PRENTICE COMPUTER CENTRE

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

NEWSLETTER

N-318   March 1988

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Authorized by the Director of the Computer Centre

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Manager, Applications Development — *Ms Noela Meier*	4281
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External users may dial direct by prefixing these extension numbers with 275.

Director, Centre for Information Technology — *Mr Mike Steel*	7125
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† After 4.45 pm and at weekends, X3938 is serviced by a message recorder. Users wishing to report PC, terminal, communications and other hardware faults can leave their name, number and fault details.

1. Newsletter Summary

- The IBM 3083E has been upgraded to a 3081–KX6 processor with 64 Mbytes of memory, and a VAX 8550 has been installed to replace the KL10 system and to provide essential backup to the Administration's VAX 8650 system. Such investments are expected to provide a stable central computing environment until 1992 as there are other planned demands on central equipment funds. Approval has also been given to support the UNIX based TCP/IP data communications protocols. This will enable users to consider a wider range of computing equipment capable of network access.

- The IBM pricing will remain unchanged providing substantially increased productivity and rapid response. The pricing for the VAX 8550 will be lower than the KL10 (approximately the same as for the VAX 11/780 but without the punitive logged out quota charge). The incremental cost for on-line storage decreases as storage requirements increase.

- Training courses will be available for new users of the IBM and VAX systems.

- Information is provided on methods of improving performance for users of the SAS statistical programmes on the IBM system.

- A new version of the Numerical Algorithms Group (NAG) library of subroutines has been installed on the UQVAX (VAX 8550) and the IBM 3081.

- The functions of the HELP DESK are explained and users are invited to make use of it.

- As part of the replacement of the KL10 system, the DN87S terminal interface computers will be replaced by DECserver 500 systems. A MicroVAX II system has been installed to off-load some communications facilities from the VAX 11/780 system and allow higher speed connections.

- A data communications link has been established with QIT supporting remote login, file transfer and electronic mail.

- VAX/VMS X.25 (communications) software on the VAX 8550 has been upgraded to provide enhanced facilities for communications to VAX/VMS systems connected to public data networks in Australia and overseas.

- The auto-answer dial up facilities have been upgraded.

- Parity error checking is explained with particular reference to setting parity on your terminal or personal computer.

- The Distributed Computing Support group is available for advice on hardware and software for personal computers and workstations. A Sun Workstation connected to ETHERNET is available for demonstration. A number of supplier supported seminars are planned and some lunchtime sessions on building up your own PC will be organised.

- Those contemplating Desktop Publishing should consult the PCC support group to avoid costly errors in the establishment of such systems. Both technical and creative support is provided.

- Following liaison between TEDI and the PCC, an optical mark reader (OMR) has been installed. The primary use of the OMR is to record the results of multiple choice tests and surveys.

- A list of short courses being offered by the Centre to staff and postgraduate students at no charge is included.

- Some departments have advertised equipment for sale at the conclusion of the newsletter.

Director
ext. 2189

2. PCC Computer Developments

Following a review of user needs, approval was given for the purchase of a DEC VAX 8550 to replace the KL10 system and provide essential backup for the Administration DEC 8650 system. The IBM 3083E system has also been upgraded to an IBM 3081–KX6 processor with 64 Mbytes of memory to provide additional computing power for research, particularly for large compute intensive jobs and extensive scientific data bases.

It should be noted that these investments are expected to provide a stable central computing environment until 1992. During the period until then, there will be other demands on central funds for a major upgrade of the Library computing support system and for the replacement of the University telephone exchange by a state-of-the-art digital PABX system providing facilities for an Integrated Services Digital Network (ISDN) on campus.

Approval was also given for the Prentice Computer Centre to support the TCP/IP data communications protocols. Through appropriate gateway software, the IBM 3081–KX6 and DEC systems will be available to UNIX systems communicating via TCP/IP protocols. The Australian Computer Science Network (ACSNET) now widely used for electronic mail and news distribution will be supported by the Centre. Additionally, in response to user demand, the Carnegie-Mellon University file distribution system ('Andrew') will be implemented during the first half of the year. The VAX 11/780 will be retained as a central UNIX host on the network.

A major priority of the Prentice Computer Centre will be to further improve the data communications network. Apart from technical improvements, special emphasis will be given to ease of use, training and documentation associated with the range of network facilities.

Director
ext. 2189

3. IBM 3081-KX6

On the weekend of January 30/31, 1988 the IBM-3083E24 was upgraded to an IBM-3081-KX6.

While this was basically a processor and memory upgrade it involved the replacement of a number of modules including the 3083 processor, the 3089 power unit, the 3082 processor controller and the 3087 coolant distributor. Like the 3083, the 3081 is densely packed in Thermal Conduction Modules (TCMs) which are directly cooled by chilled water (rather than conventional air-conditioning).

The system comes with 64 MBytes of memory and is rated by IBM at approximately four times the power of the 3083. Disk capacity is unchanged but disk activity should be reduced, particularly paging, as a consequence of the significantly expanded memory. Clearly, performance of the system will be significantly improved.

3.1 IBM 3081 Pricing Policy

Prices for IBM kits, determined using 3083 benchmarks, will not be altered as a result of the acquisition of the IBM-3081.

All users should notice a reduction in job elapsed time as a consequence of the increased power of the system. Additionally, restricted kit users have received an effective price reduction because the system will now have increased throughput per unit of time. The throughput for a given CPU limit (CPU mins/month) has increased because of the increased power of the system. This increased throughput has been passed on to users at no additional charge.

3.2 New IBM VM/CMS courses

Two new IBM VM/CMS courses have been introduced this semester. A brief description follows:

PDP-10 (KL) to IBM-3081 VM/CMS conversion.

This course is specifically for existing PDP-10 users who wish to migrate their application from the ageing PDP-10 to the new IBM-3081. (12 hours)

Further features of the VM/CMS.

This course is directed at existing users who have previously attended the introductory course or conversion course and who wish to learn some more advanced features of VM/CMS. Topics to be covered include more advanced features of general system commands and utilities. (6 hours)

Dates and times for all courses are provided elsewhere in this newsletter.

Geoffrey Dengate
ext. 3944

4. DEC VAX 8550

During December and January past, the VAX-11/780 was replaced by a VAX-8550 as the UQVAX host running VMS.

The rationale behind this upgrade was:

- to provide capacity for existing applications and support systems to be converted from the PDP-10 (UQKL10).

- to provide essential backup to the VAX-8650 administration computer (UQADM).

- to provide capacity for growth in central computer use.

- through the retention of the VAX-11/780 provide a centrally supported UNIX host.

The VAX-8550 processor is rated at approximately 6 MIPS (Million of Instructions Per Second) and comes with 32Mbytes of memory and a floating-point accelerator. The system comes with a second HSC-50 Intelligent I/O Server, a TA81 tape drive (1600/6250 bpi) and 1,824 Mbytes of disk storage. Physically, there are 4 x RA81 disk drives of 456 MB each. All disk storage is permanently on-line, there are NO removable disk packs on the system.

The 600 lpm printer previously attached to the 11/780 has been retained as the printer for this system. The Centre is currently in the final stages of selecting a heavy duty, high quality laser printer that will be connected to the network and be an alternative printer for this and other systems.

Unlike the 11/780 there are no direct lines from the MICOM circuit switch into the VAX-8550. Terminals connected to the MICOM access the 8550 via a new DECserver 500 terminal server and Ethernet. An article describing this in detail appears elsewhere in this newsletter.

The cost of processing a job on the new 8550 should be approximately the same as on the 11/780. On-line disk storage charges are the same for the first 5000 blocks of storage, however significant discounts are available for large (>5000 blocks) disk storage users.

Specific problems in using this system should be directed to the HELP DESK (x3025). General comments, criticism or questions may be directed to me on ext. 3944.

Geoffrey Dengate
ext. 3944

4.1 VAX 8550 disk storage charges

The new VAX-8550 does not have any removable pack disk drives and hence all disk storage on UQVAX (and indeed UQADM) is permanently on-line. A sliding scale of charges has been introduced which significantly reduces the incremental cost for on-line storage as disk storage requirements increase.

First 5,000 blocks (0-5,000)	22.3 cents/1000 blocks per day
Next 5,000 blocks (5,001-10,000)	16.7 cents/1000 blocks per day
Next 40,000 blocks (10,001-50,000)	11.1 cents/1000 blocks per day
Any additional blocks (50,001 +)	5.6 cents/1000 blocks per day

The concept of a separate 'logged-out' quota has also been dispensed with. There is now only a permanent quota and an overdraw limit. The overdraw limit allows a job that has reached the permanent quota to continue writing to currently open files but not to open any new files. Once the overdraw limit is reached the job is aborted. The permanent quota can be changed on request however it is advisable to keep it at a reasonable level to encourage economy; it might even save you money by stopping a runaway job.

Geoffrey Dengate
ext. 3944

4.2 New VAX/VMS courses

Two new VAX/VMS courses have been introduced this semester. A brief description follows:

PDP-10 (KL) to VAX/VMS Conversion.

This course is specifically for existing PDP-10 users who wish to migrate their applications from the ageing PDP-10 to the new VAX-8550. (9 hours)

Introduction to RDB/DATATRIEVE database system.

RDB is a relational data-base system now available under VAX/VMS. It provides a mechanism whereby data may be stored and subsequently retrieved on a selective basis. (15 hours)

Barry Maher (ext. 3021) can provide more detailed information on the topics covered in these courses.

Dates and times for all courses are provided elsewhere in this newsletter.

Geoffrey Dengate
ext. 3944

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5. Large Systems Software

5.1 SAS Performance Issues On UQVM

The SAS user base on UQVM has been growing steadily. At the same time SAS users have become more sophisticated in its use and more demanding in what they expect from it. Because of the special problems some clients have had regarding SAS performance on UQVM, Prentice Computer Centre staff have acquired a deeper knowledge of the issues which affect SAS performance. Substantial improvements to SAS performance have been achieved. The changes and recommendations are outlined below :—

a. Use only the SAS FORMATs required for the job to reduce the number of I/O operations required. If possible assign the same FORMAT to numerous variables.

   In one case investigated, a simple SAS job required about 17,000 I/O operations. By only including the FORMATs required I/O was reduced to 1,100 and the CPU time was reduced to one-sixth of the original.

b. Use the SAS LENGTH statement to reduce the volume of data stored.

   By specifying the LENGTH ATTRIBute for your SAS variables a significant decrease in both DISK and MEMORY needs can result. Also I/O improvements will occur because more variables can be stored per block on disk. For variables with small integer ranges the number of bytes used can be reduced from the default 8 to as little as 2 bytes.

   More information on this topic is available by entering **INFO SASOPT** and reading the last two screens.

c. New command **SASOPT** reduces SAS I/O and memory requirements.

   This SAS OPTimisation EXEC invokes SAS with some options automatically applied. These options reduce some functionality of SAS but increase its performance. A reduction, by 300k to 450k, in memory requirements and an unqualified reduction in I/O is achieved by using 'SASOPT'.

   More information on using the **SASOPT** command is available by entering **INFO SASOPT**.

Information contained in this article is available on line on UQVM by entering **INFO SASPERF**.

The above improvements have been made over a period of six months due to a close liaison with a few SAS users who were experiencing performance problems. The PCC HELP DESK is the first place where such liaison takes place. Clients are invited to make use of the HELP DESK not only in cases where it doesn't work, but also where it works but frustration in how it works is experienced.

Wilfred Brimblecombe
ext. 4287

5.2 NAG for UQVAX

A new version of NAG (MARK 12) has been installed on the UQVAX (VAX 8550).

The Numerical Algorithms Group (NAG) library of subroutines is provided to solve many numerical computing problems. The library contains hundreds of routines, covering a wide spectrum of mathematics including complex arithmetic differential equations, integral equations, curve fitting, matrix operations, statistics and operations research; this edition adds 175 new routines.

The simplest technique for linking programs that call NAG routines is to define user libraries so that LINK searches the NAG library automatically. If you are a regular user of NAG you should add the following two lines to your *LOGIN.COM* or some other command file.

$ DEFINE LNK$LIBRARY SYS$STA:NAG$IMPURE

$ DEFINE LNK$LIBRARY__1 SYS$STA:NAG$SHARE

A class supervisor can add /GROUP to the above definitions and define them for the whole class (VMS UIC group).

With these user libraries defined, the link command is simply:

$ LINK program

For a complete list of all the routines available, print the file

SYS$DOC:NAG__SUMMARY.DOC.

If you are ever looking for a particular routine, a simple way of checking the NAG library is to use the SEARCH command.

e.g., **SEARCH SYS$DOC:NAG__SUMMARY EIGEN**

For on-line help type: **HELP NAG**, this lists the range of mathematical functions covered, gives details of changes since the last version, shows how to link to the library and mentions the documentation available. The HELP DESK holds a NAG Fortran Mini Manual to help you select the correct routines and direct you to more complete *NAG Fortran Library Manual*.

The old version of NAG (MARK 11) will be phased out early in 1988. If there are any problems with this please contact the HELP DESK (ext. 3025).

Ian Burgess
ext. 4074

5.3 NAG for UQVM

NAG was also upgraded from Mark 11 to Mark 12 on UQVM on February 15, 1988. Mark 12 provides 175 new primary ('user-callable') routines and withdraws twelve others. Notice of routines withdrawn was given when NAG Mark 11 was released. More information is available on-line by entering:

INFO NAG   General information on NAG.

INFO NAGMK12   Info on withdrawn routines and their replacements.

Information is also available in the document "FORTRAN MARK 12 NEWS" in the Library Manual. It lists the routines in question and provides a list of routines scheduled for withdrawal at Mark 13 or later. The NAG Library Manual and other NAG manuals are available for perusal from the HELP DESK. (ext. 3025).

Wilfred Brimblecombe
ext. 4287

6. Operations

6.1 Help us make the HELP DESK work

The HELP DESK is the first point of contact for users and potential users with problems to do with the Centre or the central computer facilities. Contact with the HELP DESK can be in person or by telephoning 377 3025 during the day (8:30am to 4:30 pm) or by electronic mail to CCHELP on the VAX, IBM or KL systems.

While we do not promise to be able to solve every problem at the HELP DESK, it is the mechanism for bringing your questions to the attention of the most suitable person at the Centre. Peter Casson, who is currently manning the HELP DESK, has been an Operator for more than eight years and has therefore seen many of the problems that arise for users. He has also been responsible for performing tape conversions and other small jobs for clients and is thus able to give the right advice if you are looking at sending data to (or receiving data from) another site.

If you have a problem which Peter can't answer immediately, he is required to complete a Problem Specification form which is forwarded to the appropriate person for attention. Peter is responsible for chasing up these problem specifications until they are answered and then contacting the user with the solution.

The HELP DESK also takes bookings for the Apple LaserWriter service and provides operational help for that service.

It is the aim of the Centre to provide the best possible service on the HELP DESK and any feedback from clients is appreciated. Brickbats should be directed to myself on 377 3471, bouquets can go to either Peter or myself.

The HELP DESK is located on Level Two of the Hawken Building in the Batch Station area of the Centre and is available to all staff, post-graduate students, clients and IBM cash-kit students. Other undergraduate students are expected to seek help from their academic supervisor.

Ian Armstrong
ext. 3471

7. Engineering and Communications Services

7.1 Network changes

Since the last newsletter was published there have been some changes to the network configuration. A DECserver500 has been installed and a new micro VAX II named POSSUM has been installed. The purpose of these systems will be described in turn.

7.1.1 The DECserver500

The DECserver500 is a PDP-11 based system which performs similar functions to the DN87S front-end computers—that is it 'offloads' much of the terminal handling processing from the host computers. In particular it performs all the terminal handling functions for the new UQVAX which has no terminal interfaces at all. Unlike the DN87S computers which were 'tightly coupled' to the DECsystem10 computers via a DECsystem10 bus, the DECserver is 'loosely coupled' to its hosts via a high-speed local area network—the 10 million bits per second Ethernet. The DECserver is able to act as a terminal front-end to a number of host computers connected to the Ethernet. Each DECserver500 is capable of supporting 8 to 128 terminals (depending on terminal port characteristics).

The DECserver500 has a number of features that make it a more attractive machine to use and operate that the old DN87S machines were. It is far easier to configure for terminal parameters such as line speed, modem control, flow control etc. It has a much better user interface and is able to provide much more information to users about their terminal parameters.

Using the DECserver500

When initially installed, the DECserver500 provided only 16 terminal ports and these were configured to provide dedicated access to UQVAX and to make the DECserver500 invisible to the user. This was so that users could have immediate access to the new UQVAX without having to learn a new connection procedure. Since then the DECserver500 has been expanded to the maximum of 64 ports with

modem control. The new ports will provide access to DECserver500 features and users are urged to acquaint themselves of these new features.

The DECserver500 provides two host services to the MICOM. From the MICOM selecting host UQVAX will select a DECserver500 port that will provide a dedicated connection to UQVAX. If UQVAX is not operational the port will appear 'dead'.

From the MICOM selecting host DS500 will select a DECserver500 port that will provide access to all the DECserver500 features. There are more DS500 ports than UQVAX ports, and the UQVAX ports will in time be converted to DS500 ports, so users who have become accustomed to selecting host UQVAX should avail themselves of the transition period and learn how to use the DECserver500.

After selecting host DS500 the user should type two to three carriage returns with about a one second interval between each. This is to allow the DECserver500 to recognise the terminal operating speed ('autobauding'). Then the DECserver500 will prompt for username; Eg:

DECserver 500 Terminal Server V1.0 - LAT V5.1

Please type HELP if you need assistance

Enter username>

At this point, the user should type in a user name, Eg christian name and surname separated by a blank. The DECserver500 then indicates it is ready to accept a command by displaying the prompt:

Local>

The HELP command may be typed at this point, or some status seeking commands such as SHOW SERVICES which will display a list of host services available.

The SET HOST command may then be used to connect to a particular host service; for example:

Local> SET HOST UQVAX

Local -010- Session 1 to UQVAX established

Prentice Computer Centre VAX/VMS V4.5 (UQVAX::)

Username:

If the service requested is not available the DECserver500 will inform of this fact by a message such as:

Local -711- Service not known

The DECserver500 uses the 'DEC standard' line editing conventions: control-U rubs out the current line and <DEL> or <RUBOUT> deletes the rightmost character from the type-in.

The DECserver500 HELP facility provides very similar features to the VAX/VMS HELP facility.

7.1.2 POSSUM

The micro-VAX II named POSSUM has been added to the network to provide increased communications processing capacity and to offload some communications processing from UQVAX. In particular it allows higher speed connections and more connection for DECnet nodes and it offloads CSIRONET and X.25 processing from UQVAX.

<div align="right">

Arthur Hartwig
ext. 4079

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7.2 New communication facilities with QIT

A 9600 bits per second communications line has recently been installed between the University of Queensland and Queensland Institute of Technology. This line enables facilities such as remote login, file transfer and electronic mail to be provided between some systems at the two institutions.

University of Queensland users on the DECsystem10 and node UQVAX can transfer files to or from the QIT VAX cluster, send and receive electronic mail and login to the QIT VAX cluster. QIT users of the VAX cluster can in addition to the previously mentioned facilities LOGIN to any University of Queensland host connected to the University of Queensland MICOM Circuit switch.

QIT users wishing to make use of these facilities should consult with the QIT Computer Centre. The remainder of this article specifies how users of University of Queensland systems may use these facilities.

University of Queensland users wishing to use these facilities may obtain further information from the HELP DESK (extension 3025 or send electronic mail to CCHELP).

7.3 New communications facilities available on UQVAX

The VAX/VMS X.25 software has been installed on UQVAX providing a number of new facilities. Use of most of these facilities will incur a charge. At the time of writing the charge rates have not been determined but it is anticipated that the charge rates will be available from the HELP DESK by the time this newsletter is published.

The facilities are:

a. Electronic mail facilities to other VAX/VMS systems connected to public data networks (X.25) such as AUSTPAC in Australia, TELENET and TYMNET in the USA, PSS in the UK and so on. (A list of networks was published as article 4.3 in the September 1987 issue (N.315) of the newsletter.

b. Remote login facilities to a large number of sites connected to public data networks in many countries. These facilities provided are a superset of those available through the current AUSTPAC gateway. A particularly useful facility is the ability to record a session into a file.

c. Electronic mail and file transfer facilities to a number of Australian sites, all the New Zealand Universities and almost all the publicly funded academic and research institutions in the United Kingdom and Ireland.

d. For the more erudite users, programming interfaces to both X.25 packet level and X.29 virtual terminals. These interfaces can be used from VAX assembly language (MACRO-32) or any standard VMS high level language. These interfaces may be used by those wishing to implement their own special purpose facilities or communications protocols.

Further details on these facilities are available from the HELP DESK.

7.4 Auto-answer Modem Services.

The Auto Answer Modem Services to the Micom Circuit Switcher have been upgraded recently. The configuration is :

377 2922 V.22.bis modems. Order of speed search 2400bps then 1200bps. There are 7 lines in this service.

377 2977 V.21, V.23, V.22.bis modems. Order of speed search 300bps, 1200/75bps, 2400bps then 1200bps. There are 10 lines in this service.

377 2655 Not operational. These lines have been busied.

Please report any difficulties on the maintenance number. We are particularly interested in times when the all services are busy.

7.5 Parity issues

What is Parity?

Parity is an error-checking method which has been used in serial terminal to computer and computer to computer communications almost since the start of digital communications. One of the problems with communications over wire is that the information to be carried can become corrupted by noise caused by poor connections, power fluctuations, or just someone running over the wire with a vacuum cleaner. As if this weren't enough, since a computer sees bits as either 'on' or 'off', the communicating equipment cannot even tell whether data is corrupted or not. To combat this, parity was invented. In most terminal to computer communications, each character is encoded in a series of seven or eight bits. If, then, one more bit is added onto the end of each character, to make it now eight or nine bits long, and we further relate that bit to the makeup of the character, an error-checking system can be developed.

For example, suppose the encoding is ASCII, the code used by most terminals and microcomputers on this campus. There are 128 true ASCII characters, so all characters can be represented using 7 bits. However, if only seven bits are used, there is no way of detecting an error if a character represented by (e.g.) 1100101 were corrupted by a nearby lightning strike and became 1000101. Both combinations are valid. If, on the other hand, an eighth bit is added, and moreover added such that the number of ones is always even, the correct character will become 11001010, with the last bit being 0 to preserve even PARITY. This bit is called the parity bit. Now, the same lightning strike will change the character into 10001010, which has 3 ones, and is hence invalid. Using parity, any single-bit corruption can be detected.

The problems with parity, however, are manifold. First, double-bit errors are common enough to make parity checking insufficiently 'strong' for many applications. Second, there are many different ways of using parity. The above example used even parity, but odd parity works just as well. Other schemes use 8 bits and even or odd parity. Multiple parity bits have even been tried, in an attempt to make parity checking 'stronger'. The proliferation of parity schemes has confused the issue so much, that it has become, in many cases, more a hindrance than a help, and some manufacturers have abandoned parity. The trend seems to be for terminal lines to use 8 bits and no parity, and data communications links to use more sophisticated error checking and correction methods.

What Parity Should I Use?

The upshot of the parity story is that your terminal or PC communications program probably has a whole host of available parity settings, some of which work, and some of which don't. So, you ask, which ones should I use?

The answer to this question is, it depends. Probably the best one for general use is eight bits, no parity. This will work on all the Prentice Computer Centre machines except the UQKL10. If you use the UQKL10, 7 bits, even parity, with the parity checking in your terminal disabled, seems to work on all the PCC hosts. If you wish to use KERMIT on host UQVM, it appears that 7 bits, space parity is required to make things work in all cases.

In summary:

Use 8 bits, no parity unless your situation is one of the special cases below.

a. You are using the UQKL10 and you are NOT using a true VT100 terminal (i.e. you are using a personal computer terminal emulation package). In this case use 7 bits, even parity AND disable parity checking at your own terminal.

b. You are using KERMIT on host UQVM. Use 7 bits, space parity.

c. You are using the PCC Micom Circuit Switch to access machines at the Department of Computer Science. Use 7 bits, even parity AND disable parity checking at your own terminal.

Mark Williams
ext. 4079

8. Distributed Computing

8.1 The New Year in Distributed Computing

Our Editor is always calling for general 'fill-in' type items to mark some real or imagined watershed: this however is a useful item. So, please, as you compute your way into the Bi-centennial year, remember:

a. Back up your files!!! If you are in any doubt as to how this should be done see previous newsletters or telephone us on ext. 4018 and talk to Matt.

b. Ask us first! Buying, selling, moving up, changing gear, anything at all, phone ext. 4018 and just ask, we won't bite!

c. Above all USE your Support Group! We've got resources, people, know-how, equipment, and tried and tested procedures to do just about anything in Distributed Computing. Check with us first. It could save you $$$$$.

So there it is, the first item of the year, but seriously folks, please use your support group. If we don't know already we'll find out.

8.2 Sun Workstation

Distributed Computing has a Sun Workstation connected to Ethernet. Staff members interested in such a station and with applications to run, but who, through circumstance do not have access to a SUN; should contact me, with a view to their making use of the facility during its 'shakedown' period.

8.3 Supplier Supported Seminars

The first supplier supported seminar of the year is set down for 2.30pm on Thursday 25th March in Teaching Room 2 where the topic will be 'Advanced aspects of Microsoft Word'.

8.4 Build your own PC

If there is sufficient interest we are prepared to build up a PC from scratch using a Uni-X kitset. Say four one hour sessions on Wednesday lunchtimes. Interested in real 'hands on' computing? Telephone 377-4018.

A.J. Bird
ext. 3391

9. Applications Development

9.1 Desktop Publishing

Desktop Publishing (DTP) software has been described as the most 'glamorous' thing to happen to Personal Computers in the last couple of years. In 1986/87 quite a few departments got into the DTP act and bought Macs or MS-DOS PCs, and whatever else is needed to make one a 'Desktop Publisher'.

There are many who have truly turned the DTP tools into a windfall. For them, the new tasks inevitably created by DTP software are more efficient duplications of existing tasks. In some cases the tasks are entirely new but imply a benefit because the user is a true 'publisher' in some sense: departments setting their own journals and books, community-based services and groups, and so on.

When the dust settles, however, many others will find that DTP wasn't after all 'just what they needed'. The fact seems to be that in a not insignificant number of cases the overall effect is a diseconomy, because DTP adds whole tasks to the creative effort. In many cases these tasks are wholly unnecessary. Like a photocopier, where 'fakes' are produced, rather than 'copies', a DTP system creates the tendency to look after form rather than content. It is not unusual these days to see a simple office memo dazzling with fonts, sizes, frames and rules, and sometimes also with a little ugliness; this seems to be a waste of time, because DTP, contrary to popular belief, can be very time-consuming.

At PCC we are trying to develop support services for desktop publishers and we believe that we have accumulated a good core of experience; we would like to share it with the University community. For some time now we have been providing a monthly seminar on 'Overview of DTP ' which aims to set people in the right direction by presenting them the available options. Seminars will commence again on April 11 and anybody can participate in the normal manner. Contact PCC enquiries (ext. 3018) for more information.

As part of our increasing services to microcomputer users we can now provide complete support in Desktop Publishing from both the technical and creative points of view. This is translated into support for three packages (Ventura Publisher, Macintosh PageMaker and MS-DOS Microsoft Word), advice in hardware purchase and installation, and most importantly, our ability to develop styles for your publications together with the procedures to apply them in any of the above-mentioned environments.

We offer these services in the wider context of our text processing expertise which includes academic typesetting and text conversion for a wide range of applications.

Miguel Peirano
ext. 4169

9.2 Optical Mark Reader

The Prentice Computer Centre has recently installed a Kaiser OMR40 optical mark reader (OMR).

An OMR scans sheets detecting the absence or presence of marks in specified positions on those sheets, and creates a computer file based on the results of the sheets scanned. It is similar in principle to marked card readers.

The Kaiser OMR has an associated controlling program called OSKA which tells the OMR how to format its output file and what to put in the file for each of the marks detected (or, for that matter, not detected). Thus the same sheet of marked paper can produce different output records depending on the parameters supplied to the OSKA program.

All of which is nice, but what good is it?

The OMR's primary use is in the recording of results of multiple choice tests and surveys. Rather than have this data entered manually into a computer file, the OMR can read the answer sheets or response forms directly and then create a answer or response file according to the users' specifications.

Multiple Choice Tests

Those Departments which use multiple choice tests as part of their assessment programs will be able to purchase standard response forms from the Computer Centre. These forms have provision for users to record their name, student number, subject code, and A through E responses for up to 120 questions. Test forms are being printed now, and when tests are completed satisfactorily, the forms will be stocked at the Batch Station for sale to clients.

Forms Design Service

For users whose needs are not met by the standard response forms, the Computer Centre provides a forms design service so that response or survey forms can be constructed in such a way as to take best advantage of the OMR.

Response boxes must be positioned accurately on response forms if they are to be read consistently. Similarly there is a limited number of 'optically transparent' colours that can be used when printing these forms. All forms used on the OMR must meet the positioning and colour specifications.

The Computer Centre can arrange for the design and printing of forms that meet these specifications.

Analysis of Data Read by the OMR

For survey work, analysis of responses can be completed by one of the many statistical packages available on the Computer Centre's mainframe computers. Alternatively the Centre can transfer the raw data file created by the OMR to diskette for analysis by clients own software.

Shortly, the Computer Centre will begin programming of a comprehensive multiple choice test marking and analysis program similar to, but far more extensive than, the old EVAL software. Enquiries regarding the use of the OMR and related services provided by the Computer Centre can be directed to Richard Armstrong on ext. 4280.

Richard Armstrong
ext. 4280

10. Courses

10.1 The New Wave

With the successful introduction of a number of micro-computer courses within the Prentice Computer Centre over the last year, it has been become apparent that there is a sustained demand for further education to be provided in this area. To this end, it is envisaged that a number of new micro-computer courses will be introduced in 1988.

As has been recently advertised, an Advanced MS/PC-DOS course has been introduced for those users who wish to build their knowledge more substantially in this area. In particular, this course will cover comprehensive batch file programming, hard disk maintenance, additional accessory programs that support the operating system, and the actual internals of the operating system structure. This course is only for those who have a reasonable understanding of MS/PC DOS.

It is hoped that an Advanced dBase III and an expanded PC-Mainframe communication course can be implemented sometime later in the year.

Nick Evans
ext. 3021

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10.2 Semester and course timetables

Enrolments for all courses may be made by phoning extension 3018. The following courses will be offered during the period March–June, 1988:

March

•†	General Plotting	March 28–31 4 half days 1–4pm each day
‡	Introduction to MS/PCDOS	March 28, 30, 31 3 half-days 9–12am each day

April

•	Introduction to SQL (*note late finish*)	April 5–8 4 half-days 1–5pm each day
‡	Introduction to WORDPERFECT	April 5–8 4 half-days 1–4pm each day
‡	'Desktop Publishing' Overview	April 11 1 half-day 1–4pm
•†	SPSS-X	April 11–15 5 half days 1–4pm each day
‡	Dbase III	April 13–15 3 half-days 9–12am each day
•	Further features of IBM3081	April 19–20 2 half-days 9–12am each day
‡	PC↔Mainframe Communications	April 20 1 half-day 9–12am
†	Introduction to VAX/VMS	April 26–28 3 half days 9–12am each day
‡	Introduction to MS/PCDOS	April 26–28 3 half-days 1–4pm each day

May/June

•	Introduction to IBM3081 VM/CMS	May 3–6 4 half-days 1–4pm each day
‡	PC Overview	May 4 1 half-day 9–12am
‡	'Desktop Publishing' Overview	May 11 1 half-day 9–12am
†	RDB/Datatrieve	May 9–13 5 half days 9–12am each day
‡	Introduction to WORDPERFECT	April 9–12 4 half-days 1–4pm each day
•	Introduction to SAS	May 16–20 5 half-days 9–12am each day
‡	Introduction to MS/PCDOS	May 17–19 3 half-days 9–12am each day

†	KL→VAX conversion	May 23–25 3 half-days 1–4pm each day
‡	Dbase III	May 23–25 3 half-days 1–4pm each day
	Typesetting (*note late finish*)	May 30–June 2 4 half-days 9am–1pm each day
‡	Introduction to WORDPERFECT	May 31–June 3 4 half-days 9–12am each day

- •   denotes IBM course
- †   denotes VAX course
- ‡   denotes PC course

If marked †• please indicate when enrolling whether you would prefer your course account to be established on the VAX or IBM machine.

General Notes:

1. It is expected that users attending courses on specific packages (SQL, SAS, SPSS–X, DBASE III, etc) will be familiar with keyboard-usage, file-management and editing on the relevant machine (IBM, VAX or PC). Attendance at such short courses without this background provides many problems, as all courses are hands-on. Introductory courses are given frequently to allow familiarity with the fundamentals before attending courses on particular application packages.

2. All courses will be held in the Centre's teaching rooms near the Physics Annexe — the mainframe courses in Course Room 1 and the micro-computer courses in Course Room 2.

3. Staff, post-graduate students and kit-owners are admitted free to courses. The charge is $10.00 per half-day session for other internal users; $17.00 per half-day session for affiliated users; and $37.00 per half-day session for external users.

4. Enrolments for all courses may be made by phoning ext. 3018.

Barry Maher/
Nick Evans
ext. 3021

11. Equipment for sale

11.1 Printing terminals

The Pharmacy Department has an old Teletype and Decwriter which it is offering for sale.

Details are:

One x LA 36 DECWRITER (1977) with stand in working order - Best Offer

One x TELETYPE (1972) in working order - Best Offer

Please contact Mr Alan Wright (ext. 3990) or Mr Ron West (ext. 4102), Pharmacy Department.

11.2 Surplus Computer Equipment

The Library plans to withdraw from service items of computer equipment in 1988 and 1989. All library computer equipment, including terminals, have been fully maintained by the Prentice Computer Centre from the date of purchase.

Expressions of interest in the following equipment are invited.

Terminals ESPRIT, VIS 50, ADM3a, ADM5, TTY 43, Whisper writers.

Disk Drives RP06, Fujitsu 'Eagle'

Disk Packs for above drives

Processors PDP11/44, PDP11/73 and PDP11/84

Plus various ancillary equipment.

A schedule of release of equipment is expected to be available by the end of February. Enquiries can be made to *Judy Wilson, Ext. 2153*.