# THE mini•ta/ker

## DECUS
RT-11 SIG NEWSLETTER

Contributions to the newsletter should be sent to:

> Ken Demers
> MS-48
> United Technologies Research Center
> Silver Lane
> East Hartford,Conn.  06108
> 203 727-7241

Other communications can be sent to:

| | | |
|---|---|---|
| John T. Rasted | | RT-11 SIG |
| JTR Associates | or | C/O DECUS |
| 58 Rasted Lane | | One Iron Way |
| Meriden,Conn.  06450 | | MR2-3/E55 |
| 203 634-1632 | | Marlboro,Mass.  01752 |
| | | 617 481-9511 Ext.  4141 |

---

## FROM THE EDITOR

---

Due to a change in the Decus funding algorithm, the cost of newsletters will not be paid for by DEC starting in 1980. This leaves the task of newsletter funding in the hands of each SIG. As members of the RT-11 SIG, we can fund the "Minitasker" anyway we choose. Most user input at New Orleans favored a yearly subscription fee(possibly with reduced rates if a user wishes to purchase the newsletter of more than 1 SIG). I will insert a questionnaire in the next newsletter. However, I welcome any user comments on newsletter funding.

I am looking for volunteers willing to act as distributers of the RT-11 Symposium Tape(possibly for the RSX/IAS tape also) outside the U.S.A. You should have 9 track mag tape and floppy disk support.

---------------------------------------------------------------------------

HOW TO REACH THEM

---------------------------------------------------------------------------


John T. Rasted                                   RT-11 SIG Chairman
JTR Associates
58 Rasted Lane
Meriden, CT 06450
(203) 634-1632


Ken Demers                                       Newsletter Editor
MS-48                                            DECNET Contact
United Technologies Research Center
Silver Lane
East Hartford, Ct 06108
(203) 727-7241


Nick Bourgeois / 1736                            Tape Copy Coordinator
Sandia Laboratories                              MACRO Contact
P.O.Box 5800
Albuquerque, NM 87185
(505) 264-8088


James R. Cutler                                  Standards Coordinator
Space Physics Research Lab                       RT/RSX Contact
2455 Hayward
Ann Arbor, Mich 48105


Art Hermes                                       RT/RSX Contact
MIT/LNS Bates Linear Accelerator
P. O. Box 95
Middleton, Ma 01949
(617) 245-6600


Carl Lowenstein                                  RT-11 HHK Coordinator
Marine Physical Lab                              SIG Hardware Contact
San Diego, Ca 92152
(714) 452-2308


Eric Morton                                      RT-11 DECUS Library
Prelco Corporation                               Coordinator
170 Lincoln                                      NELUG Coordinator
Lowell, Ma 01851
(617) 458-8763

John L. Pratler                          FORTRAN Contact
PA Coll. of Pod. Med.
8th & Race Streets
Philadelphia, Pa. 19107
(215) 629-0300  Ext. 155


Susan S. Rasted                          FMS11 Contact
Software Dynamics Inc.
1000 Yale Ave.
Wallingford, CT 06492
(203) 265-2226


Marilyn Runyon                           Wish List
39 Locust Point Rd.
Locust, N.J. 07760


Edwin J. Stevens                         MU-BASIC Contact
EMDA Inc.
747 East Green Street
Pasadena, CA 91101
(213) 795-5991


J. W. Tippie                             RT-11 LUG Coordinator
Argonne National Labs                    CAMAC Contact
9700 S. Cass Ave
Argonne, Ill 60439


Greg Woodbury                            BASIC Contact
Dept. of Microbiology
Box 3020
Duke Univ. Med. Center
Durham, N.C. 27710
(919) 684-5138

# RT-11

# INTERNALS TUTORIAL

# SCHEDULING

# IN

# F/B

## IMPLICATIONS OF MULTIPLE JOBS

Job dependent information must be isolated
- Each job has an impure area
- Each job has its own stack

Monitor and interrupts require separate stack
- Context might change

I/O is sharable

Running job may become blocked
- Monitor must allow other job (s) to run

USR is interlocked to avoid directory corruption

ENSYS interlocks parts of monitor to avoid job data base corruption

# CONTEXT OF A JOB

Context switch requires work only if 2 or more jobs active

Context includes:
- Impure area (channels, etc.)
- Stack
- Registers (R0–R5, FPU)
- TRAP vector, SYSCOM area
- .CNTXSW data

# SYSTEM STATE

Uses monitor's stack

Job code cannot run

Context switching delayed

Used to modify important data

Operations that do not run entirely within the user job:
- Interrupts
- Timer Service
- Blocking a job
- I/O initiation
- I/O abort
- .PROTECT, .CHCOPY
- USR interlock
- All XM mapping requests

# BLOCKING A JOB

A job is blocked if it cannot proceed until some asynchronous event happens. Types of blocking:

1. Waiting until:     Terminal input is available

     Caused by:     .TTYIN (with TCBIT$ off), .CSIxxx, .GTLIN, .MTIN

     Unblocked when:     Line (or character) is available

     Unblocked by:     Terminal input interrupt service

2. Waiting until:      Terminal output possible

    Caused by:      .TTYOUT, .PRINT, .MTOUT, .MTPRNT

    Unblocked when:      There is room in the output ring buffer

    Unblocked by:      Terminal output interrupt service

3. Waiting until:      I/O on a specific channel is complete

    Caused by:      .READW, .WRITW, .WAIT, .SDATW, .RCVDW, .MWAIT

    Unblocked when:      I/O count for the specified channel is 0

    Unblocked by:      I/O completion (from drivers)

4. Waiting until:      All I/O is complete

    Caused by:      .EXIT, Job abort

    Unblocked when:      Job's total I/O count is 0

    Unblocked by:      I/O completion (from drivers)

5. Waiting until:      No longer suspended

    Caused by:      .SPND, .TWAIT

    Unblocked when:      .RSUM by user or .TWAIT completion routine

    Unblocked by:      .RSUM processor

6. Waiting until:      Operator intervenes

    Caused by:      SUSPEND command to KMON

    Unblocked when:      Operator types RESUME command

    Unblocked by:      KMON

7. Waiting until:      USR is available

    Caused by:      Any request that uses the USR, any KMON command, exit from background job

    Unblocked when:      USR free and no higher priority job wants it

    Unblocked by:      USR release routine (DEQUSR)

8. Waiting until:      Queue element is available

    Caused by:      Any request that needs a queue element if none is available

    Unblocked when:      Queue element free

    Unblocked by:      Queue element return routine

9. Waiting until:      Forever

    Caused by:      Foreground or system job termination

    Unblocked:      Never
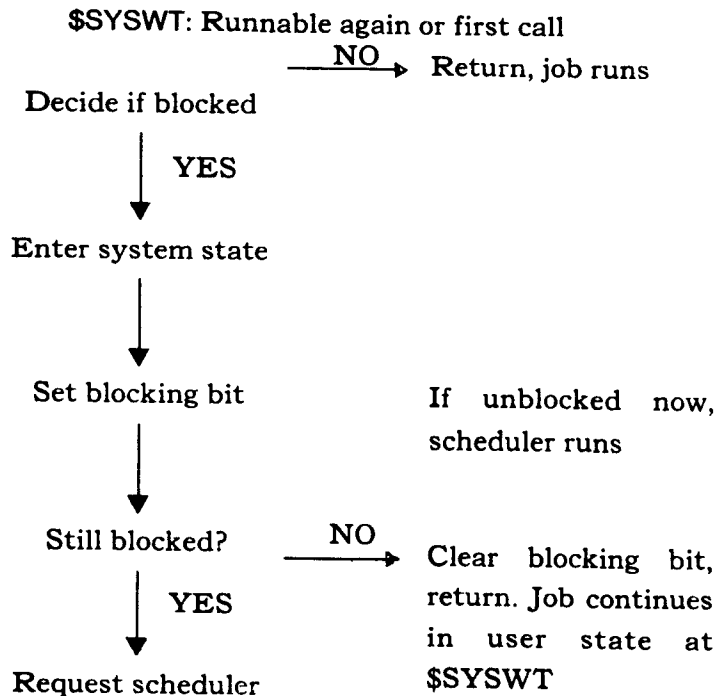
# HOW BLOCKING IS DONE

Monitor runs in user state for job

When job might be blocked, calls $SYSWT passing:
- Blocking bit mask
- Decision subroutine

Next time job runs in user state, it continues at $SYSWT

If job should not have been unblocked, it gets blocked again

# $SYSWT — BLOCKING ROUTINE

$SYSWT: Runnable again or first call

Decide if blocked ——NO→ Return, job runs

↓ YES

Enter system state

↓

Set blocking bit          If unblocked now, scheduler runs

↓

Still blocked? ——NO→ Clear blocking bit, return. Job continues in user state at $SYSWT

↓ YES

Request scheduler

# HOW UNBLOCKING IS DONE

Some asynchronous event occurs

Interrupt code enters system state (via $INTEN)

Code decides that something significant happened

If job is blocked waiting for this condition,

blocking bit gets cleared and the scheduler is requested

# REQUESTING THE SCHEDULER

RQTSW: Request the scheduler for a job

Ignored if higher priority job is already running

INTACT saves highest priority job needing a schedule pass

Schedule pass needed to make job runnable (asynchronous)

Schedule pass needed to make job non-runnable (synchronous)

Job runnable if main line blocked but completion routine runnable

# COMPLETION ROUTINES

Some asynchronous event occurs

Interrupt code enters system state

Code places queue element on job's completion queue

Monitor sets CPEND$ in job status

Scheduler unblocks and runs job

When all completion routines are done, main line continues
- $SYSWT runs again
- Main line blocked again if necessary

# SCHEDULER OPERATION

Runs just before monitor is about to return to job

Runs if INTACT is non-zero

Examines jobs in descending priority, starting at INTACT job
- Runnable job: switch context and return to the job
- No job runnable: run null job, then scan all jobs again

# WHEN IS A JOB RUNNABLE?

1. If no blocking bits are on, job can run

2. If blocking bits are on, but

    A. A completion routine is pending, and

    B. Job is not yet in completion

   Blocking bits are cleared

  Job continues at completion routine dispatcher in monitor

---

NEW ORLEANS SYMPOSIUM

---

John T. Rasted, RT-11 SIG Chairman

RT-11 SIG member presentations in New Orleans included the RT-11 Symposium Roadmap, interactive sessions such as RT-11 Symposium Wrap-Up Session and the RT-11 User Application Panel. During the User Application Session, users gave informal presentations on various aspects of their hardware and software applications. In addition, 7 formal papers were presented. DIGITAL's presentations included the RT-11 Product and Languages panels, and very enthusiastically received technical sessions on How to Write an RT-11 Device Driver, RT-11 Features Workshop and an RT-11 Internals Tutorial. User input to the future direction of RT-11 was enhanced by participation in the RT-11 Feedback Session and Wrap-Up which was held on the last day of the symposium. A number of DIGITAL sessions were presented on FMS-11 software and PDT Intelligent terminal systems. A number of poster papers were also presented. These included how to implement Resident Libraries Under RT-11, A Reading Grade Level Information System Using RT-11 MuBasic and RT-11/IBM VSPC Interface Program.

```
 25-Apr-78
1979 SPRING DECUS        RT-11 TAPE
NEW ORLEANS
-------------------------------------------------------------------
DATBAS.BAS      22 18-Apr-79    BASIC-11 V2 EXTENSIONS TO READ/WRITE
DATBAS.DAT       3 18-Apr-79    AT ANY BUS ADDRESS.
DATBAS.DIR<<     2 18-Apr-79
DATBAS.DOC     285 18-Apr-79    N. A. BOURGEOIS, JR.        1736
DATBAS.HLP       9 18-Apr-79    SANDIA LABORATORIES
DATBAS.MAC      87 18-Apr-79    ALBUQUERQUE, NM. 87185
DATBAS.MAP      26 18-Apr-79
DATBAS.TEC       1 18-Apr-79    (505) 264-8088
DATBAS.TXT      34 18-Apr-79
-------------------------------------------------------------------
```

```
BAS001.COM     2 18-Apr-79
BAS001.TEC     1 18-Apr-79
MON001.BAT     2 18-Apr-79
MON002.BAT     7 18-Apr-79
MON003.BAT     5 18-Apr-79
MON004.BAT     6 18-Apr-79
MON005.BAT     4 18-Apr-79
MON006.BAT     4 18-Apr-79
MON007.BAT     2 18-Apr-79
MON009.BAT     3 18-Apr-79
MON010.BAT     3 18-Apr-79
MON011.BAT     8 18-Apr-79
MON012.BAT     2 18-Apr-79
MON013.BAT     3 18-Apr-79
MON014.BAT     5 18-Apr-79
MSC001.BAT     2 18-Apr-79
MSC002.COM     2 18-Apr-79
MSC002.MAC     1 18-Apr-79
PAT    .COM    1 18-Apr-79
PAT    .FOR    1 18-Apr-79
PAT    .MAC    1 18-Apr-79
PATA   .COM    2 18-Apr-79
PATA1  .MAC    1 18-Apr-79
PATA2  .MAC    1 18-Apr-79
PATB   .COM    2 18-Apr-79
PATB1  .MAC    1 18-Apr-79
PATB2  .MAC    1 18-Apr-79
PATC   .COM    2 18-Apr-79
PATCH  .BAT    1 18-Apr-79
PATCH  .COM    2 18-Apr-79
PATCH  .DIR<<  6 18-Apr-79
PATC1  .MAC    1 18-Apr-79
PATC2  .MAC    1 18-Apr-79
PATD   .COM    2 18-Apr-79
PATDIR.COM     1 18-Apr-79
PATD1  .MAC    1 18-Apr-79
PATD2  .MAC    1 18-Apr-79
PATE   .COM    2 18-Apr-79
PATE1  .MAC    1 18-Apr-79
PATE2  .MAC    1 18-Apr-79
PATF   .COM    2 18-Apr-79
PATF1  .MAC    1 18-Apr-79
PATF2  .MAC    1 18-Apr-79
PATG   .COM    2 18-Apr-79
PATG1  .MAC    1 18-Apr-79
PATG2  .MAC    1 18-Apr-79
PATH   .COM    2 18-Apr-79
PATH1  .MAC    1 18-Apr-79
PATH2  .MAC    1 18-Apr-79
PATI   .COM    2 18-Apr-79
PATI1  .MAC    1 18-Apr-79
PATI2  .MAC    1 18-Apr-79
PATJ   .COM    2 18-Apr-79
PATJ1  .MAC    1 18-Apr-79
PATJ2  .MAC    1 18-Apr-79
PATJ3  .MAC    1 18-Apr-79
```

SELECTED RT-11 V3B PATCHES THROUGH MAR-79
KEYED TO THE RT-11 SOFTWARE DISPATCH.

N. A. BOURGEOIS, JR.

```
PATJ4 .MAC      1 18-Apr-79
PATL  .COM      2 18-Apr-79
PATL1 .MAC      1 18-Apr-79
PATL2 .MAC      1 18-Apr-79
PAT001.COM      2 18-Apr-79
PAT001.FOR      1 18-Apr-79
PAT001.MAC      1 18-Apr-79
PAT002.COM      2 18-Apr-79
PAT002.FOR      1 18-Apr-79
PAT002.MAC      1 18-Apr-79
PAT003.COM      2 18-Apr-79
PAT003.FOR      2 18-Apr-79
PAT003.MAC      2 18-Apr-79
PAT004.COM      2 18-Apr-79
PAT004.EIS      2 18-Apr-79
PAT004.FIS      2 18-Apr-79
PAT004.FPU      2 18-Apr-79
PAT004.NHD      2 18-Apr-79
PAT005.COM      2 18-Apr-79
PAT005.MAC      1 18-Apr-79
PAT009.COM      2 18-Apr-79
PAT009.MAC      2 18-Apr-79
PAT010.COM      2 18-Apr-79
PAT010.FOR      1 18-Apr-79
PAT010.MAC      1 18-Apr-79
PAT011.MAC      2 18-Apr-79
SRC001.BAT      2 18-Apr-79
SRC002.BAT      2 18-Apr-79
SRC003.BAT      4 18-Apr-79
UTL001.BAT      3 18-Apr-79
UTL002.BAT      2 18-Apr-79
UTL003.BAT      2 18-Apr-79
UTL004.BAT      2 18-Apr-79
UTL005.BAT      2 18-Apr-79
UTL006.BAT      2 18-Apr-79
UTL007.BAT      2 18-Apr-79
UTL008.BAT      3 18-Apr-79
UTL010.COM      1 18-Apr-79
UTL010.MAC      1 18-Apr-79
UTL011.BAT      2 18-Apr-79
UTL012.BAT      3 18-Apr-79
```
--------------------------------------------------------------------
```
IULC2 .C80     24 18-APR-79      8080 CROSS ASSEMBLER.
IULC8 .C80     22 18-APR-78
                                 ROBERT CUSHMAN
                                 JONES & LAMSON
                                 160 CLINTON ST.
                                 SPRINGFIELD, VT. 05156
```
--------------------------------------------------------------------
```
RUNMIN.MAC      1 18-Apr-79      RUNOFF DOCUMENTATION PROCESSOR
RUNOFF.MAC    124 18-Apr-79      NEEDS HYPHEN.MAC FROM SAN FRANCISCO TAPE
RUNOFF.SAV     19 18-Apr-79
RUNXXX.DOC     76 18-Apr-79      CARL LOWENSTEIN
RUNXXX.RNO     62 18-Apr-79      MARINE PHYSICAL LABORATORY
                                 SAN DIEGO, CA. 92152

                                 (714) 452-2308
```

```
TYPER .MAC     17 18-Apr-79     RT-11 V3 HANDLER FOR NEC SPINWRITER.

                                CARL LOWENSTEIN
-------------------------------------------------------------------------------
CLK100.DOC      3 18-Apr-79     CLOCKING CAPABILITIES, 10 USEC INTERVALS,
CLK100.KHZ      6 18-Apr-79     DOUBLE PRECISION TO ASCII CONVERSION WITH
KW11L .DOC      1 18-Apr-79     EIS.
KW11L .MAC      6 18-Apr-79
                                LEO E. MAY
                                COMPUTER SCIENCE DEPARTMENT
                                UNIVERSITY OF MINNESOTA
                                MINNEAPOLIS, MN. 55455
-------------------------------------------------------------------------------
GETDIR.COM      1 18-APR-79     COMAPRE AND VERIFY FILES AND DIRECTORIES
GETDIR.FOR      1 18-APR-79     ON TWO DIFFERENT MEDIA.
GETDIR.MAP      5 18-Apr-79
GETDIR.SAV     16 18-Apr-79     LEO E. MAY
VFYDEV.COM      1 18-Apr-79
VFYDEV.DOC      6 18-Apr-79
VFYDEV.FOR     14 18-Apr-79
VFYDEV.MAP      5 18-Apr-79
VFYDEV.SAV     70 18-Apr-79
-------------------------------------------------------------------------------
MACLIB.DOC      5 18-Apr-79     MACROS FOR IF, GOTO, CALL, DO, & LET.
MACLIB.MAC     28 18-Apr-79
                                LEO E. MAY
-------------------------------------------------------------------------------
TIDY  .DOC      3 18-Apr-79     STRAIGHTENS MACRO SOURCE CODE.
TIDY  .FOR     19 18-Apr-79
TIDY  .MAP      6 18-Apr-79     LEO E. MAY
TIDY  .SAV     30 18-Apr-79
-------------------------------------------------------------------------------
COMM  .DOC     14 18-Apr-79     ?
COMM  .RNO     11 18-Apr-79
-------------------------------------------------------------------------------
    135 Files, 1256 Blocks
```

RT-11 USER APPLICATION WORKSHOP

The workshop at New Orleans was a great success.  We had several informal
presentations followed by some interactive exchange from the floor.  The
informal presentations were:

        Leo May -- An inter-computer communications application.

        Ted Hlibka -- A power transmission line monitoring system.

        Ken Demers -- An RT-11 DECNET application and using BASIC-11 on
             an LSI-11 without a disk.

        Jim Cutler -- ODTXM, an on-line debugger for use with the XM
             monitor.

                                Nick Bourgeois

TAPE COPY OPERATIONS

TAPE COPYING -- The following sites have agreed to copy the RT-11 DECUS
tapes on request. A blank tape along with return postage is required.
Any media arriving without the return postage will be considered as a
very welcome gift. We now have three tapes, each of which will fit on
a 600 ft reel. They are 1978 Chicago, 1978 San Francisco and 1979 New
Orleans.

John Runyon                             (212) 679-1800 x1077
Phillip Morris International
100 Park Ave., 3rd Floor
New York, NY 10017

Carl Lowenstein                         (714) 452-2308
Marine Physical Laboratory
San Diego, CA 92152

Nick Bourgeois                          (505) ~~264~~ 844-8088
Sandia Laboratories / ~~1736~~ 1738
P. O. Box 5800                          FTS  8 - 474-5511 - 505-844-8088
Albuquerque, NM 87185

PLANS FOR SAN DIEGO -- In order to minimize the time required of our all
volunteer labor we ask that all submissions for the 1979 San Diego tape
be on 9-track tape in PIP format. We will, however, be able to handle
conversions from floppy disks. I'll be asking for enough volunteers to
help with the tape copying operation to schedule people to no more than
a single two hour shift.

                        Nick Bourgeois

------------------------------------------------------------------------
RT-11 MARKETPLACE
------------------------------------------------------------------------


    ALICE Associates announces the availability of a data manipulation

and analysis package for PDP 11 laboratory computers running under RT/11.

ALICE 1.2/11 is the PDP 11 conversion of ALICE, a program specifically

for the statistical analysis of data generated by designed experiments.

(See "ALICE: A system for manipulating and analyzing multidimensional

data," Behavioral Research Methods and Instrumentation, 1976, 8, 347-51.)

ALICE 1.2/11 runs under RT/11 V3/SJ monitor with FORTRAN V.2 on PDP 11

machines with at least 32K of memory, EIS, and memory management.

(RSX FORTRAN users should write for additional details.)

The PDP 11 and ANSI standard versions of ALICE have the same instruction set and appear identical in operation to the user. The standard installation packages for each version (RK05 disk or 9-track tape) include input and output files for on-site verification of all ALICE instructions and statistical tests. Two copies of the ALICE User's Guide, which provides complete documentation for the package are included. Copies of the program and the user's guide are available from stock.
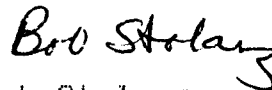
ALICE Associates

13 Spring Street

Ipswich, MA 01938

-------------------------------------------------------------------

DEC INPUT

-------------------------------------------------------------------

Dear Mr. Demers:

I originally wrote the attached articles for a DEC internal publication for Software Specialists; I am sending them to you for publication in the "Mini-tasker" in the belief that they are of general interest.

Sincerely,

Bob Stolarz

Bob Stolarz
Senior Software Specialist

P.S.: There is an undocumented restriction in the "FORTRAN IV subroutine for a dynamic change of active terminal" published in the January 1979 issue of the "Mini-tasker"; it will not handle auxiliary terminals whose vector addresses have a middle octal digit which is odd. The modification for such terminals is to change the "360 in line 26 to a "17.

## SMALLER EXECUTION-TIME PROGRAMS


Documented in the RT-11/RSTS/E FORTRAN IV Users's Guide
(p. C-15) is a simple technique for decreasing the size of
execution-time FORTRAN programs. The default error message
module included from the FORTRAN library when linking
FORTRAN programs contains the ASCII text corresponding to
each possible object time error. However, the FORTRAN
library also incorporates an alternate error message module
which contains no text; when using this module, when a
object time error occurs, only the error number is printed.
The resulting core savings in using the shorter form is 821
words; the corresponding on-disk savings in the size of each
.SAV or .REL file is 3-4 blocks. (The core savings can be
particularly significant when generating programs to be run
in the foreground.)

There are two ways of using this feature:

If a standard FORTRAN library has been built, the shorter
error message module can be included when linking a FORTRAN
program as follows, e.g.:

        .LINK/INCLUDE MAIN<RET>
        Library search? $SHORT<RET>
        Library search? <RET>

Alternatively, a modified FORTRAN library can be built so
that the short error message module is included
automatically (the longer error messages are not available
if this procedure is followed). The OTS library build
procedure on p. 14 of the RT-11 FORTRAN IV INSTALLATION
GUIDE is modified as follows:

        .R LIBR
        *OUF:SYSLIB[-1]=INF:xxx,OTSCOM,vvv,sss/D/G<RET>
        Module name? ERRS<RET>
        Module name? <RET>
        Global? $VRINT<RET>
        Global? <RET>

These techniques are also applicable to FORTRAN V2 and V01C.


## RX01 DEVELOPMENT SYSTEMS


This article outlines a method for organizing system and
user files on an RX01 RX(V)11 or PDT-11/150 FORTRAN
development system. This method was developed as a result
of upgrading several DECLAB-03 customers from RT-11 V2C to

V3B (primarily to provide IBV11-A support). As with the V2C
DECLAB software, a system floppy, containing most of the
system components necessary to compile, link, and execute
FORTRAN programs, is booted in SY0, and SY1 is reserved for
a floppy containing (mostly) user program and data files.
As a reference point, the following is the directory of one
possible maximal system floppy:

```
12-Mar-79
SWAP   .SYS    24 11-Mar-78    DXMNSJ.SYS    59 24-Oct-78
TT     .SYS     2 11-Mar-78    LP    .SYS     2 11-Mar-78
PIP    .SAV    16 11-Mar-78    DUP   .SAV    21 24-Oct-78
DIR    .SAV    17 11-Mar-78    TECO  .COM     1 30-Nov-78
TECO   .SAV    27 11-Mar-78    VEG   .TEC     1 30-Nov-78
VT52   .TEC     5 30-Nov-78    FORTRA.SAV   128 30-Nov-78
LINK   .SAV    29 05-Feb-79    STARTS.COM     1 14-Dec-78
SYSLIB.OBJ    149 14-Dec-78    IB    .SYS     4 26-Nov-78
 16 Files, 486 Blocks
 0 Free blocks
```

The system floppy is created by initializing a blank floppy
with one directory segment. DXMNSJ.SYS is the baseline SJ
monitor; PDMNSJ.BL is the same size. FORTRA.SAV is the V2.1
threaded only compiler. SYSLIB.OBJ is the FORTRAN library
built from xxx, OTSCOM, NOVIR, and V2NS; SYSF4 is not
included in this library for space reasons. (The standard
FIS library is 155 blocks; the EIS and NHD libraries are 157
blocks.)

The STARTS.COM file contains minimally the commands
ASSIGN DX1[PD1] DK, and DATE as the last command; this
produces the '?KMON-F-No date' message, to remind the
operator to enter the current date. If the console terminal
is a CRT, a SET TT SCOPE command is added. For systems
without a line printer, an ASSIGN TT LP command is added so
that command options such as /LIST and /MAP will default to
the console terminal. For systems with sufficient memory,
SET USR NOSWAP and/or LOAD TT[,LP] commands can be added.
For systems with an IEEE bus interface, the commands
INSTALL IB and LOAD IB are added.

The choice of editor should be based on the type of console
terminal. If the console terminal is a hardcopy device,
RT-11 EDIT should probably be used. For systems with a VT52
or VT55 as a console terminal, TECO with scope support is
the better choice of editor. The files TECO.SAV, VEG.TEC,
and VT52.TEC are copied from the RT-11 V3B binary
distribution. The file TECO.COM is created to contain the
command EDIT/EXECUTE/TECO SY:VEG; scope TECO is then easily
started with @SY:TECO. The VEG.TEC file must be modified
because it attempts to read VT52.TEC from DK:; the procedure
for modifying it is as follows:

```
.R TECO
*EBVEG.TEC<ESC>FNVT52<ESC>SY:VT52<ESC>EX<ESC><ESC>
```

There is a disk space problem if TECO with scope support is chosen as the system editor; it will not fit with the rest of the standard system components. The extra space necessary to fit TECO is garnered from building a FORTRAN library with only short OTS error messages; the Small Buffer article on page 11 of Volume 464 (8 February 1979) entitled "FORTRAN IV/RT-11 V2.1/SMALLER EXECUTION-TIME PROGRAMS" describes how to do this. Finally, if the IEEE bus handler, IB.SYS, must be included, the VEG.TEC file, normally 4 blocks, is edited to remove the initial keypad display, which reduces its size to 1 block; if the FIS library has been built according to the above referenced article, IB.SYS will then fit, with 0 free blocks (see directory above).

If a VT100 or VT105 is the console terminal, the RT-11 keypad editor, KED.SAV (41 blocks), distributed with FMS-11, would be the ideal choice of editor, but it will not fit with the rest of the system components. A reasonable second choice is the MINC BASIC keypad editor, MEDIT.SAV (24 blocks), which can be copied from one of the MINC BASIC disks; it accepts the same command string format as KED.

There are some system files which must reside on each DK1 program/data disk. A copy of FDT can be kept on DK1. If the SYSF4 routines, FORTRAN extensions (LSILIB), and/or the IBV11-A support subroutines (IBLIB) are to be used, a combined library containing them, called EXTLIB, can be created to reside on DK1. Since most users do not use any of the SYSF4 routines explicitly, when building a combined library only the SYSF4 routines implicitly referenced by the LSILIB and IBLIB routines can be extracted and placed in the combined library, saving approximately 40 blocks over including all of the SYSF4 routines. The following steps are followed:

```
.R LIBR
*SYSF4L=SYSF4            !build temporary library
*SYSF4R=SYSF4L/E         !extract routines
Global? $CRASH
Global? $CMPLT
Global? IGETC            !only if IBLIB is included
Global? <ret>
```

Then, if only LSILIB is to be included:

```
*EXTLIB[-1]=SYSF4R,DK1:LSILIB
```

Or, if IBLIB is to be included:

```
*EXTLIB[-1]=SYSF4R,[LSILIB,]DK1:IBLIB/G
Global? IB$ERR
Global? <ret>
```

# NOTE

RT-11 V2C had the SET TT [NO]COPY commands to enter and exit auto-copy mode for VT55 terminals with copiers. These commands were removed in V3B because they are superfluous; auto-copy mode can be toggled on and off on the VT55 itself by typing SHIFT/COPY (see page 2 of the VT50-Series Copier Users' Manual).

# VIRTUAL ARRAYS IN FOREGROUND

## PROBLEM

Virtual arrays do not work correctly in FORTRAN programs run in the foreground using non-PLAS support (VIRNP.OBJ); extended memory is not allocated correctly and programs may terminate with an "?Err 61 Illegal Memory Reference" message.

## PROCEDURE

Create 5 source files called PATxN.MAC, using the values of x and yyy from the following table:

| x | yyy |
|---|-----|
| D | 156 |
| F | 140 |
| I | 130 |
| L | 142 |
| Q | 132 |

PATxN.MAC:

```
        .TITLE  $VIRxN
        OFFSET=yyy
        .PSECT  OTS$I
        B=.
        .=.+20
        .GLOBL  PATVIR
        JSR     PC,PATVIR
        .=B+OFFSET
        JSR     PC,PATVIR
        .END
```

Assemble each file and apply it to VIRNP as follows:

```
.MAC PATxN
.R PAT
*VIRNP=VIRNP,PATxN
```

Create a file called PATVIR.MAC as follows:

PATVIR.MAC:

```
        STKSIZ=1000
        .PSECT  OTS$I
PATVIR::SUB     @#42,2(SP)
        ADD     #1600+STKSIZ,2(SP)
        RTS     PC
        .END
```

Assemble PATVIR as follows:

```
.MAC PATVIR
```

Now rebuild the FORTRAN library, adding the file PATVIR in the LIBR command string immediately after VIRNP, and relink any FORTRAN programs using virtual arrays.


RESTRICTION


In order for the patch to work correctly, the STKSIZ parameter in PATVIR.MAC must reflect the actual stack size used in ALL programs; the default stack size of 1000 is used above. This patch has no effect on the operation of background programs, with the exception of the stack size restriction above.


NOTE


The minimum value for the FRUN /N switch when runnning FORTRAN programs in the foreground is 351., which does not include room for any file buffers.

# SETTING TERMINAL CHARACTERISTICS

The following program, SETTTN, can be used to set terminal
characteristics, such as terminal width, scope rubout, and
baud rate, when operating under an RT-11 V3B multi-terminal
monitor. SETTTN can be invoked by a startup indirect
command file, and is particularly useful when used in
conjunction with MU BASIC-11/RT-11 V2, since that system
does not provide a convenient way of establishing initial
terminal characteristics.

```
        .TITLE   SETTTN

        .MCALL   .MTATCH, .MTSET, .EXIT

;THE FOLLOWING ARE BIT DEFINITIONS FOR THE MOST COMMONLY
;USED TERMINAL CHARACTERISTICS

HWTAB$    =1          ;HARDWARE TAB IF SET
CRLF$     =2          ;OUTPUT CR/LF AT TERMINAL WIDTH
FORM$     =4          ;HARDWARE FORM FEED IF SET
FBTTY$    =10         ;PROCESS CTRL/F AND CTRL/B IF SET
PAGE$     =200        ;ENABLE XON/XOFF PROCESSING
TTLC$     =40000      ;ENABLE LOWER CASE INPUT
SCOPE$    =100000     ;SCOPE RUBOUT FOR CRT TERMINALS
DEFLT$    =CRLF$+PAGE$      ;DEFAULT SETTING

;(PARTIAL) BAUD RATE DEFINITIONS FOR DZ(V)11s

B110$     =1000       ;110 BAUD
B300$     =2400       ;300 BAUD
B600$     =3000       ;600 BAUD
B1200$    =3400       ;1200 BAUD
B2400$    =5000       ;2400 BAUD
B4800$    =6000       ;4800 BAUD
B9600$    =7000       ;9600 BAUD


;TERMINAL CHARACTERISTICS ARE SET IN THE FOLLOWING TABLE
;EACH LINE HAS THE FORM:
;
;TTn:    <configuration bits>,0,<filler specifcation>,<terminal width>
;
;FOR EXAMPLE:
;
;FOR AN LA36 AT 300 BAUD WITH 132 COLUMN PAPER:
;TTn:    DEFLT$+B300$,0,0,132
;
;FOR A VT52 AT 9600 BAUD:
;TTn:    DEFLT$+SCOPE$+HWTAB$+B9600$,0,0,80
;
;THE TABLE IS INITIALLY SETUP WITH THE STANDARD RT-11 DEFAULTS
;(EXCEPT FOR BAUD RATE)
```

```
        .RADIX  10.

TT0:    DEFLT$+FBTTY$,0,0,80
TT1:    DEFLT$,0,0,80
TT2:    DEFLT$,0,0,80
TT3:    DEFLT$,0,0,80
TT4:    DEFLT$,0,0,80
TT5:    DEFLT$,0,0,80
TT6:    DEFLT$,0,0,80
TT7:    DEFLT$,0,0,80
TT8:    DEFLT$,0,0,80
TT9:    DEFLT$,0,0,80
TT10:   DEFLT$,0,0,80
TT11:   DEFLT$,0,0,80
TT12:   DEFLT$,0,0,80
TT13:   DEFLT$,0,0,80
TT14:   DEFLT$,0,0,80
TT15:   DEFLT$,0,0,80
TT16:   DEFLT$,0,0,80


        .WORD     0             ;TABLE TERMINATOR
SETTTN: MOV       #TT0,R1       ;ADDRESS OF FIRST STATUS BLOCK
        CLRB      R2            ;UNIT NUMBER
LOOP:   .MTATCH   #AREA,#0,R2   ;ATTACH IT (IGNORE ERRORS)
        .MTSET    #AREA,R1,R2   ;SET CHARACTERISTICS (IGNORE ERRORS)
        INCB      R2            ;INCREMENT UNIT NUMBER
        ADD       #8,R1         ;POINT TO NEXT BLOCK
        TST       (R1)          ;MORE?
        BNE       LOOP          ;YES
        .EXIT                   ;NO, EXIT (AND DETACH)

AREA:   .BLKW     3

        .END      SETTTN
```

RT-11 V2C
BOB STOLARZ, SWS, WA, DTN 221-5392 (617-895-5392)



INTERFACING A SECOND FLOPPY


    There is an error in the patch for 'Installing a Second
Diskette Handler' published in the RT-11 V2C System
Generation Manual. As published, the patch will work
correctly with programs such as PIP, but will fail with a
program (such as MU BASIC/RT-11 V1) that attempts
simultaneous tranfers with the two devices; the problem is
that the patch assigns the same device code to DY as is used
for DX. The following corrections should be made on page
4-26:

In the SJ monitor patch, the line which reads:

        *0,16546/12013   102022<CR>

should be changed to read:

        *0,16546/12013   102037<CR>


In the F/B patch, the line which reads:

        *0,17706/12013   102022<CR>

should be changed to read:

        *0,17706/12013   102037<CR>

## ADDITIONAL ON-LINE FILE STORAGE


It is often desirable to have the maximum amount of  on-line
user  file  storage  available  while  MU  BASIC is running,
particularly on RX01 based configurations.  If the  USR  has
been  made  resident  (answer Y to the 'KEEP USR RESIDENT (Y OR
N)?' question and if a non-overlaid MU BASIC is  being  used
(standard on the floppy disk distribution), then the systems
disk can be dismounted once MU BASIC is running and replaced
with  another  file  storage  disk.  The disk mounted in SY0
should  contain  the  following  files:  BYE.BOO,  EXIT.BOO,
9CAT.B,  and  9CAT1.B.  In addition, if the HELLO feature is
being used, the disk should  contain  the  following  files:
HELLO.BOO,  PASWRD.BOO,  NOTICE.BOO,  and ZAP.BOO.

The only completely safe procedure for swapping  the  system
disk  is  as follows: When MU BASIC is initially brought up,
no users should be allowed to  login.   The  system  manager
should login, and when READY appears, the system disk can be
dismounted and replaced.  The system manager should type OLD
ZZZ (some filename known not to be present on the new disk).
After  the  ?FNF  message  appears,  the  system  can  be made
available to all users.

The only disadvantage to this scheme is the  reduced  amount
of user space available (2KW) due to USR residency, however,
on a 4 user, 28KW system, each user's space  is  reduced  by
only 500 words (from 3KW to 2.5KW), if divided evenly.

The OLD [dev:]ZZZ command should be entered any time  either
disk  is  swapped, and this should only be done if it can be
assured that no one has any open files on the volume  to  be
removed.

**GBF**

GBF   Mascheroder Weg 1   D-3300 Braunschweig-Stöckheim

Gesellschaft für
Biotechnologische
Forschung mbH

Ken Demers

MS–48

United Technologies Research Center

Siver Lane

East Hartford, Conn. 06108

USA

K.P.Schindler
Abt.Phys.Meßtechnik

| Ihre Zeichen | Ihre Nachricht vom | Unser Zeichen | Datum |
|---|---|---|---|
| | | | 8.Mai 1979 |

Dear Mr. Demers,

I have read in the last "mini-tasker" from DECUS that there is considerable
current interest in a libary software for the Hewlett Packard 7221A
graphics plotter.  As the software package HP-Plot/21 offered by Hewlett
Packard requires too much memory, we have developed a libary software
written in Macro-11. We would be most pleased to provide any who may be
interested with further information.

Your sincerly

*Klaus-Peter Schindler*

March 1, 1979


Mr. Ken Demers, Editor
The Mini-Tasker
c/o United Technologies Res. Center
MS-48
Silver Lane
East Hartford, CT   06108

Dear Mr. Demers:

REMOTE-11, a limited network addition to RT-11, has been in
use here for more than two years, and we have had to make
several changes in the code in order to implement features
which were inoperative in the original software as distributed.
Since there has been considerable delay in the publication of
these changes through official channels, I should like to have
you consider publication of the changes in the Mini-Tasker
as the SRCCOM comparisons which I include with this letter.

The copy shown as page one lists the SRCCOM differences between
the file shown as (1) which is from the original release file
of RTSIM.MAC and the file shown as (2) which is our first
functional RTSIM program which would allow two things to occur
that could not be done in the original code.  The first and
most important item is that with these changes programs
written in FORTRAN-IV and down-line loaded to a remote satellite
can independently assign a file name to a data file, that action
at the remote satellite, causes to be written on the host disk.
As the code was originally distributed, only a default name
(i.e. FTN2.DAT) was a possible name.  This was an error in the
original code.

We have used several forms of the "Call Assign" subroutine in
FORTRAN to successfully name files once the above change was
incorporated.  Some forms that would appear to be functionally
similar to others do not work, but that seems to depend largely
upon the version of the compiler and library which are in use
at the time.  One form which has worked consistently well
for us is as follows:


First, define as a Logical*1 the variable name that is to
be used as the file name, then in the body of the program
read the name in 20A1 Format, then TRIM, and call ASSIGN.
The code then is:

```
      LOGICAL*1 RNAME(21)
      Accept N, (RNAME(I), I=1,20)
      Call TRIM
      Call ASSIGN (IDSIC, RNAME, Ø, 'NEW', 'NC', 2)
```

The second important change in this copy of RTSIM is the buried
DDCMP (Ø5,NN) codes which all appear as the default DDCMP ØØ,1Ø,
are elucidated and appear without overwriting.  This helps a
bit in debugging transmission problems when the problem has
occurred in the REMOTE-11 software.

Beside the code changes which I include, it should be mentioned
that we have had a considerable bit of hardware difficulty
which manifested itself as a software problem in the network
until it was very closely scrutinized.

With the release of REMOTE-11, the standard DEC product for
asynchronous serial communication became the DL-11WA/B.
Initially, it appeared that some of these were not working well
at 9600 baud 20 ma loop service.  This was apparently a UART
problem on the board as some boards worked and others didn't
but when you dropped back to 4800 or 2400 baud, the problem
would go away.  Even after a consistent set of DL-11W's were
installed, which all operated satisfactorily at 9600 baud,
problems still occurred with mysterious frequency.

Several more changes later, it can be reported that our problems
were cured with the help of some hints that appeared in this
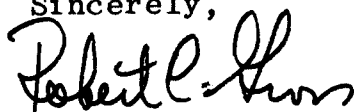newsletter a year or more ago, from Tom Provost.

The DL-11W suffers from a fixed priority on the bus which cannot
be changed without cutting etches.  In a normally configured
system, the first DL-11 is generally the console device and
the clock resides on this board.  By physical proximity on the
backplane to the CPU boards, it also gives this DL-11 the
highest apparent priority just because of electrical proximity.
If the satellite DL-11's that are in the host are connected
considerably further away from the CPU then other devices
(i.e. disk controller, line printer, etc.), they have a lower
priority, and this will definitely cause problems. We have moved
DL-11W's connected to the satellites to the closest slots to the
CPU; other devices are moved further away.


Additionally, the insertion of RF shields, as distributed with
some A/D's, cut down on apparent cross-talk between the DL-11's
operating at the maximum baud rate.  Finally, when a flock of
DL-11W's are on the same backplane, even though only one has
the clock enabled, the pull-down resistors in the chain seem to
degrade the clock signal sufficiently that it can ultimately
run slow or appear to disappear, causing considerable foreground-
background communication problems in RT-11.  As a result,
since the most common configuration in which REMOTE-11 is
operated is for REMOTE-11 to occupy the foreground, the problems
appear as a disk communication problem in REMOTE-11.  We have
broken the clock line on those DL-11W's that are not to be
connected to the console device.

Our problems were further complicated by an apparent problem
in background-foreground priorities that apparently continued
in RT-11 through version 2C and was not, apparently, solved
until version 3.  With the installation of version 3, REMOTE-11
operated quite well with our reconfigured RTSIM and our reorganized
and configured DL-11W's.  With version 3 RT-11 came a new
release of Fortran which with its accompanying libraries would
not produce down-line loadable programs that would operate
in the satellite.  We have continued to use the old release of
FORTRAN and its libraries for compilation and assembling
programs to be transmitted with REMOTE-11.  None of the patches
which were issued to solve this problem have worked, and we
have recently obtained information and software which indicates
that a version of FORTRAN-IV that is somewhat ahead of 2.1,
works at this location if we also include the old FORTRAN library
from version 2.04.

I understand that the people at DEC who maintain REMOTE-11,
and who have been very helpful in the course of the solution
of some of our problems, have a new release version ready with
many of these patches and problems fixed, but I doubt if it
will be seen by any independent users before these notes appear.

Sincerely,

Robert C. Gross
Biosciences Division
Research Laboratories

RCG:cab
Enclosure

```
1)1                    .NLIST  TTM      Original RTSIM.MAC
2)1                    .NLIST  TTM      Our      RTSIM3.MAC

1)5    DERR:   .ASCII  /****** DDCMP ERROR /
1)     D1:     .BYTE   0,0,",
****
2)5    DERR:   .ASCII  <15><12><12><12>/****** DDCMP ERROR /
2)     D1:     .BYTE   0,0,",
**********
1)6            BR      ERR0             ;NO:   UNEXPECTED MESSAGE RETURNED
1)     8$:     CMPB    1(R0),#2         ;ACCESS ACK?
****
2)6    ERR5:   MOVB    1(R0),R1         ;REPLACE DDCMP
2)             MOV     #5,R0            ;00,10 WITH
2)             JMP     DERROR           ;SUB CODE 05,XX
2)     8$:     CMPB    1(R0),#2         ;ACCESS ACK?
**********
1)6            BNE     ERR0             ;NO:  FATAL ERROR THEN
1)             TST     (SP)+            ;CLEAN UP STACK
*****
2)6            BNE     ERR5             ;NO:  FATAL ERROR THEN
2)             TST     (SP)+            ;CLEAN UP STACK
***********
1)8    READ7:  CLR     R0               ;UNEXPECTED MESSAGE RETURNED
1)     :
****
2)9    READ7:  CMPB    #10,R1           ;ERROR 00,10?
2)             BNE     READ7A           ;NO GO TYPE ERROR
2)             JMP     ERR5             ;CONVERT TO SUBCODES
2)     READ7A: CLR     R0               ;UNEXPECTED MESSAGE RETURNED
```

```
2)          :
**********
1)11   CSIDN:   CLR     ARG2+2(SP)      ;SHOW NO SWITCHES WERE SPECIFIED
1)              JSR     PC,REMARG       ;REMOVE ARGS AND EXIT
1)              JSR     PC,REMARG
1)              JMP     NOP1
****
2)11   CSIDN:   MOV     ZEROUT,R4       ;NEED TO ZERO THE OUTPUT SPACE ?
2)              BEQ     1$              ;NOPE
2)              MOV     #15.,R1         ;YES...SET UP COUNT
2)      2$:     CLR     (R4)+           ;ZERO OUTPUT CHANNEL AREA
2)              DEC     R1              ;ONE LESS WORD TO CLEAR
2)              BGT     2$              ;MORE TO GO
2)      1$:     CLR     ARG2+2(SP)      ;SHOW NO SWITCHES WERE SPECIFIED
2)              JSR     PC,REMARG       ;REMOVE ARGS AND EXIT
2)      ;       JSR     PC,REMARG       ;DOPES!!! LEAVE SWITCH COUNT ON STACK
2)              JMP     NOP1
**********
1)11           CLR     INOUT           ;SHOW WE'RE DOING OUT SPECS
1)             MOV     ARG2+2(SP),R4   ;GET POINTER TO OUTPUT AREA
****
2)11           CLR     INOUT           ;SHOW WE'RE DOING OUTPUT SPECS
2)             CLR     ZEROUT          ;CLEAR ZWEERO OUTPUT FLAG
2)             MOV     ARG2+2(SP),R4   ;GET POINTER TO OUTPUT AREA


*********
1)11           MOV     #15.,R1         ;ZERO OUT OUT SPECS
1)      3$:    CLR     (R4)+
1)             DEC     R1
1)             BGT     3$
1)      2$:    MOV     ARG1(SP),R0     ;RESET R0
****
2)11           MOV     R4,ZEROUT       ;SET FLAG (POINTER) TO ZERO OUTPUT SPACE
2)             ADD     #30.,R4         ;BUMP R4 TO INPUT AREA
2)      2$:    MOV     ARG1(SP),R0     ;RESET R0
**********
1)11           .ENDC                   ;.IFDF   NOCSI
****
2)11   ZEROUT: .WORD   0               ;ZEROUT.NE.0 IF NEED TO ZERO OUTPUT
2)             .ENDC                   ;.IFDF   NOCSI
**********
1)15           MOV     #100,(R0)       ;RESET INTERRUPT FLAG
1)             BR      HERE            ;EXIT
****
2)15           MOV     #100,0310(R0)   ;RESET INTERRUPT FLAG
2)             BR      HERE            ;EXIT
**********
```

JY/VH

DIVISION OF NUMERICAL ANALYSIS & COMPUTER SCIENCE
*Department of Industry*
**NATIONAL PHYSICAL LABORATORY**
Teddington Middlesex TW11 0LW England

Telex 262344   Telegrams Bushylab Teddington Telex
Telephone 01-977 3222 ext   4037

| | |
|---|---|
| Mr Ken Demers<br>MS.48<br>United Technologies Research Centre<br>Silver Lane<br>East Hartford<br>Conn. 06108  USA | **Your reference**<br><br>**Our reference**<br><br>**Date**  15 February 1979 |

Dear Ken

I have been interested to read your correspondence in Mini Tasker regarding transferring files between OS/8 and RT-11 floppies.

One of our student workers, Martyn Armstrong, has developed a program for executing 8 to 11 to 8 (ASCII) file manipulations.  It is called PIP8 and runs on a LSI-11 under RT-11.

Essentially you use the standard command string interpreter for defining input and output files and specify OS/8 format files with a "/8" option. The program looks after all OS/8 directory and block addressing problems so that the differences between the file structures are transparent to the user.  In addition the program provides the following options:

> /D    deletes files
>
> /L    directory on TT
>
> /P    directory on LP
>
> /R    renames files
>
> /F    full directory (used with /L or /P)

All these options can be used with or without the "/8" option, depending on the structure of the floppy.

It is hoped to submit the program to the DECUS User library in the near future but in the meantime anyone interested should contact me.

While writing, I have taken the opportunity to enclose some recently despatched SPRs.

Yours sincerely

28.

JOHN YARDLEY

INTRODUCTION TO PIP8.
-----------------------

    PIP8 is a file transfer and file maintenance utility program
    for  both OS/8 and RT/11 (ASCII) files.  It runs under the RT/11
    operating system and enables you to transfer files in the same
    format or from one format to another.  You can obtain directories
    of discs, rename or delete files in either format.

CALLING AND USING PIP8.
-------------------------

    To call PIP8 from the system device respond to the dot (.) printed
    by the monitor by typing:

    R PIP8

    PIP8 responds by first typing the current version number.  The Command
    String Interpreter then prints an asterisk in the left margin and
    waits for you to enter a command string.  If you respond by entering
    only a carriage return, PIP8 prints its current version number and
    prompts you again for a command string.

    When PIP8 is waiting for input from the console terminal you can type
    CRTL/C to abort PIP8 and return control to the monitor.  However you
    must type two CRTL/Cs to abort PIP8 at any other time.  This is not
    recommended when transfering, renaming or deleting OS/8 files as
    directories are being updated and may be corrupted.

    In the current version no wildcards are allowed.

    Since PIP8 performs file transfers on all types of ASCII files (.MAC,
    .FOR,.LST etc), it does not assume file extensions for either input or
    output files.  You must explicitly specify all file extensions, where
    applicable.

    If no devices are specified PIP8 assumes the default device "DK:".

    OS/8 files may only be stored on the RX01 floppy disc medium.

FILE TRANSFERS.
----------------

    When copying files the command form is as follows:

        OUTPUTFILE-SPEC[/8]<INPUTFILE-SPEC[/8]

    It is possible to copy files in the following formats

        RT/11 TO RT/11.
        OS/8  TO OS/8.
        RT/11 TO OS/8.
        OS/8  TO RT/11.

PIP8 OPTIONS.
--------------

OS/8 OPTION (/8).
------------------

      The /8 option is used in conjunction with all the other options
to specify that a file is in OS/8 format.  All files are assumed
to be in RT/11 format unless the /8 option is used on that file.

Example:
    To copy an OS/8 file TEST.PA from DX0: to DX1: the correct
command would be:

        DX1:TEST.PA/8<DX0:TEST.PA/8

The output file would be in OS/8 format since the /8 option was
used on the output file as well.

RENAME OPTION (/R).
-------------------

      The /R option enables files in either format to be renamed, however,
the files must both be in the same format and on the same device.

COMMAND FORM.
-------------

        NEWFILE-SPEC[/8]<OLDFILE-SPEC[/8]/R

Example:
    To Rename the file 1:PROG.MAC To 1:NPL2.MAC you would type the
following command:

        1:NPL2.MAC<1:PROG.MAC/R

Note both files are in RT/11 format.

DELETE OPTION (/D).
-------------------

      The /D option enables the user to delete files from a directory.

COMMAND FORM.
-------------

        FILE-SPEC[/8]/D

Example:
    To delete the OS/8 file WRONG.MAC from DX1: the correct command
would be as follows:

        DX1:WRONG.MAC/8/D

DIRECTORY LISTINGS:
--------------------

        The directory listings obtained from PIP8 give all the file
        names on the specified device, the length of each file in decimal
        and the date associated with each file.  It is possible to obtain
        a directory listing on the console terminal or the line printer.

LINE PRINTER OPTION (/P).
-------------------------

        The /P option is used to obtain a directory as described above
        on the line printer.

    COMMAND FORM.
    -------------

            DEV:[OPTIONS]/P

Example:
        To obtain a directory on the line printer of the OS/8 floppy
        disc in DX1: the correct command would be:

            DX1:/P/8

CONSOLE TERMINAL OPTION (/L).
-----------------------------

        The /L option is used to obtain a directory as described above
        on the console terminal.

    COMMAND FORM.
    -------------

            DEV:[OPTIONS]/L

Example:
        To obtain a directory of the DL: disk on the terminal you would
        type the following:

            DL:/L

FULL DIRECTORY OPTION (/F).
---------------------------

        The /F option is used in conjunction with the options /L and /P
        in order to obtain a full directory of the device which includes

        a)empty blocks on the device,
        b)starting blocks of each file on the device in octal.

        Tentative files are treated as empty blocks with a length of zero.

COMMAND FORM.
-------------

           DEV:[OPTIONS]/F

     Example:
          To obtain a full directory of the OS/8 floppy in DX0: on the line
          printer you would type the following command:

          DX0:/P/8/F


                                                        January, 1979.

Martyn Armstrong
Division of Numerical Analysis and Computer Science
National Physical Laboratory
Teddington
Middlesex
England

     ------------------------------------------------------------------

     USER REQUESTS
     ------------------------------------------------------------------



          If anyone has a PDP-11 that communicates with a Burroughs
     1700 or 1800 please contact
                              Gary Stelzig
                              608 785-1000 Ext. 426

| OPERATING SYSTEM RT-11 V3B | VERSION 3B | SYSTEM PROGRAM OR DOCUMENT TITLE Monitor Components | VERSION OR DOCUMENT PART NO. | DATE 6-FEB-79 |
|---|---|---|---|---|

| SEE EXAMPLE IN INSTRUCTIONS) | | DEC OFFICE Welwyn | .DO YOU HAVE SOURCES? V3 only | YES ☑ NO ☐ |
|---|---|---|---|---|

NAME: John P. Yardley
FIRM: National Physical Laboratory
Teddington, Middlesex, England
ADDRESS:

**REPORT TYPE/PRIORITY**

☒ PROBLEM ERROR    ☐ 5.   ☒ 4.
☐ SUGGESTED ENHANCEMENT    ☐ 3.
☐ OTHER    ☐ 2.   ☐ 1.

| SUBMITTED BY: John Yardley | PHONE: 01 977 3222 | CAN THE PROBLEM BE REPRODUCED AT WILL? YES ☑ NO ☐ |
|---|---|---|

| ATTACHMENTS | COULD THIS SPR HAVE BEEN PREVENTED BY BETTER OR MORE DOCUMENTATION? PLEASE EXPLAIN IN PROVIDED SPACE BELOW. YES ☑ NO ☐ |
|---|---|

MAG TAPE ☐   FLOPPY DISKS ☐   LISTING ☐
DECTAPE ☐   OTHER _____

| CPU TYPE LSI-11 | SERIAL NO. WMG5264 | MEMORY SIZE 28k | DISTRIBUTION MEDIUM RX01 | SYSTEM DEVICE RL01 | DO NOT PUBLISH ☐ |
|---|---|---|---|---|---|

## 1. Error in RL01 Handler

Problem: There is an error in the RL01 handler which makes it possible to address a non-existant unit as an existing one. This could be dangerous!

i.e. .INIT/NOQUERY DL4: would cause DL0: to be INITialised.

Solution: The mask for the unit number should be 7, not 3.

```
i.e.    DLEPT:  MOV     DLCQE,R5
                MOVB    Q.UNIT(R5),R0
                BIC     #^C<7>,R0
```

## 2. Problem with .SPFUN request for RL01 handler

Problem: Section 1.4.8.9 in the A.P.G. on the RL01 disk handler does not explain the use of the "device specific" .SPFUN arguments. e.g. which arguments are the cylinder and sector numbers?

## 3. Problem with unit number of default device

Problem: How do you find the unit number of the device assigned "DK" from within a program? You can easily find the device using a .DSTATUS but not the unit number.

## 4. Device Time-out Support

Problem: Ideally, one would like to use the device time-out feature to execute the handler completion code when a time-out occurs. However, handler completion code must exit through the Monitor's completion code (at fixed offset 270), whereas a completion routine must presumably take take a normal RTS PC. How is one supposed to accomplish this, or otherwise how is device time-out intended to be used. I feel the documentation on device time-out leaves something to be desired.

| OPERATING SYSTEM | VERSION | SYSTEM PROGRAM OR DOCUMENT TITLE | VERSION OR DOCUMENT PART NO. | | DATE |
|---|---|---|---|---|---|
| RT-11 | V3B | FORTRAN V2.04 | V2.04 | | 12-SEP-78 |

| (SEE EXAMPLE IN INSTRUCTIONS) | DEC OFFICE | DO YOU HAVE SOURCES? | YES |
|---|---|---|---|
| NAME: John Yardley | Reading, Eng. | Yes | NO |

| FIRM: National Physical Laboratory | REPORT TYPE | | PRIORITY | |
|---|---|---|---|---|
| | ☒ SOFTWARE ERROR 1. | | ☒ LOW 2,3. | |
| ADDRESS: Queens Road | ☐ DOCUMENTATION ERROR | | ☐ STANDARD | |
| Teddington, Middlesex | ☒ INQUIRY 2,3. | | ☒ HIGH 1. | |
| England ZIP: | ☐ FOR YOUR INFORMATION/SUGGESTION | | | |

| SUBMITTED BY: John Yardley | PHONE: 01-977-3222 | CAN THE PROBLEM BE REPRODUCED AT WILL? YES ☒ NO ☐ |
|---|---|---|

| ATTACHMENTS | | | | COULD THIS SPR HAVE BEEN PREVENTED BY BETTER OR MORE DOCUMENTATION? PLEASE EXPLAIN IN PROVIDED SPACE BELOW. | YES ☐ NO |
|---|---|---|---|---|---|
| MAG TAPE ☐ | FLOPPY DISKS ☐ | LISTING ☒ | | | |
| DECTAPE ☐ | OTHER _____ | | | | |

| CPU TYPE | SERIAL NO. | MEMORY SIZE | DISTRIBUTION MEDIUM | SYSTEM DEVICE | DO NOT PUBLISH |
|---|---|---|---|---|---|
| LSI-11 | WMG5264 | 20K | Floppy | Floppy | |

## 1. Apparent Fortran Compiler Error.

The program "T.FOR" reads an octal number from the keyboard in response to the query "BLOCK NUMBER?". It passes the value read to a subroutine "OS8BLK", which takes as an input argument the INTEGER*2 value, BLOCK and returns two, four element, INTEGER*2 arrays, "TRACK", "SECTOR". These arrays are then printed out by the main program.

There appears to be a bug which is conditional upon the assignment of certain elements of "TRACK".

The array elements TRACK(3) and TRACK(4) in the subroutine OS8BLK are incorrectly assigned when the value to which they are assigned is an expression (ie ITCK+1), rather than a single variable (ie ITCK). Furthermore, the incorrect assignment affects the planted variable,"III" as well.

The inclusion of four "DEBUG" lines and the corresponding terminal output should make the nature of the error clear. For your information, I have also included the FORGEN dialogue used in builing the compiler.

I am completely mystified by this bug and have been totally unsucessful in tracking it down any further. It appears to be tied up with the fact that TRACK is an argument to the subroutine; but then so too is SECTOR, which is not corrupted!

2. How do you access a variable declared as COMMON in one program from another program written in assembler? It does not appear to be good enough to simply define the variable as GLOBAL.

3. Is there a version of LSILIB (supplied with 11L03) compatible with version 2 of FORTRAN. Alternatively, will FORTRAN/RT-11 extensions V1B support the LSI-11, this is not made clear in SPD 12.12.4

SUBJECT: Field No. R11-1694 - SPR No. 11-19975

The response for your Software Performance Report is as follows:

STATEMENT

Formal parameter array problem.

RESPONSE

Thank you for your SPR.

1. This is fixed in the next FORTRAN IV release for RT-11.

2. You need to define a .PSECT for your Commons in the assembly program.

```
.PSECT    Your Common block name
.WORD     Number of words in your Common block.
.END
```

3. This inquiry should be directed to either the Components Group or LSI Group.

## Indirect Command Files

A command file containing a command that requires user intervention (such as in INITIALISE) will not take its response from the command file.

eg       a file comprising

**INIT DX1:**
**Y**

still waits for the user to reply to the question "Are you sure?", then treats the reply in the command file as illegal. (see attatched terminal listing)

## Floppy Disk Handler

The Floppy Disk Handler seems to be running slow on the FB monitor.

For some reason, under the FB monitor, the 2:1 sector interleave is just critical, so that interrupts from the line time clock, for example, significantly reduce throughput of data.(ie increase transfer rate)

This is all the more surprising because the 50 Hz mains frequency works to the advantage of the handler. The handler has 20% more time to process a sector in the UK!

I have accompanied the SPR with a copy of the terminal output showing times for a " COPY/DEVICE " under SJ & FB, with the LTC on and off.

---

## SAN DIEGO SYMPOSIUM

---

John T. Rasted, RT-11 SIG Chairman

For the Fall Symposium, users are invited to present papers concerning any aspect of their RT-11 based system: hardware, software, application or extension. Especially welcome will be those users interested in presenting a tutorial on any of the RT-11 Languages or more technical aspects of the RT-11 operating system. Users willing to present or participate in interactive workships or panel presentations are urged to submit minipapers early so other interested users can help fill out the panel or agenda. Because of scheduling conflicts, users submitting poster papers will be most welcome.

The RT-11 User Application Panel will be continued. No formal presentation is required for this session, but users planning to participate should contact the SIG Chairman.

The Fall Symposium in San Diego promises to be as informative and productive as New Orleans. To assure the continuing success of the Symposia, YOUR active participation is required.

**DECUS**

DIGITAL EQUIPMENT COMPUTER USERS SOCIETY
ONE IRON WAY, MR2-3/E55
MARLBORO, MASSACHUSETTS 01752

**MOVING OR REPLACING A DELEGATE?**

Please notify us immediately to guarantee continuing
receipt of DECUS literature. Allow up to six weeks
for change to take effect.

( )   Change of Address
( )   Delegate Replacement

DECUS Membership No.: _____

Name: _____

Company: _____

Address: _____

_____

State/Country: _____

Zip/Postal Code: _____

Mail to: DECUS - ATT: Membership
One Iron Way, MR2-3
Marlboro, Massachusetts 01752 USA

Affix mailing label
here. If label is not
available, print old
address here.
Include name of
installation, com-
pany, university,
etc.