PRENTICE COMPUTER CENTRE

UNIVERSITY OF QUEENSLAND, ST. LUCIA, QUEENSLAND, AUSTRALIA. 4067.

MINI-MICRO NEWSLETTER

No. 10 10-November-80

CONTENTS

Authorized by the Director of the Computer Centre

1.0 EDITORIAL

I must apologize to David Yates of Botany for not including his article in the last newsletter - it is now included in this issue.

Ross Gayler of Psychology made two suggestions regarding this newsletter.

1. Could the Centre publish a list of all Minis and Micros in Departments giving a brief outline of hardware, application and contact and,

2. Publish the results of hardware evaluations and if time permits invite people to displays of equipment.

Regarding 1 we are currently putting all our records in this area into a data base (using 1022). When this operation is complete and information verified I had intended to publish such a list. We usually don't publish the reasons for selecting a particular item of hardware. We usually evaluate in detail equipmment required for a specific purpose. The results of such evaluations for various reasons are often confidential to the University. In any case the results of such evaluations usually become well known. I think we should be "advertising" better the various packages, systems and peripherals we recommend and the purposes for which they are intended. Hopefully, we can do this through these newsletters.

Time does not permit us to look into a great variety of equipment which may never be used. However, we do try to keep abreast of the market place and we are always willing to discuss requirements.

Graham Rees
extension 3288

2.0 PURCHASING EQUIPMENT THROUGH THE CENTRE

The Centre does not charge any type of service fee for processing orders for purchasing equipment through the Centre. The Centre has made arrangements with a number of manufacturers for discounts and other services and such savings or services (e.g. warranty) are passed directly to the Departments concerned including credit (or debit) adjustments on exchange rates.

Currently there are two charges made by the Centre in this area:

1. There is a $150 one time line-connection fee for any line connected to the communications network and

2. There is a 2% installation fee charge for add-on equipment which Departments require the Centre to install. (There is no installation fee for the original system).

Director
extension 2189

3.0 TELECOM AUSTRALIA CHARGES

As from 1/9/80 the Telecom Australia charges for Datel Private Lines are as follows:

3.1 Annual Line Access Fees (includes each modem and lines to the local exchange).

Speed of modems	on campus	off campus
300 bits per second	$144.00	$240.00
1200 bits per second	432.00	720.00
2400 bits per second	672.00	1120.00
4800 bits per second	792.00	1320.00
9600 bits per second	1440.00	2400.00

3.2 Installation Fees (one time charge only).

Speed of Modem	on campus	off campus
300 bits per second	168.00	280.00
1200 bits per second	192.00	320.00
2400 bits per second	240.00	400.00

4800 bits per second	276.00	460.00
9600 bits per second	360.00	600.00

The costs shown cover both instation and outstation sites.

D. Anderson
extension 3166

4.0 TERMINAL MAINTENANCE CHARGE RATES

The following charge rates will apply for maintenance of terminals from 1 January 1981 for the University of Queensland and Griffith University. This service is not available to external clients.

LA120	$260 p.a.
LA36 Decwriter II	$200 p.a.
TTY43	$180 p.a.
ADM3A	$120 p.a.
T1733 ASR or KSR	$240 p.a.
T1735	$280 p.a.
GE Terminet	$280 p.a.
VT55	$300 p.a.
Teleray 1061	$200 p.a.
Diablo 1620*	$200 p.a.
ADM31	$200 p.a.
VS200	$150 p.a.
VT100	$200 p.a.
VTE-5	$200 p.a.
VIS100	$200 p.a.

* The Diablo 1620 are micro processor based terminals for which we do not have spare modules or software listings to enable certain repairs. The $200 charge will cover all labour for preventive and remedial maintenance and up to $20 in parts per service. More expensive parts from, or module 'swaps' with, the Australian Diablo agents will be billed to the customer at cost. The cost of an average module swap would be about $250.

Clients requesting new or changed maintenance arrangements are asked to write to G. Rees, Specialist Systems Engineer at the Prentice Computer Centre.

G. Rees
extension 3288

5.0 RECOMMENDED TERMINALS

The current recommended terminals are as follows:

(Note: Maintenance, Telecom modem and line rental and installation charges appear elsewhere in this newsletter and also in the Computer Centre newsletter N256 of 13 October 1980)

Hardcopy

TTY43 30 cps 5 x 7 matrix print $1208
draft copy only

- paper (from UQ stores, code number 17663)
- ribbon (from UQ stores, code number 17671)

DIABLO 1650 30 cps impact printer $3600
word processing quality

- including tractor
- paper continuous ISX11
  line printer quality (from UQ store, code number 17647)
- paper continuous 1109/1 70 GSM
  bond quality (Moore Paragonand Computer Resources)
  NOTE: This is not A4 size paper.
- ribbons (Remington, Digital Equipment Aust., Mitsui)

* see VIS200 plus Sanders Media 12/7 package for alternative.

Video Terminals

ADM3A

- dumb terminal 24 lines x 80 characters UC/LC $1160
- retrographics option $1250

  Recommended only if the retrographics option is required to give TEKTRONICS 4010 graphics display capability.

VIS200

- 24 lines of 80 characters UC/LC $1130

  This price is duty free and applicable where the primary use is in teaching and/or research. Other applications will attract 24% duty.

  This terminal contains a Z80 microprocessor and is being

modified to support special video features on the PDP10's and a printer (e.g. TTY43 or Sander's Media 12/7) attached to the VIS200 for hardcopy. Document preparation and editing can be performed on the screen with draft or final copy printed on the Sander's Media 12/7.

The Centre normally has 2 or 3 of these terminals in stock available for immediate delivery.

*VT100

- DEC Video Terminal — approx $1900

*VIS100

- Visual Display emulation of DEC VT100 — $1500

* Duty exempt prices. The Centre has applied for duty exemption where the teminals are to be used with specific software packages which require VT100 emulation. Other applications and uses of these terminals will attract 24% duty.

The Centre currently has 2 of VIS100 in stock for immediate delivery.

Printers

LA120

- DEC 5 x 7 matrix 120 cps draft copy only — $2760
- This device requires a modem isolator to connect to a Telecom Modem — $300
- Paper, continuous 15 x 11 line printer (from UQ stores, code number 17647)
- Ribbons (from UQ stores, code number 17655)

Sanders Media 12/7 (with serial interface) — $3800

- word processing quality print see sample print overleaf
- cut sheet feeder (hopper holds about 200 sheets A4 paper and works well) — $675
- forms tractor (any continuous stationery) — $446

1. This printer will be supplied with certain standard fonts - enquire at Centre for details. Other fonts are available POA.

2. The cut sheet feeder is the only means of printing A4 size sheets. A4 is not available in continuous stationery.

New Products

We are currently looking at a small medium speed printer (100 to 200 cps) in the price range $1000 to $1500 to use in conjunction with the VIS200, Apple and Sorcerers. It would be desirable to have a graphics capability and be able to be interfaced to a parallel port or a serial line. Any suggestion would be welcome.

G. Rees
extension 3288

6.0 SORCERER MICROCOMPUTER

Subsequent to the publication of prices for the Sorcerer II in the previous newsletter, the Centre has negotiated substantial discounts with Dick Smith Electronics Pty Ltd, the Australian Agents.

The following prices now apply:

X3001	Sorcerer II, 16K RAM	$970
X1196	Video Monitor	$97.50
X3110	Cables	$22.50
X3095	EPROM PAK	$52.17
X3090	Development PAK	$97.04
	Superscope Cassette Recorder	$50.00
	U of Q Monitor	$100
	U of Q Intelligent Terminal PAK	$120

Other items POA.

Freight and insurance will be billed at cost.

The Centre is currently holding three Sorcerers in stock for immediate delivery.

G. Rees
extension 3288

7.0 A MICROCOMPUTER IN THE BOTANY DEPARTMENT

The Botany Department uses a North Star Horizon microcomputer for a range of tasks. The Horizon is a Z80A based, S-100 bus machine. It presently has 56K of 200ns RAM, two double and two quad capacity 5 and a quarter inch disk drives. These give just over 1M bytes storage capacity. Software supplied with the machine includes a 4K operating system (DOS), a monitor in several versions which replaces front panel functions, a number of utility routines (Copy Disk, Copy File, Initialize Disk etc.) and a 12K BASIC interpreter. I consider the BASIC excellent. The DOS is rather primitive. Although CP/M is available (and we have it) it will not allow the use of North Star BASIC nor much of the other software available using the DOS. The manufacturer also sells UCSD pascal for the same machine. Fortran, COBOL and a wide range of other software is also available (some of which requires CP/M). We have a good program development system and a compiler for portions of BASIC programs as well as a number of commercially available utility programs. Ninety percent of programming is performed in BASIC.

Communication with the Horizon is via a Diablo 1620 keyboard (terminal) and the video display is an ETI 640 64 x 16 memory mapped board. In addition there is a 256 x 256 graphics display, a hardware floating point board (markedly speeds basic arithmetic) and analog input boards. A recent acquisition is a 12 bit A/D board which will (theoretically) provide a resolution of 2.4 uV in the input signal. We have a number of other more specialised S-100 boards including a video camera interface.

I consider the Horizon is an excellent machine both in its performance and reliability. It is also good value for money.

The use of the machine has been shared between teaching and research. A major simulation was written to aid in third year practical classes. In addition, the machine is used for routine repetitive calculations in class.

The prime research use is as a real time data acquisition and processing tool. Until the 12 bit A/D board arrived it was linked via a parallel port to a 20 channel Solartron Datalogger. The combined system was run from a 240 volt generator and housed in a 4WD vehicle. This combination has allowed the measurement of the components of the radiation balance of plant communities on sand dunes on North Stradbroke Island and other sites. The instrument readings sampled by the data logger are processed by the Horizon with some statistical analysis and then stored on diskette for later processing in the laboratory. Operation of the system currently depends on the fuel tank size of the generator!

Work is progressing on the use of a video camera interfaced to the Horizon to allow the calculation of the area of plant leaves. The video image is digitized and stored in RAM which is mapped onto a video monitor. Machine language software then calculates the "area" of the leaves represented on the screen.

The initial equipment was purchased partly from funds provided through the computer Centre Advisory Committee several years ago. Without in any way criticising that Committee it should be noted that the relatively small level of funds available to purchase this type of equipment generally necessitates the purchase of less well known and supported machines. This has produced a number of problems in respect to the Botany Department involving both cost and inconvenience. Although I consider the system we have as being very versatile and useful, it has taken a great deal of blood, sweat, tears - and solder too - to get it to its present state. I would venture to suggest the total cost of this "cheaper" system to the University has been well in excess of the cost of an equally useful but well known and supported brand of mini (or micro?). Certainly there is a case to be made for some form of standardization in the areas of mini and micros within the University.

In writing these notes, I hope I can encourage other more or less isolated microcomputer users to make <u>their</u> contribution to this newsletter and thus become less isolated. I think it would be most useful to know who is doing what with micros within the University.

David Yates
Botany Department
extension 2070

For anyone interested in the North Star Horizon, Anderson Digital Equipment have recently become the Australian distributors.

Editor

8.0 EVALUATION AND SUPPORT OF NON-DEC HARDWARE

The Computer Centre currently evaluates and supports hardware such as printers and terminals which are not directly competitive with DEC peripherals. As there are now many devices available which emulate DEC products it would be advantageous to PDP11 users if direct replacements of DEC peripherals (especially disk drives) were also evaluated and supported if found to be satisfactory.

The advantage of using emulators based on newer technology would be reduced cost to purchase and maintain the devices. Most DEC products are more expensive than their equivalents. There may be quite valid reasons for this but it is difficult not to be suspicious when the price of a DZ11 distribution panel (consisting of a simple printed circuit board, sixteen 25 pin connectors, a metal mounting plate and a plastic cover) is around $500.

The emulators, being more recent devices, use more modern technology than their DEC equivalents. This results in them being smaller so that they cost less for their share of backplane, cabinet and power supply. There are also fewer components to fail so they should be more reliable. These newer devices also often include self-test features missing from the DEC hardware. This should lead to them being easier to repair.

A worrying feature of the design of the latest DEC peripherals is that they do not appear to take full advantage of the sophistication possible with modern components. For example, the RL01 disk drive is less intelligent and more difficult to drive than the comparatively ancient RK05. This sort of thing doesn't increase one's faith in DEC's design skills.

Emulators are now available for DEC disk and tape drives as well as most communications products. Obviously there would be some cost to the Computer Centre to evaluate these devices. But the reduced purchase and maintenance costs should result in an overall saving of money for the University.

Ross Gayler
Psychology Department
extension 3226

9.0 COMPUTER CENTRE REPLY TO "EVALUATION AND SUPPORT OF NON-DEC HARDWARE"

The above letter from Ross Gayler touches quite a few points which I am glad of having the opportunity to discuss.

Contrary to Ross's opening remarks, the Centre does in fact purchase and recommend quite a few products which are directly competitive with DEC (floppy discs, memory, DZ11, terminals, printers and card readers to name a few). There are many factors including the direct costs which influence the Centre to purchase or recommend any item of equipment for example:

- purchase price
- spare parts cost and availability
- reliability
- maintainability
- expected life
- local product support
- delivery times

At times some factors conflict and some can only be qualitatively evaluated - there is always a risk. The Centre operates as a third party maintenance organisation where our clients demand a certain grade of service hence, reliability and maintainability are weighty factors. Also the University is entitled to "value" for money be it based on cost, availability, service provided etc.

At the risk of having things dropped on me from a great height, I think the selection process for computing equipment in many departments has a different bias. For example, after initial purchase there is no requirement for a department to show that any equipment is being used for the purpose intended or utilised to some satisfactory level or is in fact operational. I am not saying that this is good or bad (after all this is a University and not all research is productive), but pointing out the difference in the evaluation process.

Of course, there are times when we have no influence at all in the selection process e.g. Apples and Sorcerers.

To some extent DEC are in the same boat as the Centre, that is, they have to wear what they sell. While I don't understand the rationale behind some DEC decisions and I would agree that some of their design is not so elegant, much of their equipment is exceptionally good. The amount of DEC equipment on campus would

exceed $3m and I think has provided excellent service in the main. Therefore, it is fairly difficult to knock their product.

The other problems in evaluating new or alternative products are money, time and staff. Usually there needs to be specific requirement for a number of clients before we would begin a detailed investigation. However, we do try to keep abreast of the latest developments.

A few examples may help clarify the situation further. We now buy DZ11's from Plessey at a slightly cheaper (10%) price but much better delivery. Add in memory for PDP11's has been purchased in bulk at considerable savings. DSD Floppy Disc Drives were originally purchased because of improved delivery and cheaper price - we would not change back to DEC at this stage because of spare parts and training.

Larger disc drives present a slightly different picture. While a department may purchase a new disc drive for $10,000 (with no spares), which costs $15,000 from DEC, the Computer Centre cannot. We need about 3 to 5 such units to make it economical to purchase spares (from Capital funds which requires various approvals from outside the Centre) and training (from staff resources we don't always have available immediately).

In summary, I agree that there are a number of worthwhile products on the market which could be used to advantage within the University which we do not have the time to evaluate. Our aim is to maximise in some way the benefits to the University of the resources available. I appreciate Ross's comments since not many people are moved to put pen to paper. Comments from others would be welcome - particularly on any equipment they have installed either successfully or not, which is not currently supported by the Centre.

G. Rees
extension 3288

10.0 DECNET FOR RT-11

Software is now available for RT-11 to provide low cost file transfers between the DEC1090 and a PDP-11 running RT-11, and to allow virtual terminal access to the University's computing network in a manner similar to RSX-11M operating systems.

Those system managers interested in connection of their system to the network can contact Bryan Claire on ext. 2837.

Bryan Claire
extension 2837

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