DECUS 12 BIT SPECIAL INTEREST GROUP
NEWSLETTER

March   Number 21   1977

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(Please include reference to Newsletter number and page when inquiring
about material published.)

NEWSLETTER DEADLINE

The deadline for ready-to-use material for the next Newsletter is
29-April-1977. Material requiring editing/re-typing must be in earlier.
Ready-to-use material should use an area 6 1/2 inches (16.5 cm) wide by
no more than 9 inches (23 cm) long on each page. It should be on white
bond paper whenever possible and must be reasonably clean, legible and
sufficiently dark for good photographic reproduction.

SPRING DECUS SYMPOSIUM

We just completed the scheduling of the Spring Symposium (one of the
reasons for delay of this Newsletter) and the 12 Bit part looks very
interesting. In Las Vegus we had 181 attendees who were interested in
the PDP-8 and PDP-12. Because the Spring meeting is in Boston, we
should see an even stronger turnout and we usually get a larger DEC
contingent in Boston due to the much lower cost when there is no travel
or housing costs for people from Maynard and Marlborough.

Among the DEC sponsored sessions we will have a PDP-8 Product Panel, a
Technical Overview of new PDP-8 products, a PDP-8 Extended Memory
Workshop where the plans for extending memory beyond 32K will be
discused, an OS/8 System Software Workshop, a DECNET/8 Workshop, and an
RTS/8 Workshop. In the area of user papers we have a session of OS/8
System Software papers, a session of 12 Bit Hardware papers which
include two or three on the IM6100 micro-processor chip used in

interfaces for the 8 family, and in conjunction with the RTS/8 Workshop
we have some user papers on their experience with RTS/8. As usual, we
will have a 12 Bit SIG meeting but this time we plan to allocate as much
of the session as possible to an interactive panel session on recent
experience with 12 Bit software. If possible we hope to have some
reports on field tests of new items like MACREL, DECNET/8 and RTS/8. No
specific speakers have been designated in the program because we want
the flexibility to accommodate last minute developments. If you think
you might have a contribution to make in this informal session please
send me a note as soon as possible.

NEWSLETTER TURNAROUND TIME

I recently wrote to the DECUS Executive Director, Ely Glazer, about the
question of turn around time for SIG newsletters such as this one. This
is a matter that has been of great concern to many of the other DECUS
Special Interest Groups and I have been trying to improve it ever since
this newsletter was started. Lately I have been hearing more complaints
on the subject however. In the case of the last 12 Bit SIG Newsletter
the following were the dates involved: Newsletter hand delivered to
DECUS 20 Jan (late, due to the bad weather here), the DECUS "schedule
for mailing" was 7 Feb, I recieved a copy of the Newsletter 8 Feb (this
was pulled from regular mailing and sent direct I am told), Lee Nichols
received his copy in Delaware on 25 Feb and I just learned that Jim Van
Zee received his copy on the West Coast on 7 March and Jim Crapuchettes'
copy also arrived on the West Coast about the same time!

Although Ely's answer to my letter has not arrived as yet, I understand
it will by that the delays are due to the use of Third Class mail.
Some SIG s have been allowed to use First Class mail as an experiment
but I understand that the cost was unacceptable. DECUS is looking into
the possiblity of qualifying for Second Class mailing. This might
improve matters but it is not easy to set up. The other possibility is
to charge for newsletters. This would make more money available for
such things as First Class postage. If you have any thoughts on this
subject pro or con let me and your Executive Board know. At the moment
no one in the DECUS administration really knows how newsletter charges
would be received by the membership. I have been told indirectly that
the International Liaison Committee is moving ahead with plans for
newsetter charges without first consulting the SIGs and the membership.
If you do not like the idea of charges for newsletters it would be a
good idea to let your Executive Board know how you feel.

STATIC

We are just coming to the end of this year's bad static electricity
season in this part of the world (Northeast USA). As usual, questions
on the subject have been frequent. The following is from a note I sent
to John G. Iezzi in response to such a question.

"Static is usually worst in the winter (due, it is believed, to low
humidity). Most static problems disappear with the coming of Spring.
Most users find that the following steps help: 1) get rid of any
carpets and the like in the vicinity of the equipment, 2) provide as

much grounding as possible for personnel (I find if I touch a grounded table before I touch the computer or terminal it helps a lot), 3) the best thing you can do is increase the humidity in the area of your equipment. Some recommendations call for 50% relative humidity but we found 30% to 35% was al we could manage and that made a big difference. 4) where the static is affecting equipment like line printers (i.e., paper sticking to the machine) you can get static eliminator devices which are supposed to help."

I don't know of any definitive answer to the static problem. Solving it seems to be a question of trying the various partial solutions available until the problem is reduced to an acceptable level. To that end I would like to have anyone who has had success to share it with us in the Newsletter. If we get some good inputs I can combine them for an item for a Fall issue when we will be starting to work on the problem again in earnest. Maybe we will get some good inputs from Australia and New Zealand. They should just be coming into their main static season now.

THE ONCE AND FUTURE PDP-8/I

We bought one of the very first PDP-8/I's. It was never on a DEC service contract and was always maintained on a "per call" basis by DEC. The system has grown from a 4K CPU and teletype to a large configuration which includes several non-DEC items. The CPU was so old that when we went to install a card reader interface we found that our machine did not have the built in wiring for it that "all" 8/I's have. In recent times we found that maintenence was getting to be more and more of a burden so for the past couple of years we have gone around and around with DEC Field Service about how we could qualify our system for a service contract. Because it never was on contract before, it did not have many of the ECO's that have been issued over the years. The outcome of all our talks was that they could not do anything for us, it was hopeless.

I know better than this and finally I managed to get our Field Service manager to talk to Bob Reed who runs DEC's Traditional Products Line. As many of you know, TPL's main reason for existing is to service owners of the older machines. After a good deal of resistance from Field Service, a lot of exceptional effort from TPL, and several discussions with our salesman a package was finally worked out. We sent the system to TPL (in Nashua, New Hampshire) were it was totally refurbished. A new CPU backplane with the current ECO's was installed, the modules were brought up to date, many other ECO's were installed, and the system was re-packaged in new cabnets. The people at TPL even managed to accommodate several of our non-DEC items, a most "un-DEC" service! I talked to the people doing the work on several occasions and it was apparent that they took real pride in doing a good job. They went far out of their way to solve all our problems and made sure everything was perfect when we brought the system back up. TPL got Field Service to certify the system for maintenence before it left Nashua so it was re-installed and went on the service contract just like a brand new system.

The reasons we went this way rather than to simply replace the PDP-8/I
with a new 8e or 8A were: 1) the cost of converting all the interfaces,
the negative bus peripherals, and the Fabri-tek memory and 2) we could
not wait for as long as the quoted delivery on a new CPU. The job TPL
did was not cheap but I suspect they lost money and in any case it was
cheaper than the conversion to a new CPU.

12 BIT HISTORY

Sometime ago I came across a list of dates of initial shipments of
various computers. It seems interesting to list the DEC 12 bit products
for our membership. If any of you know of different dates it would be
educational to update this list for the record.

PDP-5	Nov 1963
PDP-8	May 1965
PDP-8S	Sep 1966
PDP-8I	Mar 1968
PDP-8L	Oct 1968
PDP-12	Apr 1969
PDP-8e	Apr 1971
PDP-8m	Jun 1972
PDP-8f	May 1973
PDP-8A-100	Jun 1975

For comparison, the first PDP-11 was shipped in Apr 1970 and the first
PDP-15 was shipped in Feb 1970. It is interesting to note that the end
of the PDP-15 has already been announced but the original 12 bit
architecture goes on strong. Some of us recall the predictions in 1970
that the upstart PDP-11 would finish off the 8 in no time at all.
It looks as though sometimes fortelling the future can be tricky.

NOTE FROM ERIC SWANSON

"I have written some routines for OS/12 FORTRAN IV to expand the display
capabilities, which might be of interest to other users. The routines
are useful for data display and editing. In brief, these include:
1) routines to display X and Y cursors, either as a background task or
   in a program loop,
2) a routine to change the operation of DEC's PLOT subroutine so that
   straight line segments connect successive displayed points,
3) a routine which disables the TTY interrupt and checks the keyboard
   under program control,
4) a combination routine which provides cursors controlled by the analog
   channels, and checks for a command from the TTY.

The routines are written in RALF code, and I can provide sources to
anyone who sends to me one OS/8 formatted LINCtape or DECtape.

I have also written subroutines for FORTRAN IV which support large
2-dimensional arrays on an RK8E disk. The disk is driven by an OS/8
independent internal handler, and an FPP-12 is required. (Note: an
FPP-8A should work also I think. RH) Both single and double precision
arrays are supported. Anyone who is interested should contact me.

Finally, programmers using extended precision in FORTRAN IV should
beware of B format conversions, which are infrequently erroneous in
about the fifth decimal digit. I have submitted an SPR to DEC, and
hopefully a fix will be forthcoming."

Eric's address is Department of Biochemistry, J405 Health Science
Building, SJ-70, University of Washington, Seattle, Washington 98195.

SANDIA FOCAL-77

I just recieved a copy of a very good report on SANDIA FOCAL-77 by
William F. Chambers (Sandia Labs ref. no. SAND77-0128, available from:
National Technical Information Service, U.S. Department of Commerce,
5285 Port Royal Road, Springfield, VA 22161 for $4 for printed copy or
$3 for microfiche).

"The system is built around DEC's FOCAL language for the PDP-8 series
computers, utilizes 16K, 20K, or 24K core and incorporates computed line
numbers, tabulation, file handling, doubly dimensioned variables, a
modulo function, logical IF, multiplicative congruence random number,
extended text editing, ASCII string, extended line length, disc variable
storage, X-Y plotter, and nuclear multichannel data acquisition and
display routines. It also includes hardware driver routines for the
counters, multiplexers, digital-to-analog converters, and stepping
motors associated with an electron microprobe or an X-ray diffractometer
and for an optical densitometer. The floating point, push-down list,
variable lookup, sorting, and branching routines have been re-coded to
improve execution speed. The EAE has been used whenever possible. Most
features, including hardware driver selection, amount of core, presence
or absence of EAE, disc variable storage, and output line length, are
conditionally assembled and are selectable at assembly time."

The computed line number, tabulation, and file handling are from OMSI
FOCAL (PFOCAL), the floating point and sorting speed-ups are from Jim
Crapuchettes' work, and the Calcomp plotting package is from John
Fitzgerald. A very nice touch is that Appendix III is a micro-fiche
listing. The writeup says source and binary files are available from
the author on DECtape or paper tape.

NOTE FROM JIM VAN ZEE

Jim wrote to say he was sorry for "barking up the wrong tree" regarding
the /K switch to PAL8 and the .DEASSIGN command. He notes "I did verify
that when you disable CCL you set the .DEASSIGN command back again. I
must say that this is not crystal clear in the OS/8 Handbook, but they
probably didn't think anybody would care."

Jim goes on "My pet peeve for this month is the OS/8 LPT: handler and
the extra formfeeds associated therewith. I have had so many inquiries
about this that I think the solution should be widely publicized.
Perhaps even DEC will take heed in a future release, but I don't give
this much of a chance. To illustrate the attitude, one person from

upper New York State related to me how his local DEC office had told nim the formfeeds could not be eliminated 'because they were built into the software'!"

"Anyway, it is really irritating to list a directory on the LPT: and have to throw away 3 blank pases in order to set perhaps 10 lines of output. Of course DIRECT V5 (the user modified DIRECT now in the DECUS Library in an updated V5A version. RH) has the /P switch to eliminate one of those pases, but it is still annoying to set a pase eject both at the beginning and at the end every time you call the LPT: handler. Every single user that I have talked to would perfer to include his own formfeeds when he needs them - Just as the DIRECT prosram normally does. This would be especially pertinent for BASIC prosrammers;   Those using FORTRAN or UWF (U/W FOCAL - RH) can senerally use the internal line printer handlers provided by the lansuase. For those who would like to set rid of this nuisance, here's how:

```
.RUN SYS:BUILD
$AL LPSV,1
/0014 0015$      (This '$' = ALTMODE or ESCAPE)
$AL LPSV,32
/1211 1201$
$BO
.SAVE SYS:BUILD
```

This patch substitutes a 'return' for the form feed. (Maybe DEC will make this sort of a thing a SET option when they release SET in OS/8 - RH) Another modification which users misht like to have is a way to output a CTRL/N at the beginning of each pase. This would create bold letters on the first line (of a PAL8 listing, say) provided they had a Centronics printer or equivalent, and could be defeated by skipping this line. I have seen some output which indicated that this mod may already have been implemented by someone. Will anyone who knows about this contribute their ideas to the Newsletter? "

"UWF will be available shortly for use under the ETOS time-sharing system. I submitted a note to DECUSCOPE concerning the PDP12, LAB8/e scope oriented version, but it was rejected. I am a little sad about this, but I recosnize that the 'new' DECUSCOPE is only a shost of its former self and has many too many pases devoted to DECUS administrative changes, officers, etc. and fewer pases available for user announcements. Anyway, considering all the PDP12 users out there who still think that FOCAL12 is the neatest prosram ever invented, I had hoped to convey the message that a similar (but even nicer?) prosram was now available for use under OS8 and on the LAB8/e as well"

Jim also sent copies of his last two U/W-FOCAL Newsletters, a note on how he uses LINCtapes formatted with 1008 (a new record?) OS/8 blocks, and a note on the non-OS/8 version of U/W-FOCAL which seems to be up and runnins now for non-OS/8 environments. The latest version of UWF is 3R according to the newsletter. Jim keeps on makins improvments such as fixins UWF so it will run in the OS/8 backsround of RTS/8 (Note' all interrupt driven prosrams such as UWF and OS/8 FORTRAN IV need to modify themselves when run in the backsround this way because the RTS/8 system

does not support interrupts for the background. The current release of
OS/8 FORTRAN IV does take care of this, contrary to what some people
think. It cannot run in the background with an FPP-12 or FPP-8A,
however, due to limitations of the hardware. Maybe after the Spring
DECUS meeting anouncements there will be some hope to reduce this
limitation.)

Jim also sent a copy of a paper he wrote titled "U/W-FOCAL: A COMPARISON
WITH OTHER LANGUAGES". The quality of reproduction is not quite good
enough for the Newsletter and it is too long (10 pages, single spaced)
for me to get it retyped for this issue. If you are interested in it,
let Jim know, he can probably send you a copy. If there is enough
interest I may be able to find a way to get it into a future Newsetter.
The FOCAL vs. The World debate is always popular and might be worth
continuing to follow.

NOTE FROM LARS PALMER

Lars sent a couple of pages of material which are included elsewere in
this issue. Note that he refers to a listing but it did not reach me
with the rest of his material. One of the items is a letter to the
DECUS/Europe Executive Board regarding the the DECUS Library. Although
the PDP-12 that the Library is considering would help meet some of the
needs that Lars discusses, his comments are still worth circulating.

On I.M. Templeton's attempt to decode the RESORC program, Lars comments
that he does not quite see why anyone would experd his time doing this
when DEC sells the sources. Lars says that he has the sources and could
give him the information he needs but that might be considered cheating.
However, just to help him along a little, Lars says that the forth word
in the table in question is the address of a subroutine in field zero
that is specific to each device. (While I fully agree with Lar's logic
about the non-cost effectivness of dis-assembling code for which sources
are available, it seems to be a fact of life that many of the people who
are most interested and best qualified to attack such projects are in
situations where such logic simply does not apply. For example, a very
inventive, productive graduate student at a university will want to work
on something like this but he will find that there is absolutely no
money available for software purchases and in any case his time is not
valued in a way that would be rational in the "real world". Until DEC
recognizes this situation and finds a way to accommodate it, it seems
inevitable that people will go on dis-assembling programs and operating
systems. RH)

NOTE FROM RUDI STANGE

Rudi has written again from the DEC office in Munich to respond to the
item in the last Newsletter about support of OEM's by the 12 Bit world.
Rudi sent a copy of the OEM Information Catalog that DEC has for
Germany. Although I do not read German I can tell that the book is as
good if not better than what is available in the US. Although it covers
both 12 and 16 bit equipment, I was interested to see that the 12 bit
section does not take a back seat to the 16 bit section. In the section
showing applications of the DEC hardware by OEM's, I found 8 obvious

references to 12 bit machines and only 6 references to 16 bit equipment. There are several more applications were the specific hardware is not obvious, but I think it is clear that in Rudi's part of the world the PDP-8 family is still very much alive and well.

NOTE FROM FRANK DIETER LEHMANN

Responding to Rudi Stange's request in the last Newsletter, Mr. Lehmann has sent a patch to U/W FOCAL that will allow it to use the date in the DD.MM.YY form. He also has a patch available for the YY-MM-DD form.

14446/4557	7012	RTR
14447/7010	0122	AND P77
14450/0107	7110	CLL RAR
14453/7012	4557	RTL6
14454/0122	7010	RAR
14455/7110	0107	AND P17
14514/7040	1361	TAD (-2
14561/xxxx	7776	-2

NOTE FROM JEROME VUOSO

I recently received a letter from Jerome Vuoso with comments on a number of points. Several of his comments are similar to ones I hear when talking to other members of the SIG. Jerome is a teacher at the Brooklyn Friends School in New York City. They own a CLASSIC (i.e. PDP 8A, dual RX01 floppy disc, VT-50 terminal, etc.) with an LA-36 used as a line printer and they run a full set of OS/8 software except for FORTRAN IV. Some of his comments and a few responses follow:

"We are very pleased with the CLASSIC and have found that one computer is not enough. We are presently looking into expanding our system into a time-sharing system (ETOS looks very good) and this leads me to a very MAJOR concern about DEC. DEC does not seem to care too much about a small user/buyer of their equipment. When I approched our salesman about expanding our present system to a timesharing system I got no help from him. He did not flatly say we would not be able to do so but he implied that we bought a non-expandable system. This was one of the selling points made to us about the classic, i.e. that it was expandable. He promised to look into it for us and 2 months later I recieved a package of material not on the PDP-8 expansion but on the PDP-11(!) with a note saying that our RX01's may not be transferable to a PDP-11 environment."

"The same salesman lead me to believe that the OS/8 V3C update that we bought would contain BASIC, TECO, etc. (which it did not). I see in the Newsletter that Software cost is a concern of very many OS/8 users. To be honest, if I had known that Version 4 of OS/8 was coming out within the coming year I would never have gotten V3C ($150 down the drain and no satisfaction). I have yet to see a full explanation of the various Software Support Categories and/or their costs." (This may be because

the PDP-8 part of DEC is still trying to find a way to meet the users'
needs in this area and still live within DEC's overall software policies
which are not well suited to the small user. Note: Look for V3D this
fall but do not look for "V4" very soon. If the release after V3D is
going to be worthwhile it now looks like it will be a major project. If
it is another minor upgrade it may not be worth waiting for. RH)

"Why should the users have to make and/or find modifications to existing
software when DEC comes out with a new piece of hardware? For example
the VT-50 terminal - TECO is a pain in the neck to use when deleting
characters and also can not 'freeze' the screen. The same is true for
the BASIC Editor which is used by our students."

"Speaking of patches, that is one of the reasons that I think the
Newsletter is one of the best of its type. The only problem is that
everyone does not have FUTIL or SPY or can easily get them. If
possible, can you also publish the ODT or EPIC equivalents of these
patches." (In general, I do not have the time to do the conversions but
must depend on our contributors so please note this request when
submiting patches. RH)

"With the CLASSIC (i.e. only floppy discs) we are limited as to how many
programs we can get from DECUS (because very few have been submitted on
floppies). With no paper tape or DECtape we cannot get some of the
several excellent programs that are available. Do you know of anyone
who can transfer programs from paper tape and/or DECtape to floppies? I
would be willing to make an arrangement on a cost plus basis with them
and then I would be willing to copy programs for other CLASSIC users on
a cost basis." (This is an issue I have been beating on DECUS about for
years. In the last year or so they have finally started to understand
what it is about. At the Las Vegas meeting in December the Library
Committee's vote to recommend a trial acquisition of the PDP-12 for the
DECUS Library's use was therefore very pleasing. The system in question
includes the capability requested here. Hopfully DECUS will like the
PDP-12 enough to keep it. If that happens I think we can look forward
to a formalized offering of the desired service as well as a number of
others as time goes on and they learn how to handle the various
requests. RH)

"Do you know of a patch to PIP that will disable the /Z and/or /Y
option? With almost 100 students using floppies there has been a rash
of zeroed disketts. Also the students try to copy system heads.   I
would think this would be of great interest to anyone in an educational
environment!" (Yes, the basic problem was addressed in DECsystem-8 (in
DECUS). By simply changing CCL to chain to programs called ZERO and
SQUASH, plus putting a parameter block on each device that controls
zeroing and squashing and which is checked by those programs, most of
the problem goes away and you get more effective capabilities in the
deal (SQUASH is much better and faster in some cases than /S for
example). Now the only trick is to get it on a floppy! By the way it
seems that DECUS has been sending out an unsatisfactory writeup (an out
of date one) with DECsystem-8 so only those in the know already can use
it without a lot of research. We are working on getting that fixed
soon. RH)

"I have several programs (in OS/8 BASIC) that are not ready for submission to DECUS. If anyone wants an "unfinished" copy of them (they work but with no documentation) I will be glad to send a copy of the sources and/or copy them onto their floppies. The only thing I request is that they supply the return postage. Copying and Xerox costs will be on me. I think this will force me to write the documentation.

The programs are as follows:

A) FIXUP - a line and character oriented editor that will "fixup" programs written in BASIC. It enables a student to change a line in the middle without having to retype the entire line. Also it enables you to replace, search, and other functions throughout an entire program, a specific range of lines or in a specific line.

B) BCREF - a cross reference program giving the reference line numbers used in a BASIC program.

C) PMPAL8 - a program written in BASIC that emulates the PAL8 assembler using the same procedures as PAL8. I/O is done differently from PAL8 however. It enables you to store, retrieve, and compile PMPAL8 programs, and to examine "core" (by the way PMPAL8 stands for "Poor Man's PAL8 assembler). I wrote this when I was forced into teaching a course in assembler to high school students and thinking of what they could do if they used the real PAL8 and ODT. The idea for PMPAL8 came from SIMCOM, LILAC, SADSAC etc. from DECUS.

All of the above programs were written in O/S 8 BASIC for use on a CLASSIC system (2 floppies, 16K memory, and a VT-50 terminal). They can be easily modified to suit the memory and/or terminal on the target machine. I would hope that anyone who requests copies of any or all of these programs would give me feedback so that I can make them ready for submission to DECUS."

Jerome's address is Brooklyn Friends School, 375 Pearl Street, New York, NY 11201.

NOTE FROM ERIC K. OLSON
————————————————————————
Eric says he found a possible solution to the problem of a two-terminal timeshared BASIC with mass storage on a one DECtape only system after writing his last letter. He notes that EDU25 requires a tape and a disk or else two DECtapes. His suggestion is to do an ASSIGN of the name DTA1 to SYS (i.e. DTA0) or something similar. This way you might get away with only one tape even though EDU25 thought it had two tapes. If EDU25 uses the OS/8 device handlers (it could have it's own internal handlers I suppose) then this could work but it might be very slow. An EDU25 expert will have to advise us further.

On the question of a LOGIN capability, Eric suggests the following:
"A temporary solution may be Stanley Rabinowitz's patch to do a .UC whenever the system is booted. Using this patch, it is currently impossible to run a program directly, via .R or .RUN, since these

commands are implemented in the Keyboard Monitor rather than CCL.
However, an indirect approach such as .LOAD LOGIN.BN/G would load and
run LOGIN, which could be a program demanding name, password, and date,
or whatever. This could be used to run any program at bootstrap time,
even one in .SV format, by saying:

            .LOAD progrm.SV/I/G."

Eric recalls free DECUS Convention tickets some years ago and wonders
about it. DECUS tells me that there have never been free tickets to the
US DECUS Symposia but that DECUS had free passes to the SJCC (Spring
Joint Computer Conference) the year it was in Boston at the same time as
the DECUS meeting.

"What is DECNET/8?","What is MACREL?" Your salesman should have lots of
information on DECNET in general and DECNET/8 in particular.   DECNET/8
runs under (and requires) RTS/8. It implemenents DEC's company wide
scheme for connecting computers together over communications networks.
In theory all computers that have an implementation of DECNET can
communicate and exchange data, even non-DEC systems.   At the monment,
however, DEC is still changing the design of some parts of DECNET so
each version that is released tends to only be compatable with itself.
This seems to be true of the version of DECNET/8 that is just now being
released. MACREL is DEC's new assembler for OS/8.   It has been in
development for a long while and is only now starting to be field tested
by a few sites. MACREL will have a full macro capablity (somewhat like
MACRO-11 for the PDP-11) and and also the ability (with its linking
loader) to generate relocatable programs. The relocatable routines can
be written and assembled individually and combined at link time so that
you can work on small sections of code rather than having to always edit
and reassemble, large programs as single units. You can also create a
library of common subroutines that will be automatically searched at
link time for any routines that you call for in your program. This
works rather like FORTRAN but the code you can write is much more
attractive to the advanced programmer.   MACREL has been delayed by
several factors, one of which is the complexities of trying to invent a
way to have true relocatable code for the PDP-8.

"RE: Reference Card - I made an OS/8 V3 Reference card, which is not
beautiful, but it works for me. I am willing to reproduce it for anyone
for the cost of postage and copying. I wish to impress upon prospective
buyers that it works for me, but may not for you. To order, send $.50
to Eric Olson, Bolton Road, Harvard, Mass. 01451. Although I cannot
refuse a check, please send cash, coin or stamps."

"RE: MSBAT (Mark Sense Batch) - DEC has published a Mark Sense Batch
Users Guide, from which I have selected the following to enlighten the
general public.
MSBAT uses two types of cards, depending on the type of run: BASIC and
FORTRAN. Both contain the language elements of their respective
languages, as well as JCL for MSBAT.   It has three modes: Batch,
Interactive Batch, and PIP. In Batch mode the system works normally
except it reads from the CDR: and outputs to a specified file.   In
Interactive Batch it outputs to the TTY and any input that normally

comes from TTY is (selectively) taken from it. In PIP mode, the system can read an imbedded source file. More information can be found in DEC-S8-OBUGA-A-D, The MSBAT Users Guide." (Note: Dan Smith lent me a copy of this manual, which I had never seen before. The manual seems fairly well done on a quick review. If you have a mark sense card reader you might like to look at a copy. I am told that MSBAT is distributed on the same tape as BATCH. I cannot say as the last release of OS/8 that I got was in the form of a field test kit that had everthing on one disk. RH)

OS/8 SUPPORT OF ADDITIONAL INFORMATION WORDS

I found the following information from Stan Rabinowitz in my files recently. I am not sure it has ever been published in a neat package before.

1)   .ZERO DEV:=0

    has the same effect as

         .ZERO DEV:

    which is treated as

         .ZERO DEV:=1

    i.e., one additional info word is set aside. This is used to store the date of a file.

2) ZERO and SQUISH only look at the low order 2 octal digits of the = argument. To create a device with no additional info words, type

         .ZERO DEV:=100

    This will not allow dates to be put in files, but will allow more directory entries on a given device.

3) FOTP handles all additional info words correctly. It will copy them. /T will not bomb, if there is no room for a date.

4) RESORC will tell you how many additional info words a system head has, if it has other than one.

5) DIRECT will print all additional info words in octal, if there are more than one.

6) No DEC CUSP uses any additional info words after the first (which is used for the date).

The following related features of FOTP are not well known.   They were added after the first release I think.

1) The rename option (/R) looks at the /T switch. If /T is typed then not only is the file renamed, but the new file receives today's date.

Without /T, the new name has the same date as the old name.

2) The rename option (/R) allows you to rename a file to its own name. This is not very useful unless some other switch is included, for example /T.

3) If no output file is specified with /R, then FOTP assumes the same name as the first input file.

Example: To redate all files on a DECtape to Jan. 1, 1976:

          .DATE 1/1/76
          .RENAME DTA0:*.*/T

In any case where FOTP creates a new file, if the old file had no date, then FOTP will put today's date on the file.

'SET' COMMAND FOR OS/8 V3C

When OS/8 V3C was released there was some experimental code embedded in it for a 'SET' command. This command was not a part of of the official release and it is not supported by DEC. I have not documented it up until now because there were some serious buss in the command. Stan Rabinowitz has now given me patches to fix the buss. If you are interested in experimenting with the SET feature you can apply the following patches. Keep in mind that this is not part of the supported product; if you find a bus you are on your own. If all goes well, SET will probably be released as part of the V3D release later this year but there is no commitment from DEC as yet on that point.

          .GET SYS:CAMP
          .ODT

enable SET:

          237/0400   4200   (enables SET option)
          507/2664   2665   (change CAMP from V4 to V5)
          641/5257   4555   (adds SET to CAMP HELP message)

SET bus fixes:

          6463/1053   5352
          6552/xxxx   1053;7041;7001;5264   (fix SET MTA FILES)

          6600/0304   104;105;106;114;115;116;124;125;
                                    126;127;134;135;136   (fix SET CDR)

          6150/0000   5515;7240;4574;5756
          6163/4574   5351   (allows = option for some commands)

          ^C
          .SAVE SYS:CAMP

Note that CAMP must be on SYS: under the name CAMP.SV. The SET command

is already in CCL. The following is the best documentation of the SET command that is presently available.

SET is a CCL command and has the general form

        SET dev [NO] attribute [argument]

Notes: 1. dev must be a legal OS/8 device name. It may optionally be followed by a colon.

        2. The parts of the command are separated from each other by spaces with the following exceptions:

           (a) If dev is followed by a colon, then the spaces are optional.

           (b) Spaces after word NO are optional.

           (c) If numerical argument is present, it may be preceded by an = and optional spaces.

Examples:
        SET   TTY   TAB
        SET   TTY: TAB
        SET   TTY   NO FLAG
        SET   TTY   NOFLAG
        SET   LPT: WIDTH 80
        SET   LPT   WIDTH = 80
        SET   CDR   CODE 029

Most attributes apply to a particular type of device only. Thus it would make no sense to say

        SET CDR TAB

since the TAB attribute only applies to teletypes. The above command would produce the error message

        UNKNOWN ATTRIBUTE FOR DEVICE CDR

Note that it is the internal code for the handler that is looked at, not the name. Thus if the user typed

        ASSIGN CDR TTY
        SET TTY TAB

he would still get the message

        UNKNOWN ATTRIBUTE FOR DEVICE CDR

The SET command locates the image of the specified handler on the system device and permanently modifies it as specified by the attribute or arguments.

In some cases, the NO part of the command is not legal, e.g.,

        SET TTY NO WIDTH

In such a case you will get an ILLEGAL SYNTAX error message.

The following is a detail description of the possible attributes.
Underlined characters are required; others are optional.

Attributes applying to all handlers:
----
1. READONLY

   This command causes the device to become read-only. Thereafter, any
   attempt by the monitor to write to this device will cause an error
   message to be generated. To cancel this condition, use the

       NO READONLY

   attribute.

   Example: SET LTA3 READONLY

2. FILES

   This attribute causes the monitor to believe that the handler handles
   a file-structured device. The NOFILES attribute makes the handler
   non-file-structured. This attribute has special meaning for MAGTAPE
   (see below).

   Example: SET DTA1 NO FILES

   Note: The READONLY and FILES attributes only affect the status of the
         handlers until the next time you bootstrap, at which time the
         original status is restored.

3. VERSION x

   Where x is a letter. This command changes the version number of the
   handler to be x. The NO modifier is not permissible with this
   command.

   Example: SET TV:VERSION G

4. LOCATION

   This command has one of the following two forms:

       SET dev LOCATION n = m

   or

SET dev LOCATION n

In the first case, relative location n of the handler is changed to contain the value m. Both n and m are octal numbers. n must be in the range

$$0 <= m <= 7777$$

and n must be in the range

$$0 <= n <= 177$$

for one page handlers, or

$$0 <= n <= 377$$

for two page handlers.

In the second case (where no = m is specified), the system first prints the current contents of relative location n of the handler, then it prints a slash. The user then either types a carriage return to cause the location to remain unchanged, or he types the new value (in octal) followed by a carriage return.

Examples: (computer type-out underlined)

    .SET RKB1 LOC 37 = 1234
    —

    .SET PTP: LOC 144
    —
    3615/ 7000
    ―――――

The NO modifier is not permitted.

Attributes applying to Line Printers
----

1. WIDTH n
   ―――――

    This sets the line printer width to n. n is a decimal number in the range

$$0 < n < 256$$

    The NO modifier is not permitted with this command.

    Example: SET LPT WIDTH 80

2. LC
   ――

This attribute is used if the line printer has the physical ability to print lower case characters. The NOLC attribute causes the handler to convert lower case characters to upper case prior to printing.

Example: SET LPT NO LC

3. LV8E

This attribute is used if the line printer is an LV8E. If it is an LP08 or LS8E, use the NOLV8E attribute.

Example: SET LPT2: LV8

Attributes which apply to card readers:
----

1. CODE n

Where n is a decimal number which has either the value 26 or 29.

This command modifies the card reader to use either the DEC 026 card codes or the DEC 029 card codes. The NO modifier is not permitted with this attribute.

Example: SET CDR CODE 026

Attributes available for MAGTAPE:
----

1. PARITY   EVEN

PARITY   ODD

It is left as an exercise for the reader to figure out what this command does. The NO modifier is not permitted.

Example: SET MTA0: PARITY EVEN

2. DENSITY n

Not yet implemented.

3. FILES

This attribute causes the handler to work in so-called file-mode. In this mode, the handler does not do an automatic rewind when referencing block 0. To restore the handler to single-file mode, use the NOFILES attribute.

Example: SET MTA1 FILE

Attributes available for teletype:

These attributes only apply to the KL8E handler. Also, you cannot invoke a feature that was not enabled when the handler source was assembled.

1. WIDTH n

   Where n is a decimal number which is in the range

       0 < n <256

   and which is a multiple of 8. However, n must not be 128.

   This sets the width of the teletype. Because of a bug in the KL8E handler, this width may not be respected if the handler is not simulating tabs. The NO restriction is not permitted with this command.

   Example: SET TTY WIDTH 72

2. CODE n
   ----

   where n is an octal number in the range

       1 <= n <= 77

   This command changes the internal IOT code for keyboard to n. The internal device code for the teleprinter is set to n+1. For example, if you have a VT05 hooked to your system with device codes of 40 and 41, you would say SET TTY CODE 40. The NO restriction is not permitted.

   Example: SET TTY CODE = 3

3. ALTMODE

   Not currently implemented.

4. ECHO

   The NOECHO attribute causes characters typed in on input to the handler not to echo. The ECHO attribute restores echoing.

5. LC
   --

The LC (lower case) attribute causes the handler to accept lower case characters on input. The NOLC command causes the handler to convert lower case input to upper case.

6. PAGE

The NOPAGE attribute disables the use of ^S and ^Q. The PAGE attribute restores it. This command not available with released handler (version C).

7. TAB

The NOTAB attribute causes the handler to simulate tabs by spaces. The TAB attribute causes the handler to print tabs as real tabs.

Also, the TAB command changes the starting address of TECO to 5200 (allowing it to accept tabs as tabs). The NOTAB command changes TECO's starting address to 200 (causing it to simulate tabs).   These modifications to TECO can be prevented by typing /N after the word TAB.

Example: SET TTY NO TAB

8. FILL

The FILL attribute (which should be used in conjunction with the TAB attribute) causes two fill characters to be typed following a tab. The NOFILL attribute removes these fill characters.

Example: SET TTY NO FILL

9. FLAG

The flag attribute causes the handler to flag lower case characters on output by printing them as upper case preceded by a quote. The NOFLAG attribute causes lower case characters to print as lower case.

Example: SET TTY FLAG

10. CTRL,GAG,DELAY
    ---- --- -----

Not yet implemented.

Error Messages

? SYNTAX ERROR

Badly formed command or NO specified when not allowed.

? UNKNOWN ATTRIBUTE FOR DEVICE dev

An illegal attribute was specified for the given device.

? CAN'T - DEVICE IS RESIDENT

No modifications are allowed to the system handler or coresident
handlers.

? CAN'T - OBSOLETE HANDLER

The handler is a V2 handler, or has an old version number.

? CAN'T - UNKNOWN VERSION OF THIS HANDLER

The version of the handler is not one recognized. Possibly because
it is a newer version.

? CAN'T AFFECT ANNALEX LPT

Only LPSV handler can be modified by LPT attributes.

? CAN'T - NOT KL8E HANDLER

The AS33 handler cannot be modified by TTY attributes.

? BAD VERSION LETTER

A non-letter was specified as a handler version number.

? CAN'T MUST REASSEMBLE KL8E SOURCE

The KL8E source must be reassembled to enable the desired attribute.

? ILLEGAL WIDTH

A width of 0 or too large was specified; or for TTY, a width of 128
or one not a multiple of 8 was specified.

? UNKNOWN CARD CODE

A card code other than 026 or 029 was specified.

? NUMBER TOO BIG

The number specified was out of range.

? CAN'T - DEVICE DOESN'T EXIST

A nonexistant device was referenced.

? I/O ERROR ON SYS:

   An i/o error occurred while trying to read or rewrite the handler.

X OPERATION NOT YET IMPLEMENTED

   Self-explanatory

Forcing a version

Some commands only work on a given version of a handler. If the handler
actually has a diffrent version number, you can make the program think
the handler has the correct version number by typing a hyphen after the
device name followed by the desired version letter of the handler.

Example: SET TTY-D PAGE

causes the version D patch for the PAGE attribute to apply to the
current TTY handler regardless of its version.

RESOLUTION OF THE OS/8 DATE PROBLEM

As you know, the OS/8 date will stop working at the end of this year
because the number of bits reserved back in 1970 are only enough to
handle through 1977.   A couple of Newsletters back, I proposed an
approach to the solution of this problem that was intended to maximize
compatibility and avoid designing in future problems. Recently, the
PDP-8 software development group got together to make a decision on how
the problem was going to be resolved. Various other solutions were
under consideration but I am told that after everyone finally sorted out
my suggestion, they decided it was the best way to go.   Some
enhancements were added to fill out the details. The final resolution
is to be implemented in the next release of OS/8 which is currently
being referred to as "V3D". That release is said to be planned as a
date fix, bug fix and small upgrade type release.   The following was
adapted from DEC's current plans for resolving the "date problem":

There are two words in the OS/8 monitor which are of concern to date
algorithms. These locations will be referred to symbolically as:

        MDATE= 17666   (Monitor Date)
        BIPCCL= 07777   (Batch In Progress word)

Both are permanently resident.

There will be two kinds of date words in OS/8 - 12-bit relative date
words and 14-bit extended date words. Location MDATE always contains a
12-bit date word. 12-bit date words are always relative to some base
year.   (In OS/8 V3C and earlier, this base year was always 1970.) The
format for a 12-bit date word is described in the OS/8 Software Support
Manual, section 1.2.4. The month is a four bit field in bits 0 thru 3
that is in the range 1-14 (octal), i.e. 1-12 (decimal) representing the
months January to December, respectively. The day is a five bit field

in bits 4 thru 8 that is in the range 1-37 (octal) representing 1-31
(decimal). Illegal dates like February 30 are permitted, and if you
encounter them, just print them as you find them. The year is a three
bit field in bits 9 thru 11 that has the range 0-7 inclusive. This
represents the increment from the base year. If no base year is
specified, assume 1970 as the base year. The only exception to the
above ranges is that an all zero word means no date was specified (i.e.
the user has not typed in a date, or the file is undated, etc.)

The Batch In Progress word (location 07777) is not adequately documented
anywhere. The few places where it is documented, it is documented
wrong. Furthermore, the next release of OS/8 is adding functionality to
this word so ignore all previous documentation and substitute the
following:

Bit 0:   Reserved for DEC

Bit 1:   1 if BATCH is running
                0 if BATCH is not running

Bit 2:   1 if OS/8 is running in the background of RTS/8
                0 otherwise

Bits 3-4:   Monitor date extension bits (described below).
                These bits are always 0 in OS/8 V3C and earlier

Bit 5:   Reserved by DEC for future expansion

Bits 6-8:   Software Core Size.
                0 means no software core size specified; all of memory
                is available to the program.
                Non-0 specifies the highest memory field which may be
                used by the program. Additional fields may exist, but
                they are reserved.

Bit 9:   Reserved by DEC for future expansion

Bit 10:   Used by BAT:. Do not touch

Bit 11:   Used by Command Decoder to specify BATCH is not present.
                Do not touch.

(Note: There is still a small chance that the monitor date extension
bits will have to be moved but it does not seem likely.)

Dates may be associated with files on OS/8 devices if at least one
additional information word is allocated in the directory. The correct
method for accessing additional information words is given in appendix
D9 of the OS/8 Software Support Manual. Note that the first additional
information word, if present is always the date. However, it is
possible that a directory may not contain any additional information
words. Programs must not bomb if that happens. (Be sure not to try to
set the date in the directory if no additional information words are
present.) Many user directories, left over from PS/8 days, have no

additional information words. Also, a user can eliminate the additional
information words if he wishes to pack more files in a directory.   Such
a directory can be created via the =100 option to either a SQUISH or
ZERO command.

There is no base year associated with files on a device.   If no base
year is known, file dates cannot be printed properly. If such a case
arises, the best idea may be to print the date with a base year of 1970
and flag the date as being questionable by printing a question mark (?)
after it.

A base year will be specified by the user when he enters the date via
the DATE command.   The base year is 1970 plus eight times the number
located in the date extension bits (bits 3-4 of location BIPCCL).   For
example, if bits 3-4 of BIPCCL are 10 (i.e. 2 octal), then the base year
is 1970 + 8*2 = 1986. To set today's year, add the current base year to
the offset specified in bits 9-11 of MDATE.

"Now for what you have all been waiting for!" How to set the 14-bit
extended date of a file. Go through the same process as setting the
current year, that is, add the relative year of the file (bits 9-11 of
its date word) to the current base year, WITH THE FOLLOWING IMPORTANT
EXCEPTION: if the resulting year is greater than than today's year,
subtract 8 years from the date.   Using   this   scheme you will always
compute the year of a file correctly if it falls in the current system
date's year or in the preceding seven years. Dates out of this range
will be computed with offsets of a multiple of eight years. In some
cases this can be gotten around by resetting the system date temporarily
to set a program such as DIRECT to print what you want, for example.

FROM DAN SMITH

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OS/8 FORTRAN IV BUG-OF-THE-MONTH:

RALF crashes if insufficient room for .RL output.

Ralf correctly detects this condition, which is supposed to produce the --IO-- error. However, the code which calls the error routine resides in the output buffer (boo!). The following patch prevents crashing:

```
4464/5542 5761
4561/**** 2275
2276/2324 1706
```

This creates a new error code, --OF--, which means either output overflow or symbol table overflow (formerly --ST--).

More on LTA4-7 (Brian Converse)
    Our system was shipped with a version of BUILD containing only LTA0-3. LTA4-7 were nonexistent (not just inactive). Presumably they had been deleted by UNLOADing. One reason for this might be that they wanted to include every possible handler type in the basic BUILD, and they had to delete some things to avoid a NO ROOM error. Anyhow, the version of LINCNS.BN does include all eight entry points. If you want more than four LTA's (or want, say, LTA0, 1, 4, and 5 for compatibility with other systems), $UNLOAD unwanted group names, $UNLOAD LNC, $LOAD LTA1:LINCNS, and you're in business.
    Limitations are approximately as follows: you are limited to 15 active "handlers" or "device slots," including SYS: and DSK:; active handlers are those things that print with asterisks when you $PR. If you have too many, you get the message ?HANDLERS when you try to $BOOT. You are, however, also limited to 9 "block slots," including SYS:. This means that when you $PR, there should be no more than 9 group names containing active handlers, or you will get the (undocumented?) message ?SLOTS.
    I'd like some comments from folks out there about renaming the LTA's "DTA's" (which we do). My current feeling is that it's a good idea and everybody should do it and ask DEC to make it official with the next major release. It greatly reduces confusion and cockpit errors for users who work on both PDP-12's and -8's. If all the different flavors of DECtape controllers can all be called DTA's, why not LINCtapes? Any reason not to? Any machine in the world with both LINCtapes and DECtapes?

ENDORSEMENTS:
    1.   Jim van Zee's UW Focal, a very nice version with excellent OS/8 file support and PDP-12 features. Everybody with a PDP-12 should get it. Write Jim at Dept. of Chemistry, BG-10, U. of Washington, Seattle, Washington 98195.

    2.   "DECsystem-8," presently a modified CCL and some system CUSPs which implement a very useful tape-labelling scheme. I think this or something very like it should be an official part of OS/8.

The DATE word question.

I fully agree with Bob that the DATE word must be solved once and for all completely. This means that in core, bits must be reserved somewhere to specify an offset. The status word used by Batch for the batch in progress flag contains several unused bits. These could easily be used to specify an offset for the DATE word. On files, the only reasonable approach seems to be to take one more extra information word and use this as a DATE word. This would mean that files created up to now could be used as they are. Any program could easily be modified in such a way that if there is only one extra information word, the offset is given as 1970 and if there are more information words, the second is picked up and used as offset into further dates in the future. And also while you are at it, why not modify the system in such a way that on a non-system device, the number of directory blocks is not fixed. Probably they would have to be specified at the time of zeroing the device with PIP. But really there is no difficulty in allowing the programs to read until they simply find the link between the directory blocks to be zero.

Several programs work this way already. This is easily checked by zeroing the link in between in any directory block. Files beyond that block will be missed by most of the OS/8 functions. This link word has always been a bit of a puzzle to me as with fixed directory sizes it is not really necessary anyhow.

A minor problem exists in CAMP. The command UNLOAD RKXN where X is not zero (silly, who wants to write protect SYS: ?) is wrong. I have tried to get DEC to correct the error via SPR´s but they seem to misunderstand me every time.

The patch is:

CAMP OS/8 version

3	3C	Old	New
3270	3761	7104	7000
Loc 3377	3770	3	6

Harald Nyman in Gothenburg, Sweden, has created a Library to FORTRAN II which allows FORTRAN II programs to run in the foreground to RTS8. It will be submitted to DECUS as soon as possible, but I can pass your name onto Harald if you cannot wait until it is in DECUS. Harald has also notified me that he surpassed my FORTRAN IV sampling speeds by writing a routine that overlays FRTS interrupt service. He managed to run sampling at 38 kHz throughput to disc. Again I can pass your name on to him if you want to contact him.

I have lately as many others been annoyed by the problem of the "directory overflow"
on our RK05 discs. Specially discs that are used to keep source codes in high level
languages very fast run out of directory space. There are various ways of solving it,
but one is segmentation of the disc into smaller units. This can be done in many ways.
It can be done by taking the traditional approach and segmenting it fully into smaller
discs each having a handler. However, this approach is difficult as it very soon runs
into handler overflow condition. Another way of solving it is to have files under the
RK05 handler being separate discs, a kind of virutal disc on the disc. One then only
has to specify the offset where the file starts to the RK05 handler to produce a real
handler into the disc. This can be done in many ways. One way is to set up a set of
names which are then semi permanently assigned to the different areas through one
method or another. This is implemented in Vernon Blackmore's LOG program, where
he on LOGIN rewrites PIP and the system tables to handle the specific virtual disc
that is to be used. Of course the second problem that exists beside the handler overflow
condition is the problem of specifying to PIP the file size required for the ZERO and
SQUISH operations. This latter problem can be overcome either by rewriting PIP for
different configurations or by using virutal discs of a standard fixed size which then
can be put into PIP tables. (Of course a third possibility is patching PIP in such a
way that it does a directory look up on the special device numbers. This is done in
the timesharing system ETOS, but it requires a major patching of PIP.)

When I wanted some more directory space on the disc, I used the fixed sizes I placed
on each RK05, which I want to get multiplied, four separate files each having the
size of a DEC tape. This size was chosen merely for convenience. It allows a whole
DEC tape to be saved and restored from such a file storage area. Then comes the
problem of how to specify which of these areas I want to access. There are of course
various ways of doing it. Some people experiment with the equal option to the command
decoder. Another way is to use separate handlers, which is not too good because the
file overflow problem. To give full flexibility allowing these multiple discs to reside
on any RK05 in a fully equipped system, the most flexible approach is that used by
Vernon Blackmore in the LOG system (with thanks, Vernon!) of using a pseudohandler
which does not contain the actual physical handler parameters, but only passes its
arguments suitable modified to a second handler. If this handler is core resident, there
is no real problem. If this second handler is not core resident, it has to be picked up
in one way or another. Specifying our pseudohandler as a two-page handler makes it
possible to load the real handler as the second page of the pseudohandler. Then comes
the question of how to specify to the pseudohandler what virtual disc I want to access.

I found a good and flexible way to do this by using the assigned user device name table.
The syntax then is that I do an ASSIGN RKXX 2 e.g. , this means use RKXX driver and
offset the arguments in such a way that the second virtual disc is accessed. This procedure
works very well if the real handler is core resident. If the real handler is not core
resident it must be read into core. To get the relevant block number the handler must
access a table in USR. However, USR is "almost" always in core at this point so the
approach works quite well.

A listing of the handlers follows. I do not expect Bob to list the whole handler in the
Newsletter, but I hope he will at least take the commented part of it. The handler is
available from me until such a date that I can get it onto my bits and pieces tape in
the Library.

Hässle

AB Hässle Subsidiary of Astra Pharmaceuticals AB

Mrs Birgitta Carlson
SIG Coordinator of the
DECUS Europe Board
P O Box 340
1211 GENEVA 26
Switzerland

Kulörepens kommelse

Hälsu

Dear Birgitta,

Let me begin by stating that I only have experience of the PDP-8 Library and
know nothing what so ever of the workings of the other DECUS Libraries.
However, of the PDP-8 Library (whenever I mention DECUS Library from
here on, I mean the PDP-8 Library unless I specifically mention anything
else) I am one of the larger users (I have probably tested something like 200
programs). Let me summarize my views on the possibilities of improvment
of the Library and on the plans on the DECUS Europe Board under three headings.

1) Administrative measures planned by the DECUS Europe Board. The DECUS
   Europe Board plans or aims at having an European Central for the distribution
   of the DECUS Library and as one of the first provisions they have stipulated is
   that the using of users DEC tapes, floppies etc. will be discontinued from
   Europe. I really do not have any comments on these actions. It is irrelevant
   to me if the Library is in Europe or in America. What does bother me is the
   possibility of longer turn around times if the Library has its center in Europe
   from which I am expected to request my programs. I have never really seen
   the advantage of the system of mailing users DEC tapes. I think it is very much
   a way for users to change bad DEC tapes into good ones, which really must
   cost DECUS quite large sums of money.

2) The possibility of improving the quality of the Library.
   Any measure that improves the quality of the Library is certainly welcome unless
   it at the same time lowers the number of programs of reasonable quality that reach
   the Library and/or prolongs the process of a program reaching the Library consider-
   ably. I certainly think it is a good idea to have some kind of installation site which
   tests all or most of the programs in the Library (some limitations will always occur
   due to all sites not having the necessary hardware to test the program). However, I
   do not think a program should be stopped in the Library merely on the grounds that

Hässle

it has not been tested or that it has been tested and not found up to quality. I
think it would be much more advantageous if the catalog carried some kind of
information of the form NOT TESTED, TESTED AND ACCEPTED and TESTED
NOT UP TO STANDARD. Anybody requesting a program marked "Not up to standard"
would know that he himself probably has to put a lot of work into it but even so it
might give him more than what it cost him. I am very suspicious of a system of
rejecting programs on the basis of what someone else thinks of them. I might
think that they are good even though the referee thinks them useless. However,
if the result of the refering process could result in a note in the Library catalog,
I think it would be a good step in the right direction.

3)   Other remarks on the Library.
I feel actually that in the PDP-8 Library there are two major problems which are
of a much more serious nature than the question of the standard of the Library.
These are:

a) The fact that the DECUS system does not allow copying of programs from one
   media to another. At present DECUS can only supply the same media that the
   program is submitted on. This means for example that a very large population
   of PDP-8 users, the classic users, are barred from a large portion of the
   Library because it is on either DEC tape or paper tape which they cannot handle.
   The only system totally acceptable would be a system where DECUS could copy
   material onto the requested media and DECUS should then support all the OS/8
   release media that DEC supports, i. e. paper tape, DEC tape, RK05 disc and
   floppy.(A step in this direction which might solve the problem has been taken.
   See latest 12 Bit SIG Newsletter.).

b) The second problem in the Library is the problem of updates. Many DECUS
   programs have been updated several times. With the present system of the catalog
   it is extremely difficult to know that a program has been updated since your last
   received it. The ideal system would of course be the case where everybody that
   has requested a program receives an update information on it, a system which
   I never see coming into use in the DECUS Library. However, I think it would be
   worthwhile if in the catalog the submittal date of the program always was shown
   and on those programs where there has been a change or an update of some kind
   since the last catalog release this was remarked in some way in the catalog listing.
   This probably would mean a larger number of pages in the catalog changed with
   each release, but I think it would be worth it.

Best regards,

Lars Palmer

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THE VERSION OF 'CLOCK' IN THE CURRENT FORLIB.RL RETURNS ERRONEOUS
VALUES ON A CALL TO 'TIME' (SEE SOFTWARE NEWS, NOV. '75).   UNFORTUNATELY
THE FIX SUGGESTED IS DIFFICULT FOR PAPER TAPE USERS SINCE THEY HAVE BEEN
SUPPLIED WITH THE OS/12 VERSION OF CLOCK.RA, AND THE MODIFICATIONS
ARE RATHER TEDIOUS.

THE PROBLEM ARISES BECAUSE THE 'FLDA OVRCNT' IN 'TIME' ASSEMBLES
AS A SINGLE-WORD REFERENCE (0315) WHICH GIVEN A BASE OF 10 POINTS TO 10 +
3*115 = 357, WHEREAS THE THREE-WORD LOCATION REQUIRED STARTS AT RELATIVE
ADDRESS 360.   IT IS DIFFICULT TO MODIFY THIS WITHOUT UPSETTING LABEL
REFERENCES, BUT IT IS POSSIBLE FOR PDP8/E USERS TO CHOSE A ALTERNATIVE
SINGLE-WORD-ADDRESSABLE LOCATION FOR OVRCNT BY SKIPPING SOME REDUNDANT
KW12 INSTRUCTIONS.

```
        THE SEQUENCE      TAD RATE          BECOMES        TAD RATE
                          CLL RTR                          CLL RTR
                          RAR                              JMP .+4
                          TAD CPTYP                OVRCNT, 0
                          RAR                              0
                          TADZ FCNPTR                      0
                          SZL                              RTR
                          JMP NOBIT-1                      TADZ FCNPTR
                          RTR                              RTR
```

SINCE CPTYP=0 FOR PDP8.

OVRCNT IS NOW LOCATED AT RELATIVE ADDRESS 236, WHICH MAY BE
REFERRED TO IN 'TIME' WITH 0262, SINCE 10 + 3*62 = 236.   REFERENCES TO
OVRCNT AT RELATIVE ADDRESSES 277, 300 337 & 341 MUST BE MODIFIED.

EPIC MAY BE USED AS FOLLOWS: -

```
. R EPIC

*FORLIB. RL</1$
R
S, 6131, 7777          /SEARCH FOR CLSK (6131)
0105   0273            /FOUND AT BLOCK 105, 273
6131 /                 /(LINEFEEDS)
1406 /
0000 /
0330 /
0477 /
1367 /
7112 /
7010 /5241            /JMP .+4
1366 /0000
7010 /0000
1761 /0000
7430 /7012            /RTR
5255 /1761            /TADZ FCNPTR
7012 /                /RTR
0, 344
7200 /
3362 /3240            /DCA OVRCNT+2
3361 /3237            /DCA OVRCNT+1
1366 /
W                     /WRITE CHANGES IN THIS BLOCK
```

```
R. 106              /READ NEXT BLOCK
0, 5
7510 /
2364 /2240         /ISZ OVRCNT+2
7410 /
2363 /2237         /ISZ OVRCNT+1
5352 /
0, 60
0202 /
0006 /
0316 /0262         /FLDA OVRCNT
0005 /
E                  /WRITE CHANGES & CLOSE
*^C
```

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TCS/8 TIME-SHARE SYSTEM

The TCS/8 Time Share system is a general purpose programming system for use on a DEC PDP-8/e or /f computer. It allows up to 7 users to simultaneously run programs in a variety of languages from his own teletype. The language processors available to each user include a powerful FOCAL interpreter, PAL assembler, a text editor, and a BASIC interpreter. Each user has at his command a 4K PDP-8 and may run any program which will fit in his 4K of memory. The system includes these features:

* A keyboard MONITOR which controls execution of user programs, handles all I/O and services user program requests through a variety of system calls.

* File storage on up to 8 DECtapes with full protection from other users. DECtape use is shared by all users at all times. Programs or data may be stored in files.

* Octal Debugging Technique and an Absolute Loader incorporated in the
MONITOR which use none of the users core memory.

* A command language based on EDUSYSTEM-50 and highly compatible with it.

* A Command Decoder and a set of General Input/Output routines patterned
after those found in OS/8 which simplify user program I/O considerably.
File formats are also compatible with OS/8.

* A system log which records all major operations performed by the system.

* System overhead is reduced by kepping all programs in core at once
eliminating the need for a swapping disk (also restricting the number of
teletypes which may be supported.)

The system requires the following hardware: A PDP-8/e or /f CPU
and at least one DECtape unit (two are preferable). An additional 4K of
memory, beyond the basic 4K, is required for each user teletype which is to
be supported. Thus 16K is required to support 3 teletypes. The maximum
system, 32K memory, will support 7 user teletypes. A disk may be substituted
for the DECtapes but swapping will not be done.

Along with the system comes a variety of system programs including a
PALD assembler, FOCAL and BASIC processors, a symbolic EDITOR, a PIP file
transfer program, CAT, a program to list file directories and various other
utility programs. Each of these programs, including the MONITOR have undergone
extensive testing for over a year and are thoroughly debugged.

The system is distributed on DECtape and may be purchased by writing to:

David R. Morey
24 Roebling Hall Box 180
R.P.I., Troy, N.Y. 12181

The cost is $ with a customer supplied DECtape. For additional information
write to above address. Two manuals are also available. The TCS/8 USER MANUAL,
which describes the system,may be purchased for $ 1 and the TCS/8 SYSTEM
MAINTAINENCE MANUAL, which explains how to maintain the system and a little of
how it works, available for $ 1 . These may be purchased from above address
also.