files, and report output. Periodic (weekly and monthly) runs are made on dealer file maintenance, and print-out of delinquency notices, trial balance, and weekly and monthly reports. Interest rebates are computed by the 78ths method and accrual of unearned income is done by the straight line method.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder with Disk IOCS.

CONTINUED FROM PRIOR PAGE

MINIMUM SYSTEM REQUIREMENTS - Requires 8K, Indexing and Store Address Register feature, 1442, 1443 with 144 print positions, Sense Switches, and 2 - 1311 Disk Drives. There are 9067 source statements.

BASIC PROGRAM PACKAGE
DOCUMENTATION - None
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1440102003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1440-11.3.001

TARS - TALLY ANALYSIS REGISTRATION AND SCHEDULING

AUTHOR....Mr. W. R. Johnson

DIRECT TECHNICAL INQUIRIES TO...

Alice D. Peters
IBM Corp.
150 Grand St.
White Plains, N. Y.

DESCRIPTION - TARS - 1440 is a series of programs designed to give the professional school administrator the most complete freedom and flexibility in the preparation of conflict free student programs. Utilizing the full power and random access capabilities of the IBM 1440 computer system, the programs have encompassed the best attributes of the two basic methods of student sectioning. The two methods presently in use in manual, semi-automatic, unit record and even in large-scale computer systems are "sectioning by section" (the Sorter Plan) and "sectioning by student" (the Bin Plan). Although both of these systems have performed well over the years, each has certain limitations. Sectioning by student (Bin Plan) requires the pre-selection of those students who are presumed to be the most difficult to schedule, i. e.; those students requesting several single offering (single section) courses. After this pre-selection, arbitrary decisions concerning which section, of a multiple-section course offering, to use are made manually by a professional or automatically by a computer. Because a major factor in these arbitrary decisions is the number of remaining seats in a section, this method has the advantage of balancing the number of students in each of several sections of a particular course. The disadvantage of the system or approach is of course the arbitrary decision making. The arbitrary decisions made for the earlier sectioned students can create very real but theoretically avoidable conflicts for students subsequently sectioned. The sectioning by section plan (sorter plan) does not make these arbitrary decisions as early as the bin plan. With this method, all students requesting single section subjects are sectioned. Then those requesting doubles are sectioned, then triples, etc. The major difficulty with this method is that it requires a greater amount of coding to keep track of where and when a student has been sectioned. This method also has the disadvantage of placing less emphasis on class balancing. However, the plan does have several significant advantages. First among these is that it requires less professional intervention. Second, it does a better job with those students who are more difficult to section. And finally, this plan is easily performed on basic unit record equipment. Because of the tremendous power and random access capabilities of the IBM 1440 computer system, the significant advantages of both of the afore-mentioned systems have been incorporated in TARS - 1440. As stated before, TARS - 1440 is a series of programs designed to give freedom and flexibility to the school administrators in preparing conflict-free student programs. This series of programs is as follows - The request count tally... The possible conflict analysis... The file load... The student request loading and single offering sectioning... Main sectioning - Phase A - By section... Main Sectioning - Phase B - By student... Backtracking for conflicts... Updated master schedule... Conflict students printout... File maintenance or change program... Schedule writing and grade card punching... Section balancing.

PROGRAMMING SYSTEMS - Written in Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 1440 1441 - Processing Unit Model A-4 (8K) Direct Seek Indexing and Store Address Register feature Disk Storage Control feature 1443 Printer Attachment feature Sense Switches 1442 Card Read Punch Model 1 1443 Printer Model 1 Printer Control feature Standard 52-Character-Set Typebar 1447 Console Model 1 1311 Disk Storage Drive Note - Use of Direct Seek feature reduces running time. The program may, however, be reassembled deleting the Direct Feature statement. The TARS - 1440 program specifications are as follows -

1. Maximum of 2500 students

CONTINUED FROM PRIOR COLUMN

- Maximum of 13 requests per student (up to 12 in one semester).
- Maximum of 12 periods (time increment per day).
- Maximum of 999 courses - plus lunch and study hall.
- Lunch may be scheduled as a control card option.
- Second semester courses are scheduled in a second run. However, TARS provides continuity of section assignment for full-year courses.
- A single course section may not span more than 5 different periods (time increments), although it may meet any or all days of the week during those time increments.
- Each study hall may have one or more sections.
- Study halls will be treated individually by day and period.
- No student may be in more than one section of study hall during a period.
- No student may be in more than 8 different study hall sections.
- The conflict analysis will handle up to 149 course offering codes.
- The tally program will (a) Count course requests, (b) Spread requests by grade and sex, (c) print requests by student and (d) print students requesting each course.
- Format of request cards and section masters is the same as class 7070.
- Format of lunch and study halls is same as other section masters. Program will handle one during period.
- Program will handle up to 3000 course section with a maximum of 50 sections allowed for any one course.
- Ability to use one of the 12 periods of the day as a dummy period.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write up
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1440113001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1440-11.5.003

COMPUTER FOR THE IBM 1080 ANALYTICAL DATA ACQUISITION PROGRAM

AUTHOR....W. R. Whittle

DIRECT TECHNICAL INQUIRIES TO...

W. R. Whittle
IBM Corp.
2651 Strang Blvd.
Yorktown Heights, N. Y. 10598

DESCRIPTION - This is a 1440 program designed to process the punched card output of the IBM 1080 Analytical Data Acquisition System servicing TECHNICON Auto Analyzers and one of two IBM 1080 Sample Identification Turntables, all operating in a clinical laboratory environment. It matches specimen identification numbers with their raw data values, makes adjustments for drift, baseline shift, and interaction, linearizes the data, and computes specimen concentrations. A quality control report is produced which summarizes the Auto Analyzer runs, and each test result and specimen identification number is stored in disk memory. The user then must write a program to store in disk memory. The user then must write a program to store the results in the patient file.

MINIMUM SYSTEM REQUIREMENTS - 8K Core Storage, a 1447-2, one 1311, a 1442 and a 1443.

BASIC PROGRAM PACKAGE
DOCUMENTATION - None
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source code.

ORDERING INFORMATION: PROGRAM NUMBER 1440115003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

CONTINUED FROM PRIOR COLUMN

1440-11.5.004

MEDICARE INPATIENT BILLING

AUTHOR....G. H. Bang

DIRECT TECHNICAL INQUIRIES TO...

G. H. Bang
IBM Corp.
101 E. Post Rd.
White Plains, N. Y.

DESCRIPTION - This program will print the In-Patient Hospital Admission and Billing (SSA 1453) and Provider Billing For Patient Services By Physicians (SSA 1544) Reports on continuous forms designed by the Social Security Administration. These reports are prepared by the hospital when billing Medicare patients under Title XVIII of Social Security Health, Education and Welfare Program. These programs are designed specifically for use in conjunction with the Hospital Billing Application Program 1440-UH-01X, but are sufficiently general to allow their modification for use with user designed patient billing procedures. They further can be adapted to other equipment in the 1400 series or used with the 1401/1440/1460 Compatibility Feature on System/360. The system provides for setting up master files unique to Medicare to supplement the individual patient master, insurance, and charge records created and maintained by the hospital patient billing programs.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.
MINIMUM SYSTEM REQUIREMENTS - 8K of core storage and the minimum configuration specified by the Patient Billing Application Program.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440115004

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-11.5.005

PROPERTY ACCOUNTING SYSTEM FOR HOSPITAL

AUTHOR....Mr. D. R. Statham

DIRECT TECHNICAL INQUIRIES TO...

Mr. D. R. Statham
1615 N. 25th St.
Birmingham, Ala. 35234

DESCRIPTION - To depreciate and list all property equipment monthly, while providing for deletions and additions to the file and checking and handling separately items that would over depreciate.

PROGRAMMING SYSTEMS - Programmed using Autocoder and IOCS.

MINIMUM SYSTEM REQUIREMENTS - 4K-1440 with Indexing and Store Register, a 1442 Card Read Punch, a 1443 Printer, 2-1311 Disk Drives, a 1447 Console.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440115005

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-12.3.001

BILL OF MATERIAL PROCESSOR STRUCTURE FILE ADDRESS REORGANIZATION MAINTENANCE PROGRAM.

AUTHOR....Ramon L. Fritsch

DIRECT TECHNICAL INQUIRIES TO...

Ramon L. Fritsch
IBM Corp.
7321 W. Lake St.
River Forest, Ill.

DESCRIPTION - The purpose of this program is to facilitate the reorganization of an installed 1440 Bill of Material Processor System, Application Program 1440-ME-02X. Due to the additions and deletions to the part number (p/n) master file in the B/M Processor System, it becomes necessary to reorganize the records periodically to retain

efficient processing. Since the physical location of the master P/N records may be changed after the file reorganization, the linkage addresses in the product structure and part index files must be changed to reflect the new P/N master locations. Structure File Address Reorganization Maintenance (SPARM) program performs these changes by processing the P/N master file in sequence, accessing each product structure record in the where-used chain, then in the component sequence and then randomizes the P/N to access the part index record. SPARM eliminates the need for reloading the product structure and part index files from cards.

PROGRAMMING SYSTEMS - Written in 1440 Autocoder.

MINIMUM SYSTEM REQUIREMENTS - 4K 1440 Disk System.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE - None.

ORDERING INFORMATION: PROGRAM NUMBER 1440123001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	none		none

1440-12.3.002

LABOR AND MATERIAL PROGRAM

AUTHORS...J. D. Callon J. Witt
Patricia Roche R. L. Fritch

DIRECT TECHNICAL INQUIRIES TO...

J. D. Callon
IBM Corporation
3424 Wilshire Boulevard
Los Angeles, California 90005

DESCRIPTION - This is a demonstration program which is an extension of the 1440 Bill of Material Processor. It includes -

- . Loading and maintenance of inventory and product structure records.
- . Loading and maintenance of work center and routing records.
- . Gross to net time series planning report with requirements offset by lead time.
- . Gross work center loading by time period.
- . Retrieval reports (explosion and implosions).
- . Calculation and maintenance of low level codes.

This program offers manufacturing companies an excellent base for developing mechanized production control programs. By taking advantage of these standardized routines the user can benefit from earlier implementation as well as minimization of planning and programming expenses. The package makes eight programs available to the user, which enable him to load and maintain his part number and machine group master files with random indexes to these files.

PROGRAMMING SYSTEMS - Written in Autocoder.
MINIMUM SYSTEM REQUIREMENTS - 8K 1440 CPU... 1442 Card Read Punch... 1443 Printer 120 print position... 1447 Model 2 Console With Sense Switches... (2) 1311 disk drives... indexing and Store Address Register Feature.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1440123002

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1440-12.3.003

BILL OF MATERIAL PROGRAMS TO LOAD, MAINTAIN AND EXPLODE IBM FILES

AUTHOR....John Vonjess

DIRECT TECHNICAL INQUIRIES TO...

John Vonjess
IBM Corporation
400 Wyman Street
Waltham, Massachusetts

CONTINUED FROM PRIOR PAGE

DESCRIPTION - These programs, designed for the 4K user, will load a Bill of Material File, maintain the file with additions, deletions and changes. The loading program reduces the part number of the components down to five digit address so that approximately six components can be loaded in a sector with a complete where-used index generated at the same time. Controls are maintained in each program. The Explosion Program permits the explosion of a Bill with substitutions. Included are two Inquiry programs which will give a complete where-used report for 1 level up and a BM listing of 1 level down. All documentation is included so that any other customer could make modifications to suit his needs.

PROGRAMMING SYSTEMS - Autocoder (AU-008) and IOCS (IO-010) are the programming systems used for all programs except the Random File Organizations Routines (OT-040).

MINIMUM SYSTEM REQUIREMENTS - 1440 - 4K Plus, 1442, 1443, 1447 Model 2, 1311 as required - Minimum 1, Advanced Programming, Scan, and Sense Switches.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1440123003

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT
BASIC	none	CARDS	15	none
OPTIONAL	none	CARDS	15	none

1440-15.0.001

EXTENDED PERFORMANCE COMPUTER ASSISTED INSTRUCTION
OPERATING SYSTEM FOR IBM 1440-1448

AUTHORS...Judith Miller W. S. Wengert

DIRECT TECHNICAL INQUIRIES TO...

Judith Miller
IBM Corporation
1825 K Street, N. W.
Washington, D. C. 20036

DESCRIPTION - This system of programs is an expansion of the IBM 1401, 1440, or 1460 CAI Operating System providing extended capabilities for course generation and system control, including support for audio/visual devices, additional language features, a card input system, additional administrative control and improved system performance. The system includes all support programs necessary to generate the system pack, initialize the system, extract and print recordings and perform various off-line operations such as printing course material and/or student information.

PROGRAMMING SYSTEMS - All programs are coded in the Disk Autocoder Source Language.

MINIMUM SYSTEM REQUIREMENTS - 16K, 1440-1448 with Indexing and Store Address, Bit Test, High-Low-Equal Compare, and Sense Switches, and one 1311 Disk Drive, Direct Seek, and one 1050.

BASIC PROGRAM PACKAGE
DOCUMENTATION - Write-up.
MACHINE READABLE - Appropriate material delivered.

OPTIONAL PROGRAM PACKAGE
DOCUMENTATION - None.
MACHINE READABLE - Source Code.

ORDERING INFORMATION: PROGRAM NUMBER 1440150001

	PROGRAM NUMBER EXTENSION	DISTRIBUTION TYPE	MEDIUM CODE	USER VOLUME REQUIREMENT	
BASIC	none	CARDS	15	none	
OPTIONAL	none	MT	7/556	22	01
		MT	7/800	24	01

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April 1969

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