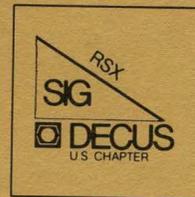
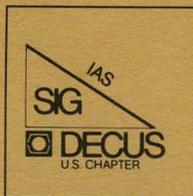




The DeVIAS Letter



The RSX Multi-Tasker

December 1983 Issue

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CONTENTS

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	Page
RSX SIG Steering Committee Executive Board	2
RSX SIG Steering Committee Activity Coordinators	2
RSX SIG Steering Committee Working Group Chairman	3
Hints 'n Things OPS.CMD Modification	4
Manipulating the FORTRAN Environment ..	6
Clear Your Screen	9
RSX-11M V4.1 SYSGEN Symbols	11
Working Group News	15
EXTRA --- EXTRA	15
DECUS Library Update	15
CALLING ALL IOUs	16
Field Test Report Panel	17
WANTED --- WANTED	18
RSX-11M-PLUS for the Micro/PDP-11	18
Building and Using Resident Libraries .	20
SPEAK OUT	21

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Editor's Note: In an effort to save space,
each persons address was only be shown
once.

Hints 'N Things

"Hints 'n Things" is a monthly potpourri of helpful tidbits and rumors. Readers are encouraged to submit items to this column. Any input about a way to make life easier on RSX is needed. Please beware that items in this column have not been checked for accuracy. Send any contributions to Multi-Tasker - "Hints n' Things", c/o DECUS, One Iron Way, MR2-3/E55, Marlboro, MA 01752.

OPS.CMD Modification

Tony Gandy
Systeme Corporation
3443 Parkway Center Court, Orlando, FL 32804

Enclosed please find a copy of the command file OPS.CMD. This is a modification of the command file submitted by Ralph Stamerjohn in the April '83 issue. (Editor's Note: April '83 Pages 127-128) The primary change was to limit the number of command strings supported and move the parsing up front to remove redundant parsing of each line from the sort file. As a result, OPS runs faster, especially on RSX-11M where Indirect is heavily overlaid. Additionally, OPS may create a command file without executing it, allowing further editing or reuse.

```
.ENABLE SUBSTITUTION
.IFNINS SRD      INS $SRD
.SETN N 1
.SETF MAKFIL
.SETS CMDNAM "TMP.TMP"
.PARSE COMMAN "<><>" DUMMY SRD DUMMY XXX
.;
.;      If no SRD selection, take one
.;
.SETT INLINE
.IF XXX NE "" .GOTO STRIN
.SETF INLINE
;*****
;
;      OPS.CMD - Select files and perform operation
;
;      @OPS <SRD selection> <command line>
;
;      Examples: @OPS <*.TSK/AF:11-APR-83> <MAC $F,$F/-SP=$F>
;
;              @OPS and then answer questions
;
;      Parameters are:
;
;              $N is entire filename
;              $D is device
;              $U is UIC ($G is group, $0 is owner)
;              $F is filename
;              $T is filetype
;              $V is version
;
;      Limits: Up to 5 command lines allowed
;              Up to 7 substitutions per line
;*****
.IF SRD NE "" .GOTO CMDS
.ASK MAKFIL Generate a command file (without executing it)
.IFF MAKFIL .GOTO SWORD
.ASKS A File name (default='CMDNAM')
.IF A EQ "" .SETS A CMDNAM
.SETS CMDNAM A
.SWORD:
; SRD selection (RETURN to exit)
.ENABLE QUIET
.ASKS SRD
.DISABLE QUIET
.IF SRD EQ "" .EXIT
```

OPS.CMD Modification (Continued)

```

.;      If on command line, loop and read strings
.;
.CMDS:
; Command line 'N' (RETURN for no more commands)
.ENABLE QUIET
.ASKS XXX
.DISABLE QUIET
.IF XXX EQ "" .GOTO SORT
.STRIN: .SETS CMD'N' XXX
.;
.;      Parse command line for later use
.;
.PIECE: .PARSE CMD'N' "$$$$$$" Q1'N' Q2 Q3 Q4 Q5 Q6 Q7
.SETN NN 2
.SETS $Z ""
.IF Q'NN' 'N' EQ "$" .SETS Q'NN' 'N' "$Z"
.SETS R'NN' 'N' Q'NN'[2:100.]
.INC NN
.IF NN LE 7 .GOTO PIECE
.;
.INC N
.IF N LE 5 .AND .IFF INLINE .GOTO CMDS
.;
.;      Make SRD selection to temp file and open for read
.;
.SORT: .IF N EQ 1 .EXIT
SRD SRD.TMP='SRD'/LI
.OPENR SRD.TMP
.IFT MAKFIL .OPEN 1 'CMDNAM'
.;
.;      Read SRD file and select filename.
.;      Parse so $N is entire filename
.;      $D is device
.;      $U is UIC ($G is group, $O is owner)
.;      $F is filename
.;      $T is filetype
.;      $V is version
.;
.MFD: .READ LINE
.IFT <EOF> .GOTO FINIS
.SETS TEST LINE[1:3]
.IF TEST NE " **" .GOTO FINIS
.PARSE LINE " [,]" DUMMY DUMMY $D $G $O DUMMY
.SETS $U "["+$G+" "+"$O+"]"
.READ LINE
.;
.LOOP: .READ LINE
.IFT <EOF> .GOTO FINIS
.SETS TEST LINE[16.:16.]
.IF TEST NE ";" .GOTO MFD
.PARSE LINE " .; " DUMMY DUMMY $F $T $V DUMMY
.SETS $T "."+$T
.SETS $V ";"+$V
.SETS $N $D+$U+$F+$T+$V
.;
.;      Execute commands or build a command file for each line
.;
.IF NDF CMD1 .GOTO LOOP
.SETS COMAND Q11+'Q21'+R21+'Q31'+R31+'Q41'+R41+'Q51'+R51+'Q61'+R61+'Q71'+R71
.IFF MAKFIL 'COMAND'
.IFT MAKFIL .DATA 1 'COMAND'
.IF NDF CMD2 .GOTO LOOP
.SETS COMAND Q12+'Q22'+R22+'Q32'+R32+'Q42'+R42+'Q52'+R52+'Q62'+R62+'Q72'+R72
.IFF MAKFIL 'COMAND'
.IFT MAKFIL .DATA 1 'COMAND'
.IF NDF CMD3 .GOTO LOOP
.SETS COMAND Q13+'Q23'+R23+'Q33'+R3+'Q43'+R43+'Q53'+R5+'Q63'+R63+'Q73'+R73
.IFF MAKFIL 'COMAND'
.IFT MAKFIL .DATA 1 'COMAND'
.IF NDF CMD4 .GOTO LOOP
.SETS COMAND Q14+'Q24'+R24+'Q34'+R34+'Q44'+R44+'Q54'+R54+'Q64'+R64+'Q74'+R74
.IFF MAKFIL 'COMAND'

```

Manipulating the FORTRAN Environment

Douglas C. Shaw
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3650 Tuckahoe, Birmingham, Michigan 48010

Editors Note:

Douglas promised to write an article while at the "Fall '82 Symposium". His Multi-Tasker IOU is now Paid-In-Full. Thank you Douglas!!!!

Although we are primarily a FORTRAN shop, we occasionally make small forays into the cryptic world of MACRO in order to enhance the FORTRAN environment. Presented here are three of my favorite little MACRO subroutines :

1. SWERLN - Switch Error LUN

This routine re-assigns the LUN that FORTRAN used for logging any errors it happens to find. We direct it to the CO: device. This is particularly usefull for obtaining hard copies of errors and also, if you are using FORMS 11, prevents garbage from being spread all over your form.

```
.TITLE SWERLN.MAC
.ENABL LC
.NLIST BEX
.IDENT /C00.00/
.MCALL ALUN$S
.GLOBL SWERLN          ; ENTRY POINT
; EXTERNAL DEFINITIONS
.GLOBL .MOLUN          ; Msg Output lun from FORTRAN impure area
;-
; 1.Name:              SWERLN
;
; 2.Function:          This routine switches the FORTRAN
;                      Error LUN device assignment to C0: so
;                      that the task wont't hang if the TI:
;                      is attached to another task (a very
;                      real possibility in the MMD environ-
;                      ment)
;
; 3.Calling Sequence:          CALL SWERLN
;
; 4.Routines called:          None
;
; 5.Directives called:          ALUN$ - Assign LUN
;
; 6.Author:              Douglas C. Shaw
;
; 7.PCN History:          25-Sep-82      Written
;
;                      06-Nov-83      Doug Shaw
;                      Use .MOLUN global for error LUN instead
;                      of computing it from number of user luns.
;+
.PSECT $CODE1 RW, I, LCL, CON
SWERLN::
MOV @ .MOLUN,R0      ; Get the error logging LUN
ALUN$S R0, "CO, 0,ERR ; Switch it to C0:
RETURN              ; Back to whence I came
ERR: HALT           ; Crash via ERROR 7 (Reserved instruction)
.END                ; if there is a problem ....
```

2. IVAL - Return value of Global symbol or run time address

As its name implies, this routine returns the value of a global symbol (declared with GLBDEF task builder option) or the address of a FORTRAN variable. In this manner, it works much like the GETADR subroutine. We use it for reading options set at task build time and some times for setting addresses of FORTRAN variables for Executive services calls.

```
.TITLE IVALUE.MAC - GET VAR ADDR
.ENABLE LC
;
;      Function to simply return the address of the argument
;      in R0 (standard FORTRAN Function Convention)
;
;      Usage :      IVAR1=IVAL(IVAR2)
;                  where IVAR2 is a variable name or
;                  a global symbol delclared in an
;                  EXTERNAL statement.
;
.PSECT $CODE1 RW, I, LCL, CON
IVAL:  MOV      2(R5),R0      ; Move the address
RTS    PC                  ; Return
.END
```

3. GETARG - Return number of calling parameters

This little routine allows you to determine how many arguments were passed to a subroutine. It must be the first call upon entry to the routine; don't ask me how it works ... it was empirically designed !

```
.TITLE GETARG.MAC
.DSABL GBL
.ENABLE LC
.NLIST BEX
.IDENT /C00.00/
.GLOBL GETARG      ; ENTRY POINT
;-
; 1.Name:          GETARG
;
; 2.Function:      To return the number of arguments
;                  that were passed to the subroutine
;                  who called THIS routine.
;
; 3.Calling Sequence:      CALL GETARG (NARGS)
;
; 4.Routines called:      None
;
; 5.Directives called:    None
;
; 6.Author:          Douglas C. Shaw
;
; 7.PCN History:      Written 28-Apr-82 (With a little help
;                  from my friends !!)
;+
.PSECT $CODE1 RW, I, CON, LCL
GETARG:  MOV      @2(SP),@2(R5)      ;; Get the number of arguments
BIC      177400,@2(R5)      ;; from the previous call and
RTS      PC                  ;; clear the high order byte.
.END
```

Manipulating the FORTRAN Environment (Continued)

The following short example illustrates the use of these routines :

```
PROGRAM TEST
IMPLICIT INTEGER (A-Z)
INTEGER*2      DUM1,DUM2,DUM3
BYTE BUFF (4)
C
CALL SWERLN           ! Switch errors to Console
ENCODE (4,100,BUFF) 12345 ! The ERROR 63 conversion
100 FORMAT (I4)      ! error from this statement
C                   ! will appear on C0: device
C
C Call subroutine with varying numbers of arguments
C
CALL DUMMY ( )
CALL DUMMY (DUM1)
CALL DUMMY (DUM1,DUM2)
CALL DUMMY (DUM1,DUM2,DUM3)
CALL DUMMY (DUM1,,DUM3)
CALL EXIT
END

SUBROUTINE DUMMY (ARG1,ARG2,ARG3)
IMPLICIT INTEGER (A-Z)
C
CALL GETARG (NARGS)           ! Number of arguments passed
TYPE *, ' '
TYPE *, 'NUMBER OF ARGUMENTS PASSED = ',NARGS
C
C Address of the arguments; -1 means that no argument is present
C
IF (NARGS.GE.1) TYPE *, '      IVAL(ARG1) = ',IVAL(ARG1)
IF (NARGS.GE.2) TYPE *, '      IVAL(ARG2) = ',IVAL(ARG2)
IF (NARGS.GE.3) TYPE *, '      IVAL(ARG3) = ',IVAL(ARG3)
RETURN
END
```

And this is the output from the program (note that the ERROR 63 message does not appear here ... it comes out on the C0: device) :

>RUN TEST

```
NUMBER OF ARGUMENTS PASSED =      1
      IVAL(ARG1) =      -1

NUMBER OF ARGUMENTS PASSED =      1
      IVAL(ARG1) =    1484

NUMBER OF ARGUMENTS PASSED =      2
      IVAL(ARG1) =    1484
      IVAL(ARG2) =    1486

NUMBER OF ARGUMENTS PASSED =      3
      IVAL(ARG1) =    1484
      IVAL(ARG2) =    1486
      IVAL(ARG3) =    1488

NUMBER OF ARGUMENTS PASSED =      3
      IVAL(ARG1) =    1484
      IVAL(ARG2) =      -1
      IVAL(ARG3) =    1488
```

Clear Your Screen

Bernard E. Wood
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P. O. Box 1663, Los Alamos, NM 87545

Editors Note:

Bernard promised to write an article while at the "Fall '82 Symposium". His Multi-Tasker IOU is now Paid-In-Full. Thank you Bernard!!!!

Many (if not most) users resolutely refuse to clear the terminal screen or dispose of paper when logging off. This may pose a problem at installations which handle confidential or proprietary information. The following subroutine hooks into BYE to automatically clear screens and/or remind users to remove their paper. See comments for installation notes.

```
.TITLE BYESUB
;
.ENABLE LC
;
; User subroutine to hook into ...BYE. The purpose is to auto-
; matically erase screen of a softcopy terminal or to perform
; pagefeed on a hardcopy terminal at logoff time, in order to
; prevent unauthorized access to data shown on the terminal.
;
; Notes: (1) This subroutine is hardware dependent and must be
; modified to use at other installations. The modifica-
; tions required are to examine the terminal-type byte in
; R0 for those terminals present at the installation and
; to add message and screen-erase strings for these
; terminals. In the present case, the only terminal types
; which exist are Tektronix 4014, TI Silent-700 and DEC
; VT100 and LA120. The SET /TERM=ttn:m (m = model number,
; 128-255) command is used at startup time to define the
; Tektronix terminals as m=129 and the TI terminals as
; m=130. See DEC documentation for lists of known termin-
; als and their symbolic names and screen-erase strings.
; See terminal documentation for non - DEC terminals.
; (2) BYE assigns LUNs 1 and 7 to TI:. This subroutine
; uses LUN 1 and EFN 1 for terminal I/O.
; (3) SY:[1,24]BYEBLD.COMD contains documentation on
; including this subroutine.
;
; Author: Bernard E. Wood
; P-15, MS D406
; Los Alamos National Laboratory
; Los Alamos NM 87545
;
; Language: MACRO-11
;
; System: RSX-11/M
;
.PAGE
;
.MCALL DIR$,MRKT$C,WI$E$C,QIOW$,QIOW$C,TTSYM$
;
TTSYM$ ; define TT: char. words
;
LUN =1
EFN =1
T.TK40 =201 ; define TEK as model 129.
T.TI70 =202 ; " TI " " 130.
;
.NLIST BEX
```

Clear Your Screen (Continued)

```

;
TTYTYPE: .BYTE TC.TTP,0
;
ERSMSG: .ASCII sSCREEN WILL ERASE IN 3 SECONDS
LERSMG=-ERSMSG
PGMSG: .ASCII PAGE FEED IN 3 SECONDS - PLEASE
.ASCII REMOVE USED PAPER
LPGMSG=-PGMSG
TKERAS: .BYTE 33,14,15 ; erase TEK screen
LTKER =.-TKERAS
VTERAS: .BYTE 33,133,110,33,133,112 ; erase Vt screen
LVTER =.VTERAS
LAERAS: .BYTE 14,15 ; pagefeed LA120
LLAER =.-LAERAS
LFEEDS: .BYTE 12,12,12,12,12,12 ; fake other terms.
LLFS =.-LFEEDS
;
.MACRO TYPE MSG,LEN,FMT
MOV MSG,TYPQIO+Q.IOPL
MOV LEN,TYPQIO+Q.IOPL+2
MOV FMT,TYPEIO+Q.IOPL+4
DIR$ TYPQIO
.ENDM TYPE
;
TYPQIO: QIOW$ IO.WVB,LUN,EFN,,,,<0,0,0>
;
;
$USRSB:QIOW$C SF.GMC,LUN,EFN,,,,<TTYTYPE,2>
MOV TTYTYPE+1,R0 ; get terminal type
CMPB R0, T.TK40 ; is it a TEKtronix?
BEQ TEKT ; ... yes - go do it
CMPB R0, T.V100 ; is it a VT100?
BEQ VT1H ; ... yes - go do it
CMPB R0, T.L120 ; is it a LA120?
BEQ LA120 ; ... yes - go do it
CMPB R0, T.TI70 ; is it a TI-700?
BEQ TI700 ; ... yes - go do it
BR OTHER ; none of the above - fake it
;
TEKT: TYPE ERSMSG,LERSMG,40 ; notify of what's coming
JSR PC,PAUSE
TYPE TKERAS,LTKER,40 ; erase the TEK screen
MRKT$C 1,2,2 ; wait for screen to settle
WTSE$C 1
BR RETURN ; ... and quit
;
VT1H: TYPE ERSMSG,LERSMG,40 ; notify of what's coming
JSR PC,PAUSE
TYPE VTERAS,LVTER,40 ; erase the VT100 screen
BR RETURN ; ... and quit
;
LA120: TYPE PGMSG,LPGMSG,40 ; notify of what's coming
JSR PC,PAUSE
TYPE LAEERAS,LLAER,40 ; output a formfeed
BR RETURN ; ... and quit
;
TI700: ; treat TI-700 and unknowns
OTHER: TYPE PGMSG,LPGMSG,40 ; notify of what's coming
JSR PC,PAUSE
TYPE LFEEDS,LLFS,40 ; output some linefeeds
;
RETURN: RTS PC ; back to main code
;
;
PAUSE: MRKT$C 1,3,2
WTSE$C 1
RTS PC
.END

```

RSX-11M V4.1 SYSGEN Symbols

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15/23 Baches Street, London N1

When RSX-11M V3.2 appeared, I submitted a "Road Map" of RSXMC.MAC symbols in August 1980 which was published in The Multi-Tasker. The enclosure is the equivalent for the V4.1 release, which you might like to publish in your next newsletter.

The [11,10]RSXMC0.MAC and [200,200]*.CMD from RSXM35 and EXCPRV volumes of RL01/RL02 distribution kit were concatenated into one file. All lines with "\$\$" were extracted, sorted eliminating duplicates and formatted using TECO. The result is a definitive directory of symbols that may be included in the RSXMC.MAC prefix file generated by SYSGEN.

Other symbols may be found in the [11,10]*.MAC source files. These relate to options no longer supported (i.e. cannot be enabled by a straight SYSGEN) or for unbundled products or RSX-11M+ to I&D space etc. not supported under 11M).

Any more information can be obtained from me at Systime's London Office as above.

```
A$$BIO=0          ;ASYNCHRONOUS BUFFERED I/O
A$$BRT=0          ;SPECIFY REQUESTED EXIT AST DIRECTIVE
A$$CHK=0          ;ADDRESS CHECKING
A$$CLI='NCLI'.    ;ALTERNATE CLI SUPPORT; MAX NUM OF 'NCLI'. CLIS
A$$CPS=0          ;ACF SUPPORT
A$$D01='AD'.      ;AD01 A/D CONVERTERS
A$$F11='AF'.      ;AFC11 A/D CONVERTERS
A$$HDR=0          ;ALTERNATE TASK HEADER REFRESH
A$$NSI=0          ;ANSI MAGTAPE SUPPORT
A$$PRI=0          ;ALTER PRIORITY DIRECTIVE
A$$R11='AR'.      ;AR11 LAB PERIPHERAL SYSTEMS
A$$RDA=0          ;AR11 D/A OPTION
A$$TRP=0          ;AST SUPPORT
B$$LV1='''$BASEL' ;BASELEVEL '$BASEL'
B$$LV2='''$BLREV' ;BASELEVEL REVISION OF '$BLREV''
B$$MAP=1          ; bitmap screen
C$$CDA='$CDD'.    ;CRASH DUMP ROUTINE
C$$CHE=0          ;CACHE MEMORY SUPPORT
C$$CKP=4.         ;CHECKPOINTING SUPPORT
C$$CSR='$MDC'.    ;CSR ADDRESS OF CRASH DEVICE
C$$INT=0          ;CONNECT TO INTERRUPT DIRECTIVE
C$$ONS='CO'.      ;CONSOLE DRIVER
C$$ORE='$DSA'.    ;SIZE OF DYNAMIC STORAGE REGION
C$$R11='CR'.      ;CR11 CARD READERS
C$$RSH='$CND'.    ;CRASH REPORTING
C$$RTO='$CRR'.    ;CR: NOT READY MSG INTERVAL
C$$RUN='$CDU'.    ;PHYSICAL UNIT NUMBER OF CRASH UNIT
C$$SMT=0          ;CANCEL SELECTIVE MARK TIMES
C$$TTY='$RSI'.    ;REGISTER/STACK DUMP DEVICE CSR ADDRESS
D$$B11='XB'.      ;DA11-B PAR. LINE IINTERFACES
D$$C11='NCONTR.'. ;bitmap video interface
D$$E11='XL'.      ;DL11-E LINE INTERFACE
D$$H11='NCONTR.'. ;DH11 ASYNCHRONOUS LINE MULTIPLEXERS
D$$IAG=0          ;DIAGNOSTIC FUNCTIONS
D$$ISK=0          ;NONRESIDENT TASK SUPPORT
D$$J11='NCONTR.'. ;DJ11 ASYNCHRONOUS LINE MULTIPLEXERS
D$$L11='NCONTR.'. ;DL11 A/B/C/D LINE INTERFACES
D$$LMD=0          ;DL11-E MODEM SUPPORT
D$$M11='NDM.'.    ;DM11BB MODEM CONTROL INTERFACES
D$$P11='XP'.      ;DP11 LINE INTERFACES
D$$PAR=0          ;DIRECTIVE COMMON SUPPORT
D$$Q11='XQ'.      ;DQ11 SYNC. LINE INTERFACES
D$$R11=0          ;DR11-K OPTION PRESENT
D$$SHF=0          ;AUTOMATIC DYN. MEM. COMPACTION
D$$U11='XU'.      ;DU11 LINE INTERFACES
D$$V11='NCONTR.'. ;DHV11 ASYNCHRONOUS LINE MULTIPLEXERS
D$$VMD=0          ;DHV11 MODEM CONTROL
D$$W11='XW'.      ;DUP11 LINE INTERFACES
```

RSX-11M V4.1 SYSGEN Symbols (Continued)

```

D$$W50=1          ;RCD50 Winni controller (DW!)
D$$WCK=0          ;DISK WRITECHECK SUPPORT
D$$YNC=0          ;DYNAMIC CHECKPOINT ALLOCATION
D$$YNM=0          ;DYNAMIC MEMORY ALLOCATION SUPPORT
D$$Z11='NCONTR.' ;DZ11 ASYNCHRONOUS LINE MULTIPLEXERS
D$$Z50=1          ;RX50 diskette controller (DZ!)
D$$ZMD=0          ;DZ11 MODEM SUPPORT
E$$ACT=0          ;LOGGING OF CONCURRENT I/O
E$$DVC=0          ;LOG DEVICE ERRORS AND TIMEOUT
E$$EAE=0          ;EAE SUPPORT
E$$LOG=0          ;ERROR LOGGING
E$$XPR=0          ;EXTEND PARTITION (TASK) DIRECTIVE
F$$LPP=0          ;FLOATING POINT PROCESSOR SUPPORT
F$$LTP=0          ;FIS SUPPORT
F$$LVL=1          ;FILES STRUCTURE LEVEL SUPPORT
G$$EFN=0          ;GROUP GLOBAL EVENT FLAGS
G$$TFP=0          ;GET PARTITION PARAMETERS DIRECTIVE
G$$TSS=0          ;GET SENSE SWITCH DIRECTIVE
G$$TTK=0          ;GET TASK PARAMETERS DIRECTIVE
G$$WRD=0          ;INCLUDE $GTWRD CODE
H$$RTZ=50.        ;LINE FREQUENCY
I$$C11='IC'.      ;ICS/ICR-11 INDUS CONTROL SUBSYSTEM
I$$COM=0
I$$P11='IP'.      ;IP11/IP300 PROCESS SUBSYSTEMS
I$$POM=0
I$$RAR=0          ;INSTALL, REQUEST, AND REMOVE ON EXIT
I$$RDN=0          ;I/O RUNDOWN
K$$CNT=173202     ; address of clocks interrupt register
K$$CSR=173030     ; internal clock CSR address (CKCSR2)
K$$IEN=115        ;CLOCK INTERRUPT ENABLE (KW11-P AT LINE FREQ)
K$$LDC=<57*256.>+77 ; lo=disable,hi=enable clock interrupt
K$$TPS=64.        ; clock interrupt rate (ticks per second)
K$$W11=172400     ;KW11-Y SUPPORT
L$$11R=0          ;FAST PRINTER SUPPORT
L$$50H=0          ;50Hz LINE FREQUENCY
L$$A11='LA'.      ;LPA11 LAB PERIPH. ACCELERATORS
L$$ASG=0          ;LOGICAL UNIT ASSIGNMENT
L$$DRV=0          ;LOADABLE DRIVER SUPPORT
L$$KPC='KMK.'.    ;KMC11 POLLING COUNT
L$$LDR=0          ;LOADABLE LOADER SUPPORT
L$$P11='LP'.      ;LP/LS/LV11/LA180 LINE PRINTERS
L$$PS1='LS'.      ;LPS11 LAB PERIPHERAL SYSTEM
L$$PTO='$PNR'.    ;LP: NOT READY MSG INTERVAL
L$$SBF=0          ;LPS11 BANDWIDTH FILTERING
L$$SDA=0          ;LPS11 D/A OPTION
L$$SDR=0          ;LPSDR-A PRESENT
L$$SGR=0          ;LPS11 GAIN RANGING OPTION
L$$SI1=0          ;LSI-11 PROCESSOR
M$$CLI=0          ;MULTIPLE CLI SUPPORT (NEVER DEFINED W/A$$CLI)
M$$CRB=84.        ;MCR COMMAND BUFFER LENGTH
M$$CRX=0          ;EXTERNAL MCR FUNCTIONS
M$$EIS=0          ;EXTEND INSTRUCTION SET SUPPORT
M$$EXT=0          ;EXTENDED MEMORY SUPPORT
M$$FCS=0          ;FCS/FILE SYSTEM SUPPORT
M$$L11='EM'.      ;ML11 MEMORY DISK CONTROLLERS
M$$MGE=0          ;MEMORY MANAGEMENT
M$$MUP=0          ;MULTI-USER PROTECTION
M$$NET=0          ;EXTERNAL COMMUNICATIONS PRODUCTS (NETWORKS)
M$$OVR=0          ;OVERLAYED MCR
N$$LDV='NL'.      ;NULL DEVICE
N$$MOV='$DTV'.    ;SIZE OF BLXIO ''MOV'' TABLE
N$$UMR=5*4        ;BYTES OF STATICALLY ALLOCATED UMR'S
P$$BPR=51.        ;POOL BASE PRIORITY TASK CONTROL
P$$CTL=0          ;POOL MONITORING TASK SUPPORT
P$$FRS=200.       ;LOWEST PERMISSIBLE SIZE OF LARGEST POOL FRAGMENT
P$$GMX=0          ;GET MAPPING CONTEXT
P$$HIL=1600.      ;HIGH POOL LIMIT
P$$LAS=0          ;PROGRAM LOGICAL ADDRESS EXTENTIONS
P$$LOL=600.       ;LOW POOL LIMIT

```

RSX-11M V4.1 SYSGEN Symbols (Continued)

```

P$$MON=0          ;SPM-11 SUPPORT
P$$NIC='$PDD'     ;CSR ADDRESS OF PANIC DUMP DEVICE
P$$OFF=0         ;PARENT/OFFSPRING TASKING
P$$P11='$PF',    ;PC11 PAPER TAPE PUNCH
P$$P45=0        ;ROTATING DATA LIGHTS
P$$R11='$PR',    ;PR11 PAPER TAPE READER PLUS ANY PC11 READERS
P$$RFL=0        ;POWER FAIL
P$$RTY=0        ;PARITY MEMORY
P$$SRF=0        ;SEND/RECEIVE BY REFERENCE
P$$WRD=0        ;INCLUDE $PTWRD CODE
Q$$CRC=0        ;DQ11 CRC OPTION SUPPORT
Q$$HPT=0        ;DQ11 PROTOCOL OPTION SUPPORT
Q$$MGR=0        ;QUEUE MANAGER SUPPORT
Q$$OPT='$NPK',   ;PRE-ALLOCATE I/O PACKETS
R$$11M=0        ;RSX-11M SYSTEM
R$$11S=0        ;RSX-11S SYSTEM
R$$611='$DM',   ;RK611 DISK CART CONTROLLERS
R$$60F=0        ;RK06 OFFSET RECOVERY SUPPORT
R$$DER=0        ;CORAL DEALLOCATION ERROR CHECKING
R$$EXV=0        ;EXTEND EXECUTIVE TO 20K
R$$F11='$DF',   ;RF11 FIXED HEAD DISK CONTROLLERS
R$$JP1='$DB',   ;RJ/RWP04\05\06 PACK CONTROLLERS
R$$JPO=0        ;RP04/05/06 OFFSET RECOVERY SUPPORT
R$$JS1='$DS',   ;RJ/RWS03\04 DISK CONTROLLERS
R$$K11='$DK',   ;RK11 RK05 DISK CONTROLLERS
R$$L11='$DL',   ;RL11 DISK CARTRIDGE CONTROLLERS
R$$LKL=1        ;RMS RECORD LOCKING AND PLACE CTL.
R$$M11='$DR',   ;RWM03 DISK PACK CONTROLLERS
R$$MOF=0        ;RMO3 OFFSET RECOVERY SUPPORT
R$$NDC='$RRS',  ;CLOCK TICKS PER SCHEDULING INTERVAL
R$$NDH='$HIC',  ;HIGHEST PRIORITY CLASS TO CONSIDER
R$$NDL='$LOC',  ;LOWEST PRIORITY CLASS
R$$P11='$DF',   ;RP11-CVE DISK PACK CONTROLLERS
R$$POI=0        ;REQUEST AND PASS OFFSPRING INFO
R$$PRO=0        ; professional system (PMX)
R$$SND=0        ;SEND/RECEIVE DIRECTIVES
R$$TPR='$TEMPS' ;TYPE OF PDP-11 PROCESSOR
R$$UDA='$DU',   ;UDA DISK CONTROLLER
R$$X11='$DX',   ;RX11 DISK CONTROLLERS
R$$X21='$DY',   ;RX211 DISK CONTROLLERS
S$$ECC=0        ;SHARRED ECC CODE
S$$NM1='$TEMPS' ;FIRST 2 CHARS OF SYSTEM NAME
S$$NM2='$TEMPS' ;SECOND 2 CHARS OF SYSTEM NAME
S$$NM3='$TEMPS' ;THIRD 2 CHARS OF SYSTEM NAME
S$$TIM=0        ;SET SYSTEM TIME DIRECTIVE
S$$TOP=0        ;STOP BIT DIRECTIVES
S$$WLK=0        ;SOFTWARE WRITELOCK SUPPORT
S$$WPC='$DKS',  ;CLOCK TICKS PER SWAPPING INTERVAL
S$$WPR='$SWP',  ;SWAPPING PRIORITY
S$$WRG=0        ;PROCESSOR HAS A SWITCH REGISTER
S$$WST=0        ;SWITCH STATE DIRECTIVE
S$$YSZ='$TME',*32; ;SIZE OF PHYSICAL MEMORY IN 32W BLOCKS
T$$3OP=0        ;LA3OP SUPPORT
T$$A11='$CT',   ;TA11 DUAL CASSETTES
T$$ACD=0        ;ANCILLARY CONTROL DRIVER SUPPORT
T$$ACR=0        ;AUTOMATIC CR/LF
T$$BTW=0        ;BREAKTHROUGH WRITE
T$$BUF=0        ;CHECKPOINTABLE DURING TERMINAL INPUT
T$$C11='$DT',   ;TC11 DECTAPE CONTROLLERS
T$$CCA=0        ;UNSOLICITED INPUT AST
T$$CCO=0        ;WRITE WITH CONTROL/O CANCELLATION
T$$CPW=0        ;FULL DUPLEX TERMINAL DRIVER
T$$CTR=0        ;CONTROL-R SUPPORT
T$$CUP=0        ;DEVICE INDEPENDENT CURSOR POSITIONING
T$$ESC=0        ;ESCAPE SEQUENCE SUPPORT
T$$GMC=0        ;GET TERMINAL CHARACTERISTICS
T$$GTS=0        ;GET TERMINAL DRIVER SUPPORT
T$$HFF=0        ;LA180S TERMINAL SUPPORT

```

RSX-11M V4.1 SYSGEN Symbols (Continued)

```

T$$HLD=0           ;HOLD SCREEN MODE
T$$J16='MM'.      ;TM02/03 MAGTAPE CONTROLLERS
T$$KMG=0          ;TASK TERM./DEVICE NOT READY MESSAGES
T$$LWC=0          ;SETTABLE CASE CONVERSION
T$$M11='MT'.      ;TM/TMA/TMB11 MAGTAPE CONTROLLERS
T$$M78='MF'.      ;TU78 MAGTAPE CONTROLLERS
T$$MIN=0          ;BASELINE TERMINAL DRIVER
T$$RED=0          ;HARDWARE RECEIVE ERROR SUPPORT
T$$RNE=0          ;READ WITH NO ECHO
T$$RFR=0          ;READ AFTER PROMPT
T$$RST=0          ;READ WITH SPECIAL TERMINATOR
T$$RUB=0          ;CRT RUBOUT SUPPORT
T$$S11='MS'.      ;TS04/TS11 MAGTAPE SYSTEMS
T$$SMC=0          ;SET TERMINAL CHARACTERISTICS
T$$SYN=0          ;TERMINAL-HOST SYNCHRONIZATION
T$$TRW=0          ;TRANSPARENT READ/WRITE
T$$U58='DD'.      ;TU58 <NEW> DECTAPE CONTROLLERS
T$$UTB=0          ;USER TERMINAL INPUT BUFFERING
T$$UTO='$TMN'.    ;TIME OUT ON UNSOLICITED INPUT
T$$VBF=0          ;VARIABLE LENGTH INPUT BUFFERING
U$$ACH='UAK.'     ;NUMBER OF CHANNELS PER MODULE
U$$ADM='UDD0.'+'UDD1.' ;ADU01/IAD-IA ANALOG INPUT
U$$ADM='UDD2.'     ;ANALOG OUTPUT
U$$CIM='UDD3.'     ;DIGITAL INTERRUPT
U$$CSM='UDD4.'     ;DIGITAL SENSE
U$$D11='UD'.      ;UDC11 UNIVERSAL DIGITAL CONTROLLER
U$$ICM=0
U$$LTM='UDD5.'     ;BI-STABLE OUTPUT
U$$MHI=0          ;HIGH ADDRESS OF 18 BIT UNIBUS ADDRESS IN BITS 4 AND 5
U$$MLO=160000     ;LOW 16 BITS OF 18 BIT UNIBUS ADDRESS
U$$MRN=170224     ;ADDRESS OF NEXT AVAILABLE UMR
U$$NIF=0          ;AR11 UNI-POLAR A/D SAMPLING
U$$SSM='UDD6.'     ;SINGLE SHOT OUTPUT
U$$TIM='UDD7.'     ;I/O COUNTER
V$$CTR='$HIV.'     ;HIGHEST INTERRUPT VECTOR
V$$RSN=41         ;RSX-11M V4.1
V$$S2S=0          ;VS60 DRIVES 2 CRT MONITORS
V$$S60=0          ;VS60 GRAPHICS DISPLAY SUBSYSTEM
V$$T11=0          ;VT11 GRAPHICS DISPLAY SUBSYSTEM
X$$DBT=0          ;EXECUTIVE DEBUGGING TOOL
X$$M11='XM'.      ;DMC11 LINE INTERFACES

```

Working Group News

Jeff Hamilton
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Greenville, TX 75401

Editor's Note: Jeff is the new Working Group Coordinator taking over the responsibilities that were previously handled by Liz Bailey. At this time I would like to thank Liz for the Working Group reports that she has submitted to The Multi-Tasker over the past two years.

SRD Working Group

The SRD Working Group met in Las Vegas to discuss the future of the working group and its directions. The official working group version of SRD is on the Fall83 SIG tape. Bob Turkelson, chairman revealed that there were several enhancements. The group is working on including features not yet implemented and increasing overall speed of operation.

RUNOFF Working Group

The RUNOFF Working Group with Allen Watson the temporary chairman sitting in for Chuck Spalding who was unable to attend. The group decided to continue development and try to consolidate the various versions into one "official" version.

Sigtape Working Group

The Sigtape working group met and discussed ways of breaking the SIG tape job into several smaller and more easily managed sub functions. This will enable the tape to be shipped to users in less time than in the past. The tree structure was discussed and ways of increasing the integrity of the structure were brought out. Glenn Everhart the new chairman will try to whip the submissions into shape and leave the distribution to several members of the working group.

DECUS Library Working Group

The DECUS Library Working Group with Bruce Zalinsky as the chair decided upon continued testing and compilation of information off of past RSXIAS SIG tapes to submission to the library.

System Performance and Accounting Working Group

The System Performance and Accounting Working Group discussed several options to bring M+ style accounting and performance enhancements to M. Several possible sessions to be given at the Spring84 national symposium were discussed.

Data Acquisition, Simulation, and Process Control Working Group

The Data Acquisition, Simulation, and Process Control Working Group finally decided to take matters into their own hands. The group voted to join like members in the VAX and RT areas to form a real-time SIG. The preliminary work of getting signatures and petitioning the executive council were accomplished.

EXTRA --- EXTRA

The Multi-Tasker editor will accept articles through the second Friday of each month for the following month's issue.

Send your articles to the address below:

The Multi-Tasker
c/o DECUS
One Iron Way, MR2-3/E55
Marlboro, MA 01752

EXTRA --- EXTRA

DECUS Library Update

Ardoth A. Hassler
The Catholic University of America
Washington, DC

Reported by Phil Beene
DECUS Scribe Service

DECUS Spring '83 Symposium
St. Louis, MO

Ms. Ardoth Hassler, library coordinator for the DECUS Library Board, led an informative working session designed to update interested users on DECUS Library activities.

Following her brief status report on how the Library has been operating since the previous DECUS Symposium, SIG representatives from the U.S. Program Library Committee delivered short reports on how their individual groups are progressing.

Ardoth began her report by explaining the DECUS Library's new incentive/reward program to encourage program contributions from DECUS users. Any member contributing a program will receive a plaque from the Library acknowledging their efforts. Although announcement brought a general sense of approval from members of the audience, many thought the program would be more successful if the contributor were offered the alternative of receiving credit towards one of the Library's existing

DECUS Library Update (Continued)

listed programs. This suggestion will be referred to the Library Committee.

Following Ardoth's announcements, Larry Hicks gave a brief report on his work with the Library catalog. Since the last Symposium, the previous three existing versions of the catalog have been compiled together into one document. A free copy of this new version should be mailed to all DECUS members around June.

The Library will begin treating this catalog as its main marketing tool. It will be given away in order to make more DECUS members and others aware of the wide selection of programs available through the Library System.

In addition to the catalog distribution the Library will continue to improve user awareness through posters, buttons, booth displays and the implementation of advertising.

A discussion of the Library's current taping programs and strategies elicited considerable input from members of the audience. One suggestion which came up during this portion of the discussion was the Library's need to make a better general abstract listing of available tapes and the information contained within them. The point brought up, was that many potential Library customers can't justify the tape purchase price without a better knowledge of what they are buying. Ardoth said the group would consider this in the future and try to come up with a better list.

Another taping problem currently being experienced by the Library is their need for a better copying system. A new mass-producing copying unit is one of the Library's main immediate objectives.

For those users and SIG members unable to attend the Symposium, or just wishing to obtain copies of SIG sessions, master tapes will be available. SIGs having copies made at the St. Louis Symposium included: RSX, RT-11, DECsystem-10/20, VAX, and RSTS.

Copies of these tapes are available to users for about \$112. The RSX and VAX tapes are quite lengthy, and are expected to include two tapes.

The last portion of the formal half of the session included a discussion of long range planning goals. The main Library goal is to acquire a method of determining what items and interests users will have in the future. According to committee members, this knowledge will enable the Library to better plan and prepare for these needs, saving everybody time and money in the future.

Following the formal first half of the session, Ardoth and other committee members took questions from the audience.

Many of the questions concerned the alternative methods available to create Library donor incentives. Most DECUS members present agreed a credit system would be more effective than the current plaque proposal. Citing other successful library programs, even Ardoth agreed, but said she was not certain such a program would work in the DECUS system. She feels the Library could easily become overwhelmed with nonusable programs offered by users wanting free programs. Although the DECUS Library is not a profit organization, she said such results could destroy the system's financial stability through increased operating costs.

One alternative to the plaque system already being discussed, is the possibility of offering a RAINBOW 100 system through a lottery which would include all program contributors.

In other pertinent discussion, some users felt that DECUS should obtain stronger rules applying to users' copying and distribution of programs obtained through the library. Though there is no law which protects the programs, which are public property, members said it would be nice if DECUS created a head or logo least recognize their contributions to program users. This would not only be self-rewarding to the program authors, but would also create a greater awareness among non-DECUS programmers.

In concluding the meeting, Ardoth promised all suggestions would be carefully discussed among Library managers, and promised to let users know results of these discussions as soon as possible.

CALLING ALL IOUs

Does The Multi-Tasker editor have an IOU that has your name on it?

At the DECUS Fall '82 Symposium the The Multi-Tasker editor offered an instant reward for article IOUs. Have you sent your article? It is not too late, please forward your article to:

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c/o DECUS
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Marlboro, MA 01752

CALLING ALL IOUs

Field Test Report Panel

RMS-V2.0,
RSX-11M-PLUS V2.1
and
RSX-11M V4.1

Allen Bennett
Clark Equipment Company
Battle Creek, MI

Jim Downward
KMS Fusion
Ann Arbor, MI

Gary Maxwell
U.S. Geological Survey
Menlo Park, CA

Mike Pettengill
Digital Equipment Corporation
Nashua, NH

H. Legare Coleman, Session Chairperson
Philip Morris International
New York, NY

Reported by Marc Caffee
DECUS Scribe Service

DECUS Spring '83 Symposium
St. Louis, MO

The purpose of this session was to have reports from individuals who have field tested the soon to be released versions of RSX and RMS. Both favorable and unfavorable features were discussed.

For RSX-11M V4.1 the first consideration was the ease with which the system was generated. There were no unexpected crash problems. RMS V2.0 works as advertised, in particular there is transparent file access through DECnet. It is worth noting that to incorporate this feature you need lengthy overlays or 32 KB of memory dedicated. Additionally, the system can now be "dynamically" tuned using MCR commands.

Among some of the disappointments was essentially the same EDT as in V4.0. The latest word on V3.0 of EDT is that it might be on the first update of RSX-11M 4.1 and RMS 2.1 It was also observed that TKB died occasionally for apparently unknown reason. In the 4.1 version IQ.X was removed. It was felt that despite it not working properly in 4.0 it was still better than nothing.

At least one panel member was distressed by the direction of this new version. While V4.1 is improved in terms of maintenance it appears there are no real substantial improvements to facilitate better realtime computing applications, vectored FCS library for example. Also it would be desirable to see more uniformity for installation of layered products. Another improvement might be a vectored executive.

In summary, V4.1 is better than nothing but not what it could have been.

Some of the features incorporated in RSX-11M-PLUS are:

1. A new version of the overlay runtime support.
2. 700 bytes of binary pool savings.
3. A large version of FllACP is now automatically multiuser.
4. There is now OPEN support for I-D space tasks.
5. ODT can look at both I-D parts of tasks.

Additionally an improved version of BRU is incorporated into both V4.1 and V2.1. This version of BRU is upward compatible. It is not downward compatible. Features in the new BRU include the ability to backup to smaller sized volumes. If you run out of room on the smaller volume BRU asks you to mount the next volume. Also there is a new R.P. sort algorithm.

The new version of RMS will have stream file support. Other features include use of wildcards and resident clusterable libraries in order to save space. In summary, the new version of RMS will essentially have the functionality of VAX RMS.

Q. What will be the difference in performance between FCS and RMS?

A. FCS can be faster using multibuffering, but RMS does have more functionality.

Q. What are the updates we've been hearing about? Will these replace the autopatches?

A. Updates will replace autopatches. Hopefully, they will be better.

Q. Is a new I/O operations manual in the making?

A. Not to anyone's knowledge. The RMS manual has undergone major change.

Q. Will current Fortran compilers work in I-D space?

A. F77 will work, F4P will not.

Q. RMSLIB will be a vectored library. What about other libraries?

A. We are working towards task independent libraries.

RSX-11M-PLUS for the Micro/PDP-11

Brian McCarthy
Digital Equipment Corporation
Nashua, NH

S. Reid Madsen, Session Chairperson
Weidner Communications
Menlo Park, CA

Reported by Marc Caffee
DECUS Scribe Service

- Q. How much space does RMS use in RSX-11M-PLUS?
- A. 40 K with indexing, 20 K without.
- Q. Using RSX-11M-PLUS with many terminals causes operating system crashes frequently; has this been fixed?
- A. We believe this will no longer be a problem
- Q. Will TKB run in I-D space?
- A. Yes
- Q. Will the distribution kit be in BRU format?
- A. Yes
- Q. What about EDT?
- A. Some minor changes have been made but nothing major until V3.0 of EDT is released.
- Q. Will all tasks linked to resident libraries in V4.0 and V2.1 have to be rebuilt?
- A. Yes

This session dealt with future plans for support of RSX-11M-PLUS for the Micro/PDP-11. The basic problems encountered in RSX include difficulties in installation management and the lack of speed in TKB.

The basic challenge is to overcome the above problems so that Micro/PDP-11's running RSX can be utilized in small applications. Constraints encountered in meeting the above challenge are reduced cost for software, new distribution media requirements, ease of installation, reduced operating costs, and availability of applications.

Some of the goals for future Micro/PDP-11 systems running RSX are as follows:

1. A system the customer can install within 1 hour.
2. A system which is easy to use.
3. Compatibility with the RSX family.
4. Easy to develop applications (applications sell systems).
5. A system which is efficient in disk space usage.
6. A system packaged for the end user market.
7. Support for all Micro/PDP-11 hardware and relevant options.

WANTED --- WANTED

Articles for The Multi-Tasker Newsletter

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WANTED --- WANTED

In meeting these goals DIGITAL plans the following actions:

1. A single installation "card" which contains instructions on installing the system.
2. A redesigned stand-alone system (single floppy subset system).
3. Standardized additional software installation procedures for layered products.
4. Autoconfiguration on host machine.

RSX-11M-PLUS for the Micro/PDP-11
(Continued)

To facilitate ease of use DCL will be the only CLI supported with the base system. Additionally, the documentation will be greatly simplified. Other features will be online help facilities and named directories.

Ease of management will be accomplished by eliminating the sysgen (as previously outlined), simplifying the error logger, a simplifying the backup procedure, autoconfiguration, and implementation of a startup procedure driven by an "English-like" parameter file (similar to V2.0 in M-PLUS).

RSX compatibility will be accomplished by using the RSX-11M-PLUS V2.1 executive and file control system. RMS V2.0 will also be incorporated. DCL and utilities in the Micro/PDP-11 will be compatible with RSX-11M-PLUS V2.1. Finally, the Micro/PDP-11 will be upward compatible with RSX-11M V4.1.

Applications may be compiled/linked on an RSX host system, then transferred to a Micro/PDP-11 system. Most application debugging may be performed on the host machine. There will be programming extension kits available for native development.

As previously mentioned, the Micro/PDP-11 will be packaged for the end user market. Importance is being given to presenting a packaging/documentation combination that is attractive to the first time user. For example, the system will be shipped in a "designer" box. This package will have provision for OEM resale.

The minimum recommended system will include 512 KB of RAM memory, two RX50 diskette drives, and a RD51 10 MB fixed winchester disk. It should be noted that the system only comes with 256 KB of memory, however for many applications, such as multiuser systems, more memory is urged. Optional hardware will include a floating point processor, commercial instruction set, line printer, RL02s, RX02s, AND DZV11'S.

The system will be available in three kits:
1) base system 2) advanced programming kit
3) additional software kit.

Features to be included in the base system include online help, layered language support, and TKB. Options will include error logging, and report generator control file (RPT). The base system documentation kit will include the previously discussed installation card, and a two volume introduction to Micro/PDP-11 RSX.

The advanced system will allow program development in MACRO-11. This system will also support privileged program development, file transfer, and magtape capability. The documentation set will be much more extensive.

Among the additional software to be available will be the following:

1. Developmental languages
2. Communications products
3. DIGITAL layered products
4. Business applications
5. Technical applications
6. Office automation

All systems will have a ninety day limited warranty, which includes telephone support. More extensive warranties will be made available.

During the Question and Answer session, the following questions were asked:

Q. Will the Micro/PDP-11 support shared regions?

A. Yes

Q. When will F77 be available?

A. No commitments, but hopefully this fall. It is currently being field tested.

Q. How will RX02s be supported, since RX02s are not supported in 22-bit addressing on Q-Bus systems?

A. A new device driver will be available.

Q. Will this driver one day be available for other RSX users?

A. We'll think about it.

Q. When will DECnet be supported?

A. Hopefully this fall.

Q. What tape drive is supported?

A. TSV05

Building and Using Resident Libraries

S. Reid Madsen
Weidner Communications
Provo, UT

Allan J. Bennett, Session Chairperson
Clark Equipment Company
Battle Creek, MI

Reported by Marc Caffee
DECUS Scribe Service

DECUS Spring '83 Symposium
St. Louis, MO

The RSX taskbuilder permits three types of shared regions: shared commons, shared libraries, and dynamically allocated regions. Several types of shared libraries were discussed, as follows:

1. Resident library - a library that requires a dedicated address window in your task.
2. Cluster library - a set of libraries mapped through one window (this type of library can be very slow).
3. Supervisor mode library (RSX-11M-PLUS only) - the library mapped uses supervisor I space while the task is mapped in D space.

The purpose in using a library is to reduce the physical address space required for a task by putting routines used by many tasks into a common area (library). By doing this a net gain in physical address space is made. Using shared libraries also reduces disk swapping, since the space requirements for tasks is less than that required by tasks which do not use shared libraries. This not only increases throughput, but can possibly forestall the purchase of additional memory.

An example of an existing library is the FCS library. During the SYSGEN procedure you can link a number of tasks to FCSRES. Additionally, some of the layered products (e.g. FORTRAN) have the ability to build resident libraries. In addition to the above libraries the user can write his own libraries. In order to establish a library you must: define the library contents, build the library, install the library, and finally link the task to the library.

A user built library can contain either a MACRO-11 source file or an overlay descriptor file. MACRO-11 source files are used by specifying the source file's global entry points. If an ODL file is used,

the file contains the names of the object modules to be included in the library.

After the contents of the library have been established, TKB is used to build the library. By using different TKB commands you can build overlaid libraries, cluster libraries, and supervisor libraries. In building a memory resident overlay a potential pitfall occurs in referencing entry points. If an entry point is not referenced in the root segment it should be defined using the .GBLREF option.

In building cluster libraries there are several things to remember.

1. All libraries except the first must be memory-resident overlays.
2. User task vectors indirectly resolve all interlibrary references.
3. Revectoring entry point symbols must not appear in the "Upstream" symbol definition file. A .GBLXCL option must appear for each symbol being revectoring to a "Downstream" library.
4. All libraries must be built PIC or built for the same address.
5. Trap or asynchronous entry into a library is not allowed.

Building a supervisor mode library is similar to building other libraries.

Once a library has been built, the next step is installation. One way to do this is to use VMR to create a new bootable system image. One strategy is to install each library in a partition which has the same name as the task. To get the size for the partition to be created look at the memory allocation map.

You are now ready to link to the resident library which you have created. For a non-clustered and non-supervisor-mode library use either the LIBR or RESLIB TKB options. For clustered libraries use the CLSTR keyword. Supervisor-mode libraries are specified by SUPLIB or RESSUP.

In a test to check performance three different situations were compared:

1. No libraries
2. Cluster library in which both libraries were overlaid
3. Cluster library where the first library was not overlaid

Cases 1. and 2. had essentially the same performance, while case 3 was slower by about a factor of 9.

SPEAK OUT

"Speak Out" is a monthly column for readers to express their opinions or to comment on a previous column. The articles published in this column are an individual's viewpoint and do not necessarily reflect the opinion of DECUS or the RSX SIG. Readers are welcome to submit articles on any subject concerning the RSX World. Send submissions to: The Multi-Tasker - Speak Out, c/o DECUS, One Iron Way, MR2-3/E55, Marlboro, MA 01752.

Kevin Angley
 TELEX Terminal Communications
 3301 Terminal Drive, Raleigh, NC 27604

July 11, 1983
 Mr. Ralph Cook
 Digital equipment Corp.
 800 Eastowne Drive, Suite 100
 Chapel Hill, NC 27514

Dear Mr. Cook:

After receiving your letter of July 1, 1983 in which you attempted to console me regarding the quality of Digital's software support, I decided to take a new attitude towards software support, SOFTWARE DISPATCH, et al. I decided to assume all was well until the first time software support disappointed me again.

Lo and behold, today's mail brought the July SOFTWARE DISPATCH. Fearlessly I proceeded to apply the only relevant patch (seq. #10.3.5.24). Overlooking the typos (e.g.: "falal"), I began following instructions to apply the patch. I was determined not to let minor problems change my attitude. But, what's this???? The text says that the patch updates to version 2.5-13 but the patch file actually updates to 2.5-14! Oh, what the heck - I'll just try all the different permutations of ident's and levels until it comes up correct.

Next, I find more typo's but this time in the patch file (e.g.: "PAPER1" in F8.PAT). Could this mean that these patches are never tested before release to paying customers? Still undaunted, I attempt to PAT, but - perish the thought - the checksums were wrong! Then the command line for patching references module "F5" which has nothing to do with the fix.

Hmmm.....so much for pleasant attitudes.

Kevin Angley
 Software Engineer

cc: RSX SIG Multi-tasker
 c/o DECUS
 One Iron Way, MR2-3E55
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INDEX

	Page
Building and Using Resident Libraries .	20
CALLING ALL IOUs	16
Clear Your Screen	9
DECUS Library Update	15
EXTRA --- EXTRA	15
Field Test Report Panel	17
Hints 'n Things OPS.CMD Modification	4
Manipulating the FORTRAN Environment ..	6
RSX SIG Steering Committee Activity Coordinators	2
RSX SIG Steering Committee Executive Board	2
RSX SIG Steering Committee Working Group Chairman	3
RSX-11M-PLUS for the Micro/PDP-11	18
RSX-11M V4.1 SYSGEN Symbols	11
SPEAK OUT	21
WANTED --- WANTED	18
Working Group News	15

NOTES



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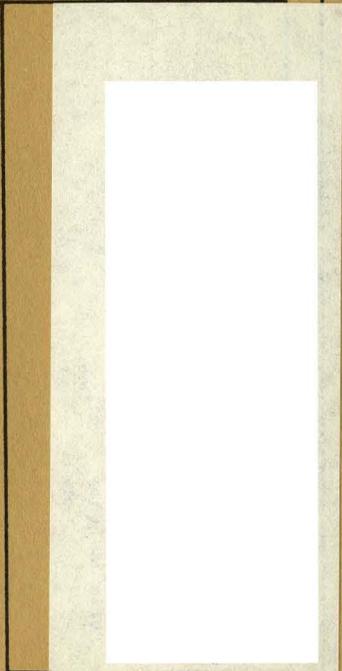
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