CROSSTALK Journal of Hewlett-Packard Technical Computer User Groups

NOV-DEC 1985

Malcolm Kerr to speak at final meeting for this year

Malcolm Kerr, the Managing Director of Hewlett-Packard Australasia, has kindly offered to be the guest speaker at the final meeting of the Desktop Computer Users Group.

This will be a combined H.P.D.C.U.G.V. and HP 1000 U.G. meeting to commence at 4 p.m. sharp on Thursday November 26 at HP Blackburn. As this is the final Desktop Computer User Group meeting for the year it is one not to be missed. All are welcome, members and others alike.

The meeting will also feature a presentation by Alan McNamara from Laserform.

Of course, we will have all the regular meeting features such as the introductory notices, the HELP session and the presentation of brief technical offerings ("SNIPPETS").

All in all this promises to be an exciting evening. I hope to see you there. Refreshments will be offered. If you have any queries please contact me on (03) 859 6643.

— **Chris Simpson**
(President, HPDCUGV)

Co-Ordinator's Comments

Welcome to the final edition of Crosstalk for 1985. We have been relatively successful in our commitment to get Crosstalk out every two months, however the task is becoming increasingly difficult.

The reason for this has been the diminishing contributions from members. We need the continuing support from members to maintain the success of Crosstalk.

With the break over Christmas we have the ideal opportunity to build up a bank of articles to ensure next year gets off to a flying start. So please keep those articles coming over the Christmas break.

We have printed a flyer which is designed to attract new members to join our user groups. This flyer will be distributed to our existing desktop and 1000 series customers, to HP dealers and enclosed with new shipments. We expect the flyer to be mailed during the first week of November.

I have been communicating with John Geremin, President HPTCUG (NSW), who has promised to keep us informed of developments with his group. This will allow groups in various states to remain aware of what the groups in the other states are doing.

Finally I wish everybody a Merry Christmas and a Happy New Year.

Until next year.

Regards
Derrin Johnson
HP Melbourne.

CONTENTS

- Malcolm Kerr to speak at final meeting for year
- New Products
- Desktop Forum
  — H.P.D.C.U.G.V. Meeting at Spectrometer Services Pty. Ltd.
- Focus 1000
  — Using Edit/1000 on Non-HP Terminals
- Puzzle Place
- Classifieds
- Coming Events

NEW PRODUCTS

Introducing the HP Laser JET PLUS printer

On August 26, HP introduced the HP Laser Jet PLUS, the second member of the Laser Jet family of personal office printers. The HP Laser Jet PLUS offers the same capabilities as the original, top-selling Laser Jet and, in addition, increased graphics and flexibility.

Features PLUS
Compared to the Laser Jet, the HP Laser Jet PLUS's 512 Kbytes of memory allows more advanced graphics (full page at 150 dpi or half page at 300 dpi), better merged text and graphics, downloadable fonts and forms, and electronic forms including shading and pattern images.

More flexibility
The HP Laser Jet PLUS printer has downloadable fonts capability (up to 30 points or about two times the size of typewriter print) that offers users new flexibility for printer sharing as well as mixing and matching typefaces. Up to 32 fonts (depending on font size) can be downloaded to the printer's memory. Up to 16 fonts can be printed on one page, utilizing any combination of cartridge and downloaded fonts (also known as Soft Fonts).

The HP Laser Jet PLUS has available a Centronics parallel interface, which allows faster printing of graphic images from the IBM PC.

Laser Jet compatibility
The HP Laser Jet PLUS is 100 percent compatible with the original Laser Jet printer design. The HP Laser Jet PLUS uses the same toner cartridge, font cartridges, and paper trays and runs with the same software as the HP Laser Jet. However, software designed specifically to use the additional HP Laser Jet PLUS memory may not necessarily work with the Laser Jet printer.

Laser Jet PLUS software support
HP is currently working with many independent software vendors to provide advanced software support of Laser Jet PLUS's advanced features. Enhancements to packages for typesetting general and technical word processing, graphics, business presentations, and image processing (scanning) are available.

For additional information on the Laser Jet PLUS printer, contact your HP sales rep.

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

HP 9000 Series 300 HP 2392A/VT 100 terminal emulator

The HP 9000 Series 200 HP 2392A and VT100 Terminal Emulator has been upgraded to run on the Series 300 under the Pascal 3.1 operating system. This terminal emulator allows you to use your Series 300 computer as a terminal to a host computer, transfer files between the host and disc drives connected to the Series 300, and run applications packages such as HP DeskManager for the HP 3000.

The new terminal emulator is Revision 2 of the HP 98791B product. Two disc options are available. Opt. 042 for 5.25-inch and Opt. 044 for 3.5-inch. All 98791B orders received on or after August 1 will be filled with the new revision.

Upgrade kits
HP 9000 Series 200 customers who purchased the Pascal 3.0-based release (98791B Rev. 1) may want to upgrade to the Pascal 3.1 based version (98791B Rev. 2). You may purchase the 98791-69301 upgrade kit for 3.5-inch media or the 98791-69601 upgrade kit for 5.25-inch media. You must also return two production discs (P/N 98791-10X14 and 98791-10X15 where X = 3.6). Users who own the 98790A, 98791A, or 09800-10X80 terminal emulators must order the 98791B Revision 2 instead of these upgrade kits.

Security system compatibility
The security system implemented in the new version of the terminal emulator allows you to link the codeword either to the computer's ID PROM (Models 216, 217, 220/98203, 236, and 237 only) or to the HP 46084A HP-HIL ID Module (Models 217, 220/46020, 237, 310, and 320 only). Users who want to purchase one copy of the terminal emulator to run on both Series 200 and Series 300 computers at different times should select the ID Module approach. This method is of interest to users who rotate computers through different sites, who use a backup computer when the primary computer is on loan or undergoing repairs, or who lease one computer for awhile and then replace it with another. Please note that Series 300 users must order the HP 46084A HP-HIL ID module.

Introducing the HP 2397A color graphics terminal

The HP 2397A has all the graphics, alphanumerics, ergonomics, and ease-of-use features offered on the HP 2393A. It also provides the same level of input/output flexibility.

In addition, the HP 2397A offers these benefits:

- High quality color — Graphics can be displayed in eight colors from a palette of 64. More colors are possible using dither patterns. In alphanumeric mode, foreground and background colors can be defined for each character cell. At any one time, eight color pairs can be displayed from a total of 64 possible pairs. Color hardcopy is possible with HP plotters, the new HP 7510 film recorder and the Diablo C150 color inkjet printer.
- Instant software leverage — The HP 2397A is backward compatible with the HP 2627A graphics terminal. The terminal ID field in the HP 2397A can be configured as an HP 2627A to run graphics applications written for the HP 2627A, without modifications, on HP and non-HP systems.
- Low cost of ownership — Using state-of-the-art technology, the HP 2397A has achieved significant reliability improvements.

The HP 2397A provides TEKTRONIX 4010/4014 compatibility and a no-cost ANSI X3.64 option.

New color monitor available

The HP 35741 color monitor is a 12-inch 640 x 400 resolution RGB analog color video display monitor. An excellent choice for use with HP computer systems or workstations, the color monitor features an innovative ergonomic design and HP quality and reliability at a competitive price. Support for the 35723 HP Touch Accessory is included as a standard feature of the color monitor. (The HP Touch Accessory must be purchased separately.)

The color monitor is currently being used with the HP 2397A color graphics terminal, the HP 9000 Models 310 and 320 and HP personal computers. The monitor features: RGB P22 color phosphor, a 0.31mm dot pitch, available resolution of 640 x 400, analog video inputs capable of providing a continuous spectrum of colors, HP-HIL support for the HP Touch Accessory, convenient front panel brightness and contrast controls, non-glare screen, integral tilt and swivel, internal speaker, and a one-year warranty.

For further information and technical specifications on the color monitor, refer to the HP 35741 data sheet (P/N 5953-8626).

DESKTOP FORUM

H.P.D.C.U.G.V. meeting at Spectrometer Services Pty. Ltd. Coburg

Presentation by John Hedger

Firstly, welcome to Spectrometer Services —

I think I am correct in saying this is our first user meeting combined with a field visit.

The idea of this meeting, apart from our normal features, is to see some of the applications for which we use Hewlett-Packard desktop computers in the every day running of our laboratory. The meeting will be completely 'open ended' and everybody is welcome to stay after the formal proceedings to discuss ideas and problems etc. Also you are welcome to tour our laboratories at your leisure and ask questions so long as they are kept simple. You are also asked to partake of the refreshments provided.

WHO IS SPECTROMETER SERVICES ??
Spectrometer Services was started in 1959 to provide an analytical service for the foundry industry in Australia. Most metallurgical analysis prior to this were performed by slow and costly classical methods and in fact quality control was almost non existent.

With the advent of Direct Reading Optical Emission Spectrometers (DROES), it was possible to analyze metal quickly and accurately and for a large range of elements. However, the initial cost of such an instrument was far too expensive for any one foundry to purchase and operate. So, Spectrometer Services purchased a very large spectrometer, one capable of analyzing a wide range of foundry and allied products, and set out to provide a fast service for industry at a realistic price. Hence the name Spectrometer Services.

However, we were not breaking into an established field of service to industry, but rather we were offering something which had not been available before, and so we found that we had to educate rather than advertise. After a few hard years, we were processing samples from foundries all around Australia and some in New Zealand. We were able to phone or telex results back to our client within hours of receiving the samples.

Over the years, as instruments became relatively cheaper, (25,000 pounds in 1959 to under 100,000 dollars today), and as foundries became more competitive to survive, all of the large foundries operating today purchased their own spectrometers, and to a large extent our work target has moved away from that area. Today we are more concerned with providing all industry with a sort of 'trouble shooting' type of analytical service, still specialising in metallurgical analysis, but we are far more diversified in our instrumentation and our range of services for contract analysis.

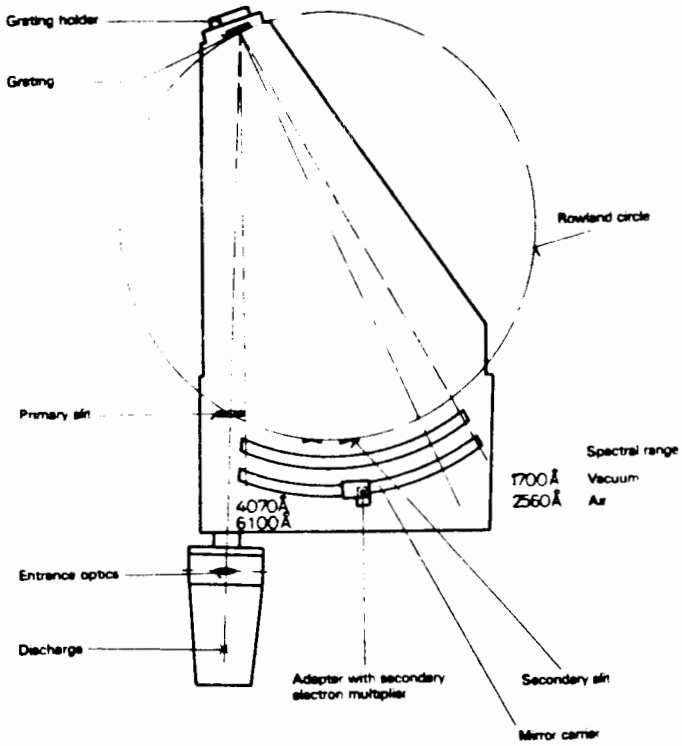
BACKGROUND OF SPECTROGRAPHIC ANALYSIS
Whilst we are primarily concerned with the role of the H.P. desktops on the end of the instruments rather than the science of Spectrocopy, its appropriate that we look just a little into just what a spectrometer is and how we produce analytical figures from one.

The spectrochemical method depends in the first place on the fact that atoms of elements may be energized (excited), in a suitable excitation source, to

emit radiant energy. When dispersed either by a prism or grating this energy emerges in the form of a spectrum. The structure (number and wavelengths of lines) of a spectrum is determined primarily by the structure (electronic configuration) of the atom, and as atoms of different elements have different electronic configurations, each element has a distinct and characteristic spectrum which serves as a conclusive positive qualitative test for that element. In quantitative analysis the brightness of the spectrum line is used as a measure of the concentration.

For all the theory and formulae that scientists have been publishing since the early 1800s, a spectrograph consists of three main components.
a) The energy source for vaporisation and excitation of the sample (Discharge).
b) Spectrum generation using a prism or a grating to separate the total light into its components. (Grating)
c) Spectrum measurement using film or photo-electric cells. (Photo-electric cells or electron multipliers)

Below is a schematic showing the relative positions of these components in a spectrometer.



Beam path in a simultaneous spectrometer, schematic representation

So how do we analyse a sample using these components?
The test sample is mounted opposite a counter electrode of some pure metal such as silver, copper or graphite, with a gap of 3 to 5mm. An electrical discharge is passed between the counter electrode and the sample to vaporise a small area of the surface of the metal under test. The atoms present are excited by this process and emit light which is focussed on to a concave diffraction grating. The grating breaks down the incident light into a specrum containing, at discrete wavelengths, the spectrum lines of all the elements present in the sample.

At least one line for each element to be determined is isolated by an exit slit and focussed onto the cathode of a photo-multiplier tube which converts the weak light signal into a useful electric current. The luminous intensity of each line is directly proportional to the concentration of its relative element in the specimen under test.

Since the light emitted varies considerably throughout the duration of the test (approx 15-20 secs.), the outputs from the photo-multipliers are fed into high-quality capacitors or 'integrators' in order to average and store the charge for later referencing.

A stepping system then connects an amplifier to the integrators one after the other, so that the charge on each can be displayed on a digital voltmeter. The readings obtained are converted into concentration percentages by reference to graphs or tables. (Optical emission analysis is essentially a comparative technique in which known standards of materials are used to calibrate the instrument and samples under test are referred to these standards).

THE MULTIPROGRAMMER (6940B)

In 1978 we were looking for ways to replace the old mechanical read-out and control panels with a more up-to-date system. There were no firms offering retrofit readout consoles for spectrographic equipment and so we decided to develop our own system based on a Hewlett Packard data acquisition and control until called a MULTIPROGRAMMER or 6940B.

The components purchased were

9825 Computer with roms ($9000) for a system controller

6940B Multiprogrammer, as the interface between computer and 'real world'. ($1600)

98032A GP10 interface for computer to Multiprogrammer ($600)

69351 Voltage monitor card to read 1 to 10 volts from integrator outputs ($500)

3 by 69330 Relay output cards, each with 12 relays, for controlling the electrical switching of source unit, argon valves etc. ($200 ea.)

All of the old electrical components were discarded except for the power supply for the Photomultiplier tubes, and the original integrator units. A 24 volt dc power supply was built to control slave relays outside Multiprogrammer so no 240 Volt lines were connected inside Multiprogrammer. This power supply also drives the LEDS used as progress indicators.

One card of 12 relays was used to control the starting and stopping of the source unit, switching the various control relays within the integrator boxes, turning Argon valves on and off etc.

The other two relay cards are used as a multiplexer to provide 24 Volts positive to one axis of a group of 12 integrators and 24 Volts negative to the other axis of the groups of 12 integrators. This enables the 24 relays to switch 144 integrators across the voltage monitor card.

SOFTWARE

A software package was developed which consisted of the following programs —

TEST PROGRAM : For testing functions of the Multiprogrammer and all hardware involved.

CALIBRATION : For collecting raw voltage readings from the analysis of primary standards prior to establishing calibration curves.

CURVE FIT : For fitting analytical data of primary standards to curves of the form Y=A+B*X+C*X^2+D*X^3+E*X^4

GROUP TABLES : This program is used to develop an array or 'group table' containing all the parameters, variables, constants, upper and lower limits for concentrations, variation limits for duplication, inter-element correction data, print out formats, and coefficients for any analytical program. Group Tables become the data files used by the Main Analysis Program.

MAIN ANALYSIS PROGRAM : This is the main program resident in the computer at all times, which controls the whole analytical operation using the parameters in the currently selected Group Table.

The same software package has been developed for the HP 85 and the HP 86B. A Parallel Interface was purchased so that either of the 80 series could be used as a backup to drive the Multiprogrammer and whilst the 80 series are not up to the operating speed of the 9825, they perform adequately.

OTHER DEVELOPMENTS

9825

Many other functions are performed on the 9825 such as our own Debtor's Ledger, Payroll, etc. We have developed many programs for laboratory calculations. Several software packages involving Multiprogrammers have been developed for clients. One of these packages involved a Multi-programmer with an Extender frame containing twenty eight cards in total.

HP 85

One of our spectrometers originally had as its output, a DIGICO Micro 16V mini computer driving a ASR 33 Teletype. When the Teletype required replacing we found that we could purchase a HP 85 for less than the replacement cost of the old mechanical Teletype, so a similar system was developed for the QUANTOVAC 80. The mini computer was discarded as uneconomical.

HP 86B

One of the many 'foreigners' which we performed on the 9825 for many years was the running of a Credit Union. However as this became far too large for the 9825 with no mass storage other than the tape cartridge, we found it necessary to buy the HP 86B with the 4.6 Megabyte Winchester. Today, most of our software development is done on the 86.

USING EDIT/1000 ON NON-HP TERMINALS

By Brett Hutchinson HP Melbourne

Most people who buy HP 1000's, complete their system with the purchase of HP terminals. They work properly and provide in general the capability for the user to get the most out of his system. There are some however, who choose to use non-HP terminals, whether it be because they have existing equipment, are forced to buy a particular brand or just want to buy 'el cheapo' brand X. These non-HP terminals generally work OK, provided you don't:-

a) use applications that specifically use HP type terminal escape sequences.
b) want to use screen mode in EDIT/1000.
c) want to use XON/XOFF handshaking when in a character editing mode in EDIT/1000.

The point of this article is not to answer problem (a), but to address (b) & (c). (b) & (c) go hand in hand, since if you are using a non-HP terminal with XON/XOFF handshaking (and most do!), you can't use screen mode editing and therefore must use character editing mode. The problems that arise in this situation are not insurmountable, they just cause the user a lot of inconvenience, particularly in an environment where the users don't appreciate the situation and then give the system manager a hard time, who in turn gives an HP SE a hard time.

In response to being given a hard time, I decided there must be a solution or workaround to these problems. The only real solution is to use an HP terminal, so the alternative was to develop a workaround.

I will attempt to give you a brief description of the technical issues and then provide the workaround that I have developed.

Firstly, I will look at problem (b). EDIT/1000 starts up by normally issuing a terminal status equist (ESC^) to determine what type of (HP) terminal it is dealing with. HP terminals (and copies) will respond with an identification which EDIT uses to decide if the terminal can be used in screen mode. If the correct response is not returned from the terminal, then EDIT will set an internal flag to indicate that screen mode is unavailable. Since the non-HP terminal didn't understand the terminal status request, it "hangs" until the user typically hits the return key <CR> about twelve times. It will then respond with a message that you are not using an HP terminal and that screen mode is unavailable. I believe that this problem can even be worse if you are attempting to use the terminal connected to a PAD on an X.25 network.

This first problem isn't really a big deal. The user is inconvenienced but he can still run EDIT. "So what's the big issue?" you might ask. This leads me to problem (c). You have managed to run EDIT, although screen mode is unavailable, so you have to use character mode editing. You decide that you want to insert some text into a line and the EDIT manual says that you can use either <control>S or <control>I. After trying <control>S you now wonder why your terminal is dead. The problem here is that <control>S is a DC3 character, or otherwise known as an XOFF. So instead of inserting text you have just told the 1000 that you don't want to talk to it anymore. Your next attempt is with a <control>I. What happens now is that your cursor has just moved to the next tab position since <control>I represents the HT or horizontal tab character and your text has been inserted but not necessarily where you wanted it.

Some of you might be thinking that the answer to this problem is either to delete the line and re-type it or to use <control>R and replace the line. This leads me to the workaround that was developed to make the solution as transparent to the user as possible. I have included a technical explanation of what was required and also the listings of the programmatic solution.

The solution to problem (b) was to find a way to stop EDIT from issuing the terminal status request. ie. assume that the terminal was non-HP and don't get EDIT to interrogate it. This can be achieved by the fact that EDIT checks for the 'device type' of the terminals. Terminal device types can be from 0 .. 7, with the default for HP terminals being 5. EDIT will check for device type 0 or 5, and if this is true it will issue a terminal status request. The answer therefore is to make the terminal device type's 1, 2, 3, 4, 6 or 7, so that EDIT will assume the terminal is "dumb" and proceed as normal.

The initial solution to this was to change the device type to 4 for the relevant terminal LU in the RTE-A system generation. (Not possible in RTE-6 system generation). This solution worked fine until we tried to use LINK or TF. Both these programs have an inherent "feature" that causes them not to echo prompts if the device type is not 0 or 5. While both LINK and TF worked, it was a little disconcerting not being able to see what you were typing in.
The next level of the solution was to dynamically change the terminal device type when running EDIT. This necessitated running a shell program which I had called EDITR (not to be confused with EDITR which preceded EDIT/1000 on older RTE systems) which changes the device type to 4, runs EDIT and then changes the device type back to what it was. I have only implemented this solution under RTE-A and it involves indexing via the LU table to the appropriate DVT entry, where the device type is retrieved and then modified. The same could be achieved in RTE-6/VM by indexing via the DRT to the appropriate EQT and changing the device type there.

The solution to (c) involves understanding really what the EDIT manual means when it says that <control> I can be used to insert characters. <control>I can be used for insertion but it doesn't always insert where you want it. To get around this you will have to define a new tab character within EDIT. This allows you to insert text at the right location although it is not a very "pretty" solution. This is because the terminal still interprets the <control>I as a local tab operation, so your cursor typically moves from where you want to insert the text. While this is disconcerting, I can assure you that the text is in fact inserted in the correct location. Another gotcha is that while the tab key works locally on the terminal, it is now performing the operation of telling EDIT that you want to insert text! Be warned.

The implementation of defining a new tab character (in my case I settled on <control>U — nak character) was performed by appending the SETC (set tab character command) to the EDIT run string from within EDITR. This can cause a potential problem if the user types in an invalid EDIT run string, because if EDIT finds an error when passing the run string, it ignores any following commands which in this case would include the SETC command. This can be alleviated by omitting run string commands or making sure you don't make a mistake! I realise that the implementation of this solution is not very elegant but it solves the basic problem of using <control>S to insert text.

Since I am no longer acting as a Systems Engineer, I have developed the EDITR program no further. An obvious first off enhancement to the program would be to provide RTE-6/VM support. Anyone attempting this enhancement would need a basic understanding of RTE-6/VM internals and the ability to write privileged code. Given that errors in the run string cause problems, a simple enhancement might be to have the user run EDITR **without** run string commands and then prompt from within the program for the run string (if any). This would at least ensure that the SETC was correctly executed.

I hope that the EDITR program is helpful to some users of non-HP terminals. Since I am now a sales rep, you might even consider calling me about **buying HP terminals.**

P.S. Do you know about the cheaper 239X family of terminals?

```
FTN7X,L,S
      program EDITR(3,50),Edit program for non-HP XON/XOFF terminals
c
c This program schedules the EDIT/1000 editor for use with non HP terminals
c using an XON/XOFF protocol. In order for EDIT/1000 to work correctly, the
c device type of the terminal must not be 0 or 5. Therefore, a routine
c called DTALT is used to alter the device type for the user's terminal.
c
c EDIT/1000 uses the (CNTRL) S character to insert characters in the pending
c line. However, this is also the XOFF character, so the work-around is to use
c (CNTRL) I to insert characters. This has the complication that (CNTRL) I is
c is also the horizontal tab character. EDIT/1000 must therefore be configured
c to use a different HT. In this program, the horizontal tab is set to
c (CNTRL) U, by using the "SETC,(CNTRL)U" command.
c
c NOTE : (CNTRL) I will now insert characters but it will still locally tab
c at the terminal. This can be rather confusing to the user, since the
c cursor may move from the position where he wants to insert characters.
c Don't worry though, it really does work.
c     Another inconvenience is that while (CNTRL) U inserts tabs into your
c line of text, it does not tab locally on the terminal. The result is that
c you don't appear to have inserted any tabs into the line.
c Don't worry though, it too works !
c
c
c PROBLEMS ( with this program )
c --------
c 1) If you try to edit a non existent file, EDIT/1000 will not interpret any
c    commands that follow in the command string, including the SETC command.
c    eg. "RU,EDIT,non_existent_file!TF" will not recognise the "TF" command
c
c 2) Similar to the above problem, if you give an incorrect command, then any
c    following commands are ignored.
c    eg. "RU,EDIT,file!S!TF" will not recognise the "TF" command since the "S"
c        command is invalid with the use of non-HP terminals.
c
c Source      : EDITR.FTN
c Relocatable : EDITR.REL
c Program     : EDITR.RUN
c
c
c Programmer : Brett Hutchinson (841024.1053)  Systems Engineer, Melbourne
c
c
      implicit none

      integer dev_type,              ! current device type of terminal
     +        new_dev_type,          ! new device type for the terminal
     +        real_lu,               ! the real system lu for the terminal
     +        logical_lu,            ! logical lu for the terminal ( = 1 )
     +        LOGLU,                 ! system routine to retrieve LU's
     +        Parms,                 ! parameters returned from EDIT (dummy)
     +        Buff_len,              ! length of the EDIT/1000 command string
     +        Ed_buff(40)            ! Run string parameters from GETST

      character Edit_run_string*80,  ! EDIT/1000 run string
     +        Run_name*5,            ! returned program name
     +        new_tab*1,             ! new tab character for EDIT/1000
     +        Edit_commands*80       ! commands for EDIT/1000
```

```
      equivalence ( Edit_commands, Ed_buff(1) )


      data new_dev_type /4/          ! device type must be from 0..7
      data new_tab /'' /             ! set at present to (CNTRL)@ ( nak )

c
c The following section of code could be modified to allow EDITR to prompt
c for file_name and run string parameters. These could be checked for validity
c which would then assure that EDITR did not run into the problems listed
c above.
c
c Retrieve the EDIT/1000 command string and build complete run string
c
      Edit_commands = ' '
      Buff_len = 0
      call GETST ( Ed_buff, -80, Buff_len )
      if ( Buff_len .eq. 0 ) then
          Edit_run_string = 'RU,EDIT,!SETC,''//new_tab
      else
          Edit_run_string = 'RU,EDIT,''//Edit_commands(1:Buff_len)//
     +    '!SETC,''//new_tab
      end if
c
c Get the LU number for the user's terminal.
c
      logical_lu = LOGLU ( real_lu )
c
c Call device type routine to determine the device type for this terminal.
c Save it in dev_type.
c
      call dtype ( real_lu, dev_type )
c
c Call device type modification routine and set new dev type
c Devtype is bits 8 - 13 so it must be shifted by 8 bits.
c
      new_dev_type = new_dev_type * 256      ! shift devtype 8 bits
      call dtalt ( real_lu, new_dev_type )
c
c Schedule EDIT/1000 and specify that the new tab character will be
c (CNTRL) @.
c
      call FmpRunProgram ( Edit_run_string, Parms, Run_name )
c
c Call device type modification routine and reset old dev type
c Devtype is bits 8 - 13 so it must be shifted by 8 bits.
c
      dev_type = dev_type * 256
      call dtalt ( real_lu, dev_type )

      stop
      end
```

```
MACRO,L,S
        NAM DTYPE
*
        EXT $LUTA,.ENTR,$LIBR,$LIBX
        ENT DTYPE
*
* THIS ROUTINE LOOKS UP THE SPECIFIED LU IN THE LU TABLE AND THEN
* INDEXES TO THE APPROPRIATE DVT ENTRY. THE SIXTH WORD IS THEN OBTAINED
* AND THE DEVICE TYPE ( IN BITS 8 - 13 ) IS RETURNED TO THE CALLING PROGRAM.
*
* Source      : DTYPE.MAC
* Relocatable : DTYPE.REL
*
* Programmer : Brett Hutchinson (851018.1031)
*
*
LUNUM   BSS 1           ; LU NUMBER TO LOOK UP
DEV     BSS 1           ; DEVICE TYPE
*
DTYPE   NOP             ; ENTRY POINT
*
* RETRIEVE PARAMETERS
*
        JSB .ENTR
        DEF LUNUM
*
* LOOK UP LU TABLE AND INDEX TO APPROPRIATE LU ENTRY.
* THEN RETRIEVE DVT6 AND GET THE DEVICE TYPE.
*
        XLA $LUTA       ; $LUTA POINTS TO FIRST WORD OF LU TABLE
        ADA @LUNUM      ; INDEX TO DVT POINTER IN LU TABLE
        ADA MINUS1
        XLB @A          ; RETRIEVE DVT ADDRESS AND
        ADB D5          ; POINT TO DVT6 OF TERMINAL'S DVT ENTRY
        XLA @B          ; GET DVT6 AND
        AND DTMASK      ; MASK THE DEVICE TYPE ( BITS 8 - 13 )
        ALF,ALF         ; MOVE DEVICE TYPE TO LOW ORDER BYTE
        STA @DEV        ; RETURN THE DEVICE TYPE TO MAIN PROG
*
        JMP @DTYPE      ; RETURN
*
MINUS1  DEC -1
D5      DEC 5
DTMASK  OCT 037400      ; MASKS OUT BITS OTHER THAN 8 - 13
*
        END
```

```
MACRO,L,S
        NAM DTALT
*
        EXT $LUTA,.ENTR,$LIBR,$LIBX
        ENT DTALT
*
* THIS ROUTINE LOOKS UP THE SPECIFIED LU IN THE LU TABLE AND THEN
* INDEXES TO THE APPROPRIATE DVT ENTRY. THE SIXTH WORD IS THEN OBTAINED
* AND THE DEVICE TYPE (  IN BITS 8 - 13 ) IS MODIFIED ACCORDING TO THE
* NEW DEVICE TYPE.
*
* Source      : DTALT.MAC
* Relocatable : DTALT.REL
*
*
* Programmer : Brett Hutchinson (851018.1030)
*
*
LUNUM   BSS 1           ; LU NUMBER TO LOOK UP
DEV     BSS 1           ; NEW DEVICE TYPE
*
DTALT   NOP             ; ENTRY POINT
*
* RETRIEVE PARAMETERS
*
        JSB .ENTR
        DEF LUNUM
*
* LOOK UP LU TABLE AND INDEX TO APPROPRIATE LU ENTRY.
* THEN RETRIEVE DVT6 AND MODIFY DEVICE TYPE BITS
*
        XLA $LUTA       ; $LUTA POINTS TO FIRST WORD OF LUT
        ADA @LUNUM      ; INDEX TO DVT POINTER IN LUT
        ADA MINUS1
        XLB @A          ; RETRIEVE DVT ADDRESS AND
        ADB D5          ; POINT TO DVT6 OF DVT
        XLA @B          ; GET DVT6 AND
        AND DTMASK      ; MASK OUT OLD DEVICE TYPE
        ADA @DEV        ; SET NEW DEV TYPE ( BITS 8 - 13)
        JSB $LIBR       ; GO PRIVELEGED TO
        NOP
        XSA @B          ; ALTER DVT6 IN THE TERMINAL'S DVT ENTRY
        JSB $LIBX       ; RETURN FROM PRIVELEGED
        DEF *+1
        DEF *+1
*
        JMP @DTALT      ; RETURN
*
MINUS1  DEC -1
D5      DEC 5
DTMASK  OCT 140377      ; MASKS OUT BITS 8 - 13
*
        END
```

```
RU,FTNXX,EDITR.FTN,-,-
RU,MACRO,DTYPE.MAC,-,-
RU,MACRO,DTALT.MAC,-,-
RU,LINK,EDITR.REL,DTYPE.REL,DTALT.REL
```

INTERNATIONAL USERS GROUP MEMBERSHIP

At its Annual meeting the Melbourne HP/1000 Users Group announced that it was about to become a full member of the International Association of Hewlett Packard Computer Users (INTEREX). This will include a copy of the full contributed Library. The Treasurer of the Melbourne Group Norm Kay (03) 544 0633 will be the holder of the tape and limited copies of software will be available for members to use, without the need to join INTEREX.

PUZZLE PLACE

a) Find rational (ie fractional) numbers, 'x' and 'y', such that $x^3+y^3=6$. [Numerators and denominators ≤ 100.]
b) As for a), but $x^3+y^3=9$. [2 solutions!]
c) A square and cube of a given numbers use each digit once exactly. What is the given number?
d) Using the digits 1. 2 ... 9. form the largest product eg. 3746 x 2819 (obviously not the largest)

— Mark Michell

H.P.D.C.U.G.V. — Membership 1985/1986

Name: .....

Company: .....

Address: .....

.....

Phone: .....

Telex: .....

Subscription $12 enclosed: Renewal or New

Return to: Peter Hendy
I.G. Hendy Manufacturing Pty. Ltd.
11 Terracotta Drive
Blackburn, Vic. 3130

Cheques should be made payable to 'H.P.D.C.U.G.V.'

PUZZLE SOLUTION

Answer to last issues puzzle is:

The total number of chimes during the twelve hour period is $(1+11)+(1+12)+(1+1)+(1+2)+ \ldots + (1+10) = 90$ chimes. Therefore the 'chime' weight moves 8mm for each chime. The other weight moves steadily through 720mm in 720 minutes ie. 1mm/min.
Immediately after midday the chime weight has moved through $[(1+11)+(1+12)]x8 = 200$mm. The other weight has moved through 105mm (in 105 minutes). Therefore the separation here is 95mm. After this the chime weight travels more slowly until such time as it moves more than 60mm in an hour. ie. until **just before** 7 pm.
At this time the chime weight has moved through $[12+13+2+3+4+5+6+7+1]$ $x8 = 424$mm. The other weight has moved. in 8¾ hours through 525mm. Therefore the separation just before 7 pm. is 101mm which is the extreme. For programmers. the exercise could be in producing a time chart of the motions of the weights — this shows up the essence of the solution very clearly.

Mark Michell

WANTED

Obsolete HP Computer equipment and Manuals, etc.

Please phone (02) 764 4855 to negotiate collection.

JOHN GEREMIN

NOTE

CROSSTALK is a publication of the HP1000 and HP Desktop Computer user groups. Hewlett-Packard accepts no responsibility for the content herein, which is subject to change without notice. Hewlett-Packard shall not be liable for errors contained herein or for incidential or consequential damages in connection with the furnishing, performance or use of this material. Furthermore, no endorsement or promotion of any product by Hewlett-Packard is implied by its inclusion in this publication.

HP1000 Users Group — Membership 1985/1986

Name: .....

Company: .....

Address: .....

.....

Phone: .....

Telex: .....

Subscription $12 enclosed: Renewal or New

Return to: Norm Kay
HP1000 Users Group
c/- CSIRO
P.O. Box 160
Clayton, 3168

Cheques should be made payable to 'HP1000 Users Group'

Safeguard your computer data

LESS THAN 5% DISTORTION

Arlec Line conditioners provide a constant 240V output despite wide variations in mains input voltage. They also have excellent noise reduction characteristics and low harmonic content in the output waveform and are therefore ideal for use with micro-computers.
They are designed for operation on 50 HZ only and provide stable 240V RMS sine wave output within close voltage limits. This performance is achieved by a new* core structure which produces a low cost design, low waveform distortion and very good input-output isolation to reduce electrical noise. An electrostatic shield is also incorporated for further noise reduction.
Models available for 250,500 and 1000 VA.
(*patent pending)

Features:
- Constant RMS voltage output
- Isolated output
- Rapid response to load and line changes
- Overload current limiting
- Overvoltage proof
- Static ferro-resonant operation
- No maintenance necessary
- Sine wave output
- 2 year guarantee

ARLEC

Vic. (03) 895 0222. **N.S.W.** (02) 789 6733.
Newcastle (049) 2 5896. **Wagga Wagga** (069) 21 2735.
Canberra (062) 80 5519. **Qld.** (07) 8521131. **Townsville** (077) 794 288
S.A. (08) 297 0766. **W.A.** (09) 445 3611. **N.T.** (089) 84 4227.
Launceston (003) 31 6533. **Hobart** (002) 34 2233

CMS 0498

At last.....full function wordprocessing

for HP1000 systems! Introducing.....

MINIWORD

The word processing system for <u>both</u> minis and micros, including :-

* The Integral
* The Portable
* HP150 Touchscreen
* HP1000
* HP9000
* HP3000
* IBM PC and compatibles

Now you can choose the solution that is best for you. You decide whether to operate PC or mini-based, or even operate PC-based with built-in links to your mini host!

Call us today! TUSC

Computer Systems
Tel: (03) 898 0636

QLD: call CES on (07) 356 8066
NSW: call IAS on (049) 581 589
WA : call COMSYS on (09) 381 7877

COMING EVENTS

11th November:	HP 1000 Introduction to Datacomm Course. HP Melbourne. HP 9000 Introduction to Datacomm Course. HP Melbourne.
18th November:	Getting Started on HP 150 Course. HP Melbourne.
19th November:	Wordstar on HP 150 Course. HP Melbourne.
20th November:	Lotus 123 on HP 150 Course. HP Melbourne.
26th November:	Combined HPDCUGV and HP 1000 U.G. Meeting at HP 4 pm. Managing Director of HP. Malcolm Kerr to speak.
16th December:	Getting Started on HP 150 Course. HP Melbourne.
17th December:	Wordstar on HP 150 Course. HP Melbourne.
18th December:	Lotus 123 on HP 150 Course. HP Melbourne.

SPECIFICATIONS FOR SUBMISSION OF ARTICLES AND ADVERTISEMENTS

All material for Crosstalk should be sent to one of the addresses listed below from where it will be forwarded to the co-ordinator for publication. Publication dates are subject to receipt of sufficient material. For specific details contact Glenda Patterson on (03) 895 2576.

ARTICLES: Articles should be typed with any diagrams and program listings in camera-ready form (Author's name, address and phone number should be included).

ADVERTISEMENTS: Display ads. should be in camera-ready artwork form. The printer may be instructed to layout ordinary typeface ads.

CURRENT ADVERTISING RATES:
Full page — $250
Half page — $125
Column/cm — $4

There is a 20% discount on these rates for regular advertisers. Classified ads. are free for user group members, and $10 each for non-members.

Advertisers will be billed upon receipt of ad. The user groups reserve the right to change rates, limit space availability and reject advertising which is deemed inappropriate.

ADDRESSES FOR SUBMISSION OF ARTICLES AND ADVERTISEMENTS:

HP Technical Computer Users Group, N.S.W.
Box 3060 GPO,
Sydney, 2001.
N.S.W.

Norm Kay,
HP1000 Users Group (Vic.)
C.S.I.R.O.
Box 160, Clayton, 3168, Vic.

H.P.D.C.U.G.V.
Chris Simpson,
Simpson Computer Services,
63 Hartington Street, Kew, Vic., 3101.

HP Desktop Users Group (N.S.W.)
Dr. R. W. Harris,
C/o C.S.I.R.O. Division of Mineral Physics,
PMB 7, Sutherland, N.S.W. 2232.

FOR SALE

HP 1000 E Minicomputer

complete with 2 Mbyte of memory, 3x8 channel Mux boards, fast fortran RTE 6 V/M, Image, DGL/AGP, Fortran 77 etc.

PLUS:
HP 7970 B tape drive
HP 7912 disc drive
HP 2645 A terminal
HP 2647 A terminals (2off)
HP 2648 A terminal
HP 2608 A line printer
PLUS OTHER ITEMS.

AVAILABLE JANUARY 1986

Very interested in moving as one package, however will discuss separate items.

Please contact —
MIKE CLARKE ON 4207-233

FOR SALE

2 Complete 9830 Systems

including Mass Memories, Tele Printers and Spares

FULLY MAINTAINED

Enquiries via Chris Simpson
Phone: (03) 859 6643

FOR SALE

HP7970B MAG TAPE SYSTEM

including: Tape Drive, HP13181 controller, cables, mounted in HP Bay
HP2108A computer with 32k Words
Visual 50 terminal
Visual 550 graphic terminal

WANTED TO BUY

HP2112 MX power supply or HP2112 computer.
Aust-Am Graphic Services
(054) 43 0165

CLASSIFIED ADVERTISEMENTS

FOR SALE

TWO HP 9111A GRAPHICS TABLETS (HP-1B)

Add interactive graphics control (cursor moving and picking) and a digitising capability to your system.

Purchased in 1983. Maintained in excellent condition since new by HP under current service contract.

AT $2050 SAVE MORE THAN 50% OFF THE NEW PRICE.

Telephone David Cohn at Wilson Electric Transformers.
(03) 560 0411

FOR SALE

2 x HP 150 B TOUCHSCREEN PERSONAL COMPUTERS (45660BK)
with 15 MB Winchester Disc with integral double-sided 3½ inch diskette. **$7,500 each**

3 x HP 150 B TOUCHSCREEN PERSONAL COMPUTERS (45650BK)
with dual double-sided 3½ inch diskettes.
$5,250 each

Comprehensive software included in above prices.
Equipment bought new January/March 1985.
Contact: A. ANTONIOU (03) 387 2922
Business Hours

FOR SALE

1 9825 A based Audio Production Testing System

The system includes —
3 6269B Power Supplies
1 9825 A 24K
1 9885 Disc Drive
1 9878A I/O Expander
1 6940B Multiprogrammer
1 3455A Digital Voltmeter
1 5300B Measuring System
1 2131A B & K Digital Frequency Analyser

Software is available to connect the system to run as a horn and audio production testing system.
System components can be sold separately
Telephone No. for enquiries (03) 772 7968
Ask for David Butler

FOR SALE
OR HIRE

9800 Series Computers, Peripherals & Accessories

— 9835, 9831, 9825, etc.
— Disc-drives, Printers, etc.
— HP Software PAC's
— HP Manuals and Binders
— HP Course folders
— Used diskettes (for 9885)
— Pertec Tape-drive
— 9876A fast Thermal Line-printer (new)
— 'Greyhound' controller for 7906 (new)
— 98032A Interfaces (new)
— Computer parts

MANY CONTACTS also wish to buy/sell all kinds of desktop computer equipment.

CHRIS SIMPSON — (03) 859 6643