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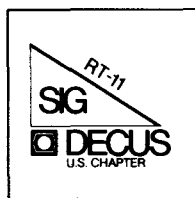
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From The Editor

I still need more volunteers to convert the audio tapes recorded at DECUS Symposium RT-11 sessions into articles for the "Minitasker". You will only be responsible for converting the tape from any one session. Please contact me as soon as possible.

Thankyou,

Ken Demers

USER INPUT

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SCIN 123:1

3 MAY 1983

A DOCUMENTATION DIRECTORY FOR RT-11 DEVICE HANDLERS AND INTERRUPTS.

R. D. BROWNRIGG

ABSTRACT: An exhaustive list is presented of those references to device handlers and interrupt processing contained in the DEC documentation available for the RT-11 version 4.0 operating system.

1. INTRODUCTION.

The following references are to section numbers, figures, and tables contained in the various manuals available for the RT-11 version 4.0 operating system. All references have direct relevance to device handlers in particular or interrupt processing in general. In some cases, further information is provided in parentheses to clarify exactly which aspects of these topics are mentioned or discussed in the particular section referred to. Page numbers are also provided.

The manuals referred to and their abbreviations are as follows:

MAM	- DIGITAL 'microcomputers and memories' handbook (1982 edition)
GEN	- RT-11 Installation and System Generation Guide
SYS	- RT-11 System User's Guide
REF	- RT-11 Programmer's Reference Manual
SUP	- RT-11 Software Support Manual

2. DIGITAL 'microcomputers and memories' handbook

ARCHITECTURAL OVERVIEW	MAM CHAPTER 2
PROCESSOR STATUS WORD (interrupt priority)	MAM CHAPTER 2
PROGRAMMING TECHNIQUES	MAM CHAPTER 8
POSITION INDEPENDENT CODE (virtual address space)	MAM CHAPTER 8
STACKS (subroutines, interrupts)	MAM CHAPTER 8
INTERRUPTS (interrupt enable bit)	MAM CHAPTER 8
LSI-11 BUS	MAM CHAPTER 9
INTERRUPTS (vector, device priority)	MAM CHAPTER 9
MEMORY MANAGEMENT (kernel mode, user mode)	MAM CHAPTER 10
MEMORY RELOCATION	MAM CHAPTER 10
PROTECTION	MAM CHAPTER 10
PAGE ADDRESS REGISTER (PAR)	MAM CHAPTER 10
VIRTUAL AND PHYSICAL ADDRESSES	MAM CHAPTER 10

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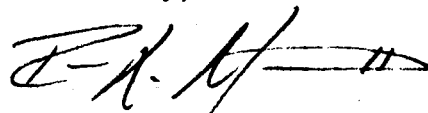
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I have discovered a small problem with RT-11 V5 and RX03 dual sided, dual density floppies: the new version has all the code that used to support RX03's deleted. What used to be a relatively simple patch to enable RX03 support is now a rather involved patch which re-enters all the old RX03 support code.

If you would like a copy of this patch please request in writing to the editor of the "Mini-Tasker".

Sincerely,



Russell L. Morrison II
Systems Analyst,
Software Support

HIGH LEVEL MULTILANGUAGE MACHINE-INDEPENDENT PROGRAMMATION
(16, 32, 36, ... BITS) : A SUBROUTINE FOR BIT MANIPULATIONS
IN BASIC AND FORTRAN IV.

BY DANIEL GUINIER

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INTRODUCTION :

MANIPULATION OR EXAMINATION OF BITS OF A MEMORY WORD PERMITS
COMPRESSION OF BINARY DATA THAT CAN REACH A VERY INTERESTING RATE
FOR STORAGE, CODING OR DATA ACQUISITION. THIS ALSO ALLOWS LOGICAL
OPERATIONS APART FROM USING MACHINE CODE OR ASSEMBLER LANGUAGE WHICH
ARE PARTICULAR TO A GIVEN COMPUTER.

WE HAVE REALIZED A SUBROUTINE AND ITS CALLING PROGRAM WRITTEN AS IN
FORTRAN IV AND ALSO IN BASIC (TESTED WITH ZX81 SINCLAIR WHICH IS THE LEAST
EXPENSIVE MODEL IN THE MARKET OF MICRO-COMPUTERS). OUR PURPOSE IS TO USE
THIS METHOD ON ALL TYPES AND ORGANIZATIONS OF COMPUTERS (16, 32, 36, ... BITS)
AS WELL AS TO COMPARE THESE TWO LANGUAGES.

METHODS :

REPRESENTATION OF INTEGERS :

AN INTEGER I IS STORED IN A MEMORY WORD OF 16, 32, 36, ... BITS
WHOSE THE HIGHEST WEIGHTED BIT IS THE BIT OF SIGN; IF THIS BIT IS RESET TO
ZERO, THE NUMBER IS POSITIVE, OTHERWISE, IT IS POSITIVE.

EXAMPLE :

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I

- LET NBRBIT=16, 32 OR 36, THE NUMBER OF BITS PER WORD.
- LET J, THE INDEX FOR THE POSITION OF THE BITS IN THE WORD (J=1 TO NBRBIT).
- LET BIT(J)=0 OR 1, THE ACTUAL VALUE OF THE J TH. BIT IN THE WORD.

IF NBRBIT=16 $-(2^{15}-1) \leq I \leq 2^{15}-1$ THAT IS $-32767 \leq I \leq 32767$
 IF NBRBIT=32 $-(2^{31}-1) \leq I \leq 2^{31}-1$
 IF NBRBIT=36 $-(2^{35}-1) \leq I \leq 2^{35}-1$

BINARY - DECIMAL CONVERSION :

THE VALUE OF A MACHINE WORD WHICH IS THE IMAGE OF A FIELD INTEGER I CAN BE EXPRESSED AS :

$$I = \text{BIT}(1) + \text{BIT}(2)*2 + \text{BIT}(3)*2^2 + \text{BIT}(4)*2^3 + \text{BIT}(\text{NBRBIT}-1)*2^{(\text{NBRBIT}-2)}$$

THE NBRBIT-TH BIT GIVES THE SIGN OF I

EXAMPLE :

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
I	I	0	I	0	I	0	I	0	I	1	I	0	I	0	I

IF WE APPLY WHAT WAS DESCRIBED ABOVE :

$$I = 1 + 1*2 + 0*2^2 + \dots + 1*2^6 + \dots = 1 + 2 + 2^6 = 1 + 2 + 64 = 67$$

$I = + 67$ BECAUSE $\text{BIT}(\text{NBRBIT}) = \text{BIT}(16) = 0$

THIS IS A BINARY - DECIMAL CONVERSION.

DECIMAL - BINARY CONVERSION :

FOR A POSITIVE INTEGER I, THAT IS AN I WITHOUT ITS SIGN BIT, CAN BE CONVERTED INTO BINARY REPRESENTATION CONTAINED IN THE ELEMENTS BIT(J) OF AN ARRAY BIT() THAT ARE THE RESIDUALS OF SUCCESSIVE DIVISIONS PER TWO.

EXAMPLE : - TAKE THE ABSOLUE VALUE OF $I = 67$

67 / 2 = 33	;	RESIDUAL	:	BIT(1) = 1
33 / 2 = 16	;	RESIDUAL	:	BIT(2) = 1
16 / 2 = 8	;	RESIDUAL	:	BIT(3) = 0
8 / 2 = 4	;	RESIDUAL	:	BIT(4) = 0
4 / 2 = 2	;	RESIDUAL	:	BIT(5) = 0
2 / 2 = 1	;	RESIDUAL	:	BIT(6) = 0
1 / 2 = 0	;	RESIDUAL	:	BIT(7) = 1

ALL OTHER BITS FROM BIT(8) TO BIT(NBRBIT-1), THAT IS BIT(15) ARE RESET TO ZERO AND $\text{BIT}(\text{NBRBIT}) = 0$ IF I IS POSITIVE.

THIS IS A DECIMAL - BINARY CONVERSION.

FOR NEGATIVE NUMBERS :

IN THE PRECEDING CONVERSIONS, WE WORKED ON POSITIVE INTEGERS TO AVOID TWO'S COMPLEMENTATION, FORM IN WHICH NEGATIVE INTEGERS ARE USUALLY STORED, THIS OPERATION WAS AUTOMATICALLY DONE BY A SINGLE INSTRUCTION OF SIGN CHANGE AND COMPLEMENTATION BY $I = I (+/-) 2^{(NBRBIT-1)}$ WHEN $BIT(NBRBIT) = 1$

EXAMPLE :

	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
I = + 67	I	0	1	0	1	0	1	0	1	0	1	1	0	1	0	1
I = - 67	I	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1

NUMERICAL EXAMPLES :

1ST. EXAMPLE : *****

INPUT :

I = 67

I1= 0

OUTPUT :

67

0000000001000011

2ND. EXAMPLE : *****

INPUT :

I = -67

I1= 0

OUTPUT :

-67

111111110111101

3TH. EXAMPLE : *****

INPUT :

I = 67

I1= 1

BIT 1 = 1

BIT 9 = 1

BIT 2 = 0

BIT10 = 1

BIT 3 = 1

BIT11 = 1

BIT 4 = 1

BIT12 = 1

BIT 5 = 1

BIT13 = 1

BIT 6 = 1

BIT14 = 1

BIT 7 = 0

BIT15 = 1

BIT 8 = 1

BIT16 = 1

OUTPUT :

-67

111111110111101

4TH. EXAMPLE : *****

INPUT :
 I = 67
 I1 = 1
 BIT 1 = 2 BIT 9 = 1
 BIT 2 = 2 BIT 10 = 1
 BIT 3 = 2 BIT 11 = 1
 BIT 4 = 2 BIT 12 = 1
 BIT 5 = 2 BIT 13 = 1
 BIT 6 = 2 BIT 14 = 1
 BIT 7 = 2 BIT 15 = 1
 BIT 8 = 2 BIT 16 = 1
 OUTPUT :
 -189
 1111111101000011

LISTINGS :

SUBROUTINE BIT01 INCLUDES THREE PRINCIPAL PHASES :
 SEARCH OF THE BITS' LEVEL FOR THE FIELD INTEGER I.
 POSSIBLE CHANGES OF THIS LEVEL (0 OR 1).
 RELEASING OF A NEW FIELD INTEGER I AFTER A CHANGE OF LEVEL OF THE BITS.

THESE PHASES ARE IMPLICIT FOR THE TWO VERSIONS (BASIC AND FORTRAN).
 THE LISTINGS BELOW INCLUDE THE TWO VERSIONS WITH MAINS AND SUBROUTINES
 AND ALSO FOUR NUMERICAL EXAMPLES.

INPUT AND OUTPUT ARGUMENTS :

FORTRAN IV	BASIC	TYPE	FUNCTION
I	I	IN/OUT	INTEGER FOR THE LEVEL OF THE BITS OF THE ARRAY BIT(), UNCHANGED FOR OUTPUT IF IND OR I1=0
IND	I1	IN	IF IND OR I1=0 : EXAMINATION OF THE BITS' LEVEL, OTHERWISE POSSIBLE CHANGE OF THESE LEVELS.
BIT()	AC()	OUT	INTEGER ARRAY [0,1], LOADED WITH THE BITS LEVEL OF THE INTEGER FIELD I.
BITSET()	BC()	IN	INTEGER ARRAY, GIVING THE BITS' LEVEL TO CHANGE FOR ALL BITSET() INCLUDED IN [0,1]
NBRBIT	N0	IN	NUMBER OF BITS IN A MACHINE WORD (NBRBIT=16, 32, 36, ... BITS).


```
*****
* LISTING OF THE FORTRAN IV VERSION *
*****
```

```
*****
* MAIN PROGRAM FORTRAN IV *
*****
```

```
INTEGER BIT(36),BITSET(36)
```

```
DATA NBRBIT/16/LEC,IMP/5,7/
```

```
DO 1 J=1,NBRBIT
1 BITSET(J)=-1

WRITE(IMP,2)
2 FORMAT('$I= ')
READ(LEC,3)I
3 FORMAT(I5)
WRITE(IMP,4)
4 FORMAT('$IND= ')
READ(LEC,3)IND

IF(IND.EQ.0)GO TO 7

DO 6 J=1,NBRBIT
WRITE(IMP,5)J
5 FORMAT('$BIT',I2,' = ')
READ(LEC,3)K
IF(K.GT.1.OR.K.LT.0)GO TO 6
BITSET(J)=K
6 CONTINUE

C CALL SUBROUTINE BIT01
7 CALL BIT01(I,IND,BIT,BITSET,NBRBIT)

C OUTPUT RESULTS.
WRITE(IMP,8)I,(BIT(K),K=NBRBIT,1,-1)
8 FORMAT(/I8//,2X,16I1//)

STOP
END
```

```
*****
* SUBROUTINE FORTRAN IV *
*****
```

```
C
C
C SUBROUTINE BIT01(I,IND,BIT,BITSET,NBRBIT)
```

```
C DANIEL GUINIER (1983) C.N.R.S. STRASBOURG
```

```
C SUBROUTINE FORTRAN IV FOR EXAMINATION AND/OR CHANGE OF THE VALUE
C OF ONE OR SEVERAL BITS IN A MACHINE WORD FOR ANY TYPE OF COMPUTER
C ARCHITECTURE (16, 32, 36, ... BITS).
```

INTEGER BIT(36),BITSET(36)

NBR=NBRBIT-1
IP=I
BIT(NBRBIT)=0

IF(IP GE. 0)GO TO 1

BIT(NBRBIT)=1
IP=IP+2.**(NBRBIT-1)

1 DO 2 J=1,NBR

BIT(J)=MOD(IP,2)
IP=IP/2

IF(IND.EQ.0)RETURN

DO 4 J=1,NBRBIT

IF(BITSET(J).NE.0)GO TO 3
BIT (J)= 0
BITSET(J)=-1
GO TO 4

3 IF(BITSET(J).NE.1)GO TO 4
BIT (J)= 1

BITSET(J)=-1
4 CONTINUE

I=BIT(NBR)
N=NBR-1

DO 5 J=N,1,-1

5 I=I*2+BIT(J)

IF(BIT(NBRBIT).EQ.1)I=I-2.**(NBRBIT-1)

RETURN
END

* LISTING OF THE BASIC VERSION *

* MAIN PROGRAM BASIC *

010 DIM A(36)

020 DIM B(36)

030 LET N0=16

```

040     FOR J=1 TO N0
050     LET B(J)=-1
060     NEXT J

070     PRINT " I ="
080     INPUT I
090     PRINT " I1="
100     INPUT I1

110     IF I1=0 THEN GOTO 190

120     FOR J=1 TO N0
130     PRINT " BIT"; J; " ="
140     INPUT K
150     IF K>1 OR K<0 THEN GOTO 170
160     LET B(J)=K
170     NEXT J

180     REM " CALL SUBROUTINE BIT01
190     GOSUB 1000

200     PRINT " SORTIE DES RESULTATS"
210     PRINT " I = "; I
220     PRINT " ETAT DES BITS DE I"
230     FOR J=1 TO N0
240     PRINT A(J)
250     NEXT J

260     STOP

*****
* SUBROUTINE BASIC *

1000    REM " ..... "
1010    REM " SUBROUTINE BIT01 ..... "
1020    REM " ARGUMENTS : I, I1, A(), B(), N0" ..... "
1030    REM " ..... "

1040    LET N1=N0-1
1050    LET I2=I
1060    LET A(N0)=0

1070    IF I2>=0 THEN GOTO 1100

1080    LET A(N0)=1
1090    LET I2=I2+2** (N0-1)

1100    FOR J=1 TO N1

1110    LET I3=INT (I2/2)
1120    LET A(J)=I2-I3*2
1130    LET I2=I3
1140    NEXT J

1150    IF I1=0 THEN RETURN

1160    FOR J=1 TO N0

1170    IF B(J)<>0 THEN GOTO 1210
1180    LET A(J)= 0
1190    LET B(J)=-1
1200    GOTO 1240

```

```

1210   IF B(J)<>1 THEN GOTO 1240
1220   LET A(J)= 1
1230   LET B(J)=-1
1240   NEXT J

1250   LET I=A(N1)
1260   LET N2=N1-1

1270   FOR J=N2 TO 1 STEP -1

1280   LET I=I*2+A(J)
1290   NEXT J

1300   IF A(N0)<>1 THEN RETURN
1310   LET I=I-2**(N0-1)

1320   RETURN

```

CONCLUSION :

THE USER CAN DIRECTLY VERIFY OR HANDLE BITS' LEVEL OF A MEMORY WORD WITHOUT A SPECIFIC ASSEMBLER OR MACHINE CODE WHICH ARE PARTICULAR TO A GIVEN COMPUTER; THIS SUBROUTINE IS COMPLETELY TRANSPORTABLE TO ANY TYPE OF MACHINE.

THE READER WILL NOTICE SOME DIFFERENCES BETWEEN THE TWO HIGH LEVEL LANGUAGES AND ESPECIALLY WILL APPRECIATE THE MNEMONIC AND RELATIVE STATEMENTS QUALITIES OF FORTRAN.

I recently came across a problem with the RT-11 V5 Extended Memory monitor on 18-bit Qbus systems. I would like to share this problem (and its solution) with you and the other users out there.

The problem, simply (??) stated, is that DEC has been supplying the LSI 11/23+ chip set for some time, and thus some LSI systems (ours, for example) already have 22-bit addressing capability, even though the CPU is plugged into an 18-bit Qbus. Under these conditions, the memory sizing routine in RT-11 V5 does a "wrap-around", that is, the upper four bits of a 22-bit address are ignored, making the next address after "777777" equal to "000000" instead of "1000000". This is not especially critical in the Single Job monitor, where it simply causes the RESORC routine to report 4Mb of memory, and the VM Virtual Memory Disk Emulator thinks the same thing. Using the VM driver under these conditions can cause RMON to be written over and will generally cause the system to crash.

In the RT-11 V5 Extended Memory monitor, the bootstrap routine sizes memory and reports to RT-11 that it has 4Mb available. This causes the XM monitor to crash on loading, so users can't even have the use of the background partition.

Since Plessey Peripheral Systems' main product line is Qbus systems, this state of affairs was wholly unacceptable, and some sort of "work around" or patch had to be developed. The result of our work consists of two unsupported patches, either or both of which may be installed to fix this problem. Since these patches alter the RT-11 source files, care must be exercised in using them; i.e., be sure you have adequate backups of your distribution.

These patches are presented as a courtesy only. We have tested these patches on the DEC RT-11 distribution and have found them to work as described. However, Plessey Peripheral Systems makes no guarantee as to the accuracy or functionality of these patches, and will in no case provide support for systems on which they are applied. Plessey will assume no responsibility for any damages resulting from the use of these patches.

The first patch is an addition to SYSGEN of a new parameter, **MODE22**. This parameter turns on/off 22-bit addressing in the RT-11 system, both in the extended memory monitor and the VM driver. The patch consists of three SLP files, to be applied to **SYSGEN.COM**, **BSTRAP.MAC**, and **VM.MAC**, respectively.

The first SLP file, **SYSGEN.SLP**, is as follows:

```

-/      .IFF <ESCAPE> .GOTO M020/,.
      .IFF <ESCAPE> .GOTO Q3A
-/      .GOTO Q3/

.Q3A:   .IFF XM .GOTO M020
      .ASK [<TRUE>] MODE22 Do you want 22-bit support (Y)?
-/      .IF DNM = "LS" .GOSUB LSC/
      .IF DNM = "VM" .GOSUB VM22
-/.CTL90:.RETURN/

.VM22:  .IFT XM .RETURN
      ;
      .ASK [<TRUE>] MODE22 Do you want 22-bit support (Y)?
      .RETURN
-/.G5:/
      .SETS ARG "MODE22,22-bit support"
      .GOSUB SET
/

```

The second SLP file, **BSTRAP.SLP**, is as follows:

```

-/.SBTTL *      Extended Memory Bootstrap      */
.IIF NDF MODE22  MODE22  = 000000
.IIF NE MODE22  MODE22  = 000020
-/      BIS      #20,@#SR3/,/      BIT      #20,@#SR3/
.IIF NDF MODE22  MODE22  = 000000
      BIS      #MODE22,@#SR3
.IIF EQ PDT$OP  NOP
      BCS      20$
      BIT      #MODE22,@#SR3
/

```

It should be noted that the first line of this file should be read as "minus slash period SBTTL tab asterisk eight spaces Extended Memory Bootstrap nine spaces asterisk slash"

The third SLP file, **VM.SLP**, is as follows:

```

-/MODE22 = 000020/,.
.IIF NDF MODE22  MODE22  = 000000
.IIF NE MODE22  MODE22  = 000020
/

```

Once these files have been created, they may be implemented by the following commands:

```
.R SLP
*SYSGEN.COM=SYSGEN.COM.SYSGEN.SLP
*BSTRAP.MAC=BSTRAP.MAC.BSTRAP.SLP
*VM.MAC=VM.MAC.VM.SLP
*^C
```

Having implemented these files, perform a SYSGEN, or edit your SYSGEN.CND file to include a line:

```
MODE22 = 000000 ;22-bit support
```

which will disable 22-bit support in both the Extended Memory monitor and in the VM driver. When you perform a SYSGEN, you will notice a new question:

Do you want 22-bit support (Y)?

This question will be asked if you select the XM monitor, or, if you don't select the XM monitor, when you select the VM Virtual Memory Driver. Please note that the default base address of the VM driver in XM systems (BASE=10000) will make it uninstallable on 18-bit systems.

The second patch consists of the addition of a SET command to the VM driver. The patch is implemented through an SLP file, VMSET.SLP, the text of which is as follows:

```
-/REINST:/,/.EVEN/
REINST: .ASCIIZ  "?VM-W-Revome/install VM"
        .EVEN
        .IF EQ MMG$T
BAREA:  .BYTE    17,10
        .BLKW
        .BLKW
        .WORD    256.
        .WORD    0
C.BT22:  MOV      R3,V.BIT
        MOV      R3,I.BIT
        BR       PRI
        .ENDC
-/.DRSET/,.
        .IF EQ MMG$T
        .DRSET   22BIT,1,S.BT22,NO
        .ENDC
        .DRSET   BASE,1600,S.BASE,OCT
        .IF EQ MMG$T
S.BT22:  MOV      (PC)+,R3
        .WORD    21
        DEC      R3
        BR       C.BT22
        .ENDC
        .ENABL   LSB
-/.ENDC/,/$$$.SET/
        .ENDC
PRI:     MOV      PC,R0
        ADD      #REINST-.,R0
        .PRINT
```

```

5$:
10$:      RTS      PC
          .DSABL   LSB
          $$SET    = .
-/BIS     #MODE22,@#MSR3/,/BEQ      20$/
          MOV      (PC)+,R1
I.BIT:    .WORD    MODE22
          MOV      #MSR3,R2
          BIS      R1,@R2
          BCS      20$
          BIT      R1,@R2
          BEQ      20$
-/CLR     @#MSR3/,/JMP      100$/
          CLR      @R2
          BR       100$
-/WORD    MODE22/,.
V.BIT:    .WORD    MODE22
/

```

This patch is implemented through the following commands:

```

.R SLP
*VM.MAC=VM.MAC.VMSET.SLP
*^C

```

After entering these commands, either recompile the VM driver or perform a SYSGEN. Upon completion, a command of the form:

```
SET VM [NO]22BIT
```

will be available.

Please note that these two patches are in no way incompatible; that is, they may both be in place at once. Note as well that the second patch, which implements a SET command for the VM driver only, does nothing for the Extended Memory Monitor problem. It should also be noted that, while the second patch in no way alters the functionality of the VM driver, it does change the warning message printed after a SET command from:

```
?VM-W-Remove and reinstall this handler
```

to:

```
?VM-W-Remove/install VM
```

While this is not a big deal for most users, this message might be confusing to less sophisticated users, since it can't be found in any of the manuals.

Please note that neither of these patches will correct the RESORC report that there are 4Mb of memory installed. It will, however, fix any problems connected with using the VM driver or the Extended Memory monitor. Please note as well that any software that directly manipulates the memory management registers of the 11/23 will need to be written to take the problems of the 18-bit bus into account.

I hope that these patches will be of use to those DEC and DEC compatible users who have been a little perplexed at some of the glitches in RT-11 V5's extended memory features.

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Sincerely,



(714)540-9945

The Cursor Driven Command File Driver does the following:

1. You give the program the name of a menu file which is displayed on the screen. A menu file has the name of previously created command files together with a short description.
2. You move the cursor anywhere within the command file name. This name must be alphanumeric and can be 1 to 6 characters.
3. You hit the return key. If the command file is created properly and is spelled correctly on the menu, it will then execute.

A couple of comments/observations on the program:

1. It runs on a LSI 11/23 under TSX+; a VT100 terminal in ANSI mode.
2. The escape sequences which we use as a standard at the top of EVERY menu are as follows; (I tried the program an out of date..kind of off the wall sequence and it didn't work..so be warned):

ESC = the escape char.
cr = Car. return; lf = line feed.

ESC[ESC[?31ESC[2JESC[1;24rESC[CHESC[0mcrlf

ESC[= If in VT52 mode reset to ANSI

ESC[?31 = If screen 132 col set to 80; the question mark is not part of the sequence but since we have C-ITOH's that use it as part of their sequence we put it in and it works on a VT100 ok.

ESC[2J = Erase entire screen.

ESC[1;24r = Set top-bottom scrolling region.

ESC[CH = Cursor unconditionally to HOME position.

ESC[0m = Clear all attributes.

3. You may move the cursor anywhere with the six character command file name and the program will work. If you put a call to this program and the menu names in all command files referenced by your menu system, it can make getting around the system, significantly faster.

I'd like to thank Bruce Johnson of ITI for showing me much faster/easier ways out of the trenches at various and sundry times.

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```

ENDOFESCAPESEQUENCE: INTEGER;
SCREEN: TEXT;
ROW: R;
MENUCOL, SCREENCOL, COL: C;
INCREMENT, LEFTCOL, RIGHTCOL: INTEGER;
LENGTHOFARRAY, LENGTHOFSTRING, DONE, COLBOUNDARY, DPOS: INTEGER;
STOPCHAR, S, SAMPLE: CHAR;
JOBSTAT ORIGIN 44B: INTEGER;
CMDLENGTH ORIGIN 510B: INTEGER;
CMDFILE ORIGIN 512B: ARRAY [1..9] OF CHAR;

```

```

/*<----->*/

```

```

PROCEDURE P020BEEP;
  CONST

```

```

    DING = 7B;
    DONG = 7B;

```

```

BEGIN

```

```

  WRITE (CHR(DING), CHR(DONG));

```

```

END; [P020BEEP]

```

```

/*<----->*/

```

```

PROCEDURE P030EXECUTECOMMANDFILE;

```

```

/* THIS PROCEDURE CALLS AN ASSEMBLY LANGUAGE MACRO CALL*/

```

```

/* TO EXECUTE THE STRING OF CHARACTERS ALREADY BUILT. */

```

```

BEGIN

```

```

/* JOBSTAT SETS A BIT IN THE JSW INDICATING THERE'S A COMMAND FILE*/

```

```

/* TO BE EXECUTED WHEN THE EXIT MACRO IS EXECUTED. */

```

```

  JOBSTAT := JOBSTAT + 4000B;

```

```

[*$C

```

```

.MCALL .EXIT

```

```

CLR R0

```

```

.EXIT

```

```

*]

```

```

END; [END PROCEDURE]

```

```

/*<----->*/

```

```

PROCEDURE P040CREATECOMMANDFILE;

```

```

/*VAR INTERNAL*/

```

```

VAR CMDCOL, I1: INTEGER;

```

```

BEGIN

```

```

/* LENGTH OF COMMAND STRING SHOULD BE SET HERE; IT WILL BE PASSED TO THE
  JOBSTATUS AREA WHEN COMMAND FILE IS EXECUTED*/

```

```

  CMDLENGTH := NINE;

```

```

  FOR I1 := 1 TO 9 DO

```

```

    BEGIN

```

```

      CMDFILE [I1] := ' ';

```

```

    END;

```

```

  CMDCOL := 2;

```

```

  CMDFILE [1] := ' ';

```

```

  CMDFILE [8] := CHR(CR);

```

```

  CMDFILE [9] := CHR(LF);

```

```

        FOR I1 := LEFTCOL TO RIGHTCOL DO
            BEGIN
                CMDFLE [CMDCOL] := MENU [ROW, I1];
                CMDCOL := CMDCOL + 1;
            END;
END; [END PROCEDURE]

/*-----*/
PROCEDURE P050TRUEFALSE (VAR CH: CHAR; SKIPSET: CHARSET; VAR DB: BOOLEAN);
/*VAR INTERNAL*/
BEGIN
    IF CH IN SKIPSET THEN
        BEGIN
            DB := TRUE;
        END;
END; [END OF P050TRUEFALSE]

/*-----*/
PROCEDURE P060TESTCHAR;
/*VAR INTERNAL*/
BEGIN
    GOOD := FALSE;
    IF (SAMPLE >= 'A') AND (SAMPLE <= 'Z') THEN
        BEGIN
            GOOD := TRUE;
        END;
    P050TRUEFALSE (SAMPLE, ['A'.. 'Z'], GOOD);
    P050TRUEFALSE (SAMPLE, ['0'.. '9'], GOOD);
END; [END PROCEDURE]

/*-----*/
PROCEDURE P070FINDMENUCOL (DMENU: MN; DROW: R; SCREENCOL: C; VAR ACTUALMENUCOL: C; VAR ENDE
    ↳ ESCAPE: INTEGER);
/* THIS ROUTINE IS TO TAKE THE COLUMN NUMBER RETURNED BY THE CURSOR POSITION*/
/* REPORT AND CORRELATE IT TO THE ACTUAL COLUMN POSITION IN THE ARRAY OF THE MENU K
    ↳ EPT IN CORE.*/
/*THE CPR DID NOT COUNT ESCAPE SEQUENCES AND WHEN A TAB WAS ENCOUNTERED IT*/
/* ACTUALLY INSERTED TABCOUNT (USUALLY EIGHT) NUMBER OF SPACES IN THE COLUMN*/
/* NUMBER; WHEREAS IN THE CORE ARRAY THERE IS ONLY 1 CHARACTER (11B ELEVEIN*/
/* OCTAL).*/

CONST TAB=11B; TABCNT=8;

VAR DONE, APPARENTMENUCOL: INTEGER; CH: CHAR;

BEGIN
    DONE := 0;
    ACTUALMENUCOL := 0;
    APPARENTMENUCOL := 0;

REPEAT
    BEGIN
        ACTUALMENUCOL := ACTUALMENUCOL + 1;
        CH := DMENU [DROW, ACTUALMENUCOL];
        IF CH = CHR(ESCAPE) THEN

```

```

BEGIN
    ACTUALMENUMCOL := ACTUALMENUMCOL + 1;
    CH := DMENU [DROW, ACTUALMENUMCOL];

    IF CH = CHR(LEFTBR)
    THEN
        BEGIN
            ENDESCAPE := ACTUALMENUMCOL + 2;
            ACTUALMENUMCOL := ACTUALMENUMCOL + 2;
        END
    ELSE
        BEGIN
            ENDESCAPE := ACTUALMENUMCOL + 1;
            ACTUALMENUMCOL := ACTUALMENUMCOL + 1;
        END;

        ACTUALMENUMCOL := ACTUALMENUMCOL + 1;
    END;

/*      THIS VARIABLE IS TO STOP THE LEFT SCAN OF P110FINDSTRINGBOUNDARY FROM*/
/*      OVERSHOOTING ITS TARGET WHEN SCANNING LEFT; (IT IS ASSUMED THAT ONLY THE*/
/*      HIGHLIGHT SEQUENCE <ESC[1M> STOP SEQUENCE <ESC[1M>; OR DOUBLE HEIGHT DOUBLE*/
/*      WIDTH <ESC#N> WILL BE USED. ) */

/*THIS COULD HAPPEN IF COMMAND FILE NAME IS RIGHT AGAINST*/

/* THE ESCAPE SEQUENCE FOR HIGHLIGHTING ON THE MENU; E.G., ESC[1MXXXXXX
N'EST PAS?? */

    IF CH = CHR(TAB) THEN
        BEGIN
            ACTUALMENUMCOL := ACTUALMENUMCOL + 1;
            APPARENTMENUMCOL := APPARENTMENUMCOL + TABCNT;
        END;

    IF CH = CHR(CR) THEN
        BEGIN
            DONE:=1;
        END;

    IF CH > CHR(37B) THEN
        BEGIN
            APPARENTMENUMCOL := APPARENTMENUMCOL + 1;
        END;
    IF APPARENTMENUMCOL = SCREENCOL THEN
        BEGIN
            DONE:= 1;
        END;

    END
UNTIL DONE = 1;

END; [P070FINDMENUMCOL]

```

```

/*----->*/
PROCEDURE P080TESTFORESCAPEBOUNDARY (DCOL, ENDCOL: INTEGER; VAR DB: BOOLEAN);

```

```

BEGIN

```

```

    IF DCOL = ENDCOL      THEN
        BEGIN
            DB := FALSE;
        END;

```

```

END; [P080TESTFORESCAPEBOUNDARY]

```

```

/*----->*/
PROCEDURE P090TESTFORSTRINGLENGTH (COLNOW, COLBEGIN, LS: INTEGER; VAR DB: BOOLEAN);
/*VAR INTERNAL*/

```

```

BEGIN

```

```

    IF ABS (COLNOW - COLBEGIN) > LS THEN
        BEGIN
            DB := FALSE;
        END;

```

```

END; [END PROCEDURE]

```

```

/*----->*/
PROCEDURE P100TESTCOLLIMITS (DCOL, MIN, MAX : INTEGER; VAR DB: BOOLEAN);
/*VAR INTERNAL*/

```

```

BEGIN

```

```

    IF (DCOL < MIN) OR (DCOL > MAX) THEN
        BEGIN
            DB := FALSE;
        END;

```

```

END; [END PROCEDURE]

```

```

/*----->*/
PROCEDURE P110FINDSTRINGBOUNDARY (ENDESCAPE: INTEGER; DMENU: MN; DROW: R; DCOL: C;
    VAR DCOLBOUNDARY: C; VAR INC: INTEGER);

```

```

/*VAR INTERNAL*/

```

```

VAR NUMCHARS, DLENGTHOFSTRING : INTEGER;

```

```

BEGIN

```

```

    NUMCHARS := 0;
    DLENGTHOFSTRING := 6;
    COLBOUNDARY := DCOL;
    DONE := 0;

```

```

REPEAT

```

```

    GOOD := TRUE;
    SAMPLE := DMENU [DROW, COLBOUNDARY];
    P060TESTCHAR;

```

```

    IF GOOD = TRUE THEN
        BEGIN
            P080TESTFORESCAPEBOUNDARY (COLBOUNDARY, ENDESCAPE, GOOD);
        END;

```

```

    IF GOOD = TRUE THEN
        BEGIN
            P090TESTFORSTRINGLENGTH (COLBOUNDARY, DCOL, DLENGTHOFSTRING, GOOD);
        END;

```

```

IF GOOD = TRUE THEN
    BEGIN
        P100TESTCOLIMITS (COLBOUNDARY, MINCOL, MAXCOL, GOOD);
    END;

IF GOOD = TRUE THEN
    BEGIN
        COLBOUNDARY := COLBOUNDARY + INC;
        NUMCHARS := NUMCHARS + 1;
    END
ELSE
    BEGIN
        DONE := 1;
        COLBOUNDARY := COLBOUNDARY - INC;
    END;
UNTIL DONE = 1;

/* IF SOMEONE PUTS THE CURSOR ON A NO-NO WE WANT TO MOVE IT BACK TO ITS */
/* STARTING POINT. */

IF NUMCHARS = 0 THEN
    BEGIN
        COLBOUNDARY := COLBOUNDARY + INC;
    END;

DCOLBOUNDARY := COLBOUNDARY;

END; [END PROCEDURE]
/*----->*/
PROCEDURE P120GETCHAR;
/*VAR INTERNAL*/
/*THIS PROCEDURE IS FOR DIPLSAY THE MENU*/
BEGIN
    GET(F);
    D:=F^;
END; [P120GETCHAR]

/*----->*/
PROCEDURE P130DISPLAYSTOREFILE;
/*VAR INTERNAL*/
BEGIN
    READ (NAMEMENU);
    RESET (F, NAMEMENU);
    COL := 1;
    ROW := 1;

    WHILE NOT EOF(F) DO BEGIN

        /* DISPLAY MENU AND STORE IN ARRAY IN CORE;
        DISPLAY SCREEN
        */

        D:=F^;

        IF D=CHR(000B) THEN BEGIN
            END
        ELSE
            BEGIN
                WRITE(D);
                MENU[ROW, COL]:=D;
                COL:=COL+1;
            END
    END

```

```

END;
IF D = CHR(LF) THEN
    BEGIN
        COL:=1;
        ROW:=ROW+1;
    END;

/*          ONE READ ONE WRITE PER MODULE!!!!!!*/
        P12OGETCHAR;

END; [END OF WHILE]

        CLOSE(F);

END; [P130DISPLAYSTOREFILE]

/*----->*/
PROCEDURE P14OECOFF;
/*VAR INTERNAL*/
    BEGIN
        WRITE(CHR(035B), 'F');
END; [P14OECOFF]

/*----->*/
PROCEDURE P15OECHON;
/*VAR INTERNAL*/
    BEGIN
        WRITE(CHR(035B), 'E');
END; [P15OECHON]

/*----->*/
PROCEDURE P16OGETCURSORPOSITION;
    BEGIN
        WRITE(CHR(ESCAPE));
        WRITE(CHR(LEFTBR));
        WRITE(CHR(066B));
        WRITE(CHR(156B));
END; [P16OGETCURSORPOSITION]

/*----->*/
PROCEDURE P17OGETCURSORPOSITION;
    BEGIN
        P16OGETCURSORPOSITION;
END; [P17OGETCURSORPOSITION]

/*----->*/
PROCEDURE P18OGETSCREENCHAR (VAR CH:CHAR);

/* THIS PROCEDURE WILL BE MADE AN EXTERNAL PROCEDURE THAT*/
/* WILL BE CALLABLE FROM ANY PASCAL PROGRAM. */

VAR JOBSTAT ORIGIN 44B: INTEGER;

/* B & C ARE ON AND OFF VT100 ESCAPE LETTER ACTIVATION. */
/* S & T ARE ON AND OFF SINGLE CHAR. ACTIVATION */
/* WHEN ON YOU DON'T NEED A CR TO RETURN A CHAR TO YOU */

```

```

/* JOBSTAT DOES THE SAME THING FOR RT11 AS S DOES FOR TSX+ */
/* SEE PROCEDURE P085.. FOR TURNING OPTIONS OFF. */
BEGIN
  WRITE (CHR(035B), 'B');
  WRITE (CHR(035B), 'S');
  JOBSTAT := JOBSTAT OR 10000B;

  REPEAT
    [
      $C
      .MCALL .TTYIN
      .TTYIN
      MOVB RO, @CH(6)
    ]
  UNTIL CH # CHR(0);

```

```
END; [P180GETSCREENCHAR]
```

```

/*<----->*/
PROCEDURE P190REVERSEP180OPTIONS;

```

```

/* THIS PROCEDURE WILL BE MADE AN EXTERNAL PROCEDURE THAT*/
/* WILL BE CALLABLE FROM ANY PASCAL PROGRAM. */

```

```
VAR JOBSTAT ORIGIN 44B: INTEGER;
```

```

/* B & C ARE ON AND OFF VT100 ESCAPE LETTER ACTIVATION. */
/* S & T ARE ON AND OFF SINGLE CHAR. ACTIVATION */
/* WHEN ON YOU DON'T NEED A CR TO RETURN A CHAR TO YOU */

/* JOBSTAT DOES THE SAME THING FOR RT11 AS S DOES FOR TSX+ */
/* SEE PROCEDURE P080.. FOR TURNING OPTIONS ON. */
BEGIN
  WRITE (CHR(035B), 'C');
  WRITE (CHR(035B), 'T');
  JOBSTAT := JOBSTAT AND NOT 10000B;

END; [END PROCEDURE P190REVERSEP180OPTIONS]

```

```

/*<----->*/
PROCEDURE P200SCANTIL;

```

```
VAR X: INTEGER;
```

```
BEGIN
```

```

  FOR X:= 1 TO LENGTHOFARRAY DO
    BEGIN
      BUFFER[X] := ' ';
    END;

```

```
X:=0;
```

```

  WHILE S # STOPCHAR DO
    BEGIN
      X:=X+1;
      BUFFER[X] := S;
      P180GETSCREENCHAR(S);
    END;

```

```
LENGTHOFSTRING := X;
```


END; [P200SCANTIL]

```
/*<----->*/  
PROCEDURE P210ARRAYTONUM;  
/*VAR INTERNAL*/
```

```
VAR I1, I2: INTEGER; R1: REAL;  
BEGIN  
  R1:=0.0;  
  I2:=0;  
  DPOS:=0;  
  FOR I1:=LENGTHOFSTRING DOWNT0 1 DO  
    BEGIN  
      R1:=R1+((ORD(BUFFER[I1]) - ORD('0')) * EXP10(I2));  
      I2:=I2+1;  
    END;  
  DPOS:=TRUNC(R1);  
END; [P210ARRAYTONUM]
```

```
/*<----->*/  
PROCEDURE P220MOVECURSOR;  
VAR ENDSW: INTEGER;  
BEGIN  
  ENDSW:=0;
```

```
  REPEAT  
    BEGIN  
P180GETSCREENCHAR(S);  
  
    IF S = CHR(ESCAPE) THEN BEGIN  
      P180GETSCREENCHAR(S);  
      END;  
    IF S = CHR(LEFTBR) THEN BEGIN  
      P180GETSCREENCHAR(S);  
      END;  
    IF S = CHR(CURSRRIGHT) THEN  
      BEGIN  
        WRITE (CHR(ESCAPE));  
        WRITE (CHR(LEFTBR));  
        WRITE (CHR(103B));  
        END;  
    IF S = CHR(CURSRLFT) THEN BEGIN  
      WRITE (CHR(ESCAPE));  
      WRITE (CHR(LEFTBR));  
      WRITE (CHR(CURSRLFT));  
      END;  
    IF S = CHR(CURSRRUP) THEN BEGIN  
      WRITE (CHR(ESCAPE));  
      WRITE (CHR(LEFTBR));  
      WRITE (CHR(CURSRRUP));  
      END;  
    IF S = CHR(CURSRRDOWN) THEN BEGIN  
      WRITE (CHR(ESCAPE));  
      WRITE (CHR(LEFTBR));  
      WRITE (CHR(CURSRRDOWN));  
      END;  
    END;  
  /*IF S = CHR(CR) THEN BEGIN  
    ENDSW:=1;  
    END;
```

```

*/
IF S = CHR(LF) THEN      BEGIN
                                ENDSW := 1;
                                END;

```

```

                                END [END OF REPEAT]
UNTIL ENDSW = 1;
END; [P220MOVECURSOR]

```

```

/*----->*/
PROCEDURE P230STUFFINTOXY;
/*VAR INTERNAL*/
BEGIN
  STOPCHAR := ' ';
  LENGTHOFARRAY := 2;
  P180GETSCREENCHAR(S);
  P180GETSCREENCHAR(S);
  P180GETSCREENCHAR(S);
  P200SCANTIL;
  P210ARRAYTONUM;
  ROW := DPOS;
  P180GETSCREENCHAR(S);
  STOPCHAR := 'R';
  P200SCANTIL;
  P210ARRAYTONUM;
  SCREENCOL := DPOS;
END; [P230STUFFINTOXY]

```

```

/*#####*/

```

```
/*MAIN PROGRAM*/
```

```

BEGIN
P130DISPLAYSTOREFILE;
P220MOVECURSOR;
P160GETCURSORPOSITION;
P230STUFFINTOXY;
/* THESE NEXT TWO STATEMENTS ARE FOR DEBUGGING PURPOSES COMMENTED OUT */
/*WRITE ('SCREEN', SCREENCOL);*/
/*WRITE ('ROWXXX', ROW);*/
P070FINDMENUCOL (MENU, ROW, SCREENCOL, MENUCOL, ENDOFESCAPESEQUENCE);
INCREMENT: =-1;
P110FINDSTRINGBOUNDARY (ENDOFESCAPESEQUENCE, MENU, ROW, MENUCOL, LEFTCOL, INCREMENT);
INCREMENT: =1;
P110FINDSTRINGBOUNDARY (ENDOFESCAPESEQUENCE, MENU, ROW, LEFTCOL, RIGHTCOL, INCREMENT);
P040CREATECOMMANDFILE;
/* SAME METHOD USED HERE FOR THIS DEBUGGING STATEMENT */
/*WRITE (LEFTCOL, RIGHTCOL, CMDFILE);*/
P190REVERSEP180OPTIONS;
P030EXECUTECOMMANDFILE;
END.

```

USER REQUESTS

I am running RT-11 on a PDP 11/23 to prepare a TU-58 to run stand-alone on a 11/04. What do I have to change in FRT.MAC which is part of the stand-alone module? Where can I get the latest documentation on FRT.MAC and SIMRT.MAC.

Joseph F. Heinig
NASA Goddard Space Flight Center
Code 564.3
Advanced Systems Section
Greenbelt Road
Greenbelt, Md. 20771

We are in urgent need of a serial handler for a printer with X-on/X-off protocol for operation under Version 3 of RT-11.

If you can advise us as to where we might find such a handler, we would be most grateful.

Very truly yours,

VARTRON CORPORATION

750 WELCH ROAD
PALO ALTO, CALIFORNIA 94304
PHONE: (415) 328-2531



Pat Vartanian
DECUS Associate 118501

USER RESPONSES

The very usefull programm DATE, published by R.M.Harrington in Mini-tasker March 1983 Vol 9, No.1, could be added with some lines to accept time from 20: to 23: hours (for night-workers!)

Change the lines between the comment "HH OR H FORMAT" and "NOW CHECK FOR ERRORS" as follows:

; HH OR H FORMAT

;

HH:	CMP	R1, #541	
	BPL	TIM	; too much input
	MOV	#34460, R2	; Range 0-9
	JSR	PC, CHECKR	
	CMPB	-1 (R1), #40	; CK for Space
	BEQ	CKE	

1983 FALL SYMPOSIA IN LAS VEGAS

Even though there was very little time between the Spring symposia and the Fall symposia, I received a record number of submissions for the RT-11 SIG. The scheduling problem was compounded by the fact that the number of meeting rooms was less than before. The end result of all this is a schedule that is a little different than before. First of all, we will be starting at 8:30 in the morning instead of 9:00. Second, the coffee break time was eliminated so that we could hold more sessions. Cookies and milk will be available in a number of locations so that you will not have to go the entire morning or afternoon without food. Finally, you will notice that a number of RT-11 sessions are scheduled for Friday morning and afternoon. The thought here was that this was really a five-day convention and that we should better utilize Friday in order to avoid "session burnout." As always, I will be available at the symposia to listen to constructive criticism only so long as you buy the beer.

I have attached a Master Index of all the RT-11 sessions to enable you to make plans to attend the symposia. I hope to see you there.

RT-11

CODE	TITLE/SPEAKER	TIME REQ.
R001	USING A PDP-11/23 AS A FILE SERVER FOR ATTACHED LSI-11'S Fouts, Martin	1 hour
R002	MIGRATION OF DBMS SOFTWARE FROM RT-11 TO RSX-11M Natale, Robert C.	30 minutes
R004	RT-11 USERS SPEAKOUT Rhodes, Ned W.	2½ hours
R005	RT-11/TSX-PLUS COMPATIBILITY ISSUES Peterson, Jack J.	1 hour
R007	RT-11 SIG BUSINESS MEETING Rasted, John T.	30 minutes
R008	RT-11 SIG SYMPOSIUM WRAP-UP Rasted, John T.	30 minutes
R009	DECUS LIBRARY LAYERED PRODUCTS PANEL FOR RT-11 Bourgeois, Nick	1½ hours
R010	RT-11 ROADMAP Rasted, John T.	30 minutes
R011	RT-11 USER APPLICATION WORKSHOP Rasted, John T.	1 hour
R012	RT-11 USER COMMAND LINKAGE Crowell, John M.	30 minutes

R013	RT-11 FUTURES WORKSHOP Crowell, John M.	1 hour
R014	HOW TO DEVELOP RT-11 DEVICE HANDLERS Rhodes, Ned W.	1 hour
R017	COMBATTING FLASH FLOODS WITH PDP-11S Peterson, Jack J.	1 hour
R018	TSX-PLUS INTERNALS Bramlet, Jan	1 hour
R019	ACCESSING MEMORY ABOVE 56KB FROM RT-11 FORTRAN Trellue, Ron	1 hour
R020	SHARED REGIONS AND RESIDENT LIBRARIES FOR RT-11 XM Adams, Greg	1 hour
R021	RT-11 XM NEW USER Adams, Greg	1 hour
R022	RT-11 FEEDBACK SESSION RT-11 Software Development Group	1 hour
R023	RT-11 LANGUAGES PANEL RT-11 Software Development Group	30 minutes
R024	RT-11 PRODUCT PANEL RT-11 Software Development Group	1 hour
R025	RT-11 DIRECTORY STRUCTURES INTERNALS Gentry, Martin	1 hour
R027	RT-11 IND NEW USER Metsch, James	1 hour
R029	USING TSX-PLUS SHARED RUN-TIME SYSTEMS Crapuchettes, Jim	1 hour
R030	IMPROVING PERFORMANCE OF RT-11 FORTRAN PROGRAMS Crapuchettes, Jim	1 hour
R031	TSX-PLUS REAL-TIME I/O TECHNIQUES Crapuchettes, Jim and Clark, Tim	1 hour
R032	TSX-PLUS QUESTION & ANSWER AND MAGIC Kingsbury, Dan	1 hour

PAST SYMPOSIUM INFORMATION

From: William K. Walker
Monsanto Research Corp.
P. O. Box 32 OS-123
Miamisburg, Ohio 45342
(513) 865-3557

I gave a short presentation during the Foreign Peripherals Forum at the St. Louis DECUS meetings on the model 306A clock board from Grant Technology Systems. This is a KWV11-C equivalent board that also includes a really slick battery-backed calendar clock option. A number of people expressed interest in a couple of utilities which I had written to set the calendar clock and to set the RT-11 date and time from the clock values. This stuff was not ready for the RT-11 SIG tape at the time and I didn't have any listings with me. I have since found time to clean-up these routines and to add some additional code and assembly conditionals to make them more general. I am enclosing source listings for those of you who might be interested. For those of you who are too lazy to do your own typing, I have also submitted them to the DECUS library.

Sincerely,



William K. Walker

```
.title set306.mac
.enabl lc
.ident /wkw02/
.nlist end
```

```
; This program sets up the date and time on the calendar clock option for
; the GTSC model 306A real-time clock/calendar clock board.
```

```
; This is NOT a real sophisticated program -- if you tell it to set up
; garbage on the board, it will cheerfully do so. It is, however, simple,
; and relatively easy to understand.
```

```
; Note that there are conditionals in the code for three different set-up
; variables. You may choose to read/write the registers in binary or BCD
; format, you may keep AM/PM or 24-hour clock time, and you can have the
; board compensate for Daylight Savings Time. Note also that the program
; turns all interrupt enable bits off. The alarm times are undisturbed
; however.
```

```
; This program will run under versions 4 and 5 of RT-11 and probably
; earlier and later versions as well.
```

```
; Contributed by: William K. Walker
; Monsanto Research Corp.
; P. O. Box 32 OS-123
; Miamisburg, Ohio 45342
```

```

.mcall .stlin, .exit

ccba    = 170400      ;Base address for clock registers
resa    = ccba+12     ;Resister A address
resb    = ccba+13     ;Resister B address
resd    = ccba+15     ;Resister D address

; Conditionals:

dm       = 4          ;Disable if board is to operate in BCD mode
ck24     = 2          ;Disable if board is to keep AM/PM time
dse      = 1          ;Disable if board is not to compensate for daylight savings
                        ; time

.iif ndf dm,    dm    = 0
.iif ndf ck24, ck24 = 0
.iif ndf dse,   dse   = 0

set      = 200
dvrset   = 160
dvset    = 40
bset     = set!dm!ck24!dse

set306:
    mov     $ccba,r0      ;Set up to grab current time data off board
    mov     $sec,r1       ; (really just after alarm times)...
    mov     $6,r2
10$:     tstb    @#resa     ;Update in progress?
    bmi     10$          ;Branch if so
20$:     movb    (r0)+,(r1)+ ;Get the data...
    sob     r2,20$

    movb    @#resd,r0      ;Set 'valid RAM and time' bit
    .stlin   $buf,$yeara   ;Prompt for and set year
    call    ascbin        ;Convert to appropriate binary
    movb    r0,year       ;Store result
    .stlin   $buf,$montha  ;Get, convert, and store month...
    call    ascbin
    movb    r0,month
    .stlin   $buf,$daya    ;Do day of month...
    call    ascbin
    movb    r0,day
    .stlin   $buf,$daywka  ;Do day of week...
    call    ascbin
    movb    r0,daywk
    .stlin   $buf,$houra   ;Hour...
    call    ascbin
    movb    r0,hour

.if ea
ck24
    .stlin   $buf,$ampma   ;'AM or PM?'
    bicb    $240,buf      ;Make response upper case, 7-bit
    cmpb    buf,$'A       ;AM?
    beq     30$
    cmpb    buf,$'P       ;PM?
    bne     30$
    bisb    $200,hour      ;Set PM (high-order) bit
.endif

.endc
30$:     .stlin   $buf,$mina ;Minute...
    call    ascbin
    movb    r0,min

```



```

        .stlin    #buf,#seca      ;Second...
        call     ascbin
        movb     r0,sec

        .stlin    #buf,#seta      ;'Hit <return> to set clock...'
        mov      #sec,r0          ;R0 => data buffer
        mov      #ccba,r1         ;R1 => clock registers
        mov      #10.,r2          ;R2 = no. of bytes to transfer
        movb     #bset,@#resb     ;Tossle set-up bits
        movb     #dvrset,@#resa   ;Reset divider chain
40$:      movb     (r0)+,(r1)+     ;Load registers...
        sob      r2,40$
        movb     #dvset,@#resa    ;Remove divider reset
        bicb     #set,@#resb      ;Start clock
        .exit      ;Exit to RT-11

ascbin:
        mov      #buf,r1          ;R1 => input buffer
        clr      r0               ;Clear R0; will contain result
        tstb     (r1)+            ;Test first character
        bne      10$              ;Continue if not null
        return      ;Return with zero result otherwise

10$:      tstb     (r1)             ;Test 2nd character
        beq      20$              ;If null, number is 0-9
        movb     -(r1),r0          ;Get 10's character
        bic      #^C<17>,r0        ;Strip out ASCII stuff
.if ea    dm
        .rept    4                  ;Move left 4 bits into high-order nibble
        asl      r0
        .endr
.iff
        asl      r0                ;Multiply by 10. by doing (n*2)+(n*8)...
        mov      r0,r2
        asl      r0
        asl      r0
        add      r2,r0
.endif
        tst      (r1)+            ;Adjust pointer

20$:      movb     -(r1),r2          ;Get one's character
        bic      #^C<17>,r2        ;Strip out ASCII stuff
.if ea    dm
        bis      r2,r0              ;Set low-order nibble
.iff
        add      r2,r0              ;Add to result for 10's character
.endif
        return

buf:      .blkb     134.            ;Buffer for .stlin request

sec:      .byte     0                ;Data buffer for clock registers...
        .byte     0
min:      .byte     0
        .byte     0
hour:     .byte     0
        .byte     0
daywk:    .byte     0
day:      .byte     0
month:    .byte     0
year:     .byte     0

```

```

; Prompt messages:

yeara: .ascii /      Year (1983=83)? /<200>
montha: .ascii /      Month (Jan=1)? /<200>
daya:   .ascii /              Day? /<200>
daywka: .ascii /Day of week (Sun=1)? /<200>
houra:  .ascii /              Hour? /<200>
ampma:  .ascii /  AM or PM (A or P)? /<200>
minu:   .ascii /              Minute? /<200>
seca:   .ascii /              Second? /<200>
seta:   .ascii /Hit <return> to set clock.../<200>
        .even

.end     set306

.title  setdt.mac
.ident  /wkw02/
.enabl  lc
.nlist  end

; This program sets the RT-11 date and time from the GTSC model 306A
; clock board.

; The handiest way to use this program is to run it in your start-up
; command file. It can, of course, be run at any time you may wish to
; bring the RT-11 date and time into agreement with the the clock on the
; 306A.

; This program will run under a version 4 or 5 monitor.

; Contributed by:      William K. Walker
;                      Monsanto Research Corp.
;                      P. O. Box 32      OS-123
;                      Miamisburg, Ohio  45342

.mcall  .sval, .Print, .sdtm, .exit

ccba    = 170400      ;Calendar clock base address
rega    = ccba+12     ;"Resister A" address

jsw      = 44         ;Address of Job status word
userrb   = 53         ;Address of user error byte
sysver   = 276        ;Offset of monitor version number
sever$   = 10         ;Severe error bit in user error byte

eis      = 1          ;Disable if you do not have EIS instructions
!lt50hz  = 1          ;Remove semicolon if you have 50Hz line-time clock
!ampm    = 1          ;Remove semicolon if board is set up for AM/PM time
!bcd     = 1          ;Remove semicolon if board is set up in BCD mode
datetime = 1          ;Disable if you don't want date and time printed on exit

; NOTE: The mainline code in this program doesn't really do very much.
;       If you strip out this mainline code and add the appropriate
;       GLOBAL and PSECT stuff, you have a MACRO or FORTRAN-callable
;       subroutine named GSDTM that will set the RT-11 date and time
;       from the 306A clock.

```

```

setdt:
    .sval    #area,#sysver    ;Get RT-11 version number...
    bic      #^C<377>,r0
    cmpb     r0,#4            ;Test for version 4
    bst      20$              ;Branch if V5 or later
    bea      10$              ;Branch if V4

    .Print   #wrsver          ;Complain if earlier than V4
    bisb     #sever$,@#userrb ;Set severe error bit
    clr      r0               ;Do a hard exit...
    .exit

10$:    mov     #4000,chnbit    ;Set-up for V4-style chain exit

20$:    call    ssdtm          ;Set date and time from 306A
    .if df     datetime
        mov     #1000,sp      ;Pass DATE and TIME commands to RT-11
        mov     csize,r0      ; on exit...
        mov     #cstart,r1
        mov     #510,r2
        mov     r0,(r2)+
    30$:    movb  (r1)+,(r2)+
        sob     r0,30$
        bis     chnbit,@#jsw
    40$:    clr     r0
    .endc

    .exit

chnbit: .word    40
wrsver: .asciz   /?SETDT-F-Wrong Version Of RT-11/
    .even
    .if df     datetime
csize:  .word    cend-cstart
cstart: .asciz   /DATE/
    .asciz     /TIME/
cend:    .even
    .endc

; "Get-and-set" date and time from GTSC model 306A clock board.

.iif ndf bcd, noon = 12.
.iif df  bcd, noon = 22        ; (22 = 12. in BCD)

ssdtm:
    mov     #10.,r3           ;Get ready to move 10 bytes
    mov     #ccba,r4          ; starting from the cc base address
    mov     #sec,r5           ; to the local buffer
10$:    tstb     @#rega        ;Clock update in progress?
    bmi     10$              ;Branch if so
20$:    movb     (r4)+,(r5)+    ;Move a byte to the buffer
    sob     r3,20$           ;Keep going until done

    .if df     ampm
        tstb     hr           ;Code for AM/PM time...
        bea      30$          ;Is time PM?
        movb     hr,r0        ;Branch if not
        bic      #^C<17>,r0    ;Get hours value
        add      #noon,r0      ;Mask for hour value
        movb     r0,hr        ;Make it a 24-hour time value
    30$:    .Store "corrected" value
    .endc

```

```

.iif df bcd, call bcdbin      ;Convert register values to binary,
                              ; if necessary

        clr      r5          ;Clear R5
        movb     month,r5    ;Get the month
.iif ndf eis
        .rept    5           ;Shift left 5 bits...
        asl      r5
        .endr
.iiff
        ash      #5,r5      ;Shift left 5 bits, EIS code
.endc

        bisb     daym,r5     ;Get the day of the month
.iif ndf eis
        .rept    5           ;Shift left 5 bits...
        asl      r5
        .endr
.iiff
        ash      #5,r5      ;Shift left 5 bits, EIS
.endc

        movb     year,r4     ;Get the year
        sub      #72.,r4     ;Offset it from 1972
        bis      r4,r5       ;Stuff it into r5
        mov      r5,date     ;Save result as date word

        clr      r0          ;Clear R0 (will be high-order time)
        clr      r1          ;Clear R1 (will be low-order time)
        movb     hr,r1       ;Get hour and
        call     muld60      ; convert it to minutes past midnight
        movb     min,r5      ;Get minutes,
        add      r5,r1       ; add them in, and
        call     muld60      ; convert to seconds
        movb     sec,r5      ;Get seconds
        add      r5,r1       ;Add to get seconds from midnight...
        adc      r0
.iif ndf lt50hz
        call     muld60      ;Convert to ticks (60Hz clock)
.iiff
        call     muld50      ;Convert to ticks (50Hz clock)
.endc

        mov      r0,timehi   ;Store high-order time
        mov      r1,timeho   ;Store low-order time

        .sdtm    #area,#date ;Set the RT-11 date and time

        return

; Buffer for clock registers:

sec:    .byte    0
        .byte    0
min:    .byte    0
        .byte    0
hr:     .byte    0
        .byte    0
        .byte    0
daym:   .byte    0
month:  .byte    0
year:   .byte    0

```

```

; Date and time words for .SDTTM request:

date: .word 0
timehi: .word 0
timelo: .word 0

area: .word 0,0 ;EMT argument block for .SDTTM

; This routine multiplies a double-precision (two-word) integer by 60.
; It takes advantage of this special case, and does it as (64*N)-(4*N).

muld60:
.if ndf eis ;Non-EIS code...
    mov #2,r4 ;Multiply R0,R1 by 4...
    clc
10$:    asl r1
        rol r0
        sob r4,10$
        mov r0,r2 ;Save result (n*4)...
        mov r1,r3

        mov #4,r4 ;Now multiply by 16 to set n*64
        clc
20$:    asl r1
        rol r0
        sob r4,20$

.iff ;EIS code...
    ashc #2,r0 ;Multiply R0,R1 by 4...
    mov r0,r2 ;Save result...
    mov r1,r3
    ashc #4,r0 ;Now multiply by 16 to set n*64

.endc

    sub r3,r1 ;Subtract R2,R3 from R0,R1...
    sbc r0
    sub r2,r0
    return

.if df lt50hz

; For those of you with 50Hz line-time-clocks, this routine multiplies
; a two-word integer in R0,R1 by 50. It does this by treating 50*n as
; (32+16+2)*n.

muld50:
.if ndf eis ;Non-EIS code...
    clc ;Multiply R0,R1 by 2...
    asl r1
    rol r0
    mov r0,-(sp) ;Save result (n*2)
    mov r1,-(sp)

    mov #3,r4 ;Now multiply by 8 to set n*16...
    clc
10$:    asl r1
        rol r0
        sob r4,10$
        mov r0,-(sp) ;Save result (n*16)
        mov r1,-(sp)

```

```

        clc                                ;Now multiply by 2 so that R0,R1 is n*32...
        asl     r1
        rol     r0

.iff
        ashc     #1,r0                    ;EIS code to do same as above...
        mov      r0,-(sp)                  ;n*2...
        mov      r1,-(sp)

        ashc     #3,r0                    ;n*16...
        mov      r0,-(sp)
        mov      r1,-(sp)

        ashc     #1,r0                    ;n*32...

.endif

        add      (sp)+,r1                  ;Add n*16 to n*32 to set n*48...
        adc      r0
        add      (sp)+,r0

        add      (sp)+,r1                  ;Add n*2 to n*48 to set n*50...
        adc      r0
        add      (sp)+,r0

        return                             ;Return
.endif
.endif bcd

; This routine goes through the list of clock register values and changes
; them from BCD to binary.

bcdbin:
        mov      $sec,r0                  ;R0 => register value list
        mov      #10.,r1                  ;R1 = repeat count
10$:    movb      (r0),r2                  ;Get a value
        bic      #^C<360>,r2              ;Mask for 10's digit
        beq      20$                      ;Nothing to do if zero
        ror      r2                      ;Multiply this value by 10...
        mov      r2,r3
        ror      r2
        ror      r2
        add      r3,r2                    ;Result in R2
        movb      (r0),r3                  ;Get value again
        bic      #^C<17>,r3              ;Mask for one's digit
        add      r3,r2                    ;Add this to previous result
        movb      r2,(r0)+                ;Store binary value
20$:    sob      r1,10$                  ;Go do another until done
        return                             ;Then return
.endif

.end      setdt

```

RT-11 MACRO/FORTRAN Interactions

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Reported by Gavin Perry, DECUS Scribe Service

This tutorial covered the mechanism for calling MACRO routines from a FORTRAN program. The material is covered in the FORTRAN Users Guide and the FORTRAN Library Guide. When writing FORTRAN programs one sometimes needs to speed up certain critical parts of the program. These time critical routines will be faster if coded in MACRO routines which can be called from a FORTRAN program using the techniques presented here. These techniques include basic information on FORTRAN conventions for passing arguments to a subroutine. Also included are some of the pitfalls encountered when writing FORTRAN callable routines, with hints on how to get around them.

When a CALL statement is issued from a FORTRAN program, the code generated declares the subroutine name as a global and passes the address of an argument block in R5 to the routine as follows:

```
.GLOBL SUBRTN
      MOV    #ARG,R5
      JSR    PC, SUBRTN
ARG:   3      ; the number of arguments
      X      ; the address of parameter X
      Y      ; etc for the rest of the arguments
      Z
```

The MACRO routine can now get the argument addresses through R5. The first word of the argument block contains the number of arguments being passed in the low byte. The high byte, while usually 0, is officially undefined. This permits

the use of certain tricks. (see below) The first word in the argument block is followed by the addresses of each of the arguments in the subroutine, these parameters may be accessed by indexing R5 (e.g. 2(R5)). This is safer than altering the value of R5, since other routines may also want to reference the arguments pointed to by R5.

Function Calls

A FORTRAN function call returns with the answer in R0. If the answer is Integer*4 or Literal*4 the low order result will be in R0 and the high order part in R1. For a Real variable, the low order portion of the result is in R1 and the high order

portion is in R0. Double Precision returns four words with R0 containing the most significant portion of the result and the remaining portions in R1 to R3 (least significant). For a complex number the high order portion of the real number is in R0, the low part in R1, while the imaginary portions of the value will be in R2 and R3. FORTRAN expects to find the results returned to it in this format.

GOTCHA's

Missing arguments will have -1 as the address, so be sure to check for addresses of -1 when there is a chance of missing arguments in the call (e.g. CALL (A,B,X)). If no arguments are passed the first word will contain 0 in the low byte, so you may want to check for that too. FORTRAN doesn't care if you save the registers R0 to R5 and it won't save them for you between calls to your routines, so be sure to save any values that will be needed in other calls to a routine. The stack must also be saved. It is very important that for every push onto the stack there is also a pull from the stack. Four out of seven gotcha's were MIND THE STACK. It doesn't matter how many times it's said, everyone sometime ends up leaving a number on the stack. When this happens, a return to PC does to never-never land. If the stack contains 0 the program will just exit without even saying good bye. Some pushes onto the stack are not obvious. For example, if CSISPC is called it pushes the number of switches onto the stack even if it is zero. Don't modify FORTRAN constants unless you want $2+2=5$. It is not the value that is passed but the address. FORTRAN won't know that the value of the constant has been changed. If you are using the floating point instruction set and changing defaults for the

precision or the mode, be sure to save the value of the current flags and POP them when done with the different mode or precision. Don't mung R5 until done with all the arguments or you may grab the wrong value.

FILE I/O

FORTTRAN has an OTS work area where it keeps track of what I/O channels are open and various program linkages. Tell FORTRAN if you open or close I/O channels by using the library routines IGETC and IFREE respectively. Don't use CSIGEN since it closes channels 0-8 which are often opened by FORTRAN. Use CSISPC instead, but watch the switch number push on the stack. If FORTRAN doesn't know about the channels you open it may set a channel already open when it tries to open a channel.

COMMON BLOCK

The common block statement creates a PSECT which you can use from your MACRO routines; Just declare that PSECT in the MACRO. See the FORTRAN Users Guide for the format.

FORTTRAN ERROR TRAPS

An error in FORTRAN causes a TRAP instruction with the argument 200 + the error number. You can use these errors to tell the user about fatal errors; be sure to do something that will allow for a graceful exit anyway (such as MOV -1, R0) since

a CALL SETERR may have been executed which will keep it from exiting until the error count reaches the count level specified. If there is any chance that error traps will be called (either you call them or you use OTS routines that may trap) be sure that the trap vector has been initialized.

The PSECT layout of a FORTRAN program was discussed. The first statement of a FORTRAN program starts with a call to \$\$OTI to initialize the OTS followed by a pointer to the MAIN which then points to the data to be initialized. It is possible to write threaded code to be used with threaded (OTS) routines and programs but it was not recommended. The threaded structure is a list of entry points to the threaded routines, followed by addresses for the parameters and constants. A naming convention identifies the FORTRAN operation codes the data types and address codes (to tell how many levels of pointers back to go

before you'll reach the value). More information on this is available in the documentation of FORTRAN or from John Crowell.

MACDBG/RT-11: A User's Critique

John M. Crowell
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Reported by Margaret Watters, DECUS Scribe Service

John Crowell discussed the problems and the advantages of DIGITAL's debussing system, MACDBG. This program is a remote symbolic debussing tool which runs under RT-11SJ or RT-11XM on a PDP-11 or an LSI-11. This system has several features including the following: it loads programs into the target program via a Serial Line Unit (SLU); it examines and changes the target memory and registers; it has a RUN/HALT program; it is programmed to find breakpoints, watchpoints, and tracepoints; the Host console can be used as a target terminal; and it requires an ODT in the target. Finding the tracepoints is an especially useful tool in debussing, as the potentially problematic point in the target program is indicated, yet the program continues to run, so the user can observe the effect the point has on the program.

This system also has some non-essential features that are helpful. There is a "Help" page; a Status display (on the VT100 only); a command key pad (on the VT100 and the LA120 only); programmable keys (VT100 and LA120 only); indirect command files; and a logging console I/O to file.

The Debug Service Module (DSM) is optional, however it is required for finding breakpoints, watchpoints, tracepoints, and for single stepping. The DSM resides in the Target RAM, and takes up 464 octal bytes. It contains a loader for moving blocks of data into target memory. There is also a handler for handling breakpoints, watchpoints, tracepoints, and for single stepping. The module speeds up loading and depositing in the target memory. This module should not be used if the user does

not have the necessary RAM, or if he does not have RAM at locations 14 or 16. The program also should not be used if it uses BPTs or if it used instructions that alter the T-bit. The DSM may be linked with the user's programs, and it can be loaded separately. The speaker warned that a user must be careful that

his program does not write over the DSM. He also warned that under SJ, the 'halt' instruction corrupts DSM (or at least MACDBG thinks it does).

Crowell pointed out several problems that he has noticed while using MACDBG. The major problem is that MACDBG sets the cursor keys to the 'Application Code', which does not matter while MACDBG is in use, since it does not use the cursor keys. However, MACDBG does not reset the keys to 'Cursor Code' before exiting. This particularly baffled Crowell. MACDBG has several bugs of its own, but Crowell said that it is a powerful tool nonetheless, and that it is the most cost effective software that he has bought in a very long time.

Creation and Handling of Multi-Volume Directories Under RT-11 With TECO

Maarten van Swaay
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Manhattan, KS

Jack Crowell, Session Chairperson
Los Alamos National Laboratory
Los Alamos, NM

Reported by J. Rick Mihalevich, DECUS Scribe Service

Many small RT-11 systems are based on floppy disk storage. Files and their backup copies can easily extend over 50-100 disk volumes, and locating an individual file can become a tedious chore of browsing through a large collection of disks or printed directories.

TECO can retrieve volume ID records and file names from a volume without invoking directory operations from USR. This capability makes it possible to use TECO for the creation of a multi-volume directory file. Because retrieval of the directory information does not invoke USR, the output volume can share a spindle with the input volumes from which the directories must be obtained.

A set of TECO macros for creation and use of a multi-volume directory file was described. The package presented includes provisions for the creation of a new directory file, for insertion / replacement / deletion of a single-volume directory in the file, and for locating selected files from the directory. Because the directory file can extend over more than half the space on a single volume, a mechanism was discussed to edit a large file-in-place.

The presenter offered copies of these macros. To obtain a copy one needs to send a floppy to: Maarten Van Swaay, Kansas State University, Manhattan, Kansas 66506. The presenter requested that a package complete with return address and enough postage for return be included with the floppy.

SOFTWARE PERFORMANCE REPORTS

OPERATING SYSTEM	VERSION	SYSTEM PROGRAM OR DOCUMENT TITLE	VERSION OR DOCUMENT PART NO.	DATE
RT-11	5.0	SIPP/PIP/BACKUP	V05.00	29-AUG
NAME: Ned W. Rhodes FIRM: E-Systems, Melpar Division ADDRESS: 7700 Arlington Blvd. CUST. NO.: Falls Church, Va. 22046		DEC OFFICE AND CONTACT PERSON Lanham		DO YOU HAVE SOURCE YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
		REPORT TYPE/PRIORITY <input checked="" type="checkbox"/> PROBLEM/ERROR <input type="checkbox"/> SUGGESTED ENHANCEMENT <input type="checkbox"/> OTHER		
SUBMITTED BY: Gary L. Fuller (703) 560-5000 X2858		PHONE:		
ATTACHMENTS MAG TAPE <input type="checkbox"/> FLOPPY DISKS <input type="checkbox"/> LISTING <input type="checkbox"/> DECTAPE <input type="checkbox"/>		CAN THE PROBLEM BE REPRODUCED AT WILL? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		
OTHER:		COULD THIS SPR HAVE BEEN PREVENTED BY BETTER OR MORE DOCUMENTATION? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		
CPU TYPE: LSI-11/23		SERIAL NO.: AB02254	MEMORY SIZE: 128 K	DISTRIBUTION MEDIUM: RX-02
SYSTEM DEVICE: RL-01		DO NOT PUBLISH <input type="checkbox"/>		

1. A problem with the SIPP utility occurs when both of the following conditions are met:

- (1) An optional com-filespec is supplied in the SIPP command string.
- (2) A modification is made to the input file in the address range-
 $1000 \leq (\text{Base} + \text{Offset}) \leq 2000$ (octal).

The problem is characterized by the insertion of the command file text (destined for the com-filespec channel) into the input file starting at address 1000 (i.e. Block 1).

The probable diagnosis is that there is a channel mix-up when buffering the command file text. Why the 1000 - 2000 address range is a factor is undetermined.

The problem may be reproduced by performing any of the customization patches supplied in the RT-11 Installation Guide (AA-H376B-TC) Ch. 2.7 which specify addresses in the indicated range and by additionally specifying a com-filespec.

2. The /H and /V switches are transposed in the minireference. They are correct in the system utilities manual.

3. BACKUP/MULTI - If a file is too large to fit on the output volume and it is the last file being transferred, it continues to prompt for output volumes instead of giving a message that the file is too large.

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☐ 800 BPI ☐ 1600 BPI ☐ Other _____

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2. Users who would like to submit modifications to licensed DIGITAL software may submit files to be appended to the original source program. ONLY the modifications may be submitted.
3. Users are encouraged to include a README file on their tape including the submitter's name and address, and a description of the files he/she is submitting.
4. Tapes should be compatible with standard system software. Please indicate the number of files and the PPN, UIC or account, and tape format.
5. Tapes should be 9-track, and be labeled with the sender's name and address.

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