

# 12-BIT ARTICLES ....

DECUS 12 BIT NEWS  
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NUMBER 45

FEBRUARY 1984

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Contributions and correspondence should be sent to:

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

## NEWSLETTER SUBMISSIONS

Submissions are accepted at all times and are normally used in the next issue to go to press regardless of date of receipt.

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 Bob Hassinger for further details on acceptable media and formats if you plan to make a submission in machine readable form.

## FUTURE DEADLINES

I have been given the following deadlines for the next issue: May 1. This is the date my material must be in the hands of the person I send it to. In order to make it into that issue, your material must reach me ten days before that date to cover mailing delays and to give me time to edit and retype it. Machine readable input is greatly appreciated, particularly near deadline time. In some cases it may be possible to send your material directly to my systems electronically. If you are interested in this, give me a call.

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#### COMMERCIAL SOFTWARE

I frequently get calls and letters from people looking for software for commercial applications. They would like to find something in the DECUS Program Library but I have to tell them that very little along this line has been submitted. I think generally, commercial applications seem to be written by people interested in making money. The DECUS Library seems to get other types of software, more from people who are interested in sharing what they have done with other users rather than making money with it. I find these people are frequently in research and education rather than in the commercial sector and the software they contribute reflects this. As a result I have a hard time helping these people in the context of the DECUS Library.

Just recently David B. Kanter sent me some new material on a package that has been available commercially since 1978 that might help some of these people. It is called GIANT/8 and it is available at prices that are more realistic than many others, more in line with what is going on in the microcomputer world. The package runs under the COS-310 operating system which you need to use it. It is available in one form or another for a wide range of 12 bit systems up through the DECmate II.

I have never had a chance to work with GIANT/8 but I know it has been used quite a bit in the DECUS office for administrative functions so it might be worth looking into. David is president of Solutions Unlimited, P.O. Box 12053, Overland Park, KS 66212, (913)236-9449.

#### TKPLOT UPDATE IN DECUS PROGRAM LIBRARY

The DECUS Program Library has announced the availability of Version 2/3 (July 1983) of Eugene J.M. Lynch's TKPLOT (DECUS 8-888). TKPLOT is used with Tektronix 4010 terminals in OS/8 FORTRAN IV programs. It also requires the FORTRAN IV Plotter Routines. Version B works with a 4010 connected as the Console Terminal and Version C works with a 4010 connected on an auxiliary KL8 type interface. The following is the catalog abstract:

"The programming system presented here enables a Tektronix 4010 series Graphic Terminal, or a terminal which emulates it, to be used as the plotting device with a PDP8/12 family computer executing an OS/8 FORTRAN IV program which uses the Plotting Subroutines. The Graphic Input capability of the terminal is used to return the coordinates of designated display points to the program, and to enable interactive annotation of a screen display from the terminal keyboard. If a Tektronix Hard Copy Unit is attached to the terminal it may be used under program control.

"A file may be designated to receive all of the information necessary to reproduce screen displays on other graphic devices. Displays are saved selectively in this file, from which they may be reproduced on an incremental plotter or other graphic device on the host computer, or transmitted for

reproduction elsewhere.

"Version B corrects minor errors in Version A, adds the Graphic Input routine and a convenience routine for emulator users, amends subroutine entries so that illegal calls are handled in a kindly manner and requires a bit less memory.

"Version C has all of the features of Version B and allows the console terminal to be used both as the plotting and as the alphanumeric FORTRAN terminal output device. This version may also be used in a FORTRAN program running under OS/8 in the RTS-8 background.

"Note: Changes and Improvements: Version B: Use of Console as graphics device. Use with RTS-8 both versions: Addition of ASCII character transmission and Graphics Input Routines error correction."

The documentation is only available in hardcopy form (i.e. not on the program media). Media (service charge codes): Manual-(EC), DECTape-(HA), Floppy Diskette-(KA).

### DECMATE II SOFTWARE

I wrote an article for the last issue of the Newsletter that was quite critical of the CP/M and MBASIC options for the DECmate II. Since I still have not seen that Newsletter, I am not sure if the article actually got printed. The way things have been going you never know. In any case, the point was that under the CP/M option in MBASIC you could not access the serial I/O ports to interface, in my case, to a digitizing tablet. I was helping a small research lab that had been trying to use the tablet over noisy dial up lines to a very primitive Perkin Elmer system without success. They had recently gotten a DECmate II for word processing that they absolutely love. In fact they like it so much that the principle investigators have bought there own DECmate IIs for use at home and the lab is trying to scrape up the money for another one.

The idea was that the DECmate is really a computer and the data acquisition task with the tablet is really very easy so why not use the in house DECmate and avoid the phone and PE problems. The tablet communicates via normal ASCII on a standard RS232 line that should work fine on the serial ports of the DECmate II, and a language like BASIC should allow you to do the small amount of programming required by the task. Unfortunately, as I said, MBASIC seems unable to do it and, more important, there seems to be no recourse to fix it. The SPDs for MBASIC and CP/M say they are sold "as is" with no means for getting them fixed or even asking what to do about the problem so there you are, stuck with hardware and software that will not work and nothing you can do about it. The SPDs don't actually say the software will work in this case but they certainly do not say it will not and it is a reasonable assumption for anyone familiar with small systems like this that the software will work with the built in hardware facilities unless stated otherwise.

But - good news - since the last Newsletter went to press, I have had a chance to try a version of OS/8 that runs on the DECmate II. This is more or less the same as the one demonstrated at the DECUS Spring Symposium. It has not been announced as a product but it has been under development since the beginning of the DECmate II development project.

All I had to work with was a floppy disk, no manuals or other information to go with it. So, I got out my OS/78 version 4 manual and reread it cover to cover. It was great reading it after fighting through the DECmate II CP/M documentation. OS/8 is soooo nice compared to that! I booted up OS/8, found it prompted with the curly bracket instead of the familiar dot - a great departure from a long and proud tradition but one I can live with if I have too, particularly because I found that another long tradition, the need to type your commands in upper case, was largely removed. I presume this would be implemented fully by the time such a product was released, if ever.

Even without documentation, as an experienced user I had no problem at all finding my way around the new version. It was great being back with an old friend on this great new machine. The DECmate II is fast, it looks great, the price is right and it is a lot of fun with OS/8. Lots of new opportunities and challenges.

I also had a chance to see a technical run down on the insides of the machine. It turns out that the communications port is rather tricky to program but the printer port is really a full, bidirectional serial port just like the ones on earlier systems. Except for the funny thing all the DECmates do when they do skip on flag, it is just like every KL8 style port in the world. I decided to see if I could write a device driver for the port since there were none on the disk I had. First, in about five minutes I had a simple PAL8 program going that demonstrated the port worked as advertised and it could accept input from the tablet with no problem. Next, to save some time, I pulled in a copy of the source for the old KL8E handler from OS/8 V3D and edited a couple of lines to set it up for the location of the printer port as SLU2:. I assembled it, built the handler image and installed it in the system. It worked the first time!

The version of BASIC on this disk has been updated a good bit. I think it may be a version that will only run on DECmates now - maybe only DECmate IIs I do not know. In any case it worked fine, everything I know about OS/78 BASIC still worked, and I noticed that some very nifty new features had been added. I certainly hope it becomes available!

Anyway, within the hour I had taught the researcher who was using the tablet how to use OS/8, written a basic data acquisition program and had him using it. Some difference from the CP/M experience I must say! At this point it would seem to be out of the question for even an experienced CP/M user to adapt it the way I was able to do with OS/8 because of the way it is implemented on the DECmate and because of the lack of information required to do it.

If DEC's promised spelling checker for WPS on the DECmate II requires the purchase of a Winchester disk as we have been told by DEC, I would be tempted to write one that runs under OS/8 using only the floppy disks. The tools are there, all we need is for OS/8 to be available. The latest rumor I heard is that DEC might put this version of OS/8 in DECUS. The story before that, in the Spring, was that it was going to be released as a product. I really don't care much as long as the price is reasonable and it is AVAILABLE! I also hope DEC WILL put FORTRAN IV back in or else make it possible for the user community to do something to get it going for the new system and make it available.

NOTE FROM DR JOSEPH R GIGANTI

Here is a note that I think was lost in the scramble to get out the "last free" issue of the Newsletter last Spring. It still seems to be worth publishing. Sorry for the delay.

"It certainly was nice to see a copy of the newsletter (#41) again. I depend on it and consider it a vital line of user communication. I would be more than happy to pay for it if that's what it will take to keep it coming.

"I would like to start a 12 bit user group in the Minneapolis and St. Paul area. An announcement in the Newsletter may help to spread the word.

"On the subject of the newsletter, here are a few ideas which you may wish to expose in the next edition:

- 1) Let's get a bit of capitalism into the PDP8 user community. I would like to see advertisements for user generated software available from the authors directly. This has been the major driving force behind the development of personal computers and it can work for us as well.
- 2) If advertizing in any form is disallowed, I suggest we all agree on an inexpensive national publication to which we could subscribe and use it for announcements, advertising, etc. For this purpose, my suggestion is the COMPUTER SHOPPER (407 S. Washington Ave, Titusville, FL 32780). Subscriptions are only \$10/year, their advertising rates are rock bottom and they have a DEC classification.
- 3) The falling prices for pre-owned equipment has made it easier to own, but harder to locate. It simply isn't worth the effort to advertise. I feel the newsletter, in an appropriate section, could list users with surplus equipment in a brief manner including phone number. Again, this involves extra work which I'm sure you don't need. The newsletter preparation could be distributed among several individuals. Alternatively, repeated notices in each newsletter entreating the community to advertise their available equipment in a designated publication such as the one above may help. Only in these efforts can we hope to recycle this well made equipment back to those who are interested in maintaining their systems.

"A local used equipment vendor (Midwest Systems) told me the other day they are currently shipping 25 8a's a month!! Clearly there is a basis for the 12 bit community, but I'm less sure DEC should be behind the effort."

Dr. Giganti makes some very good points. The reason many of his ideas have not happened before now is the conservative policies of DECUS. We operate under very strong "non-commercialism" rules that severly limit our ability to do many things that need to be done. The reasons for this are a desire to maintain DECUS as a certain type of organization and to try to balance user needs against what our leadership thinks are DEC's needs. They feel that if we go too far we risk alienating our special relationship with DEC that has made DECUS so effective over the years. I have argued very much along Dr. Giganti's lines for many years with little success. It may be that our needs are unique in the DEC world or maybe just that we are the pioneers and that as other systems grow old more of DECUS will see what we see.

I do think the move away from DECUS publications toward commercial magazines is becoming a clear trend that represents a very important problem for DECUS. So far I have not seen the will in DECUS to address the issue in a way that will be successful.

Dr. Giganti is at Radimetrix, inc, 1785 Taconite Point, St. Paul, MN 55122, (612)-452-4982. I hope those of you in his area will take him up on his offer to organize a local user group. DECUS is becoming very interested in encouraging this type activity. Anyone interested in organizing a local user group in their area can contact me and I will get you in touch with the people in DECUS who can help you. (RH)

NOTE FROM IAN TEMPLETON

"I was delighted to here from Wally Kalinowski that the 12-Bit SIG Newsletter is still alive and well, even though in new clothing. I was also glad to hear that DSN is still available. Unfortunately the order number quoted in Newsletter #41 apparently doesn't apply in Canada, so I may be in for a struggle to find out how to get it. I haven't had an issue since Oct/Nov 81. (Ed. note: Since the more recent note in the Newsletter reporting similar problems with DSN in the US, I have not heard from anyone who has been able to get it. - RH)

"I have two new pieces of information.

1. My "Scope-Type Rubouts in FRTS (#40 p25) has a problem when the .LD module overwrites the flag word 17726. To deal with this, FRTS should call the rubout routine before the .LD module is loaded. This can be done somewhere in the string of NOP's between 04020 and 04032 in FRTS by inserting JMS I .+2, SKP, 7550. The 'once only' section of the routine is then done and all will be well thereafter.
2. As Wally may have told you, a rather bright summer student of ours (Andy Summers) managed to unravel the intricacies and contradictions of the IEEE 488 Bus specifications and designed an interface for the PDP8/E using the DEC M1709 Omnibus Interface Board. This allows the 8/E to be the (only) controller of the system. We have four different instruments, All Hewlett-Packard. These are scanner, DVM, counter and plotter and all can be controlled and read happily with Fortran IV, using a RALF subroutine package I have written. I recently had a request from a colleague, who has a copy of the interface and wanted to use FOCAL to drive a plotter, to write a handler as well. This I have done, though it had to be split into two: a 1-page handler for Bus initialising and SRQ testing; and a 2-page handler to send commands and messages, and to read data and status. He reports that the combination works well. The handlers have the advantage that one can test command and message strings by sending them to the Bus from TTY using PIP. Anyway, for anyone interested I have full circuit diagrams available and can also provide the driver modules, preferably on a floppy disk. My address is:

Dr. I.M. Templeton  
Room 150, M-23A  
National Research Council of Canada  
Ottawa, Canada K1A0R6

"Best wishes for the New Year."

NOTE FROM RON LARKIN ON BOB PHELPS' USR

Ron Larkin called recently looking for help with a problem he was having with Bob Phelps' USR (DECUS 8-850: "USR and other Special Purpose Subroutines for OS/8 FORTRAN IV" - a package that has proven very valuable to many, many OS/8 FORTRAN IV users). When he used USR with a new disk and controller that worked fine the rest of the time he had trouble. Ron later sent along the following note about what he found. It points out a very subtle point about OS/8 and the way PDP8 DMA devices need to be handled.

"Thank you for your advice on the problem with Phelps' USR. It turns out that the phone number you have for him reaches the Graduate School of Management or something at Rochester -- he appears to have disappeared into the private sector.

"My problem was hardware: the CESI MDC8 controller can transfer up to 32k words at a call, right across Field boundaries. Phelps' routine takes advantage of the cute "feature" of an OS/8 handler that permits I/O transfers to wraparound within a Field; USR reads from SYS: into the top part of the correct Field and then the hardware continued blithely into the next (incorrect) Field. The OS/8 Software Support Manual, page 4-3, documents the "feature" of OS/8.

"I found it interesting that the rest of OS/8, FORTRAN IV, FRTS, and all user and utility programs I have tried operated nominally, probably because the "feature" of OS/8 is seldom used."

Ron is at Illinois State Natural History Survey, Wildlife Research, Natural Resources Building, 607 East Peabody Drive, Champaign, IL 61820, (217)333-6880.

Ed. note: I recall some phone discussions with Bob Phelps about the design of USR. It gives the ability to open and close files on the fly from within FORTRAN programs, a capability I understand was left out by DEC due to a shortage of time and resources. It is no small task to do given the constraints on space and so on in FRTS. What I recall as particularly interesting was that Bob did not have access to sources of FRTS, the FORTRAN runtime system, so he could not just add some code to it. In fact, as I recall, he had to manually disassemble parts of FRTS and try to trace the code to figure out what to. Given all this and the intricacies and poor documentation of RALF coding, it is little wonder that there are some rather unique coding techniques in USR. In fact, I remember finding it very interesting to read the code and figure out just how it really did work. (RH)