# DR. WANG'S PALO ALTO TINY BASIC

# By Roger Rauskolb

Tiny Basic was first proposed in Dr. Dobb's Journal. Li-Chen Wang's version of Palo Alto Tiny Basic originally appeared in Issue No. 5, May 1976 of Dr. Dobb's Journal. A complete listing was printed, but Dr. Wang did the assembly on an IBM computer and he defined different mnemonics. In order to assemble with an Intel Compatible Assembler a translation of most mnemonics had to be performed.

I had developed my own system, which consists of two small p.c. boards, one containing the 8080 CPU, 4k of 2708 type EROM and 1K of RAM. The other PCB contained the RS-232 Interface using the Intel 8251. So I wanted to change the I/O section.

If you want to change I/O, all routines are contained in the OUTC and CHKIO routines. My system uses the following configuration:

2708	EROMS	H0000	TO	07FFH
1k	OF RAM	1000H	TO	13FFH
8251	DATA PORT	0FAH		
8251	STATUS POR	Т		

Command 27H = 2 stop bits parity disabled.
Instruction 8 bit characters.

Baud Rate Factor of 04.

Mode OCFH = No Hunt Mode. Not (RTS) forced to 0. Receive Enabled Data Ter-

minal Ready Transmit Enabled.

Transmitter Ready Status Bit = Bit 0 (01H)
Receiver Buffer Ready Status Bit = Bit 1 (02H)

The program is contained in locations OOOOH to 0768H.

68H. In 1K of RAM 847 bytes are left over for program.

Tiny Basic does not offer much in terms of functions and general mathematical capabilities. But it is great to teach programming basics to children (and adults) and for games, since it has the RND function. It takes up little memory space and executes a lot faster than other basics.

Dr. Wang was very helpful and assisted me all the way. Some errors were eliminated. I appreciate his help and he deserves a lot of credit for his implementation of Tiny Basic.

See Microcomputer Software Depository Program Index for Copies of this program.

# THE TINY BASIC LANGUAGE

### **Numbers**

In Tiny Basic, all numbers are integers and must be less than or equal to 32767.

#### **Variables**

There are 26 variables denoted by letters A through Z. There is also a single array @(1). The dimension of this array (i.e., the range of value of the index 1) is set automatically to make use of all the memory space that is left unused by the program. (i.e., 0 through SIZE/2, see SIZE function below.)

#### **Functions**

For the time being, there are only 3 functions:

ABS(X) gives the absolute value of X.

RND(X) gives a random number between 1 and X (inclusive).

SIZE gives the number of bytes left unused by the program.

# **Arithmetic and Compare Operators**

- / divide. Note that since we have integers only,  $\frac{2}{3} = 0$ .
- \* multiply.
- subtract.
- + add.
- > compare if greater than.
- < compare if less than.
- = compare if equal to. Note than to certain versions of Basic "LET A=B=O" means "set both A and B to O". To this version of Tiny Basic, it means "set A to the result of comparing B with O".
- # compare if not equal to.
- >= compare if greater than or equal to.
- <= compare if less than or equal to.
- +, -, \*, and / operations result in a value of between -32767 and 32767. All compare operators result in a 1 if true and a 0 if not true.

# **Expressions**

Expressions are formed with numbers, variables, and functions with arithmetic and compare operators between them. + and - signs can also be used at the beginning of an expression. The value of an expression is evaluated from left to right, except that \* and / are always done first, and then + and -, and then compare operators. Parentheses can also be used to alter the order of evaluation.

### **Statements**

A Tiny Basic statement consists of a statement

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number between 1 and 32767 followed by one or more commands. Commands in the same statement are separated by a semi-colon ";". "GOTO", "STOP", and "RETURN" commands must be the last command in any given statement.

# **Program**

A Tiny Basic program consists of one or more statements. When a direct command "RUN" is issued, the statement with the lowest statement number is executed first, then the one with the next lowest statement number, etc. However, the "GOTO", "GOSUB", "STOP", and "RETURN" commands can alter this normal sequence. Within the statement, execution of the commands is from left to right. The "IF" command can cause the execution of all the commands to its right in the same statement to be skipped over.

#### **Commands**

Tiny Basic commands are listed below with examples. Remember that commands can be concatenated with semi-colons. In order to store the statement, you must also have a statement number in front of the commands. The statement number and the concatenation are not shown in the examples.

### **REM or REMARK Command**

REM anything goes
This line will be ignored by TBI.

# **LET Command**

LET 
$$A = 234 - 5*6$$
,  $A = A/2$ ,  $X = A - 100$ , @ $(X+9) = A-1$ 

will set the variable A to the value of the expression 234-5\*6 (i.e., 204), set the variable A (again) to the value of the expression A/2 (i.e., 102), set the variable X to the value of the expression A-100 (i.e., 2), and then set the variable @(11) to 101 (where 11 is the value of the expression X+9 and 101 is the value of the expression A-1).

LET 
$$U = A \# B$$
,  $V = (A > B) * X + (A < B) * Y$ 

will set the variable U to either 1 or 0 depending on whether A is not equal to or is equal to B; and set the variable V to either X, Y or 0 depending on whether A is greater than, less than, or equal to B.

# **PRINT Command**

**PRINT** 

will cause a carriage-return (CR) and a line-feed (LF) on the output device.

will print the value of the expression A\*3+1 (i.e.,307), the string of characters "ABC 123 !@#", and the string "CBA", and then a CR-LF. Note that either single or double quotes can be used to quote strings, but pairs must be matched.

PRINT A\*3+1, "ABC 123 !@#", ' CBA ',

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will produce the same output as before, except that there is no CR-LF after the last item is printed. This enables the program to continue printing on the same line with another "PRINT".

PRINT A, B, #3, C, D, E, #10, F, G

will print the values of A and B in 6 spaces, the values of C, D, and E in 3 spaces, and the values of F and G in 10 spaces. If there are not enough spaces specified for a given value to be printed, the value will be printed with enough spaces anyway.

PRINT 'ABC'. ←. 'XXX'

will print the string "ABC", a CR without a LF, and then the string "XXX" (over the ABC) followed by a CR-LF.

# **INPUT Command**

INPUT A. B

When this command is executed, Tiny Basic will print "A:" and wait to read in an expression from the input device. The variable A will be set to the value of this expression. Then "B:" is printed and variable B is set to the value of the next expression read from the input device. Note that not only numbers, but also expressions can be read as input.

INPUT 'WHAT IS THE WEIGHT'A. "AND SIZE"B

This is the same as the command above, except the prompt "A:" is replaced by "WHAT IS THE WEIGHT:" and the prompt "B:" is replaced by "AND SIZE:". Again, both single and double quotes can be used as long as they are matched.

INPUT A, 'STRING', ←, "ANOTHER STRING", B

The strings and the "←" have the same effect as in "PRINT".

#### IF Command

IF A < B LET X = 3: PRINT 'THIS STRING'

will test the value of the expression A<B. If it is not zero (i.e., if it is true), the commands in the rest of this statement will be executed. If the value of the expression is zero (i.e., if it is not true), the rest of this statement will be skipped over and execution continues at next statement. Note that the word "THEN" is not used.

### **GOTO Command**

**GOTO 120** 

will cause the execution to jump to statement 120. Note that GOTO command cannot be followed by a semi-colon and other commands. It must be ended with a CR

GOTO A\*10+B

will cause the execution to jump to a different statement number as computed from the value of the expression.

#### **GOSUB and RETURN Commands**

GOSUB command is similar to GOTO command

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except that: a) the current statement number and position within the statement is remembered; and b) a semi-colon and other commands can follow it in the same statement.

**GOSUB 120** 

will cause the execution to jump to statement 120.

GOSUB A\*10+B

will cause the execution to jump to different statements as computed from the value of the expression A\*10+B.

#### RETURN

A RETURN command must be the last command in a statement and followed by a CR. When a RETURN command is encountered, it will cause the execution to jump back to the command following the most recent GOSUB command.

GOSUB can be nested. The depth of nesting is limited only by the stack space.

LIST

will print out all the statements in numerical order.

**LIST 120** 

will print out all the statements in numerical order 120.

**NEW** 

will delete all the statements.

# Stopping the Execution

The execution of program or listing of program can be stopped by the Control-C key on the input device.

#### Abbreviation and blanks

You may use blanks freely, except that numbers, command key words, and function names can not have embedded blanks.

You can truncate all command key words and function names and follow each by a period. "P.", "PR.", "PRI.", and "PRIN." all stand for "PRINT." Also the word LET in LET command can be omitted. The "shortest" abbreviation for all the key words are as follows:

A.=ABS	F = FOR	GOS.=GOSUB	G = GOTO
IF=IF	IN. = INPUT	L. = LIST	N = NEW
N = NEXT	P = PRINT	REM = REMARK	R. = RETURN
R = RND	R = RUN	S = SIZE	S. = STEP
S.=STOP	TO=TO		
Implied = LET			

### **Control of Output Device**

The Control-O key on the input device can be used to turn the output device ON and OFF. This is useful when you want to read in a program punched on paper tape.

To produce such a paper tape, type "LIST" without CR. Turn on the paper tape punch and type a few Control-Shift-P's and then a CR. When listing is finished, type more Control-Shift-P's and turn off the punch.

To read back such a paper tape, type "NEW," CR, and Control-O, then turn on the paper tape reader.

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When the paper tape is finished, turn it off and type a Control-O again.

Control-Shift-P's and turn off the punch.

To read back such a paper tape, type "NEW," CR, and Control-?, then turn on the paper tape reader. When the paper tape is finished, turn it off and type a Control-0, then turn on the paper tape reader. When the paper tape is finished, turn it off and type a Control-0 again.

# **Error Report**

There are only three error conditions in TINY BASIC. The statement with the error is printed out with a question mark inserted at the point where the error is detected.

(1) WHAT? means it does not understand you. Example:

WHAT? 210 P?TINT "THIS" where PRINT is mistyped

WHAT? 260 LET A=B+3, C=(3+4), X=4

(2) HOW? means it understands you but does not know how to do it.

HOW? 310LET A=B\*C?+2 where B\*C is larger than 32767

HOW? 380 GOTO 412?

where 412 dose not exist

(3) SORRY means it understands you and knows how to do it but there is not enough memory to do it.

#### **Error Corrections**

If you notice an error in typing before you hit the CR, you can delete the last character by the Rub-Out key or delete the entire line by the Alt-Mode key. Tiny basic will echo a back-slash for each Rub-Out. Echo for Alt-Mode consists of a LF, a CR, and an up-arrow.

To correct a statement, you can retype the statement number and the correct commands. Tiny Basic will replace the old statement with the new one.

To delete a statement, type the statement number and a CR only.

Verify the corrections by "LIST nnnn" and hit the Control-C key while the line is being printed.

# **FOR and NEXT Commands**

FOR X=A+1 TO 3\*B STEP C-1

The variable X is set to the value of the expression A+1. The values of the expressions (not the expressions themselves) 3\*B and C-1 are remembered. The name of the variable X, the statement number and the position of this command within the statement are also remembered. Execution then continues the normal way until a NEXT command is encountered.

The STEP can be positive, negative or even zero. The word STEP and the expression following it can be omitted if the desired STEP is +1.

#### **NEXT X**

The name of the variable (X) is checked with that of the most recent FOR command. If they do not agree, that FOR is terminated and the next recent FOR is checked, etc. When a match is found, this variable will be set to its current value plus the value of the STEP expression saved by the FOR command. The updated

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value is then compared with the value of the TO expression also saved by the FOR command. If this is within the limit, execution will jump back to the command following the FOR command. If this is outside the limit, execution continues following the NEXT command itself.

FOR can be nested. The depth of nesting is limited only by the stack space. If a new FOR command with the same control variable as that of an old FOR command is encountered, the old FOR will be terminated automatically.

# **STOP Command**

#### STOP

This command stops the execution of the program and returns control to direct commands from the input device. It can appear many times in a program but must be the last command in any given statement, i.e., it cannot be followed by semi-colon and other commands.

#### **Direct Commands**

As defined earlier, a statement consists of a statement number followed by commands. If the statement number is missing, or if it is 0, the commands will be executed after you have typed the CR. All the commands described above can be used as direct commands. There are three more commands that can be used as direct command but not as part of a statement:

#### RUN

will start to execute the program starting at the lowest statement number.

See Microcomputer Software Depository Program Index for copies of this program.

```
TINY BASIC FOR INTEL 8080
VERSION 2.0
BY LI-CHEN WANG
MODIFIED AND TRANSLATED
TO INTEL MINEMONICS
BY ROGER RAUSKOLB
10 OCTOBER: 1975
9COPYLEFT
ALL WRONGS RESERVED
                                ****************
                                   *** ZERO PAGE SUBROUTINES ***
                                  THE 8080 INSTRUCTION SET LETS YOU HAVE 8 ROUTINES IN LOW MEMORY THAT MAY BE CALLED BY RST N. N BEING 0 THROUGH 7 THIS IS A ONE BYTE INSTRUCTION AND HAS THE SAME POWER AS THE THREE BYTE INSTRUCTION CALL LLHH. TINY BASIC WILL USE RST 0 AS START AND RST 1 THROUGH RST 7 FOR THE SEVEN MOST FREQUENTLY USED SUBROUTINES. THE SEVEN MOST FREQUENTLY USED SUBROUTINES THO OTHER SUBROUTINES COELF AND TSTAWN) ARE ALSO IN THIS SECTION. THEY CAN BE REACHED ONLY BY 3-BYTE CALLS.
                             DMA
                                            MACRO
                                                            WHERE SHR 8) +128
                                            DB
DB
                                                          WHERE AND OFFH
                                             ENDM
0000
                                            ORG
                                                     ΘΗ
                             START
 0000 310014
0003 3EFF
                                            LXI SP,STACK;*** COLD START ***
MVI A,0FFH
                                            MVI
JMP
0005 C34206
                                                     INIT
                                             XTHL
0008 E3
                                                                           :*** TSTC OR RST 1 ***
:IGNORE BLANKS AND
 0009 EF
                                            RST
CMP
JMP
                                                      M
TC1
                                                                          TEST CHARACTER
REST OF THIS IS AT TC1
000B C36800
ARRE READ
                                           MVI A/CR
                                                                         . *** CRLE ***
0010 F5
0011 3A0010
0014 B7
                                                                         ;*** OUTC OR RST 2 ***
;FRINT CHARACTER ONLY
;IF OCSW SWITCH IS ON
;REST OF THIS IS AT OC2
                                            PHSH PSW
                                            LDA
ORA
JMP
                                                   н гэм
ОСSW
А
ОС2
0015 C36C06
                                            CALL EXPR2
PUSH H
JMP EXPR1
                                                                         ;*** EXPR OR RST 3 ***
;EVALUATE AN EXPRESION
;REST OF IT IS AT EXPR1
0018 CD7103
001C C32D03
```

```
001F 57
                                                                                                                                                                                                                                     DB
                                                                                                                                                                                                                                                                         1W1
                            0020 7C
                                                                                                                                                                                                                                                                                                                                                                                      ;*** COMP OR RST 4 ***
;COMPARE HL WITH DE
;RETURN CORRECT C AND
                                                                                                                                                                                                                                                                                  A, H
D
                            0021 BA
                                                                                                                                                                                                                                     CMP
RNZ
MOV
                          0022 C0
0023 7D
0024 BB
                                                                                                                                                                                                                                                                                A, L
E
                                                                                                                                                                                                                                   CMP
RET
DB
                                                                                                                                                                                                                                                                                                                                                                                 BUT OLD A IS LOST
                       0025 C9
0026 414E
                                                                                                                                                                                                                                                                              48N4
                       0028 1A
0029 FE20
002B C0
                                                                                                                                                                                                                                                                                                                                                                               ; *** IGNBLK/RST 5 ***
; IGNORE BLANKS
; IN TEXT (WHERE DE->)
; AND RETURN THE FIRST
; NON-BLANK CHAR. IN A
                                                                                                                                                                 .
SS1:
                                                                                                                                                                                                                                   LDAX D
CPI 20H
RNZ
                       002C 13
002D C32800
                                                                                                                                                                                                                                     INX
JMP
                                                                                                                                                                                                                                                                                  D
SS1
                     0030 F1
0031 CDB304
0034 C3C604
0037 47
                                                                                                                                                                                                                                   POP PSW
CALL FIN
JMP QWHAT
DB 'G'
                                                                                                                                                                                                                                                                                                                                                                               ;*** FINISH/RST 6 ***
;CHECK END OF COMMAND
;PRINT "WHAT?" IF WRONG
                       0038 EF
                                                                                                                                                                                                                                   RST
                                                                                                                                                                                                                                        RST 5
SUI 40H
                                                                                                                                                                                                                                                                                                                                                                                           *** TSTV OR RST 7 ***
                  0038 EF
0039 D640
003B D8
003C C25800
003F 13
0040 CD1R04
0043 29
                                                                                                                                                                                                                                                                                                                                                                               ;**** TSTV OR RST 7 ***
;TEST VARIABLE
;C:NOT A VARIABLE
;NOT "@" ARRAY
;IT IS THE "@" ARRAY
;@ SHOULD BE FOLLOWED
;BY (EXRR) AS ITS INDEX
                                                                                                                                                                                                                                        JNZ TV1
                                                                                                                                                                                                                                 INX D
CALL PARN
DAD H
                  0043 29
0044 DA9F00
0047 D5
0048 EB
0049 CD5904
004C E7
004D DAF404
0050 216613
0053 CD7C04
0056 D1
0057 C9
0058 FE1B
0058 D8
                                                                                                                                                                                                                                                                                                                                                                             JBY (EXPR) HS ITS
JIS INDEX TOO BIG?
JWILL IT OVERWRITE
JTEXT?
                                                                                                                                                                                                                                   JC QHOW
PUSH D
                                                                                                                                                                                                                     CALL SIZE FIND SIZE OF FREE
RST 4 FIND SIZE OF FREE
RST 4 FIND SIZE OF FREE
RST 4 FIND CHECK THAT
C ASORRY FISO. SAY "SORRY"
LXI H. VARBGN FI NOT, GET RODRESS
CALL SIZE OF CENTRE AND PUT IT
POP D FIND FIND FIND FIND FIND
RET C FIRM SIZE FIND FIND FIND FIND
CPI 18H FIND FIND FIND FIND
CPI 18H FIND FIND FIND FIND
CPI 18H FIND FIND FIND
CPI 18H FIND FIND
CPI 18H FIND FIND
CPI 18H FIND FIND
CPI 18H FIND
CPI 18H
CPI 18H
CPI 18H
CPI 18H
                                                                                                                                                            TV1:
                     005B D8
005C 13
005D 216613
0060 07
                                                                                                                                                                                                                                                                                D ; IF A THROUGH Z
H, VARBGN ; COMPUTE ADDRESS OF
; THAT VARIABLE
L ; AND RETURN IT IN HL
L, A ; WITH C FLAG CLEARED
                                                                                                                                                                                                                              LXI
RLC
ADD
MOV
MVI
ADC
MOV
RET
                0060 07
0061 85
0062 6F
0063 3E00
0065 8C
0066 67
0067 C9
                                                                                                                                                                                                                                                                              H A
                                                                                                                                                                                                                                                                                                                                                                        TC XCH HL/(SP) *** TSTC OR F
IGNBLK THIS IS AT LC
CMP M AND THEN JMP
; COMPARE THE BYTE THAT
; FOLLOWS THE RST INST.
; MITH THE TEXT (DE->)
; IF NOT =, ADD THE 2ND
; BYTE THAT FOLLOWS THE
; RST TO THE OLD PC
; I.E. DO A RELATIVE
; JUMP IF NOT =
; IF =, SKIP THOSE BYTES
; AND CONTINUE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        *** TSTC OR RST 1 ***
THIS IS AT LOC. 8
              0068 23
0069 CA7300
006C C5
006D 4E
006E 0600
0070 09
0071 C1
0072 1B
0073 13
0074 23
0075 E2
0076 C9
                                                                                                                                                                                                                              INX H

JZ TC2

PUSH B

MOV C.M

MVI B.0

B

POP B

DCX D

INX D

INX H

XTHL

RET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HERE
                                                                                                                                                            TC2
                                                                                                                                                            TSTNUM
                                                                                                                                                                                                                                                                                                                                                                     ; *** TSTNUM ***
; TEST IF THE TEXT IS
A NUMBER;
; IF NOT, RETURN 0 IN
B AND ML
; IF NUMBERS, CONVERT
; TO BINARY IN L AND
; SET A TO # OF DIGITS
; IF MUMBERS, THERE IS NO
; ROOM FOR NEXT DIGITS
; B COUNTS # OF DIGITS
; B COUNTS # OF DIGITS
         9077 210909 9074 44 9076 E53 9081 De 9082 E57 9088 40 9083 E4 9085 E59 9086 E59 9096 E59 9096 E59 9096 E59 9096 E69 9098 80 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 9099 87 90
                                                                                                                                                                                                                                   LXI
MOV
RST
CPI
                                                                                                                                                                                                                                                                       5
30H
                                                                                                                                                                                                                                                                    38H
                                                                                                                                                                                                                            CPI 3AH
RNC
MVI A. 0F
ANA H
JNZ QHOU
INR B
PUSH B. H
MOV C. L
DAD H
DAD H
DAD H
DAD H
DAD H
LDAX D
ANI 0FH
ADD L
AND L
A
                                                                                                                                                                                                                                                                                A, ØFØH
H
QHOW
                                                                                                                                                                                                                                                                                                                                                                     #HL=10*HL+(NEW DIGIT)
                                                                                                                                                                                                                                                                                                                                                                     ;WHERE 10* IS DONE BY
;SHIFT AND ADD
                                                                                                                                                                                                                                                                                                                                                                        AND (DIGIT) IS FROM STRIPPING THE ASCII
                                                                                                                                                                                                                                                                         0FH
L A A
H A A
                                                                                                                                                                                                                              MOV
MVI
                                                                                                                                                                                                                MV1
ADC H
MOV H, A
POP B
LDAX D
TP TN1
                                                                                                                                                                                                                                                                                                                                                                             DO THIS DIGIT AFTER
                                                                                                                                                                                                                          JP TN1
PUSH D
LXI D.HOW
JMP ERROR
                                                                                                                                                                                                                                                                                                                                                                     ; DIGIT. S SAYS OVERFLOW ; *** ERROR: "HOW?" ***
00A6 484F573F HOW:
00AA 0D
00AB 4F4B OK:
00AD 0D
00AE 57484154 WHAT
00B2 3F
                                                                                                                                                                                                                                                                       40042
                                                                                                                                                                                                              DB
DB
DB
                                                                                                                                                                                                                                                               ZOKZ
CR
  00AB 4F4B OK: DB
00AD 0D DB
00AE 57484154 WHAT: DB
00B2 3F
00B3 0D DB
00B4 534F5252 SORRY: DB
00B8 59
                                                                                                                                                                                                                                                                         WHAT?
                                                                                                                                                                                                                                                                  CR
1SORRY
                                                                                                                                                                                                              DB
```

\*\*\* MAIN \*\*\*

THIS IS THE MAIN LOOP THAT COLLECTS THE TINY BASIC PROGRAM AND STORES IT IN THE MEMORY.

AT START, IT PRINTS OUT "(CR)OK(CR)", AND INITIALIZES THE STACK AND SOME OTHER INTERNAL VARIABLES. THEN IT PROMPTS "")" AND READS A LINE. IF THE LINE STARTS WITH A NON-ZERO NUMBER, THIS NUMBER IS THE LINE NUMBER. THE LINE NUMBER (IN 16 BIT BINRRY) AND THE REST OF THE LINE (INCLUDING CR) IS STORED IN THE MEMORY. IF A LINE WITH THE SAME LINE NUMBER IS ALREADY THERE, IT IS REPLACED BY THE NEW ONE. IF THE REST OF THE LINE CONSISTS OF A CR ONLY. IT IS NOT STORED AND ANY EXISTING LINE WITH THE SAME LINE NUMBER IS DELETED.

AFTER A LINE IS INSERTED, REPLACED, OR DELETED, THE PROGRAM LOOPS BACK AND ASKS FOR ANOTHER LINE. THIS LOOP WILL BE TERMINATED WHEN IT READS A LINE WITH ZERO OR NO LINE NUMBER; AND CONTROL IS TRANSFERRED TO "DIRECT".

```
TINY BASIC PROGRAM SAVE AREA STARTS AT THE MEMORY LOCATION LABELED "TXTBGN" AND ENDS AT "TXTEAD". WE ALMAYS FILL TH: AREA STARTING AT "TXTBGN". THE UNFILLED PORTION IS POINTED BY THE CONTENT OF A MEMORY LOCATION LABELED "TXTUNE".
                                                                                                                                                                                                                                                                                                                                                                                                 0157 CD8406
015A 21BD06
015D C33B07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CALL CHKIO ; **** RUNSML ***
LXI H, TAB2-1 ; FIND COMMAND IN TAB2
JMP EXEC ; AND EXECUTE IT
                                                                                                                                                                                                                                                                                                                                                                                                0160 DF
0161 D5
0162 CDC204
0165 CD3805
0168 C2A000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .*** GOTO EXPR ***
.SAVE FOR ERROR ROUTINE
.MUST FIND A CR
.FIND THE TARGET LINE
.NO SUCH LINE #
.CLERR THE "PUSH DE"
.GO DO IT
                                                                                                                                                                                                                                                                                                                                                                                                                                                               GOTO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RST
                                                                               THE MEMORY LOCATION "CURRNT" POINTS TO THE LINE NUMBER THAT IS CURRENTLY BEING INTERPRETED. WHILE WE ARE IN THIS LOOP OR WHILE WE ARE INTERPRETING A DIRECT COMMAND (SEE NEXT SECTION), "CURRNT" SHOULD POINT.TO A 0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PUSH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CALL ENDCHK
CALL FNDLN
JNZ AHOW
POP PSW
                                                                                                                                                                                                                                                                                                                                                                                                 016B F1
                                                                                                                                                    RSTART LODI SPUSTACE
                                                                                                                                                                                                                                                                                                                                                                                                016C C35001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JMP RUNTSL
                                                                    RSTART:
                                                                   RSTART:
LXI SP, STACK
ST1: *CALL CRLF
LXI D, OK
SUB A
CALL PRTSTG
       00BA 310014
00BD CD0E00
00C0 11AB00
00C3 97
00C4 CD6005
                                                                                                                                                            R

;AND JUMP TO HERE

;DE->STRING

;A=0

;PRINT STRING UNTIL CR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     *** | IST *** & PRINT ***
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LIST HAS TWO FORMS:
'LISTCORY' LISTS ALL SAVED LINES
'CLIST #(OR)' START LIST AT THIS LINE #
YOU CAN STOP THE LISTING BY CONTROL C KEY
                                                                                                   LXI H, ST2+1
SHLD CURRNT
LXI H, 0
SHLD LOPVAR
SHLD STKGOS
MVI A, 3EH
CALL GETLN
     00C7 21CE00 00CA 220110 00CA 220110 00CA 220510 00CA 2
                                                                                                                                                                  ;LITERAL 0
;CURRNT->LINE # = 0
                                                                     ST2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRINT COMMAND IS 'PRINT ....' OR 'PRINT .... (CR)'
WHERE '....' IS A LIST OF EXPRESIONS, FORMATS, BACK-
ARROWS, AND STRINGS. THESE ITEMS ARE SEPERATED BY COMMAS.
                                                                                                   SHLD STROOS
MVI R.3EH ; PROMPT '>/ AND
CALL GETLN ; READ A LINE
PUSH D ; DE->END OF LINE
LXI D. BUFFER; DE->BEGINNING OF LINE
CALL TSTNUM ; TEST IF IT IS A NUMBER
                                                                    ST3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A FORMAT IS A FOUND SIGN FOLLOWED BY A NUMBER. IT CONTROLS
THE NUMBER OF SPACES THE VALUE OF A EXPRESION IS GOING TO
BE PRINTED. IT STAYS EFFECTIVE FOR THE REST OF THE PRINT
COMMAND UNLESS CHANGED BY ANOTHER FORMAT. IF NO FORMAT IS
SPECIFIED, 6 POSITIONS WILL BE USED.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IT CONTROLS
                                                                                                                         5
A. H
                                                                                                     RST
                                                                                                                                                                 ;HL=VALUE OF THE # OR
;0 IF NO # WAS FOUND
;BC->END OF LINE
                                                                                                     ORA
                                                                                                     POP
                                                                                                                         DIRECT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A STRING IS QUOTED IN A PAIR OF SINGLE QUOTES OR A PAIR OF DOUBLE QUOTES.
                                                                                                   JZ DIRECT DCX D MOV A, H STAX D DCX D MOV A, L STAX D PUSH B
                                                                                                                                                                 ;BACKUP DE AND SAVE
;VALUE OF LINE # THERE
       00EB
00EC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A BACK-ARROW MEANS GENERATE A (CR) WITHOUT (LF)
                           18
       00EC
00EC
00EE
                            70
12
05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A (CRLF) IS GENERATED AFTER THE ENTIRE LIST HAS BEEN
PRINTED OR IF THE LIST IS A NULL LIST. HOWEVER IF THE LIST
ENDED WITH A COMMA, NO (CRLF) IS GENERATED.
                                                                                                  PUSH B
PUSH D
MOV A, C
SUB E
PUSH PSW
CALL FNDLN
PUSH D
JNZ ST4
PUSH D
CALL FNDNXT
                                                                                                                                                                 #BC#DE->BEGIN# END
      00EF C5
00F0 D5
00F1 79
00F2 93
00F3 F5
00F4 CD3805
00F7 D5
00F8 C20B01
00FB D5
                                                                                                                                                                                                                                                                                                                                                                                            016F CD7700
0172 CDC204
0175 CD3805
0178 DABA00
017B CDD205
017E CD8406
0181 CD4005
0184 C37801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CALL TSTNUM
CALL ENDCHK
CALL FNDLN
JC RSTART
CALL PRILN
CALL CHKIO
CALL FNDLP
JMP LS1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FIEST IF THERE IS A #
FINO ** WE GET A 0
FINO THIS OR NEXT LINE
C:PASSED TXTUNF
PRINT THE LINE
STOP IF HIT CONTROL—C
FINO NEXT LINE
AND LOOP BACK
                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; A=# OF BYTES IN LINE
; FIND THIS LINE IN SAVE
; AREA DE->SAVE AREA
; NZ:NOT FOUND, INSERT
; Z:FOUND, DELETE IT
; FIND NEXT LINE
       00FC CD5405
                                                                                                                                                                DE->NEXT LINE
DE->NEXT LINE
; BC->LINE TO BE DELETED
; HL->UNFILLED SAVE RREA
; MOVE UP TO DELETE
; TXTUNF->UNFILLED AREA
   00FF C1
0100 2A1510
0100 2A1510
0100 00F505
0106 00
0107 09
0108 221510
0108 221510
0108 221510
0109 E5
0110 E5
0111 FE02
0112 CABHO0
0116 85
0117 0F
0118 1E00
0118 67
0118 67
0118 67
                                                                                                POP B
HILD TXTUNF
CALL MYUP
MOV H.B
MOV L.C
SHLD TXTUNF
POP B
HILD TXTUNF
POP PSW
POSH H
CPI 3
JZ RSTART
ADD L.A
MYI A.0
MOV H.A
LXI D. TXTEI
RST 4
                                                                                                                                                                                                                                                                                                                                                                                           0187 0E06 0189 CF 0188 38 0188 0F 0189 38 0180 CDE00 018F C25701 0192 CF 0193 0P 0194 0F 0195 CDE00 0F 0195 CDE00 0F 0196 CDE00 0F 0197 CDE000 0F 0197 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;C = # OF SPACES
;IF NULL LIST & ";"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GIVE CR-LF AND
CONTINUE SAME LINE
FIF NULL LIST (CR)
                                                                                                                                                               JUPDATE
JET READY TO INSERT
JEUT FIRST CHECK IF
JTHE LENGTH OF NEW LINE
JES 3 (LINE # AND CR)
JTHEN DO NOT INSERT
JMUST CLERR THE STACK
JCOMPUTE NEW TXTUNF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;ALSO GIVE CR-LF AND
;GO TO NEXT LINE
;ELSE IS IT FORMAT?
                                                                                                                  RSTART (MUST CLEAR THE STACK
L (COMPUTE NEW TXTUNF
LA
A, A
H
H
H
H
CHECK TO SEE IF THERE
TS ENOUGH SPACE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; YES, EVALUATE EXPR.
; AND SAVE IT IN C
; LOOK FOR MORE TO PRINT
; OR IS IT A STRING?
; IF NOT, MUST BE EXPR.
; IF ",", GO FIND NEXT
   9116 FF 9120 D2F304 0123 221510 0126 D1 0127 CDEE05 012A D1 0128 E1 012C CDE505 012F C3D600
                                                                                                RST 4
JNC QSORRY
SHLD TXTUNF
POP D
CALL MYDOWN
POP D
POP H
CALL MYUP
JMP ST3
                                                                                                                                                              ; IS ENOUGH SPACE
; SORRY, NO ROOM FOR IT
; OK, UPDATE TXTUNF
; DE->OLD UNFILLED AREA
                                                                                                                                                              ; DE->BEGIN, HL->END
                                                                                                                                                                                                                                                                                                                                                                                                                                                           PR6:
                                                                                                                                                               ; MOVE NEW LINE TO SAVE ; AREA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EVALUATE THE EXPR
                                                                                                                                                                                                                                                                                                                                                                                            0188 C1
018C C3A901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          POP
JMP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B
PR3
                                                                        WHAT FOLLOWS IS THE CODE TO EXECUTE DIRECT AND STATEMENT COMMANDS. CONTROL IS TRANSFERED TO THESE POINTS VIA THE COMMAND TABLE LOOKUP CODE OF "DIRECT" AND "EXEC" IN LAST SECTION. AFTER THE COMMAND IS EXECUTED, CONTROL IS TRANSFERED TO OTHER SECTIONS AS FOLLOWS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MORE TO PRINT?
                                                                                                                                                                                                                                                                                                                                                                                                                                                         *** GOSUB *** & RETURN ***
                                                                                                                                                                                                                                                                                                                                                                                                                                                         'GOSUB EXPR; 'OR 'GOSUB EXPR (CR)' IS LIKE THE 'GOTO' COMMAND, EXCEPT THAT THE CURRENT TEXT POINTER, STACK POINTER ETC. ARE SAVE SO THAT EXECUTION CAN BE CONTINUED AFTER THE SUBGROUTINE 'RETURN'. IN ORDER THAT 'GOSUB' CAN BE NESTED (AND EVEN RECURSIVE), THE SAVE AREA MUST BE STACKED. THE STACKED THE STACK POINTER IS SAVED IN 'STKGOS' IS SAVED IN THE STACK. IF WE ARE IN THE MAIN ROUTINE, 'STKGOS' IS ZERO (THIS WAS DONE BY THE "MAIN" SECTION OF THE CODE), BUT WE STILL SAVE IT AS A FLAG FOR NO FURTHER 'RETURN'S.
                                                                        FOR 'LIST', 'NEM', AND 'STOP': GO BACK TO 'RSTART'
FOR 'RUN': GO EXECUTE THE FIRST STORED LINE IF ANY; ELSE
GO BACK TO 'RSTART'.
FOR 'GOTO' AND 'GOSUB': GO EXECUTE THE TARGET LINE.
FOR 'RETURN' AND 'NEXT': GO BACK TO SAYED RETURN LINE.
FOR ALL OTHERS: IF CURRNIT - > 0. GO TO 'RSTART', ELSE
GO EXECUTE NEXT COMMAND: (THIS IS DONE IN 'FINISH'.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                           'RETURN(CR)' UNDOS EVERYTHING THAT 'GOSUB' DID, AND THUS RETURN THE EXCUTION TO THE COMMAND AFTER THE MOST RECENT 'GOSUB'. IF 'STKGOS' IS ZERO, IT INDICATES THAT WE NEVER HAD A 'GOSUB' AND IS THUS AN ERROR.
                                                                         *** NEW *** STOP *** RUN (& FRIENDS) *** & GOTO ***
                                                                          'NEW(CR)' SETS 'TXTUNF' TO POINT TO 'TXTBGN'
                                                                         'STOP(CR)' GOES BACK TO 'RSTART'
                                                                                                                                                                                                                                                                                                                                                                                                                                                GOSUB: CALL PUSHA
RST 3
PUSH D
CALL FNDLN
JNZ AHOW
LHLD CURRNT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SAVE THE CURRENT "FOR"
PARAMETERS
AND TEXT POINTER
FIND THE TARGET LINE
NOT THERE SAY "HOU?"
FOUND IT, SAVE OLD
CURRNT OLD STKGOS
                                                                                                                                                                                                                                                                                                                                                                                  01BF CD1906
01C2 DF
01C3 D5
01C4 CD3805
01C7 C2A000
01CA 2A0110
                                                                        'RUN(CR)' FINDS THE FIRST STORED LINE, STORE ITS ADDRESS (IN COURNT'), AND STRRET EXECUTE IT. NOTE THAT ONLY THOSE COMMINDS IN TAB2 ARE LEGAL FOR STORED PROGRAM.
                                                                         THERE ARE 3 MORE ENTRIES IN 'RUN':
'RUNNXL' FINDS NEXT LINE, STORES ITS ADDR. AND EXECUTES IT.
'RUNS'L' STORES THE ADDRESS OF THIS LINE AND EXECUTES IT.
'RUNSML' CONTINUES THE EXECUTION ON SAME LINE.
                                                                                                                                                                                                                                                                                                                                                                                    01CD E5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PUSH H
LHLD STKGOS
                                                                                                                                                                                                                                                                                                                                                                                    01CE 2A0310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PUSH H
LXI H, 0
SHLD LOPVAR
DAD SP
SHLD STKGOS
JMP RUNTSL
                                                                                                                                                                                                                                                                                                                                                                                    01D1 E5
                                                                                                                                                                                                                                                                                                                                                                                    01D2 210000
01D5 220910
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AND LOAD NEW ONES
                                                                      'GOTO EXPR(CR)' EVALUATES THE EXPRESSION, FIND THE TARGET LINE, AND JUMP TO 'RUNTSL' TO DO IT.
                                                                                                                                                                                                                                                                                                                                                                                    01D8 39
                                                                                                                                                                                                                                                                                                                                                                                    01D9 220310
01DC C35001
                                                                                              0132 CDC204
0135 211710
0138 221510
                                                                NEW:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                THEN RUN THAT LINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                 RETURN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CALL ENDCHK
LHLD STKGOS
MOV A, H
ORA L
JZ QWHAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                THERE MUST BE A CR
OLD STACK POINTER
MEANS NOT EXIST
                                                                                                                                                                                                                                                                                                                                                                                   SIDE CDC204
                                                                                                                                                                                                                                                                                                                                                                                    01E2 2A0310
01E5 7C
  013B CDC204
013E C3BA00
                                                               STOP:
                                                                                             CALL ENDCHK :*** STOP(CR) ***
JMP RSTART
                                                                                                                                                                                                                                                                                                                                                                                   01E3 7C
01E6 B5
01E7 CAC604
01EA F9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JZ
SPHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ;50; WE SAY: "WHA;ELSE; RESTORE IT
 0141 CDC204
0144 111710
                                                               RUN:
                                                                                             CALL ENDOHK
                                                                                                                                                            ; *** RUN(CR)
                                                                                             LXI D. TXTBGN : FIRST SAVED LINE
                                                                                                                                                                                                                                                                                                                                                                                  01EA F9
01EB E1
01EC 220310
01EF E1
01F0 220110
01F3 D1
01F4 CDFD05
01F7 F7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               POP H
SHLD STKGOS
POP H
SHLD CURRNT
POP D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JAND THE OLD "STKGOS"
                                                               RUNNXL:
0147 210000
014A CD4005
014D DABA00
                                                                                            LXI H,0
CALL FNDLP
JC RSTART
                                                                                                                                                   ;*** RUNNXL ***
;FIND WHATEVER LINE (
;C:PASSED TXTUNF, QU:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;AND THE OLD 'CURRNT'
;OLD TEXT POINTER
;OLD "FOR" PARAMETERS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CALL POPA
RST 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AND WE ARE BACK HOME
                                                               RUNTSL
0150 EB
0151 220110
0154 EB
                                                                                             XCHG
                                                                                                                                                   ;*** RUNTSL ***
;SET 'CURRNT'->LINE #
                                                                                             SHLD CURRNT
XCHG
INX D
INX D
                                                                                                                                                          BUMP PASS LINE #
```

REM \*\*\* IF \*\*\* INPUT \*\*\* & LET (& DEFLT) \*\*\*

\*\*\* FOR \*\*\* & NEXT \*\*\*

```
'REM' CAN BE FOLLOWED BY ANYTHING AND IS IGNORED BY TBI.
IBI TREATS IT LIKE AN 'IF' WITH A FALSE CONDITION.
                                                               **FOR HAS TWO FORMS:

**FOR MR=EXP1 TO EXP2 STEP EXP3** AND **FOR VAR=EXP1 TO EXP2**

THE SECOND FORM MEANS THE SAME THING AS THE FIRST FORM MITH EXP3=1. (1.E., WITH A STEP OF **1.)

TBI WILL FIND THE VARIABLE VAR. AND SET ITS VALUE TO THE CURRENT VALUE OF EXP1. IT ALSO EVALUATES EXP2 AND EXP3 AND SAVE ALL THESE TOGETHER WITH THE TEXT POINTER ETC. IN THE **FOR** SAVE AREA. WHICH CONSISTS OF **LOPVAR** /*LOPINC*, **LOPINC*, **ALDELMY**. **LOPINC*, **ALDELMY**. **LOPINC*, **ALDELMY**. **ALDELMY**. **ALDELMY**. **LOPINC*, **ALDELMY**. **LOPINC*, **LOPINC*, **ALDELMY**. **ALDELMY**. **LOPINC*, **LOPINC
                                                                                                                                                                                                                                                                                                                                                                                                                'IF' IS FOLLOWED BY AN EXPR. AS A CONDITION AND ONE OR MORE COMMANDS (INCLUDING OTHER 'IF'S) SEPERATED BY SEMI-COLONS. NOTE THAT THE MORD 'THEN' IS NOT USED. THE EVALUATES THE EXPR. IF IT IS NON-ZERO. EXECUTION CONTINUES. IF THE EXPR. IS ZERO. THE COMMANDS THAT FOLLOWS ARE IGNORED AND EXECUTION CONTINUES AT THE NEXT LINE.
                                                                                                                                                                                                                                                                                                                                                                                                                'INPUT' COMMAND IS LIKE THE 'PRINT' COMMAND, AND IS FOLLOWED
BY A LIST OF ITEMS. IF THE ITEM IS A STRING IN SINGLE OR
DOUBLE GUOTES, OR IS A BACK-ARROW, IT HAS THE SAME EFFECT AS
IN 'PRINT'. IF AN ITEM IS A VARIABLE, THIS VARIABLE NAME IS
PRINTED OUT FOLLOWED BY A COLON. THEN TBI WAITS FOR AN
EXPR. TO BE TYPED IN. THE VARIABLE IS THEN SET TO THE
VALUE OF THIS EXPR. IF THE VARIABLE IS PROCEDED BY A STRING
                                                               'NEXT VAR' SERVES AS THE LOGICAL (NOT NECESSARILLY PHYSICAL) END OF THE 'FOR' LOOP. THE CONTROL VARIABLE VAR. IS CHECKED WITH THE 'LOPVAR'. IF THEY ARE NOT THE SAME. TEI DIGS IN THE STACK TO FIND THE RIGHT ONE AND PURGES ALL THOSE THAT DID NOT MATCH. EITHER MAY. TEI THEN ADDS THE 'STEP' TO THAT VARIABLE AND CHECK THE RESULT WITH THE LIMIT. IF IT IS WITHIN THE LIMIT, CONTROL LOOPS BACK TO THE COMMAND FOLLOWING THE 'FOR'. IF OUTSIDE THE LIMIT, THE SAVE ARER IS PURGED AND EXECUTION CONTINUES.
                                                                                                                                                                                                                                                                                                                                                                                                                  (AGAIN IN SINGLE OR DOUBLE QUOTES), THE STRING WILL BE PRINTED FOLLOWED BY A COLON. TBI THEN WAITS FOR INPUT EXPR. AND SET THE YARRIBLE TO THE VALUE OF THE EXPR.
                                                                                                                                                                                                                                                                                                                                                                                                                  IF THE INPUT EXPR. IS INVALID, TBI WILL PRINT "WHAT?", "HOW?" OR "SORRY" AND REPRINT THE PROMPT AND REDO THE INPUT. THE EXECUTION MILL NOT TERMINATE UNLESS YOU TYPE CONTROL-C. THIS IS MANDLED IN 'INPERR'.
01F8 CD1906
01FB CD4004
01FE 28
01FF 220910
0202 211307
0205 C31307
0209 220010
0200 220010
0200 211907
020F C31907
0212 C11907
0212 C31902
0213 C31902
0214 C31902
0215 C31902
0216 C31902
0217 C31902
0218 C31902
0219 C319
0219 C319
0219 C319
0219 C319
0219 C319
0219 C319 C319
0219 
                                                                                                                                                                                                                                                                                                                                                                                                                  'LET' IS FOLLOWED BY A LIST OF ITEMS SEPERATED BY COMMAS. EACH ITEM CONSISTS OF A VARIABLE. AN EQUAL SIGN, AND AN EXPRISE EVALUATES THE EXPR. AND SET THE VARIBLE TO THAT VALUE. THE WILL ALSO HANDLE 'LET' COMMAND WITHOUT THE WORD 'LLET'. THIS IS DONE BY 'DEFLIT'.
                                                                                  CALL PUSHA
CALL SETVAL
DCX H
SHLD LOPVAR
LXI H.TAB5-1
JMP EXEC
RST 3
                                                                                                                                         SAVE THE OLD SAVE AREA
SET THE CONTROL WAR
HL IS ITS ADDRESS
SAWE THAT
USE (EXEC' TO LOOK
FOR THE WORD (TO'
EVALUATE THE LIMIT
SAWE THAT
USE (EXEC' TO LOOK
                                                        FOR
                                                                                    LXI
JMP
RST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; *** REM ***
                                                                                                                                                                                                                                                                                                                                                  02B0 210000
02B3 3E
                                                                                                                                                                                                                                                                                                                                                                                                           REM:
                                                                                                                                                                                                                                                                                                                                                                                                                                      LXI H, 0H
                                                       FR1
                                                                                    RST 3 ; EVALUATE THE LIMIT
SHLD LOPLMT ; SAVE THAT
LXI H.TAB6-1 ; USE 'EXEC' TO LOOK
JMP EXEC ; FOR THE WORD 'STEP
RST 3 ; FOUND IT, GET STEP
                                                                                                                                                                                                                                                                                                                                                 0284 DF
0285 7C
0286 B5
0287 C25701
028A CD5605
02BD D25001
02C0 C3BA00
                                                                                                                                                                                                                                                                                                                                                                                                            IFF
                                                                                                                                                                                                                                                                                                                                                                                                                                       RST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ;*** IF ***
;IS THE EXPR. =0?
                                                                                                                                                                                                                                                                                                                                                                                                                                      RST 3
MOV A, H
ORA L
JNZ RUNSML
CALL FNDSKP
JNC RUNTSL
JMP RSTART
                                                       FR2
                                                                                    JMP
LXI
SHLD
                                                                                                        FR4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; NO; CONTINUE
; YES; SKIP REST OF LINE
                                                                                                                                           ; NOT FOUND, SET TO 1
; SAVE THAT TOO
; SAVE CURRENT LINE #
                                                                                    LXI H,1H
SHLD LOPINC
LHLD CURRNT
SHLD LOPLN
                                                                                     XCHG
                                                                                                                                            AND TEXT POINTER
                                                                                                                                                                                                                                                                                                                                                                                                           INPERR
                                                                                   ACAG
SHLD LOPPT
LXI B,0AH
LHLD LOPVAR
XCHG
                                                                                                                                                                                                                                                                                                                                                  0203 2A0710
                                                                                                                                                                                                                                                                                                                                                                                                                                      LHLD STKINP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; *** INPERR ***
                                                                                                                                            DIG INTO STACK TO FIND (LOPVAR)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESTORE OLD SP
                                                                                                                                                                                                                                                                                                                                                   0206 F9
0207 E1
                                                                                                                                                                                                                                                                                                                                                                                                                                       SPHL
                                                                                                                                                                                                                                                                                                                                                                                                                                        POP H
SHLD CURRNT
 0220 EB
                                                                                                                                                                                                                                                                                                                                                   0208 220110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;AND OLD TEXT POINTER ;REDO INPUT
                                                                                                                                                                                                                                                                                                                                                   02CB D1
                                                                                                                                                                                                                                                                                                                                                                                                                                                      D
D
                                                                                                       H, B
L, B
SP
3EH
022D 60
022E 68
022F 39
0230 3E
                                                                                    MOV
                                                                                                                                                                                                                                                                                                                                                   0200 D1
                                                                                    MOV
DAD
DB
                                                                                                                                            ;HL=0 NOW
;HERE IS THE STACK
                                                                                                                                                                                                                                                                                                                                                                                                            INPUT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; *** INPUT ***
                                                                                                                                                                                                                                                                                                                                                02CD D5
02CE CD6C05
02D1 C3DB02
02D4 FF
02D5 DA1503
02D8 C3EB02
02DB D5
02DC FF
02DC DAC604
02FB 18
                                                                                                                                                                                                                                                                                                                                                                                                                                       PUSH D
CALL QTSTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SAVE IN CASE OF ERROR
S IS NEXT ITEM A STRING?
                                                                                                        B
A, M
H
                                                       FR7:
                                                                                    DAD
                                                                                                                                             FEACH LEVEL IS 10 DEEP GET THAT OLD *LOPVAR*
                                                                                     MOV
                                                                                                                                                                                                                                                                                                                                                                                                                                        JMP IP2
RST 7
                                                                                    INX
ORA
JZ
MOV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  YES, BUT FOLLOWED BY A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; yes, but followed by F
; yartable? NO.
; yes. INPUT VARIABLE
; save FOR 'PRTSTG'
; MUST BE VARIABLE NOW
; "WHAT?" IT IS NOT?
; get ready FOR 'PRTSTG'
 0234 B6
0235 CA5202
                                                                                                                                                                                                                                                                                                                                                                                                                                        JC
                                                                                                                                                                                                                                                                                                                                                                                                                                                          IP4
IP3
                                                                                                                                                                                                                                                                                                                                                                                                                                       JC II
JMP II
PUSH D
RST 7
                                                                                                                                           ; 0 SAYS NO MORE IN IT
                                                                                                        A M
H
D
FR7
 0238 7E
0239 2B
                                                                                                                                                                                                                                                                                                                                                                                                           IP2
                                                                                    DCX
CMP
JNZ
023A BA
023B C23102
023E 7E
022E 7E
022F BB
0240 C22102
0240 C22102
0242 E2
0244 210000
0247 29
0248 44
0249 40
0240 19000
0240 19000
0240 C0EE05
0251 F9
0252 2A1110
0255 EB
0255 F7
                                                                                                                                           ; SAME AS THIS ONE?
                                                                                                                                                                                                                                                                                                                                                                                                                                                           QUHAT
 0238 BB
                                                                                                                                                                                                                                                                                                                                                  02E0 1A
02E1 4F
02E2 97
02E3 12
                                                                                                                                                                                                                                                                                                                                                                                                                                      LDAX D
MOV C.A
SUB A
STAX D
                                                                                                       A.M
E
FR7
                                                                                                                                           THE OTHER HALF?
                                                                                    MOV
                                                                                     CMP
JNZ
                                                                                                                                            ; YES, FOUND ONE
                                                                                     XCHG
                                                                                                                                                                                                                                                                                                                                                  02E4 D1
                                                                                                                                                                                                                                                                                                                                                                                                                                      POP D
CALL PRISTG ; PRINT STRING AS PROMPT
                                                                                                       H, ØH
SP
B, H
C, L
H, ØAH
                                                                                    LXI
DAD
                                                                                                                                                                                                                                                                                                                                                  02E5 CD6005
                                                                                                                                            FIRY TO MOVE SP
                                                                                     MOV
MOV
                                                                                                                                                                                                                                                                                                                                                                                                                                    MOV A,C
DCX D
STAX D
PUSH D
                                                                                                                                                                                                                                                                                                                                               02E8 79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FRESTORE TEXT
                                                                                                                                                                                                                                                                                                                                                02E9 1B
                                                                                      LXI
                                                                                                                                                                                                                                                                                                                                               02EA 12
02EB D5
02EC EB
02ED 2A0110
02F0 E5
                                                                                    DAD D
CALL MYDOWN
SPHL
LHLD LOPPT
                                                                                                                                                                                                                                                                                                                                                                                                        IP3:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SAVE TEXT POINTER
                                                                                                                                           ;AND PURGE 10 WORDS
;IN THE STACK
;JOB DONE, RESTORE DE
                                                                                                                                                                                                                                                                                                                                                                                                                                  PUSH D
XCHG
LHLD CURRNT
PUSH H
LXI H, IP1
SHLD CURRNT
LXI H, ØH
DAD SP
SHLD STKINP
PUSH D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           # ALSO SAVE 10URRNT
                                                       FR8
                                                                                      XCHG
                                                                                                                                                                                                                                                                                                                                               02F0 E5
02F1 21CD02
02F4 220110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A NEGATIVE NUMBER
                                                                                                                                            ; AND CONTINUE
                                                                                     RST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; AS A FLAG
; SAVE SP TOO
9256 F7
9257 FF
9258 DAG694
9258 226510
9258 D5
9259 E8
9269 248910
9261 7C
9264 B5
9265 CAC764
9265 CAC764
9265 CAT692
9266 D4
9266 CAT692
9266 D4
9266 D5
9266 D5
9276 S6
9277 23
9276 S6
9277 23
9276 S6
                                                                                                                                                                                                                                                                                                                                               02F4 220110
02F7 210000
02FA 39
02FB 220710
02FE D5
02FF 3E3A
0301 CDFA04
                                                                                    RST 7
JC QWHAT
SHLD VARNXT
PUSH D
                                                                                                                                             GET ADDRESS OF VAR.
NO VARIABLE, "WHAT?"
YES, SAVE IT
SAVE TEXT POINTER
                                                         NEXT
                                                                                                                                                                                                                                                                                                                                                                                                                                   NXØ
                                                                                      XCHG
                                                                                                                                            GET VAR. IN 1FOR
                                                                                      LHLD LOPVAR
                                                                                                                                                                                                                                                                                                                                               0304 119D13
0307 DF
0308 00
0309 00
                                                                                     MOV A, H
ORA L
JZ AWHAT
RST 4
                                                                                                                                             0 SAYS NEVER HAD ONE
                                                                                                                                             JU SHYS NEVER HHU OWN

JSO WE ASK: "WHAT?"

JELSE WE CHECK THEM

JOK. THEY AGREE

JNO. LET'S SEE

JPURGE CURRENT LOOP

JAND POP ONE LEVEL

JGO CHECK AGAIN

JCOME HERE WHEN AGREED
                                                                                                                                                                                                                                                                                                                                                                                                                                     NOP
                                                                                                                                                                                                                                                                                                                                               0309 00
030A 00
030B D1
030C EB
030D 73
030E 23
030F 72
                                                                                                                                                                                                                                                                                                                                                                                                                                     NOP
                                                                                                         NX3
                                                                                      JZ
                                                                                                                                                                                                                                                                                                                                                                                                                                    POP D
XCHG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FOR GET OLD HL
                                                                                      POP D
CALL POPA
LHLD VARNXT
                                                                                                                                                                                                                                                                                                                                                                                                                                    MOV M.E
INX H
MOV M.D
POP H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SAVE VALUE IN VAR
                                                                                      JMP
MOV
                                                                                                       NXØ
E, M
                                                       NY3
                                                                                                                                                                                                                                                                                                                                                0310 E1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GET OLD CURRNIT
                                                                                     INX H
MOV D,M
LHLD LOPINC
                                                                                                                                                                                                                                                                                                                                                                                                                                      SHLD CURRNT
                                                                                                                                                                                                                                                                                                                                                0311
                                                                                                                                                                                                                                                                                                                                                                   220110
                                                                                                                                             : DE=VALUE OF VAR
                                                                                                                                                                                                                                                                                                                                                                                                                                    POP D
POP PSW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AND OLD TEXT POINTER
                                                                                                                                                                                                                                                                                                                                                0314 D1
                                                                                                                                                                                                                                                                                                                                               0315 F1
0316 CF
0317 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PURGE JUNK IN STACK
IS NEXT CH. 1,12
                                                                                                                                                                                                                                                                                                                                                                                                         IP4
                                                                                      PUSH H
MOV A,H
                                                                                                                                                                                                                                                                                                                                                                                                                                     RST
                                                                                     MOV
                                                                                                                                                                                                                                                                                                                                                                                                                                     DB
DB
                                                                                                                                                                                                                                                                                                                                                0318 03
                                                                                                          D
Av D
D
NX4
  027E AA
027F 7A
                                                                                      XRA
                                                                                                                                                                                                                                                                                                                                               0319 C3CD02
031C F7
                                                                                                                                                                                                                                                                                                                                                                                                                                                      IP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FYES, MORE ITEMS.
                                                                                       MOV
DAD
                                                                                                                                                                                                                                                                                                                                                                                                         IP5:
                                                                                                                                                                                                                                                                                                                                                                                                                                    RST
   0280 19
0281 FA8802
                                                                                                                                              : ADD ONE STEE
                                                                                                                                                                                                                                                                                                                                               031D 1A
031E FE0D
0320 CA2C03
                                                                                                                                                                                                                                                                                                                                                                                                                                  LDAX D
CPI CR
JZ LT1
                                                                                                                                                                                                                                                                                                                                                                                                        DEFLT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     *** DEFLT ***
  0284 AC
0285 FAAA02
                                                                                       XRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JEMPTY LINE IS OK
JELSE IT IS 'LET'
                                                                                                          NX5
                                                                                       JM
  0288 EB
                                                         NX4:
                                                                                      XCHG
LHLD LOPVAR
 0289 2A0910
0280 73
                                                                                                                                            ⇒ PUT_IT_BACK
                                                                                                                                                                                                                                                                                                                                               0323 CDA004
                                                                                                                                                                                                                                                                                                                                                                                                       LET:
                                                                                                                                                                                                                                                                                                                                                                                                                                    CALL SETVAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /*** LET ***
/SET VALUE TO VAR
                                                                                       MOV
                                                                                                          M, E
                                                                                                                                                                                                                                                                                                                                              0323 CDH004
0326 CF
0327 2C
0328 03
0329 C32303
032C F7
 0280 73
0280 23
0285 72
0285 2A0010
0292 F1
0293 87
0294 F29802
0297 EB
                                                                                                                                                                                                                                                                                                                                                                                                                                     RST
                                                                                                                                                                                                                                                                                                                                                                                                                                                      1
                                                                                      INX H
MOV M.D
LHLD LOPLMT
                                                                                                                                                                                                                                                                                                                                                                                                                                    DB
DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                LT1-#-1
                                                                                                                                              #HL=LIMIT
                                                                                                                                                                                                                                                                                                                                                                                                                              JMP LET
RST 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             : ITEM BY ITEM
                                                                                                          PSW
                                                                                                                                               OLD HE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HINTH FINISH
                                                                                                                                                                                                                                                                                                                                                                                                       LT1:
                                                                                      ORA A
JP NX1
                                                                                                                                              STEP > 0
                                                                                                                                                                                                                                                                                                                                                                                                        XCHG
                                                                                                                                             COMPARE WITH LIMIT
RESTORE TEXT POINTER
OUTSIDE LIMIT
WITHIN LIMIT, GO
BACK TO THE SAVED
                                                                                      CALL CKHLDE
POP D
JC NX2
  0298 CD9804
                                                       NX1
                                                                                                                                                                                                                                                                                                                                                                                                          ,
: *** FXPR ***
  029B D1
  0290 DAAC02
                                                                                     LHLD LOPEN
SHLD CURRNT
LHLD LOPPT
                                                                                                                                                                                                                                                                                                                                                                                                                       PEMPR' EVALUATES ARITHMETICAL OR LOGICAL EXPRESSIONS.

(EXPR2): =(EXPR2)

(EXPR2): (EXPR2): (EXPR2)

WHERE (REL OP.) IS ONE OF THE OPERATORS IN TAB8 AND THE RESULT OF THESE OPERATIONS IS 1 IF TRUE AND 0 IF FALSE.

(EXPR2): (□←) OR. →(EXPR2) ←(OR. →(EXPR3))....)

WHERE () ARE OPTIONAL AND (....) ARE OPTIONAL REPEATS.

(EXPR2): □(EXPR2) ← OR. →(EXPR2)....)
  029F 2A0F10
02A2 220110
  02A5 2A1110
                                                                                  FOR D CALL POPA RST 6
  02A8 EB
02A9 F7
                                                                                                                                               POINTER
                     E1
                                                         NX5
                   D1
CDFDØ5
F7
                                                        NX2
                                                                                                                                             / PURGE THIS LOOP
```

	1	<funct:< th=""><th></th><th>03F7 D1 03F8 7C</th><th>XP35:</th><th>POP</th><th>D B<sub>c</sub> H</th><th>; AND TEXT POINTER ; HL MUST BE +</th></funct:<>		03F7 D1 03F8 7C	XP35:	POP	D B <sub>c</sub> H	; AND TEXT POINTER ; HL MUST BE +
		PR> IS RECURS!	.) VE SO THAT VARIABLE (@/ CAN HAVE AN <expr> NS CAN HAVE AN <expr> AS ARGUMENTS, AND</expr></expr>	03F8 7C 03F9 B7 03FA FA9F00		ORA JM	H. H QHOM	; ELSE IT IS OVERFLOW
	3 KEXI	PR4> CAN BE AN	CEXPR> IN PARANTHESE.	03FD 78 03FE B7		MOV ORA	A, B A	
	j j		XPR CALL EXPR2 THIS IS AT LOC. 18 PUSH HL SAVE <expr2> VALUE</expr2>	03FF FC8604 0402 C3A803		CM JMP	CHGSGN	CHANGE SIGN IF NEEDED
032D 212107 0330 C33B07		JMP EXEC	1 >LOOKUP REL. OP. > 60 DO IT	0405 210107	EXPR4		XP31 H. T884-1	;LOOK FOR MORE TERMS .;FIND FUNCTION IN TAB4
0333 CD5C03 0336 D8	XP11:	CALL XP18 RC	;REL.OP.">=" ;NO; RETURN HL=0	0408 C33B07 040B FF	XP40:	JMP RST	EXEC	AND GO DO IT
0337 6F 0338 C9	11540	MOV LA RET	; YES, RETURN HL=1	040C DA1404 040F 7E		JC MOV	XP41 B.M	NOR A VARIABLE VARIABLE
0339 CD5C03 033C C8 033D 6F	XP12:	CALL XP18 RZ	REL.OP."#" FALSE RETURN HL=0	0410 23 0411 66		INX	H H, M	; VALUE IN HL
0330 6F 033E C9 033F CD5C03	XP13:	MOV L/A RET CALL XP18	>TRUE, RETURN HL=1 >REL.OP.">"	0412 6F 0413 09		MOV RET	LA	
9342 C8 9343 D8	AFIS.	RZ RC	FALSE FALSE HL=0	0414 CD7700 0417 78	XP41:	MOV	TSTNUM A, B	;OR IS IT A NUMBER ;# OF DIGIT
344 6F 345 C9		MOV L/A RET	; TRUE, HL=1	0418 B7 0419 C0		ORA RNZ	A	3 <b>0</b> K
9346 CD5C03 9349 6F	XP14:	CALL XP18 MOV L.A	; REL. OP. "<=" ; SET HL=1	041A CF 041B 28	PARN:	DB	1	;NO DIGIT, MUST BE
134A C8 134B D8		RZ RC	REL. TRUE, RETURN	041C 05 041D DF		DB RST	XP43-\$-1	; " (EXPR) "
34C 6C 34D C9		MOV L/H RET	ELSE SET HL=0	041E CF 041F 29 0420 01		RST DB DB	1 ')' XP43-\$-1	
34E CD5C03 351 C0	XP15:	CALL XP18 RNZ	REL.OP."=" FALSE, RETRUN HL=0	0421 C9 0422 C3C604	XP42: XP43:	RET JMP	OMHAT	#ELSE SAY: "WHAT?"
352 6F 353 09		MOV L/A RET	ELSE SET HL=1	0425 CD1A04	RND:		PARN	; *** RND(EXPR) ***
:54 CD5C03 :57 D0 :58 6F	XP16:	CALL XP18 RNC	;REL.OP."<" ;FALSE; RETURN HL=0	0428 7C 0429 B7		MOY ORA	A.H A	EXPR MUST BE +
:55 6F :59 C9 :5A E1	XP17:	MOV L/A RET POP H	; ELSE SET HL=1	042A FA9F00 042D B5		JM ORA	QНОИ L	; AND NON-ZERO
58 C9 5C 79	MP18:	POP H RET MOV A.C	:NOT REL.OP. :RETURN HL= <expr2> :SUBROUTINE FOR ALL</expr2>	042E CA9F00 0431 D5		JZ PUSH	QНОИ D	SAVE BOTH
5D E1	AF 10.	POP H	REL. OP. 4S	0432 E5 0433 2A1310			RANPNT	GET MEMORY AS RANDOM
:5E C1 :5F E5 :60 C5		PUSH H PUSH B	REVERSE TOP OF STACK	0436 116907 0439 E7		RST	D, LSTROM 4	
61 4F 62 CD7103		MOV C.A CALL EXPR2	GET 2ND (EXPR2)	043A DA4004 043D 210000		JC LXI	RA1 HJSTART	; WRAP AROUND IF LAST
65 EB 66 E3		XCHG XTHL	YALUE IN DE NOW 1ST (EXPR2) IN HL	0440 5E 0441 23 <b>044</b> 2 <b>5</b> 6	RA1:	MOV INX MOV	E, M H D, M	
67 CD9804 6A D1		CALL CKHLDE POP D	COMPARE 1ST WITH 2ND RESTORE TEXT POINTER	0443 221310 0446 E1			RANPNT H	
6B 210000 6E 3E01		LMI HJØH MVI AJI	SET HLTO, AT1	0447 EB 0448 C5		XCHG PUSH		
370 C9	,	RET		0449 CD6604 044C C1			DIVIDE	; RND(N)=M0D(M, N)+1
71 OF 72 2D	EMPR2:	DB: -	; NEGATIVE SIGN?	014D D1 014E 23		POP INX		
73 06 74 210000		DB XP21-≇- LXI H.0H	YES, FAKE 10-1	044F C9		RET		
77 039803 78 OF	XP21.	JMP XP36 RST 1	TREAT LIKE SUBTRACT POSITIVE SIGN? IGNORE	0450 CD1A04 0453 1B	ABS:	CALL	PARN D	;*** ABS(EXPR) ***
7B 2B 7C 00	unaa	DB 4+4 DB XP22-#-		0454 CD8304 0457 13			CHKSGN	CHECK SIGN
70 CDA503 :80 CF	XP22: XP23:	CALL EMPR3 RST 1 DB '+'	#1ST (EXPR3): #ADD?	0458 C9 0459 2 <b>A1</b> 510	SIZE:	RET	TXTUNE	; *** SIZE ***
:81 18 :82 15 :83 <b>E</b> 5		DB '+' DB XP25-≇- PUSH H	1 ;YES, SAVE VALUE	045C D5 045D EB		PUSH MCHG		GET THE NUMBER OF FREE BYTES BETWEEN TXTUNFT
884 CDA503 887 EB	MP24	CALL EXPR3 XCHG	GET 2ND GEXPR3) 2ND IN DE	045E 216613 0461 CD7C04		LXI CALL	H, VARBGN SUBDE	AND YVARBONY
388 E3 389 70	,,,,	XTHL MOV A.H	:1ST IN HL :COMPARE SIGN	0464 D1 0465 C9			D	
38 <b>A AA</b> 38 <b>B</b> 7A		MRA D MOV A.D			; ;****	****	******	
380 <b>19</b> 38D <b>D1</b>		DAD D POP D	RESTORE TENT POINTER		; ***	DIVIDE	*** SUB	DE *** CHKSGN *** CHGSGN *** & CKHLDE ***
88E FA8003 891 AC		JM XP23 XRA H	;1ST 2ND SIGN DIFFER ;1ST 2ND SIGN EQUAL		DIV	IDE (	DIVIDES H	BY DE, RESULT IN BC, REMAINDER IN HL
392 F28003 395 C39F00		JP XP23 JMP QHOW	SO IS RESULT ELSE WE HAVE OVERFLOW		SUE	DE' SU	JBTRACTS (	DE FROM HL
98 CF 99 2D	XP25:	RST 1 DB 7-7	,SUBTRACT?				CHECKS SIGN	
:9A 86 :9B E5 :9C CDA <b>50</b> 3	XP26.	DB XP42-≸- PUSH H CALL EXPR3	; YES, SAVE 1ST (EXPR3) ; GET 2ND NPR3>		3			GN OF HL AND B UNCONDITIONALLY.
396 CDH303 39F CD8604 3 <b>A</b> 2 C38703		CALL CHGSGN	NEGATE AND ADD THEM		F ≐CKH	LDE1 0	HECKS SIG	3N OF HL AND DE. IF DIFFERENT, HL AND DE
3A5 CD0504	; EVPPR:	CALL EXPR4	GET 1ST <expr4></expr4>		: ARE	INTERO	HANGED.	IF SAME SIGN, NOT INTERCHANGED. EITHER EN COMPARED TO SET THE FLAGS.
A8 CF A9 2A	XP31:		MULTIPLY?		; DIVIDE			
AA 2D		DB XP34-\$-		0466 <b>E5</b> 0467 60		PUSH MOV	L/H	;*** DIVIDE *** ;DIVIDE H BY DE
AC CD0504		PUSH H CALL EXER4	:YES, SAVE 1ST -AND GET 2ND (EXPR4)	0468 2600 046H CD/104		MVI	DV1	
3AF 0600 3B1 CD8704 3B4 E?		MVI B.OH CALL CHREGN XTHL	.CLEAR B FOR SIGN . .CHECK SIGN .1ST IN HL	046D 41 046E 7D 046F E1			A, L H	;SAVE RESULT IN B ;(REMAINDER+L)/DE
B5 CD8304		CALL CHASGN MCHG	CHECK SIGN OF 1ST	0470 67 0471 0EFF	DV1:	MOV	H. A C. ØFFH	RESULT IN C
RS FR		STHL MOV A.H	/IS HL > 255 ?	9473 90 9474 CD7094	DV2:	INR	C SUBDE	DUMB ROUTINE DIVIDE BY SUBTRACT
389 E2			7.5 (16 ) 200 .	0477 D27304		JNC		AND COUNT
389 E2 38A 70 388 E7 360 CAC503		ORA A JZ MPC2	; NO	047A 19				
389 E2 38A 70 388 E7 363 CAC503 38F 7A		ORA A JZ MPC2 MOV A.D	; NO ; YES, HOW ABOUT DE	047A 19 047B C9	j	RET		
389 E2 38A 70 38E 87 45 CAC503 36F 7A 360 82 361 E8		ORA A JZ MPC2			; SUBDE:	MOV		; *** SUBDE *** ; SUBTRACT DE FROM
389 E3 386 70 388 E7 560 CAC503 387 78 300 B2 301 E8 302 C2A000 305 70 306 210000	XP32.	ORA A J2 MPC2 MOV A.D ORA D XCHG JNZ AHON MOV A.L LMI H.OH	PUT SMALLER IN HL	047B C9 047C 7D 047D 93 047E 6F		MOV SUB MOV	E .	
389 E2 38A 70 388 87 190 CAC503 38F 7A 308 B2 301 EB 302 G2A000 305 70 306 210000		ORA A J2 MPT2 MOV A.D ORA D XCHG JNZ AHON MOV A.L LMI H.OH ORA A J2 XP35	PUT SMALLER IN HL PHIS ON WILL OVERFLOW THIS IS DUNG	047B C9 047C 7D 047D 93 047E 6F 047F 7C 0480 9A		MOV SUB MOV I MOV I SBB I	E ' L, A A, H D	SUBTRACT DE FROM
89 E2 88 E7 85 E7 85 CAC503 85 7A 00 82 01 E8 02 024000 05 7D 06 210000 09 B7 04 CAF703 05 DAR000	XP32.	ORA A JZ MP02 MP04 A.D ORA D MCHG JNZ AHOW MOV S.L LXI H.OH ORA A JZ XP25 DAD U JC AHOW	VES, HOW ABOUT DE  PUT SMALLER IN HL -ALSO >, MILL OVERFLOW :THIS IS DUMB -CLEAR RESULT	047B C9 047C 7D 047D 93 047E 6F 047F 7C		MOV SUB MOV MOV	E ' L, A A, H D	SUBTRACT DE FROM
89 E2 8A 70 8C 4AC503 8F 7A 60 82 61 82 62 62 62 62 63 70 64 210000 65 70 66 210000 67 70 60 19 60 1		ORA A J2 MP12 MOV ALD ORA D J2 HHOW MOV SLL LMI H-0H ORA A J2 MP25 DHD U JC AHOW DOR A JC AHOW DOR A JC AHOW DOR A	PUT SMALLER IN HL ALSO S. WILL OVERFLOW THIS IS DUNB CLEAR RESULT ACC AND COUNT	0478 C9 047C 7D 047D 93 047E 6F 047F 7C 0480 9A 0481 67	; CHKSGN:	MOV SUB MOV : MOV : SBB : MOV : RET	E L,A A,H D H,A	;SUBTRACT DE FROM ;HL
189 E2 188 E7 188 E7 189 E7		ORA A J2 MP72 MOV A-D ORA D ORA D MOV SLL LNI H-OH ORA A J2 MP25 DAD D JC AHOW DCR A JJ MP25 JMP XP23 JMP XP23 JMP XP23	PUT SMALLER IN HL -ALSO >> WILL OVERFLON -THIS IS DUNE -CLEAR RESULT -ADD AND COUNT	047E C9 047C 7D 047D 93 047E 6F 047F 7C 0480 9A 0481 67 0482 C9	; CHKSGN:	MOV SUB MOV : MOV : SBB : MOV : RET	E L,A A,H D H,A R,H	; SUBTRACT DE FROM ; HL ; *** CHKSGN *** ; CHECK SIGN OF HL
ISP 62 ISP 47 ISP 77 IS	MP23:	08A A 12 MPC2 MOV A D 08A D 0 D 10A	; VES; HOW ABOUT DE  PUT SMALLER IN HL ALSO >: WILL OVERFLOW FITHS IS DUMB CLEAR RESULT ADD AND COUNT  OVERFLOW  FINISHED DIVIDE?	047B C9 047C 7D 047D 92 047E 6F 047F 7C 0480 9A 0481 67 0482 C9 0483 7C 0483 F7 0485 F0	; CHKSGN: ; CHGSGN:	MOV SUB MOV   MOV   SBB   MOV   RET MOV   ORA	E L. A A. H D H. A R. H R	; SUBTRACT DE FROM .HL ; **** CHKSGN **** CHECK SIGN OF HL .IF -, CHANGE SIGN
189 E2 188 E7 188 E7 198 E7	MP23:	08A A 12	; VES; HOW ABOUT DE  PUT SMALLER IN HL ALSO >: WILL OVERFLOW THIS IS DUNE CLEAR RESULT ADD AND COUNT  OVERFLOW  FINISHED DIVIDE?  YES: SAVE IST (EXPR4) AND GET 2ND ONE	047B C9 047C 7D 047D 92 047E 6F 047F 7C 0480 9A 0491 67 0482 C9 0483 7C 0484 B7 0485 F0 0486 7C 0487 F5	; CHKSGN; ; CHGSGN;	MOV I MOV I MOV I RET MOV I RRP	E L.A A.H D H.A H.A A.H P SW	; SUBTRACT DE FROM .HL ; *** CHKSGN *** CHECK SIGN OF HL .IF -, CHANGE SIGN .*** CHGSGN ***
189 E2 188 E7 188 E7 198 E7	MP23:	08A 8 12	; VES; HOW ABOUT DE  PUT SMALLER IN HL ALSO >: WILL OVERFLOW THIS IS DUNE CLEAR RESULT ADD AND COUNT  OVERFLOW  FINISHED DIVIDE?  L YES, SAVE 1ST <expr4> CHECK SIGN ONE CHECK SIGN OF SIGN CHECK SIGN OF SIGN CHECK SIGN OF SIGN</expr4>	047B C9 047C 7D 047D 93 047E 6F 047F 7C 0480 9A 0491 67 0482 C9 0483 7C 0484 B7 0485 F0 0486 7C 0487 F5 0489 67	; CHKSGN: ; CHGSGN:	MOV SUB MOV I MOV I RET MOV I ORA I RP MOV I PUSH I CMA MOV I MOV I	E L.A A.H D H.A H.A A.H P SW	; SUBTRACT DE FROM 
189 E2 188 E7 188 E7 198 E7	MP23:	08A 8 12	; VES, HOW ABOUT DE  -PUT SMALLER IN HL -ALSO >> WILL OVERFLOW :THIS IS DUME :CLEAR RESULT -ADO AND COUNT  :OVERFLOW  -FINISHED -DIVIDE?  L -YES, SAVE 1ST <empr4> -AND GET 2ND ONE -CLEAR B FOR SIGN</empr4>	047B C9 047C 7D 047D 92 047E 6F 047F 7C 0480 9A 0481 67 0482 C9 0482 7C 0483 F0 0485 F0 0486 7C 0488 2F 0488 2F 0488 7C 0488 7C	; CHKSGN: ; CHGSGN:	MOV SUB MOV SUB MOV SUB MOV	E	; SUBTRACT DE FROM .HL ; **** CHKSGN *** CHECK SIGN OF HL .IF -, CHRNGE SIGN .*** CHGSGN ***
188 EB 389 E1 389 E1 389 T0 389 E7 389 E7 360 CAC593 389 T7 360 CAC593 361 EB 672 CAPA99 205 74 206 B2 207 CAPA99 205 CAPA99 205 CAPA99 205 CAPA99 205 CAPA99 205 CAPA99 205 CAPA93 205 CAPA99 205 CAPA93 205 CAP	MP23:	08A 8 32 WPC2 MOV 8-0 NCHG NCHG NCHG NCHG NCHG NCHG NCHG NCHG	; VES, HOW ABOUT DE  -PUT SMALLER IN HL -PLSO >, WILL OVERFLOW -THIS IS DUNE	047B C9 047C 7D 047D 92 047E 6F 047F 7C 0489 9A 0491 67 0482 C9 0483 7C 0483 F0 0485 F0 0486 7C 0487 F5 0489 67 0488 2F 0488 2F 0488 2F 0480 6F	; CHKSGN: ; CHGSGN:	MOV SUB MOV I MOV	E LAH A H A A A A A A A A A A A A A A A A	; SUBTRACT DE FROM .HL ; **** CHKSGN **** CHECK SIGN OF HL .IF -, CHRNGE SIGN .*** CHGSGN ***
189 E2 188 E7 188 E7 16 (AC593 18F 78 18F	MP23:	08A 8 22 MOV 8-0 MOV 8	; VES, HOW ABOUT DE  -PUT SMALLER IN HL -PLSO >, WILL OVERFLOW -THIS IS DUNE	047B C9 047C 7D 047D 93 047E 6F 047F 7C 0489 9A 0491 67 0482 C9 0483 7C 0483 F0 0485 F0 0486 7C 0488 2F 0488 2F 0488 2F 0488 2F 0488 2F 0488 2F 0480 65	; CHKSGN: ; CHGSGN:	MOV SUB MOV 1 SEB 1 MOV 1 RET MOV 1 PUSH 1 CMA MOV 1 M	E LARD A H H H H A T A T A T A T A T A T A T A	; SUBTRACT DE FROM .HL ; *** CHKSGN *** CHECK SIGN OF HL .IF -, CHANGE SIGN .*** CHGSGN ***
389 E1 388 E7 388 E7 389 E7 50 (AC593 387 (A	MP23:	08A 8 22 MOV 8.0 MOV 8.0 MOV 9.0 MOV 9	JVES, HOW ABOUT DE  -PUT SMALLER IN HL -ALSO > WILL OVERFLOW -THIS IS DUNE -CLEAR RESULT -ADO AND COUNT  -OVERFLOW  -FINISHED -DIVIDE?	047B C9 047C 7D 047D 93 047E 6F 047F 7C 0489 9A 0491 67 0482 C9 0483 7C 0484 B7 0485 F0 0487 F5 0489 67 0488 2F 0488 2F 0488 2F 0488 2F 0480 23 048E F1 0486 F2 0480 23 048E F1 0486 F2 0480 72	, CHKSGN: CHGSGN:	MOV SUB MOV I MOV I RET MO	E LARD H A A A A A A A A A A A A A A A A A A	; SUBTRACT DE FROM .HL ; *** CHKSGN *** CHECK SIGN OF HL .IF -, CHANGE SIGN .*** CHGSGN ***
289 E2 1884 77 1895 E7 1896 CAC503 1897 76 160 CAC503 1897 76 160 CAC503 1897 76 160 CAC503 160 CAC	MP23:	086 A B C C C C C C C C C C C C C C C C C C	; YES, HOW ABOUT DE  ;PUT SMALLER IN HL ;PLSO > MILL OVERFLOW ;THIS IS DUMB ;CLEAR RESULT ;HOW AND COUNT  ;OVERFLOW  ;FINISHED ;DIVIDE?  ;YES, SAVE 1ST (EXPR4) ;AND GET 2ND ONE ;CLEAR B FOR SIGN ;CHECK SIGN OF 2ND ;CET 1ST IN HL ;CHECK SIGN OF 1ST	047E C9 047C 7D 047D 92 047E 6F 047F 7C 0480 9A 0481 67 0482 C9 0482 7C 0483 7C 0483 F0 0483 87 0485 F0 0488 2F 0488 2F 0488 2F 0488 2F 0480 66 0480 22 0486 F1 0486 F1	; CHKSGN: ; CHGSGN:	MOV SUB MOV I MOV	E L.A.H. A.H. A.	; SUBTRACT DE FROM  ; *** CHKSGN *** ; CHECK SIGN OF HL ; IF -, CHANGE SIGN  ; *** CHGSGN *** ; CHANGE SIGN OF HL

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0498 7C 0499 AA 049A F29E04 049D EB 049E E7	CKHLDE:  MOV A,H  XRA D	04FA D7 04FB 119D12 04FE CD8406 0501 CAFE06 0504 FE7F 0506 CA2305	GETLN: RST 2
049F C9	RET	0509 D7 050A FE0A 050C CAFE04	RST 2 , INPUT, ECHO BACK CPI 0AH ;IGNORE LF JZ GL1
	; ; *** SETVAL *** FIN *** ENDCHK *** & ERROR (& FRIENDS) ***	050F B7 0510 CAFE04	ORA A ;IGNORE NULL JZ GL1
	; ; "SETVAL" EXPECTS A VARIABLE, FOLLOWED BY AN EQUAL SIGN AND ; THEN AN EXPR. IT EVALUATES THE EXPR. AND SET THE VARIABLE	0513 FE7D 0515 CA3005 0518 12	CPI 70H , DELETE THE WHOLE LINE?  JZ GL4 , YES  STAX D , ELSE, SAVE INPUT
	TO THAT VALUE.  "FIN" CHECKS THE END OF A COMMAND. IF IT ENDED WITH "2"2	0519 13 051A FE0D 051C C8	INX D
	EXECUTION CONTINUES. IF IT ENDED WITH A CR. IT FINDS THE NEXT LINE AND CONTINUE FROM THERE.	051D 7B 051E FEDD 0520 C2FE04	MOV A.E , ELSE, MORE FREE ROOM? CPI BUFEND AND OFFH JN2 GLI , YES, GET NEXT INPUT
	; "ENDOHK" CHECKS IF A COMMAND IS ENDED WITH CR. THIS IS ; REQUIRED IN CERTAIN COMMANDS. (GOTO, RETURN, AND STOP ETC.)	0523 78 0524 FE9D 0526 CA3005	GLIS MOV A.E , DELETE LAST CHARACTER CPI BUFFER AND 0FFH JZ GL4 ; NO, REDO WHOLE LINE DCX D ;YES, BACKUP POINTER
	; "ERROR" PRINTS THE STRING POINTED BY DE (AND ENDS NITH CR). ; IT THEN PRINTS THE LINE POINTED BY CURRNT' NITH A "?" ; INSERTED AT WHERE THE OLD TEXT POINTER (SHOULD BE ON TOP	0529 18 052A 3E5C 052C D7 052D C3FE04	DCX 0 ; VES. BRCKUP POINTER MYI A.SCH ; AND ECHO A BACK-SLASH RST 2 JMP GL1 ; GO GET NEXT INPUT
	OF THE STACK) POINTS TO. EXECUTION OF THE IS STOPPED  AND THE IS RESTARTED. HOWEVER, IF 'CURRNY' -> ZERO  (INDICATING A DIRECT COMMAND), THE DIRECT COMMAND IS NOT  PRINTED. AND IF 'CURRNY' -> NEGATIVE # (INDICATING 'INPUT'	0530 CD0E00 0533 3E5E 0535 C3FA04	GL4: CALL CRLF REDO ENTIRE LINE MYI A. 05EH CR. LF AND UP-ARROW JMP GETLN
	COMMAND. THE IMPUT LINE IS NOT PRINTED AND EXECUTION IS NOT TERMINATED BUT CONTINUED AT 'IMPERR'	0528 7C 0539 B7	; FNDLN: MOV A,H ;*** FNDLN **** ORA A ;CHECK SIGN OF HL
	RELATED TO "ERROR" ARE THE FOLLOWING: *COMHAT' SHYES TEXT POINTER IN STACK AND GET MESSAGE "WHAT?" *CAMHAT' JUST GET MESSAGE "WHAT?" AND JUMP TO "ERROR".	053A FA9F00 053D 111710	JM OHOW ;IT CANNOT BE - LXI D.TXTBGN ;INIT TEXT POINTER ; ; ; ; ; **** FNDLNF ***
	) COSORRY AND CASORRY DO SAME KIND OF THING. , COHOMY AND CAHOMY IN THE ZERO PAGE SECTION ALSO DO THIS ;	0540 E5 0541 2A1510	FNDLP: ; **** FNDLNP ***  FL1: PUSH H ; SAYE LINE #  LHLD TXTUNF ; CHECK IF WE PASSED END
0480 FF 0481 DAC604	SETVAL ***  RST 7	0544 2B 0545 E7 0546 E1	DCX H RST 4 POP H GET LINE # BACK
04A4 E5 04A5 CF 04A6 3D	PUSH H	0547 D8 0548 1A 0549 95	RC ;C.NZ PASSED END LDAX D ;WE DID NOT, GET BYTE 1 SUB L, ;IS THIS THE LINE?
94A7 08 04A8 DF 04A9 44 04AA 4D	RST 2 ; EVALUATE EXPR. MOV B.H , VALUE IN BC NOW MOV C.L	054A 47 054B 13 054C 1A	MOV B.A ;COMPARE LOW ORDER INX D LOAX D ;GET BYTE 2
04AB E1 04AC 71 04AD 23	POP H GET ADDRESS MOV M.C SAVE VALUE INX H	054D 9C 054E DA5505 0551 1B 0552 80	SBB H # # # # # # # # # # # # # # # # # #
04AE 70 04AF 09 04B0 030604	MOV M.B RET SV1 JMP CWHAT :NO "=" SIGN	0553 C9	ORA B (17, OR IT IS NOT THERE RET (NC, 2) FOUND: NC, N2 NO ) (FOUND: (18, 18, 18, 18, 18, 18, 18, 18, 18, 18,
04B3 CF 04B4 3B	FIN: RST 1	0554 13 0555 13	INX D FIND NEXT LINE FL2: INX D FUND PASSED BYTE 1 & 2
04B5 04 04B6 F1 04B7 C35701 04BA CF	POP PSN ;";", PURGE RET ADDR. JMP RUNSML ;CONTINUE SAME LINE FI1: RST 1 ;NOT "," IS IT CR?	0556 1A 0557 FE0D	FNDSKP: LDAY D
04BB 0D 04BC 04 04BD F1	DB CR DB FI2-#-1 POP PSN ;YES, PURGE RET ADDR.	0559 025505 0550 13 055D 034005	JNZ FL2
04BE 034701 0401 09	JMP RUNNXL FRUN NEXT LINE FI2: RET FLSE RETURN TO CALLER		**************************************
0402 EF 0403 FE0D 0405 G8	ENDCHK: RST 5		; 'PRTSTG' PRINTS A STRING POINTED BY DE. IT STOPS PRINTING : AND RETURNS TO CALLER WHEN EITHER A CR IS PRINTED OR WHEN
0406 D5 0407 11AE00 040A 97	OWHAT: PUSH D : *** OWHAT *** RIMAT: LXI D.WHAT : *** EPPOR: SUB A :***  **** ERROR ***		THE NEXT BYTE IS THE SAME AS WHAT WAS IN A (GIVEN BY THE CALLER). OLD A IS STORED IN B, OLD B IS LOST.  2 OTSIG4 LOOKS FOR A BACK-ARROW, SINGLE QUOTE, OR DOUBLE
0408 0D6005 040E D1 040F 1A 04D0 F5 04D1 97	CALL PRISTG		OUOTE IF NOME OF THESE, RETURN TO CALLER IF BACK-ARROW, OUTPUT A CR HITHOUT A LE IF SINGLE OR DOUBLE QUOTE, PRINT THE STRING IN THE QUOTE AND DEMANDS A MATCHING UNQUOTE.  ARTER THE PRINTING THE NEXT 3 BYTES OF THE CALLER IS SKIPPED OVER (USUALLY A JUMP INSTRUCTION).
04D3 12 04D3 2A0110 04D6 E5	STAX D LHLD CURRNT / GET CURRENT LINE # PUSH H		, 'PRTNUM' PRINTS THE NUMBER IN HL. LEADING BLANKS ARE ADDED ; IF NEEDED TO PAD THE NUMBER OF SPACES TO THE NUMBER IN C.
04D7 7E 04D8 23 04D9 B6	MOV A.M , CHECK THE VALUE INX H ORA M		HOWEVER, IF THE NUMBER OF DIGITS IS LARGER THAN THE # IN C. ALL DIGITS ARE PRINTED ANYWAY, NEGATIVE SIGN IS ALSO PRINTED AND COUNTED IN, POSITIVE SIGN IS NOT.
04DA D1 04DB CABA00 04DE 7E 04DF B7	POP D  JZ RSTART ; IF ZERO, JUST RERSTART  MOV A,M , IF NEGATIVE,  ORA A		PRISTS:
04E0 FAC302 04E3 CDD205 04E6 1B	JM INPERR ,REDO INPUT CALL PRILM , ELSE PRINT THE LINE DCX D ,UPTO WHERE THE 0 IS	0560 47 0561 18 0562 13	MOV B.A ;*** PRISTG *** PS1: LDAX D ;GET A CHARACTER INX D ;BUMP POINTER
04E7 F1 04E8 12 04E9 3E3F	POP PSW ,RESTORE THE CHARACTER STAX D MVI B.3FH ,PRINT B "?"	0563 BS 0564 CS 0565 D7	CMP B JSAME AS OLD A? RZ JYES, RETURN RST 2 JELSE PRINT IT
04EB D7 04EC 97 04ED CD6005	RST 2 SUB A ; AND THE REST OF THE CALL PRTSTG	0566 FE0D 0568 C26105 0568 C9	CPI CR , MAS IT A CR? JNZ PS1 , NO, NEXT RET , VES, RETURN
04F0 C3BA00 04F3 D5	JMP RSTART OSORRY: PUSH D ;*** QSORRY ***	0560 OF 0560 22 056E 0F	OTSTG: RST 1
04F4 11B400 04F7 C3CA04	ASORRY: LXI D.SORRY:*** ASORRY *** JMP ERROR	056F 3E22 0571 CD6005 0574 FE0D	OTE: OTE : IT IS A " OTE: CALL PRISTG : PRINT UNTIL ANOTHER CPI CR : WAS LAST ONE A CR?
	; *** GETLN *** FNDLN (& FRIENDS) ***	0576 E1 0577 CA4701 057A 23	POP H : RETURN ADDRESS JZ RUNNKL : MAS CR. RUN NEXT LINE OTC: INX H : SKIP 3 BYTES ON RETURN
	; 'GETLN' READS A INPUT LINE INTO 'BUFFER'. IT FIRST PROMPT THE CHARACTER IN A (GIVEN BY THE CALLER). THEN IT FILLS THE	0578 22 0570 23 057D 89	INK H INK H PCHL :RETURN
	THE BUFFER AND ECHOS IT IGNORES LE'S AND NULLS, BUT STILL  ECHOS THEM BACK, RUB-DUT IS USED TO CAUSE IT TO DELETE  THE LAST CHARATER (IF THERE IS ONE), AND ALT-MOD IS USED TO  CAUSE IT TO DELETE THE WHOLE LINE AND START IT ALD OVER.  CR SIGNALS THE END OF A LINE, AND CAUSE (GETLN' TO RETURN.	057E CF 057F 27 0580 05 0581 3E27 0583 037105	OT3: RST 1
	; CR SIGNALS THE END OF HILLY. HAND CHOSE "GETLA" TO RETORN.  ; "FROLIN" FINDS A LINE WITH A GIVEN LINE # (IN HL) IN THE  ; TEXT SAVE AREA. DE IS USED AS THE TEXT POINTER. IF THE	0586 CF 0587 <b>5F</b> 0588 08	0T4: RST 1 / IS IT BACK-ARROW? DB 5FH DB 0T5-#-1
	; LINE IS FOUND, DE WILL POINT TO THE BEGINNING OF THAT LINE  ; (I.E., THE LOW BYTE OF THE LINE #), AND FLAGS ARE NO & Z.  ; IF THAT LINE IS NOT THEFE AND A LINE WITH A WIGHER LINE #	0589 3 <u>E</u> 8D 058B D7 058C D7	MVI A.08DH :/MES. OR WITHOUT LE PST 2 :/DO IT THICE TO GIVE PST 2 :/TTV_ENOUGH TIME
	; IS FOUND, DE POINTS TO THERE AND FLAGS ARE NC & NZ. IF ; WE REACHED THE END OF TEXT SAVE ARE AND CANNOT FIND THE ; LINE, FLAGS ARE C & NZ.	058D E1 058E C27A05 0591 C9	POP H RETURN ADDRESS JMP 072 0T5: RET ,NONE OF ABOVE
	; 'FNDLN' WILL INITIALIZE DE TO THE BEGINNING OF THE TEXT SAVE : AREA TO START THE SEARCH. SOME OTHER ENTRIES OF THIS : ROUTINE WILL NOT INITIALIZE DE AND DO THE SEARCH	0592 0600 0594 CD8204	PRINUM:  MVI B.0 ; *** PRINUM ***  CALL CHKSGN ; CHECK SIGN
	FINDLING MILLL START MITH DE AND SEARCH FOR THE LINE #. FENDMYT MILL BUMP DE BY 2. FIND A CR AND THEN START SEARCH. FENDSKP USE DE TO FIND A CR. AND THEN START SEARCH.	0597 F29D05 059A 062D 059C 0D	JP PN1 ;NO SIGN MYI B:/-/ ;B=SIGN DCR C ;/-/ TRKES SPACE
404 WITE		059D D5 059E 110A00	PN1: PUSH D

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;SAVE AS A FLAG
;C=SPACES
;SAVE SIGN & SPACE
                                                                                                                                                                                                                                                                                                                                                                'CHKIO' CHECKS THE INPUT. IF NO INPUT, IT WILL RETURN TO THE CALLER WITH THE Z FLAG SET. IF THERE IS INPUT, Z FLAG IS CLEARED AND THE INPUT BYTE IS IN A HOWERER, IF THE INPUT IS A CONTROL-O, THE 'OCSW' SWITCH IS COMPLIMENTED, AND Z FLAG IS RETURNED. IF A CONTROL-C IS READ. 'CHKIO' WILL RESTART TEI AND DO NOT RETURN TO THE CALLER.
                                                                           PUSH D
 05A2 0D
05A3 05
                                                                           DOR C
PUSH B
0584 D06604
0587 78
0588 B1405
0589 C4B405
0586 C5
0586 C5
0586 C5
0586 C5
0588 C3
0584 C1
0586 C2
0586 77
0586 77
0586 C3
058
                                                                          CALL DIVIDE
MOV A, B
ORA C
JZ PN3
                                                                                                                             DEVIDE HL BY 10
RESULT 0?
                                                                                                                           ;YES, WE GOT ALL
;NO, SAVE REMAINDER
;AND COUNT SPACE
;HL IS OLD BC '
;MOVE RESULT TO BC
                                                                          PUSH AF
                                                                                                                                                                                                                                                                                                                                                                                                                       OUTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     THIS IS AT LOC. 10 CHECK SOFTWARE SWITCH
                                                                                                                                                                                                                                                                                                                                                                                                                                                 LD AJOCSW
                                                                                          H, B
L, C
PN2
B
C
A, C
A PN5
A, 20H
A, B
10H
E, L
A, A
D, A
D, A
D, A
D, A
                                                                                                                                                                                                                                                                                                                                                                                               0CSW
A, 0CFH
0FBH
A, 27H
0FBH
                                                                                                                                                                                                                                                                                                        0642 320010
0645 3ECF
0647 D3FB,
0649 3E27
                                                                                                                                                                                                                                                                                                                                                         INIT
                                                                                                                                                                                                                                                                                                                                                                                  STA
MVI
                                                                                                                           ;AND DIVIDE BY 10
;WE GOT ALL DIGITS IN
;THE STACK
;LOOK AT SPACE COUNT
                                                                                                                                                                                                                                                                                                                                                                                  OUT
                                                                                                                                                                                                                                                                                                                                                                                  MVI
                                                                                                                                                                                                                                                                                                                                                                                  OUT
                                                                                                                                                                                                                                                                                                        064B D3EB
                                                                                                                                                                                                                                                                                                        064D 1619
                                                                                                                                                                                                                                                                                                                                                                                  MVT
                                                                                                                                                                                                                                                                                                                                                                                                  D. 19H
                                                                                                                                                                                                                                                                                                                                                          PATLOR
                                                                                                                                                                                                                                                                                                        064F CD0E00
0652 15
                                                                                                                                                                                                                                                                                                                                                                                  CALL CRLF
                                                                                                                                                                                                                                                                                                                                                                                  DOR
                                                                                                                                                                                                                                                                                                        0653 C24F06
0656 97
0657 11A306
065A CD6005
                                                                                                                                                                                                                                                                                                                                                                                  JNZ
                                                                                                                            ;MORE?
;PRINT SIGN
                                                                                                                                                                                                                                                                                                                                                                                                  PATLOR
                                                                                                                                                                                                                                                                                                                                                                                  SUB
                                                                                                                                                                                                                                                                                                                                                                                                  A
D. MSG1
                                                                                                                                                                                                                                                                                                                                                                                  CALL PRISTS
                                                                                                                                                                                                                                                                                                      065H CD6005
065D 210000
0660 221210
0662 211710
0666 221510
0669 C28A00
0660 C27106
                                                                                                                           ;LAST REMAINDER IN E
;CHECK DIGIT IN E
;10 IS FLAG FOR NO MORE
                                                                                                                                                                                                                                                                                                                                                                                CHLL PRISIG
LXI H. START
SHLD RANPNT
LXI H. TXTBGN
SHLD TXTUNF
JMP RSTART
JNZ 0C3
                                                                                                                                                                                                                                                                                                                                                                                                 RSTART
0C3
PSW
                                                                                                                             ; IF SO, RETURN
;ELSE COVERT TO ASCII
;AND PRINT THE DIGIT
;GO BACK FOR MORE
                                                                                                                                                                                                                                                                                                                                                                                                                                 JIT IS ON
JIT IS OF
JIT IS OFF
RESTORE AF AND RETURN
COME HERE TO DO OUTPUT
STATUS BIT
NOT READY. MAIT
PREADY. GET OLD A BACK
JAND SEND IT OUT
JAND SEND IT OUT
NO. FINISHED
                                                                                          30H
2
PN6
                                                                                                                                                                                                                                                                                                      066C C27106
066F F1
0670 C9
0671 DBFB
0673 E601
0675 CA7106
0678 F1
0679 D2FA
067B FE0D
067D C0
067E 2E0A
0680 D7
0681 3E0D
0683 C9
                                                                                                                                                                                                                                                                                                                                                        002
                                                                                                                                                                                                                                                                                                                                                                                 POP
RET
IN
ANI
JZ
POP
OUT
CPI
RNZ
                                                                      UMP PN6

LDAX D
MOV L/A
INX D
LDAX D
MOV H/A
INX D
MVI C.4H
CALL PRINUM
MVI A.20H
RST 2
SUB A
CALL
RTSTG
RET
                                                                                                                                                                                                                                                                                                                                                        003
                                                                                                                                                                                                                                                                                                                                                                                                  ØERH
0502 1A
0502 6F
0504 12
0505 1A
0506 67
0507 13
0508 0E04
0508 0E04
0508 0E04
0509 2220
0505 07
0560 97
0560 97
                                                                                                                                                                                                                                                                                                                                                                                                  1H
OC3
PSW
                                                                                                                            ;*** PRTLN ***
;LOW ORDER LINE #
                                                                                                                                                                                                                                                                                                                                                                                                  ØFAH
CR
                                                                                                                                                                                                                                                                                                                                                                                                  A, LF
                                                                                                                                                                                                                                                                                                                                                                                                                                  ;NU, FINISHED
;SEND LF
;THIS IS RECURSIVE
;GET CR BACK IN A
                                                                                                                                                                                                                                                                                                                                                                                  MVI
RST
                                                                                                                          PRINT 4 DIGIT LINE #
                                                                                                                                                                                                                                                                                                                                                                                                  2
ALCR
                                                                                                                                                                                                                                                                                                                                                                                MVI
RET
IN
NOP
                                                                                                                          FOLLOWED BY A BLANK
                                                                                                                                                                                                                                                                                                        0683 C9
0684 DBFB
                                                                                                                                                                                                                                                                                                                                                                                                                                 ;**** CHKIO ***
;STATUS BIT FLIPPED?
;MRSK STATUS BIT
;NOT READY. RETURN "2"
;READY. READ DATA
;MRSK BIT 7 OFF
;IS IT CONTROL—0?
;NO. MORE CHECKING
;CONTROL—0 FLIPS OCSW
;ON TO OFF, OFF TO ON
                                                                                                                                                                                                                                                                                                                                                        CHKIO:
                                                                                                                                                                                                                                                                                                                                                                                                  ØERH
                                                                                                                                                                                                                                                                                                      0696 00
0687 E602
0689 08
0680 08
0680 087
0680 027
0690 029006
0690 29006
0697 320010
0690 F602
0697 638406
0690 F602
0690 6690
0690 6690
0690 6690
0690 6690
                                                                                                                                                                                                                                                                                                        0686
                                                                                                                                                                                                                                                                                                                                                                                 ANI
RZ
IN
                                                                                                                                                                                                                                                                                                                                                                                                  2Н
                                                                                                                                                                                                                                                                                                                                                                                                 ØFAH
7FH
ØFH
CI1
OCSW
                                                                                                                                                                                                                                                                                                                                                                                 ANI
CPI
JNZ
                                                        *** MYUP *** MYDOWN *** POPA *** & PUSHA ***
                                                         'MYUP' MOVES A BLOCK UP FROM WHERE DE-> TO WHERE BC-> UNTIL
                                                                                                                                                                                                                                                                                                                                                                              LDA
CMA
STA
JMP
CPI
RNZ
JMP
DB
                                                                                                                                                                                                                                                                                                                                                                                                  OCSN
                                                                                                                                                                                                                                                                                                                                                                                                                                 GET ANOTHER INPUT
GIS IT CONTROL-C?
GNO, RETURN "NZ"
GYES, RESTART TBI
                                                        'MYDOWN' MOVES A BLOCK DOWN FROM WHERE DE-> TO WHERE HL-> UNTIL DE = BC
                                                                                                                                                                                                                                                                                                                                                                                                  CHKIO
                                                                                                                                                                                                                                                                                                                                                        CI1:
                                                                                                                                                                                                                                                                                                                      011:
03BA00
54494E59 MSG1:
20
                                                                                                                                                                                                                                                                                                                                                                                                 RSTART
                                                        'POPA' RESTORES THE 'FOR' LOOP VARIABLE SAVE AREA FROM THE STACK
                                                                                                                                                                                                                                                                                                     06A3 42415349
06AC 43
06AD 0D
                                                       'PUSHA' STACKS THE 'FOR' LOOP VARIABLE SAVE AREA INTO THE STACK
                                                                                                                                                                                                                                                                                                                                                                               DB
                                                                                                                                                                                                                                                                                                                                                                                            1BASIC
                                                                                                                                                                                                                                                                                                                                                                               DB CR
05E5 E7
05E6 C8
05E7 1A
05E8 02
05E9 13
                                                                                                                           ;*** MVUP ***
;DE = HL, RETURN
;GET ONE BYTE
                                                                                                                                                                                                                                                                                                                                                         RZ
LDAX D
STAX B
INX D
                                                                                                                                                                                                                                                                                                                                                              *** TABLES *** DIRECT *** & EXEC ***
                                                                                                                          ; MOVE IT ; INCREASE BOTH POINTERS
                                                                                                                                                                                                                                                                                                                                                              THIS SECTION OF THE CODE TESTS A STRING AGAINST A TABLE. WHEN A MATCH IS FOUND. CONTROL IS TRANSFERED TO THE SECTION
 05EA 03
05EB 03E505
                                                                                           MVUE
                                                                                                                          CUNTIL DONE
                                                                                                                                                                                                                                                                                                                                                              OF CODE ACCORDING TO THE TABLE.
05EE 78
05EF 92
05F0 C2F605
05F1 79
05F5 C8
05F6 18
05F7 2B
05F8 1A
05F9 77
05FA C3EE05
                                                                                          A.B
D
MD1
A.C
E
                                                                                                                           ;*** MVDOWN ***
;TEST IF DE = BC
;NO; GO MOVE
;MAYBE, OTHER BYTE?
                                                                                                                                                                                                                                                                                                                                                              AT 'EXEC', DE SHOULD POINT TO THE STRING AND HL SHOULD PO
TO THE TABLE-1. AT 'DIRECT', DE SHOULD POINT TO THE STRIF
HL WILL BE SET UP TO POINT TO TABL-1. WHICH IS THE TABLE (
ALL DIRECT AND STATEMENT COMMANDS.
                                                                          SUB
JNZ
MOV
SUB
                                                                         SOB E
RZ
DCX D
DCX H
LDAX D
MOV M.A
JMP MYDOWN
                                                                                                                                                                                                                                                                                                                                                              A \sim / in the string will terminate the test and the partifmatch will be considered as a natch. E.g., P./, PRI./, PRI./, PRI./, WILL ALL MATCH PRINT/
                                                                                                                          FES, RETURN
FESE MOVE A BYTE
BUT FIRST DECREASE
BOTH POINTERS AND
THEN DO IT
LOOP BACK
                                                  MD1
                                                                                                                                                                                                                                                                                                                                                             THE TABLE CONSISTS OF ANY NUMBER OF ITEMS. EACH ITEM IS A STRING OF CHARACTERS WITH BIT 7 SET TO 0 AND A JUMP ADDRESS STORED HI-LOW WITH BIT 7 OF THE HIGH BYTE SET TO 1.
                                                                          POP B
POP H
SHLD LOPVAR
                                                                                                                          ;BC = RETURN ADDR.
;RESTORE LOPYAR, BUT
;=0 MEANS NO MORE
                                                                          POP
POP
                                                  POPA
05FE E1
05FF 220910
0602 7C
0603 B5
0604 CH1706
0607 E1
0608 E1
0608 E1
0606 E1
0606 E1
0610 220910
0611 E1
0614 221110
0617 C5
0618 C9
                                                                                                                                                                                                                                                                                                                                                              END OF TABLE IS AN ITEM WITH A JUMP ADDRESS ONLY. IF STRING DOES NOT MATCH ANY OF THE OTHER ITEMS, IT WILL MATCH THIS NULL ITEM AS DEFAULT.
                                                                          SHLD LOPPHR
MOV A, H
ORA L
JZ PP1
POP H
SHLD LOPINC
POP H
SHLD LOPLMT
POP H
                                                                                                                           ; YEP, GO RETURN
; NOP, RESTORE OTHERS
                                                                                                                                                                                                                                                                                                                                                                                                                                DIRECT COMMANDS
                                                                                                                                                                                                                                                                                                                                                                                DB 'LIST'
DWA LIST
DB (0016FH SHR 8) +128
DB 0016FH AND 0FFH
                                                                                                                                                                                                                                                                                                      06AE 40495354
                                                                                                                                                                                                                                                                                                        0682 81
0683 6F
                                                                           POP H
SHLD LOPLN
                                                                          POP H
SHLD LOPPT
PUSH B
RET
                                                                                                                                                                                                                                                                                                       06B4 52554E
                                                                                                                                                                                                                                                                                                                                                                                                1RUN1
                                                                                                                                                                                                                                                                                                                                                                                 DNA RUN
                                                                                                                         ;BC = RETURN ADDR
                                                                                                                                                                                                                                                                                                        0687 81
0688 41
                                                                                                                                                                                                                                                                                                                                                                                                       00141H SHR 8) +128
00141H AND 0FFH
                                                                                                                                                                                                                                                                                                                                                                                DB
DB
 0619 21DE13
0610 CD8604
                                                                         LXI H,STKLMT ;*** PUSHA ***
CALL CHGSGN
                                                                                                                                                                                                                                                                                                                                                                               DB (NEW)
DMA NEW
DB (00132H SHR 8) +128
DB 00132H AND 0FFH
                                                                                                                                                                                                                                                                                                       06B9 4E4557
061F C1
0609 39
0621 D2F204
0617 70
0627 70
0628 57
0629 C451010
0627 E5
0639 C49610
0627 E5
0639 C40610
0627 E5
0639 C40610
0628 C5
0639 C40610
0628 C5
0639 C5
0639 C5
0639 C5
0639 C5
0639 C5
0649 C5
0649 C5
                                                                          CALL CHOSGN
POP B
DAD SP
JNC OSORRY
LHLD LOPYAR
MOV A: H
OVA
JZ PU1
LHLD LOPTP
PUSH H
LHLD LOPLN
PUSH H
LHLD LOPLN
PUSH H
LHLD LOPLN
PUSH H
LHLD LOPLN
PUSH B
RET
                                                                                                                             ; BC=RETURN ADDRESS
; IS STACK NEAR THE TOP?
; YES, SORRY FOR THAT.
; ELSE SAVE LOOP VAR. S
; BUT IF LOPVAR IS 0
; THAT WILL BE ALL
                                                                                                                                                                                                                                                                                                      06BC 81
06BD 32
                                                                                                                                                                                                                                                                                                                                                        TAB2
                                                                                                                                                                                                                                                                                                                                                                                                                             ; DIRECT/STATEMENT
                                                                                                                                                                                                                                                                                                      06BE 4E455854
                                                                                                                                                                                                                                                                                                                                                                                                 'NEXT'
                                                                                                                                                                                                                                                                                                                                                                                DB 'NEA'
DNA NEXT
DB (00257H SHR 8) +128
DB 00257H AND 0FFH
                                                                                                                                                                                                                                                                                                       0602 82
0603 57
                                                                                                                                                                                                                                                                                                       0604 404554
                                                                                                                                                                                                                                                                                                                                                                                                 LET!
                                                                                                                                                                                                                                                                                                                                                                                  DWA LET
                                                                                                                                                                                                                                                                                                                                                                                                           (00323H SHR 8) +128
                                                                                                                                                                                                                                                                                                        0607 83
0608 23
                                                                                                                                                                                                                                                                                                                                                                                DB
DB
                                                                                                                                                                                                                                                                                                                                                                                                        00323H AND 0FFH
                                                                                                                                                                                                                                                                                                        0609 4946
                                                                                                                                                                                                                                                                                                                                                                                  DWA IFF
                                                                                                                                                                                                                                                                                                        06CB 82
                                                                                                                                                                                                                                                                                                                                                                                                         (00284H SHR 8) +128
                                                                                                                                                                                                                                                                                                                                                                                 DB
                                                                                                                            BC = RETURN ADDR
                                                                                                                                                                                                                                                                                                                                                                                  DB
                                                                                                                                                                                                                                                                                                                                                                                                           00284H AND 0FFH
                                                                                                                                                                                                                                                                                                                                                                                 DB 'GOTO'
DWA GOTO
DB (00:
DB 001:
                                                                                                                                                                                                                                                                                                        06CD 474F544F
                                                                                                                                                                                                                                                                                                                                                                                                          (00160H SHR 8) +128
00160H AND 0FFH
                                                         THESE ARE THE ONLY I/O ROUTINES IN TBI.

'OUTC' IS CONTROLLED BY A SOFTWARE SWITCH 'OCSM'. IF OCSM=0

'OUTC' WILL JUST RETURN TO THE CALLER IF OCSW IS NOT 0,

IT WILL OUTPUT THE BYTE IN A. IF THAT IS A CR, A LF IS ALSO

SEND OUT. ONLY THE FLAGS MAY BE CHANGED AT RETURN, ALL REG.

ARE RESTORED.
                                                                                                                                                                                                                                                                                                                                                                                  DB
                                                                                                                                                                                                                                                                                                                                                                                                 1G05UB1
                                                                                                                                                                                                                                                                                                                                                                                  DWA GOSUB
                                                                                                                                                                                                                                                                                                                                                                                                          :UB
(001BFH SHR 8) +128
001BFH AND 0FFH
```

106 INTERFACE AGE

SOFTW	ARE	SECTIO	ON	MICROC	OMPUTER	DEVELOPMENT SOFTW	A
06DA 524554 06DE 524E	155	DB 'RETU		0755 23 0756 D1	INX H POP D	BUMP TO NEXT TAB. ITEM RESTORE STRING POINTER	_
06E0 81 06E1 DF	+ + +		N 31DFH SHR 8) +128 1DFH AND 0FFH	0757 C33807 075A 3E7F	JMP EX0  EX3: MVI A,07F	JEST AGAINST NEXT ITEM	
06E2 52454E	,	DB 'REM'	TOLU MIND REEM	0750 23 9750 BE	EX4: INX H CMP M	JUMP ADDR., WHICH IS FLAGGED BY BIT 7	
06E5 82 06E6 80	:		9280H SHR 8) +128 280H AND 0FFH	075E D25007 0761 7E 0762 23	JNC EX4 EX5: MOV A.M INX H	LOAD HL WITH THE JUMP ADDRESS FROM THE TABLE	
06E7 464F52	2	DB /FOR/	THE STA	0763 6E 0764 E67F	MOV L/M ANI 7FH	MASK OFF BIT 7	
06EA 81 06EB F8	÷ ÷		91F8H SHR 8) +128 LF8H AND 0FFH	0766 67 0767 F1 0768 E9	MOV H.A POP PSW PCHL	CLEAN UP THE GARBAGE AND WE GO DO IT	
06EC 494E50 06F0 54	55	DB /INPUT			, LSTROM:		
06F1 82	+ +	DWA INPUT DB (00	12CDH SHR 8) +128	1000 1000 1001	ORG 1000H OCSW: DS 1. CURRNT: DS 2	H : HERE ON MUST BE RAM : SWITCH FOR OUTPUT : POINTS TO CURRENT LINE	
06F2 CD 06F3 505249	+ 4E	DB 002	CDH AND ØFFH	1993 1995 1997	STKGOS: DS 2 VARNMT: DS 2 STKINP: DS 2	;SAVES SP IN 1GOSUB1 ;TEMP STORAGE ;SAVES SP IN 1INPUT1	
06F7 54 06F8 81	+	DWA PRINT		1009 1008	LOPVAR: DS 2 LOPINC: DS 2	FORT LOOP SAVE AREA FINCREMENT	
06F9 87	÷	DB (00 DB 001	187H SHR 8) +128 87H AND ØFFH	1000 100F 1011	LOPLMT: DS 2 LOPLN: DS 2 LOPPT: DS 2	;LIMIT ;LINE NUMBER ;TEXT POINTER	
06FA 53544F	50 + +	DB 'STOP' DWA STOP DB (00	13BH SHR 8) +128	1013 1015 1017	RANPNT: DS 2 TXTUNF: DS 2 TXTBGN: DS 2	;RANDOM NUMBER POINTER ;->UNFILLED TEXT AREA ;TEXT SAVE AREA BEGINS	
06FF 3B	+	DB 001	136H AND OFFH	1366 1366	ORG 1366H TXTEND: DS 0	FEXT SAVE AREA ENDS	
0700 83 0701 1D	+ + +		31DH SHR 8) +128 1DH AND 0FFH	1366 1390 1300	VARBGN: DS 55 BUFFER: DS 64 BUFEND: DS 1	; VARIABLE @(0) ; INPUT BUFFER ; BUFFER ENDS	
	TAB4	:	; FUNCTIONS	13DE 1400	STKLMT: DS 1 ORG 1400H	;TOP LIMIT FOR STACK	
0702 524E44 0705 84	+	DB 'RND' DNA RND DB (00-	425H SHR 8) +128	1400 000D	STACK: DS 0 ; CR EQU 00H	;STACK STARTS HERE	
0706 25 0707 414253	+	DB 004;	25H AND 0FFH	000A 0000	LF EQU OAH END		
070A 84	÷	DB 'ABS' DWA ABS DB (00	450H SHR 8) +128	ABS 0450 BUFEN 13DD CHKSG 0483	AHON 00A0 BUFFE 139D CI1 069D	ASORR 04F4 AWHAT 04C7 CHGSG 0486 CHKIO 0684 CK1 049E CKHLD 0498	
070B 50 070C 53495A4	+ 15	DB 004:	50H AND 0FFH	CR 000D DIREC 0738	CRLF 000E DIVID 0466	CURRN 1001 DEFLT 031D DV1 0471 DV2 0473	
0710 84	÷	DWA SIZE DB (004	459H SHR 8) +128	DWA BF78 EX1 073D EX5 0761	ENDCH 04C2 EX2 0750 EXEC 073B	ERROR 04CA EX0 073B EX3 075A EX4 075C EXPR1 032D EXPR2 0371	
0711 59	+	DB 0045	59H AND ØFFH	EXPR3 03A5 FIN 04B3	EXPR4 0405 FL1 0540	FI1 04BA FI2 04C1 FL2 0555 FNDLN 0538	
0712 84 0713 0B	+	DB (004	40BH SHR 8) +128 0BH AND 0FFH	FNDLP 0540 FR1 0208 FR5 021C	FNDNX 0554 FR2 0212 FR7 0231	FNDSK 0556 FOR 01F8 FR3 0216 FR4 0219 FR8 0252 GETLN 04FA	
0714 544F	TAB5	DB 1TO1	;"TO" IN "FOR"	GL1 04FE GOTO 0160 INPER 02C3	GL3 0523 HOW 00A6 INPUT 02CD	GL4 0530 GOSUB 01BF IFF 02B4 INIT 0642 IP1 02CD IP2 02DB	
0716 82 0717 08	+ + +		208H SHR 8) +128 38H AND 0FFH	IP3 02EB LF 000A	IP4 0315 LIST 016F	IP5 031C LET 0323 LOPIN 100B LOPLM 100D	
0718 84	÷	DWA QWHAT	IC6H SHR 8) +128	LOPLN 100F LSTRO 0769 MYDOW 05EE	LOPPT 1011 LT1 032C MVUP 05E5	LOPVA 1009 LS1 0178 MD1 05F6 MSG1 06A3 NEW 0132 NEXT 0257	
0719 C6	+		SH AND ØFFH	NXO 025E NX4 0288 OCSW 1000	NX1 0298 NX5 02AA OK 00AB	NX2 02AC NX3 0276 OC2 066C OC3 0671 PARN 041A PATLO 064F	
071A 5354455	TAB6: :0 +	DB 'STEP' DWA FR2	;"STEP" IN "FOR"	PN1 059D PN5 05C1	PN2 05A4 PN6 05C7	PN3 0584 PN4 0585 POPA 05FD PP1 0617	
071E 82 071F 12	÷	DB (002 DB 0021	12H SHR 8) +128 2H AND 0FFH	PRØ 019B PR6 01B2 PRTNU 0592	PR1 01A3 PR8 01B6 PRTST 0560	PR2 0192 PR3 01A9 PRINT 0187 PRTLN 05D2 PS1 0561 PU1 063F	
0720 82	<b>+</b>		16H SHR 8) +128	PUSHA 0619 QT2 057A QTSTG 0560	QHOW 009F QT3 057E QWHAT 04C6	QSORR 04F3 QT1 0571 QT4 0586 QT5 0591 RA1 0440 RANPN 1013	
0721 16	+ TABS:	DB 0021	6H AND ØFFH ; RELATION OPERATORS	REM 02B0 RUN 0141	RETUR Ø1DF RUNNX Ø147	RND 0425 RSTAR 00BA RUNSM 0157 RUNTS 0150	
0722 3E3D 0724 83	<b>+</b>	DB />=/ DWA XP11		SETVA 04A0 S11 00BD STACK 1400	SIZE 0459 ST2 00CD START 0000	SORRY 00B4 SS1 0028 ST3 00D6 ST4 010B STKGO 1003 STKIN 1007	
0725 33	÷		33H SHR 8) +128 3H AND 0FFH	STKLM 13DE TAB1 06AE TAB6 071A	STOP 013B TAB2 06BE TAB8 0722	SUBDE 047C SV1 04B0 TAB4 0702 TAB5 0714 TC1 0068 TC2 0073	
0726 23 0727 83	÷	DB /#/ DWA XP12 DB (003	39H SHR 8) +128	TN1 007C TXTEN 1366	TSTNU 0077 TXTUN 1015	TV1 0058 TXTBG 1017 VARBG 1366 VARNX 1005	
0728 39	+	DB <b>00</b> 33:	9H AND ØFFH	WHAT 00AE XP14 0346 XP18 035C	XP11 0333 XP15 034E XP21 037A	XP12 0339 XP13 033F XP16 0354 XP17 035A XP22 037D XP23 0380	
0729 3E 072A 83	÷	DB />/ DWA XP13 DB (003)	7EU SUD 01 400	XP24 0387 XP32 03C5	XP25 0398 XP33 03CD	XP26 0398 XP31 03A8 XP34 03D8 XP35 03F7	
072B 3F	+	DB 00331	3FH SHR 8) +128 FH AND ØFFH /	XP40 040B	XP41 0414	XP42 0421, XP43 0422	
072C 3D 072D 83	+	DB /=/ DWA XP15 DB (0034	4EH SHR 8) +128				
372E 4E 372F 303D	+	DB 00346	EH AND OFFH				
9731 83	÷ ÷	DB 10=1 DWA XP14 DB (0034	46H SHR 8) +128				
9732 46 9733 30	+		SH AND ØFFH			$Q_{I}$	
9734 83	+	DWA XP16 DB (0035	54H SHR 8) +128	M	erry	Christmas	
9735 54	+		IH AND OFFH		$\mathscr{O}$		
9736 83 9737 <b>5</b> A	+	DB (0035	AH SHR 8) +128 H AND ØFFH				
	; ;						
738 21 <b>AD06</b>	DIRECT	LXI H, TAB1-	1 ;*** DIRECT ***				
73 <b>8 EF</b> 730 D5	EXEC: EX0:	RST 5 PUSH D	; *** EXEC *** ; IGNORE LEADING BLANKS	11	)	11 01	
73D 1A 73E 13	EX1:	LDAX D INX D	### ### ### ### ######################	W.	.44	New Yea	_
73F FE2E 741 CA5A07 744 23		CPI 2EH JZ EX3 INX H	; WE DECLARE A MATCH ; HL->TABLE	Ila	YYVY	s vew Gea	K
745 BE 746 CA3D07 749 3E7F		CMP M JZ EX1	; IF MATCH, TEST NEXT	•			
748 18 740 BE		MVI A,07FH DCX D CMP M	;ELSE, SEE IF BIT 7 ;OF TABLE IS SET, WHICH ;IS THE JUMP ADDR. (HI)			r	
74D DA6107. 750 23	EV2:	JC EX5	C:YES, MATCHED				