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

NEWSLETTER SUBMISSIONS

The Newsletter is currently published bi-monthly in the odd months. The deadline for each issue is the last Friday of the preceding even numbered month. Submissions are accepted at all times and are normally used in the next issue to go to press regardless of date of receipt. The deadline for ready-to-use material for the next Newsletter is 25-April-80. Material requiring editing/re-typing should be in earlier. Ready-to-use material should use an area 7 inches (18 cm) wide by no more than 9 inches (23 cm) long on each page. It should be single spaced on white bond paper whenever possible and must be reasonably clean, legible and sufficiently dark for good photographic reproduction.

Material submitted in machine readable form is particularly desirable because it can be edited and incorporated into the newsletter format more easily. Higher quality reproduction is also possible this way. Contact the editor (Bob Hassinger) for further details on acceptable media and formats if you plan to make a submission in machine readable form.

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Symposium Software Exchange Committee

Send copies of software you wish to exchange at the next US Symposium to one of the
following committee members for preparation:

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Groton, CT 06340
(203) 445-8501 Ext. 296
(FTS) 642-7274 Ext. 296

James Coryell
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Simi Valley, CA 93065
(805) 526-7478

DEC WORD PROCESSING UPDATE

As many of you are aware, DEC has been having trouble with their word processing
product line recently. Through WPS on the DECstation-78, everyone seemed very happy
with the products, marketing and service. With the introduction of the 200 series,
the situation seems to have turned around to where a considerable number of important
customers are extremely dissatisfied with the product and the product line.
Apparently the development of the 200 series was done with inadequate resources. In

the last several months I have been hearing a great many complaints about how poorly
the 200s are working and how unresponsive the product line has been to the customers'
problems. The kind of unresponsive attitude demonstrated seems to me to be fatal to
the prospects of a group trying to sell a ready to go, "turn key" level product like
word processing.

At the Fall Symposium we saw a glimmer of hope. At least some second level people
from the product line showed up but they were not prepared to commit to effective
solutions. Many of those in attendance seemed to feel that the people who were in
charge and had the authority to make the necessary commitments had ducked the
Symposium, presumably to avoid the inevitable confrontations with dissatisfied
customers and to avoid being put on the spot regarding the problems and their
solutions. This was consistant with the attitude towards non-communication with the
users perceived prior to the Symposium that led to so much dissatisfaction. (Every
development project of any size has its problems, the key to keeping them under
control is honest, responsive communication.)

Representatives of other product lines who have been dealing with the users through
DECUS Symposia and Special Interest Groups for any period of time generally find that
the best, most productive policy is to be open and responsive, even admit to problems
and honestly talk about what is involved and what the prospects are. It seems very
clear that the Word Processing product line has yet to learn this lesson.

Some customers who are in a position to do so, seem to have gone over the heads of the
product line to very senior DEC management to demand resolution of the situation. The
indications to date are that the message has gotten through at that level. Top
management is addressing the resolution of the problems and responding to the
customers. It is very interesting to note that top management appears to be _very_
interested in the the future of Word Processing/Office Automation. It looks as though
there is an ongoing place in their plans for hardware based on the PDP-8 architecture.
I think DEC anticipates selling a lot of small, low cost systems in the future. They
may look rather different from some of the familiar machines we all know and love but
I suspect they will still do TADs and DCAs. Watch for more on this in the coming
months.

It seems to me that what is happening is that the technological imperative of lower
cost hardware and the needs of the office of the future are going to dominate. DEC
will meet the challenge _in spite_ of the few short sighted individuals. When Word
Processing management learns the lessons that many others have learned in the past, we
will be back on track with good word processing products and happy users.

RH

NOTE FROM JIM VAN ZEE

"Never say there won't be another version of something! After firmly declaring that
UWF was 'a stable product', I have been enticed to produce 'V4G' by some work on a
version of FOCAL for the PDP-11 described by Geoffrey Grinton at the last Australian
DECUS meeting. Grinton added s me elements of 'structured programming' which looked
very interesting (see the Proceedings for further details), and while I have not
followed his scheme exactly because UWF has a number of other features which were in
conflict with some of the things he did, I have been able to include two major new
items: relational expressions and the UNTIL command.

"Relational expressions let you compare two quantities with the aid of the familiar 'relational operators' in FORTRAN. Thus to check if 'A' is larger than 'B', you can now write 'IF (A,GT,B)', which, if TRUE, will execute the code following the IF, and if FALSE, will take the 'negative if' branch. Grinton's version allowed such commands to be written without any line number references at all, using a special statement terminator to delimit the 'true' commands from the 'false' ones. My implementation is not so fancy, but offers some other advantages.

"Relational expressions are not confined to IF and ON commands, but may be used in any context. They have the value '+1' if TRUE and '-1' if FALSE. Any of six possible operators may be used: EQ, NE, LT, LE, GT or GE. The two expressions must be enclosed in parentheses and must be separated from the operator by commas (FORTRAN uses 'periods', but FOCAL must use commas). Thus it is now possible to have a command such as: TYPE FSQT(<A,GT,0>*A) which is effectively the same as taking the absolute value of the argument.

"Furthermore, it is possible to write Arithmetic Expressions to produce the result of 'Logical Operators': 'NOT' is just 'minus', 'XOR' is '-A*B' ('A' and 'B' are Relational Expressions), and the 'AND' and 'OR' operators can be written as 'FSGN(A+B-1)' and 'FSGN(A+B+1)', respectively. It is interesting that the only difference between these two is whether one adds or subtracts '1'. For simple combinations the 'FSGN' function can often be omitted: 'ON (<FSR(),EQ,2>+<X,LT,Y>+1)' tests the 'OR' of those two conditions while the same expression with a '-1' would produce an 'AND' test.

"The new UNTIL command combines properties of the IF and FOR commands. The form is: 'UNTIL (expr); COMMANDS' which will execute all the remaining commands on the line -until- the expression being tested becomes -positive-. Relational expressions thus cause the UNTIL command to loop until the condition being tested is -true-: 'UNTIL (DELTA,LT,1E-3); DO 5'. Since the UNTIL command provides only a -testing- function, it is necessary that the commands in the loop change the value of the expression - otherwise the UNTIL loop will never stop! (This is sometimes convenient: 'U (-1);S FMQ(FSR())' will display the switch register in the MQ until interrupted by typing CTRL/F.) Alternatively, the expression can involve external events, such as the setting of the sense switches or the value of the FTIM function, which will control the duration of the loop. An inportant difference between UNTIL loops and FOR loops is that if the expression is initially positive the program will immediately skip to the next line, thus bypassing the loop commands entirely. NEXT and BREAK can be used with UNTIL loops just as they are with FOR loops, and, of course, FOR and UNTIL loops can be nested if necessary."

For more information contact Jim at Lab Data Systems, 10320 Ravenna Ave. NE, Seattle, WA 98125 (Phone: 206-522-6950 before 8:30am). Jim indicated that a FPP8A version may be available in the near future.

HINTS AND KINKS FOR THE TU58

The TU58 ("DECtape II") tape system is starting to become available now. We keep hearing that DEC has big plans for it. New computer systems (like the PDP-11/44) are supposed to be shipped with a TU-58 standard (the way a floppy drive is part of the VAX, etc.). This is supposed to give a standard way of loading diagnostics and to distribute machine readable software updates (i.e. "Autopatch"). The DECUS Program Library Committee is looking at TU-58 tape as a good media for software exchange.

One of the things I like about the TU-58 is the low cost and easy interfacing. The usual serial interface version uses a standard serial port such as a KL8JA, etc. The unit contains a microprocessor that sends and receives data and control commands in the form of normal 8 bit bytes. It looks as though you could very easily make up a TU-58 in a portable box and take it from system to system, pluging into a serial port on each. The interfacing software should not be too hard to write for almost any computer.

When I finally got a users manual for the TU-58, I found one thing that seems to be a problem in the interfacing. The computer initializes or reinitializes the link to the TU-58 by sending "Break". This is needed to uniquely get out of any condition that the interfacing protacol might get into. The problem is that most of DEC's 12 bit system serial interface options (like the KL8JA for example) do not seem to have a way to generate a break (i.e., hold the line spacing for considerably more than one character time).

Jonathan Lockwood gave me a good idea on this. In the case of the DECstation, the software can change the baud rate of the serial line interfaces. Normally, you will connect to the TU-58 with as high a baud rate as possible (the TU-58 will run up to 38K baud). If the computer resets the rate of its interface to a lower rate, and then sends, say, a null, from the point of view of the TU-58 it will look like a break because the line will be spacing for longer than a full character time. If anyone else has ideas on this problem, particularly for interfaces that do not have programmable rates, let me know.

Also, we understand from a very reliable source (none of us has had a chance to try out a TU-58 to verify it) that there is an undocumented feature that is potentially of great interest to the 12 bit world. The TU-58 is formatted in 128 byte blocks. Normally the builtin controller automatically combines four of these physical blocks into one logical block. Normally, you can only address the tape on 512 byte boundries. To access the standard interchange format tape, you will have to read 512 byte blocks with some sort of special interchange program (like PIP10, etc.). This is not very attractive for 12 bit systems for non-interchange purposes involving OS/8 compatible storage where the result is a very unattractive 25% waste of available storage. We have been told that the there is a hidden bit in one of the TU-58 commands that changes the addressing mode to 128 bytes per block so that logical block addresses match the physical blocks. With this feature, it should be possable to access the entire contents of a tape in terms of 384 byte, OS/8 sized logical blocks. As the users begin to have access to TU-58s, I hope they will check this out and let us know.

I hope that if anyone starts to write software for the 12 bit systems to utalize the TU-58 that they will consider coordinating their efforts through me and our SIG so that we can be as compatible as possible within the 12 bit world and with DEC's efforts in the 16 and 32 bit areas.

DECUS PROGRAM LIBRARY

The following programs has been added to the library:

DECUS 8-916 - KODER - "KODER, when used with the simple interface described in the write-up, will accept characters at the teletype and send them in Morse Code over a suitable practice oscillator or radio transmitter.

"A line of characters is typed in response to KODER's prompt, a carriage return sends the entire line, and then KODER reprompts for more input."

Paper tape system, 4k memory. Written in PAL-8/PAL-III by Mark Francis of McDonnell Douglas Automation Company. Media (price) codes: A2, F5, G7.

DECUS 8-917 - WPS-8 to COS-310 File Conversion Utility - "WPS-8 to COS-310 Utility ('WPS>COS') converts WPS-8 structured list files to COS-310 structured data files for use in DIBOL-8 programs. The utility permits various types of input (such as accounting data, time slips, employee time records, etc.) to be input during regular word processing, without the necessity for changing the SYSTEM (requiring word processing down time) to input data processing items. Input lists may be stored in abbreviation libraries and called up as needed, and entries made in random order. Subsequent DIBOL programs can SORT all such files and provide for editing and operations not otherwise performed in the word processing mode.

"The WPS-COS Utility significantly modifies earlier similar utilities by DEC with time savings of up to 250% (or more). The operator now is required to provide only NAME OF DISKETTE and DOCUMENT NUMBER being transferred. Documentation on source files is extensive, and points to the few program lines which may be modified for personalized applications. The documentation is supplemented by a README source file and a write-up."

COS-310 all versions, 8k words. Regardless of WPS file length, the WPS diskette must be assigned one logical unit containing 41 segments (i.e., the entire diskette). Written in DIBOL-8 by Lawrence H. Eisenberg of Encino, CA. Media (price) codes: D3, K25.

DECUS 8-918 - RECA: Regular Expression Compiler/Arithmetic - "REC (for Regular Expression Compiler) is a high level language created by H.V. McIntosh as an application of machine theory and automata theory. This language has a very simple syntax and semantics, and is easy to learn.

"REC does not have a specific application. It has as many as you like, one of them is to solve numerical problems. The REC version which is oriented to handle such matter is named REC/ARITHMETIC (RECA).

"RECA has BASIC and FOCAL facilities but without the respective tedious grammatical rules. Due to its easy handling, it is an ideal programming language for beginners and very useful aid for experienced people.

"RECA has been used to solve simple to complex problems on Physics such as, Schroedinger equation solution and other quantum-mechanical problems.

"This version, for the PDP-8 uses 2K memory and all arithmetic operations are carried out by DEC-08-YA3A-PB (floating point package, slightly modified) which uses 12 pages of memory. It also works with the 4K Disk/DECtape Monitor System allowing users to handle disk files.

"Full documentation about REC and its different versions (applications), including RECA, can be obtained from the submitter."

Written in PALD by Wilfredo Lopez F. and Hector Saldana A. of Instituto Nacional de Investigaciones Nucleares, Mexico. Media (price) codes: A2, F7, G32.

DECUS 8-919 - BASIC User Defined Functions for the LQP78 - "The user defined functions for the LQP78 enables OS/8 BASIC to control the printer like an X-Y plotter. The LQP78 is normally used as a letter quality printer. It also has the capability of moving the carriage right and left in 1/120 inch increments and moving paper up or down in 1/48 inch increments. Therefore, from a machine language level the LQP78 can be controlled like an X-Y plotter with acceptable resolution for many applications."

For OS/8 BASIC V5 (links to BRTS may be different for other versions), standard memory requirements. Written in PAL-8 by John Scmidt of Digital Equipment of Canada Ltd., Richmond, B.C., Canada. Media (price) codes: D2, K25.

DECUS 8-920 - GEM: Gordon's Editor and Macro - "GEM is an extensive rewrite of EDIT-8 and MACRO-8, which combines these two programs in one coherent package. The resulting program retains all the normal characteristics of each of its ancestors, as well as at the end of pass 1 of the assembly phase.

"GEM is implemented as a base program and a series of overlays. It may easily have other input/output devices added and be reconfigured if necessary.

"Included is an additional overlay which supports multi-user operation of the Editing portion of GEM only - up to five separate users.

"GEM is fully re-entrant and could be committed to ROM if desired."

Operating system independent (stand-alone), needs 8k minimum. Written in MACRO-8 by G.A. Moyle from the University of New South Wales, Australia. Media (price) codes: A3,H30,K25.

DECUS 8-143 has been withdrawn from the library.

PT: DEVICE HANDLER

Jim van Vee sent the following information on a device handler he has:

"The PT: handler is just like the DEC paper-tape handler for the 'low speed' reader (i.e. the reader on an ASR33 Teletype), but with a few enhancements:

1) Only one entry point (PT:) is used, instead of separate entry points for reading (PTR:) and writing (PTP:). This is advantageous due to the limited number of handler names permitted by the system. If PT: is called as an input device it will use the reader, and if called as an output device it will use the punch. The command decoder specification 'PT:<PT:' is the same as the specification 'PTP:<PTR:' and makes a copy of the input tape (use the '/I' switch with PIP for best results when doing this). In order to use the '-P' CCL switch, however, you must first .ASSIGN the name 'PTP' (.AS PT PTP); then you can use commands such as .COPY file-P.

As with the standard DEC handler, the PT: handler will print a '^' ('uparrow' or 'circumflex') on the terminal when it is called upon to read a tape. This is the signal to the user to load a tape in the reader and turn it on. The 'end-of-tape' is sensed when the reader is turned off, at which point the handler inserts a CTRL/Z (ASCII 232) in the file and returns to the calling program. Note that NO character checking is performed during a read, so CTRL/Z is a legal

input character which could occur on a binary tape, for instance. Similarly, no
character checking is performed during output, so when copying a tape (PT:<PT:),
the CTRL/Z generated by turning off the reader will appear on the output tape
after the last character read, followed by as many 'nulls' (blank tape) as were
needed to fill up the buffer. (This could be quite a few if a large buffer were
being used!) An output tape produced in this way will thus not be an exact
'hole-for-hole' image of the input tape, but it will be just the same as a tape
produced using the standard DEC handler. 2) The keyboard is monitored during
both input and output to see if the user types CTRL/C. This normally causes the
operation to be aborted with an immediate return to the OS/8 Keyboard Monitor
(the '.'). However, when the handler is being used with the low-speed reader,
input from the tape is identical to input from the keyboard, so in this case the
CTRL/C trap is disabled, allowing this character to be input from the tape.
Simply turn off the reader if you wish to abort in this special case and delete
the 'garbage' file (if any) which results from the 'EOT' being sensed.

3) A significant advantage of this handler compared to the standard 'LSPT' handler
is that the Device Code can be easily changed with the SET command. This is
useful for sending data to a device which 'looks' just like a 'TTY', but has been
interfaced with a different device code, for example, a small data recorder. In
another case, one may actually have an old 'TTY' connected up as a 'lineprinter'
(using device code 66) and wish to be able to read or punch an occasional paper
tape. These two requirements were, in fact, the motivation for producing this
handler.

The default device codes for the PT: handler are 65 (input) and 66 (output).
These can be easily changed once the handler is installed in the system by using
the 'SET PT: DVC XX' command, where 'XX' is the -OUTPUT- device code. The
handler itself then sets the input device code to one less than output, i.e. if
output=66, input=65 automatically. Using this method the handler can be easily
changed for devices having codes 30-77. However codes below 30 (i.e. 04 for the
standard low-speed punch) cannot be set in this way, but must be patched in 'by
hand' using the 'SET PT: LOC nnn' command. Two consecutive locations must be
changed: locations 100 and 101 (easy to remember!). These should be set to 6XX6
and 6XX1, respectively, where XX is the device code. For example, 'SET PT: LOC
100=6046' and 'SET PT: LOC 101=6041' will allow this handler to be used with the
standard low-speed reader/punch. Once set to a value below 30 these instructions
cannot be changed with the 'SET PT DVC' command, but must again be patched by
hand as indicated above. This is a limitation of the SET command due to the
problem of distinguishing user IOTs from field-change and keyboard instructions.
The keyboard CTRL/C trap is disabled during input when the output device code is
04 (see #2 above)."

PIP BUG

Jim van Zee forwarded a copy of an SPR he has submitted to DEC on serious problems in
PIP:

"Attn: OS/8-OS/78 Maintainers

"Re: Serious problems in PIP (V14A) as distributed with OS/78-V3, the
       OS/8-V3D Device Extension Kit, and the V3D Combined Kit (QF024).

"This version has a serious coding error: two routines which are used by the /S and /Z
options (GETEQ and DVREDE) have been located in a buffer! Thus as soon as the buffer
is used these routines are destroyed, which soon leads to various sorts of system
crashes (usually a halt). There are many possible examples, but here are two simple
cases which DO work correctly with previous versions:

Ex. 1:   .R PIP   (A commonplace example: squish
                *DTA1:<DTA0:/S/O one DECtape onto another and
                *DTA0:</Z (halts) then zero the first tape.)

Ex. 2:   .R PIP   (Another practical example:
                *MERGE.PA<RXA0:A.PA,B.PA,C.PA (merge 3 files, then
                *RXA0:<RXA0:/S/O (halts) squish the floppy.)

"The first example uses the buffer (SQBUF1) to hold a copy of the directory; the '/Z'
option then fails when it tries to use GETEQ and/or DVREDE. The second example uses
the buffer (ABUF) to repack each line; the attempted squish then fails for the same
reason. I have developed a rather lengthy patch which fixes this disaster by moving
these two routines to a different page, in place of the 'MOVE' routine which is no
longer used in V14A. The ODT-level patch is a little messy because of the need to fit
things in available 'holes', but at least it can be done! The source-level fix for
'V15' should be straight-forward. A copy of the patch I have developed is enclosed.

"A second, and unrelated, problem is that this version cannot be used while the SPOOLR
is running! The version in OS/78-V2 contained extra startup code for patching certain
buffer locations so that the vital instructions at locations 1-3 were not destroyed.
(PIP normally has a buffer starting at location 00000.) For some reason this code was
omitted in V14A. There should be ample room to include this feature in the next
release after moving GETEQ and DVREDE as indicated above, but why not just make such
buffer assignments permanently? An example of a legitimate operation which fails when
the SPOOLR is running is:

Ex. 3:   .SQ RXA1:/O (machine halts)

Another example involves transfers between SLU2: and SLU3: which must be done with
PIP. (If you try to use the .COPY command for this you get a message saying: 'USE
PIP'!) So it is certainly necessary to be able to use PIP while a symbiont is
running!"
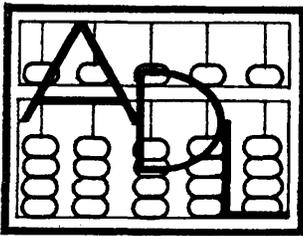
DATA SYSTEMS, INC.

6 Pinewood Drive
Monsey, N. Y. 10952
(212) 737-3748

January 8, 1980

Mr. Robert Hassinger, Coordinator
12 Bit-SIG
One Iron Way - DECUS
Marlboro, Mass   01752

re: PDP-8 System

Dear Bob:

We recently encountered what appears to be a hardware problem on the PDP-8 using
the LA120 hard copy terminal under both the EIA interfaces and the 20 MA inter-
face. The problem occurs with both the KL8-JA interface and the DKC8-AA inter-
face. When printing, the LA120 causes the system to re-boot itself or halt, if
the auto re-start is in the off position. We've had Digital Field Service at our
site working on the problem for approximately one month, working three to four
hours per day. To date, they have not been able to determine any particular
cause. Similiar problems occur with the LA120 at two of our other sites.

The Technician from Digital has replaced the power supply of the terminal, the
interface, logic and power boards, various motors and virtually every part of the
terminal but the keyboard. The terminal data line was plugged to a second system
while its power cord was still connected to the first system's power outlet and
the second system re-booted. Therefore, it is passing through the interface some-
how to the omnibus and activating the booting sequence. We believe it is causing
a power low flag to come on and then to drop. At this writing a method has not
been worked out to resolve this problem.

The problem occurs at any Baud rate from 600 - 9600 with or without the X ON/X
OFF option enabled and whether it is hooked up as the system console to a second
terminal or as a line printer. In addition, the problem only occurs while print-
ing to the device. If no printing is done, the system performs normally.

If it could be of help to anyone, our full system configuration is as follows:

          8A425 CPU 32k MOS with a DKC8-AA
          RL8A Disk Controller
          3 RL01 Disk Drives
          2 KL8-JAs
          LA120-BA with 20 MA Option
          VT100-AA with 20 MA Option
          LA8A-PA terminal (connected to the DKC8 Option Board)
          Programmer's console connected to the system.

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January 8, 1980
Mr. Robert Hassinger -

If anyone can be of assistance with the aforegoing, it would be greatly appreciated by our company and the local Digital Field Service Technicians (who acknowledge that there is a problem but to date, have not been able to localize it).

Thank you for your courtesy and help.

Sincerely yours,
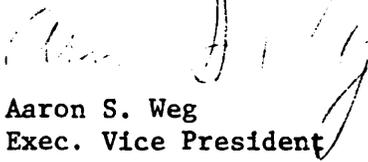
Aaron S. Weg
Exec. Vice President

P.S.   The problem usually occurs after about 30 or 40 minutes of continuous printing at which time it repeats every 2 to 3 minutes.

DECUS

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