



# COMPUTER RESOURCES

## Newsletter

86:05:05  
VOLUME 4 NUMBER 4

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## PERSONNEL

Computer Resources Department staff are located in Room 2N214 unless otherwise shown below.

To call from outside BCIT, prefix these numbers by (604) 432 (e.g. (604) 432-8818).

DIRECTOR (Acting) Ron Sproule .....8245  
Receptionist, Jean Macdonald.....8818

### Academic Systems Analysts

Lee Herberts (Assistant Manager).....8798  
John Fairley (Released Faculty).....8538  
Craig Larman .....8629  
Dan Low.....8268  
David Thomson.....8560

### Managers

Academic Systems, Neil McLagan.....8680  
Administrative Systems, Neil McLagan.....8680  
Data Administration, Jim Coss .....8482  
Processing Services, Ron Sproule.....8708  
Technical Support, Michael Marriott.....8683

### SERVICES:

Data Entry, Karen Tong .....(2N212)8618  
User Liaison, Rita Richardson .....8456  
User Help Centre:  
Larry Ferguson,  
Acting Manager .....(LIB 301) 8624  
Carol Berg, Education Coordinator....8628  
Michele Becket, Systems Analyst .....8561

COMPUTER ROOM/Operators .....8246  
Lee Korman (Assistant Manager) .....8351

### DIAL-UP TO COMPUTERS

off campus ( 300 bps) ..... 430-3371  
(1200 bps) ..... 435-1443  
on campus ( 300 bps) ..... 5448/5449

## PUBLISHING INFORMATION

The Computer Resources Newsletter is published by the Computer Resources Department of BCIT.

Contributions to the Newsletter and comments from our readers are welcome. Address correspondence to:

Editor, Computer Resources Newsletter,  
BCIT Computer Resources Department,  
3700 Willingdon Avenue,  
Burnaby, B.C. V5G 3H2

Subscription changes may be requested by completing the form on the last page. You are subscribed if your name appears on the label attached to the Newsletter. The next issue is planned for 86:09:02.

## FACILITIES

### IBM 3083-JX2

- 24 megabyte main memory
- seven IBM 3380 disk drives with 2.5 gigabytes each
- four 1600/6250 BPI tape drives
- 340 terminals and two CAD workstations
- VM/CMS and VSE operating systems
- batch and online processing
- academic and administrative processing

### Hewlett-Packard (HP) 3000/64 minicomputer

- 2 megabyte main memory
- 64 terminals
- one 404 megabyte disk drive
- one 64 megabyte disk drive
- one 1600 BPI tape drive
- MPE operating system
- introductory programming and application package training

### Microcomputers

- twenty (20) Apple II+
- seven ( 7) IBM PC
- twelve (12) Zenith Z-150
- student instructional use

### Intergraph System

- DEC VAX 11/751 Central Processing Unit
- 5 megabyte main memory
- two 300 megabyte removable-pack disk drives
- one 160 megabyte Winchester-type disk drive
- one 1600 BPI tape drive
- ten single-screen graphics workstations
- one dual-screen graphics workstation
- ten alphanumeric terminals
- three desk-top electrostatic plotters
- one 24-inch electrostatic plotter

### Further information:

- IBM, HP and microcomputer facilities:  
contact Lee Korman, Assistant Manager,  
Computer Operations (8351)

### Locations

#### IBM 3083:

##### Student Terminal Labs:

IBM 3278.....2N329  
Memorex 2078.....2N419  
Televideo 950.....2N420/421  
IBM 3178 and IBM 3279.....2N327  
IBM 3250 CAD stations .....2N319

##### Faculty Area (Computer Resources Foyer):

one HP125 terminal,  
one IBM 3178 terminal,  
one Televideo 950 terminal ..... 2N210

#### HP3000:

Student Terminal Labs.....2N322/2N325

#### Microcomputers

\*APPLE Cart ..... Library  
APPLE Student Lab ..... 2N321  
IBM PC/Zenith Student Lab ..... 2N318

Intergraph System Labs .....1P101,1P102

\*Access to the Apple Carts can be arranged at the Library Reference Desk.



## EDITORIAL MESSAGE

Since this is the final issue of the Newsletter for this academic year, let us take a moment to reflect on the hectic pace of change experienced by Computer Resources in the past year.

In the early fall of '85, Computer Resources' staff were occupied with the planning for the integration with PVI, including hardware capacity planning as well as the institution re-organisation. Concurrently, negotiations were conducted with IBM to upgrade BCIT's computing facilities to meet latent demand and to support the initial requirements of the PVI merger. As a consequence of these negotiations, the IBM 3083 mainframe computer has been upgraded; more disk storage is being acquired and BCIT will have access to more IBM PC microcomputers at an advantageous cost.

The implementation of the computer system upgrade will continue through the summer. A consequence of this is the need to relocate the office area of Computer Resources to allow for expansion of the computer room.

Generally speaking, the importance of the location of MIS/DP (management information systems or data processing) within a corporate structure is often overlooked, not only by senior management but by MIS itself. In far too many organisations, MIS is in a reporting situation where the exigencies of the immediately-superior department take precedence over that of other departments. The ideal is for MIS to report directly to the CEO. Thus, MIS remains a corporate resource, a strategic tool of the corporation with equal access by all departments and no one department having priority over another. (This ideal is my view only and not necessarily that of Computer Resources.)

Much of the changes occurring in Computer Resources can be attributed to the dynamic leadership of Willy Kurz who recently left BCIT. In three short years, he had left a significant mark upon Computer Resources -- greatly transforming the physical environment as well as creating a more service-oriented organisation.

Looking at the Newsletter itself, we have greatly improved its appearance with the assistance of the HP LaserJet printer. This parallels industry's move to "desktop phototypesetting" with laser printers.

In our attempt to improve your understanding of the operation of Computer Resources, we had focussed on the following groups during the past year: the User Help Centre and office support staff, Networking and Facilities, and Administrative Systems. The focus set the theme of each issue, e.g. associated with the User Help Centre was the topic of office automation, data communications with Networking and Facilities. If you are a recent subscriber and would like to obtain an earlier issue, a limited number of back copies are available from the Editor. (Academic Systems and Data Administration were described in Volume 3, issues 3 and 4 of 1985.)

The summer has always been the period for major software installations. Hence, one of the major functions of this last issue is to inform you of changes to expect in September. Since the Technical Support Group of Computer Resources is a major facilitator of these changes, they are the logical focus of this issue.

In closing, we wish you a happy sun-filled summer and enjoy Expo86! Do come back in September, eager to "trip over" the software changes described in this issue.

Dan Low, Editor

## NOTICES

### Student ID Requests for Next Year

It's planning time again in Computer Resources!

Each year we ask faculty who use the IBM or HP systems for teaching, to tell us their requirements for the coming 12 months. This helps us to ensure that we have the disk space and other resources which you and your students will need.

Teaching departments will soon receive Application for Computing Access forms in the mail. Please complete and return them to Computer Resources by 86:06:13.

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### Computing Courses

The following courses will be offered by Computer Resources during May, June and August:

#### MAY Courses (User Help Centre)

	Date	Time
Beginner's CMS	86:05:26	(0900 - 1200)
	86:05:27	(0900 - 1200)
Beginner's Script/GML	86:05:28	(0900 - 1200)
Advanced Script/GML	86:05:29	(0900 - 1200)
Advanced PROFS topics	86:05:29	(1400 - 1630)
and Review	86:05:30	(0900 - 1130)

#### JUNE courses (Academic Systems)

	Date	Time
CMS EXEC's	86:06:09	(0900 - 1200)
Intermediate SPSS	86:06:10	(0900 - 1200)
File Transfers with	86:06:11	(0900 - 1200)
Kermit and ZSTEM		
Minitab for Beginners	86:06:12	(0900 - 1200)

#### AUGUST Courses (User Help Centre)

	Date	Time
Beginner's CMS	86:08:25	(0900 - 1200)
	86:08:26	(0900 - 1200)
Beginner's Script/GML	86:08:27	(0900 - 1200)
Advanced Script/GML	86:08:28	(0900 - 1200)



The content and prerequisites of the courses are given below:

Beginner's CMS -- A complete introduction to CMS for those who have little or no experience. Includes creating, changing, filing, retrieving, viewing, printing, sending and receiving CMS files. No previous knowledge of CMS required.

Beginner's SCRIPT/GML -- An introduction to SCRIPT/GML commands using the "DOC" facility to create, retrieve, print and proofread your documents. Some knowledge of CMS preferable.

Advanced SCRIPT/GML -- Using advanced Script/GML commands to create documents, creating and executing form letters (merged mailings), merging text files and using special techniques. Good knowledge of Script/GML is required.

Advanced PROFS -- You will learn housekeeping and file management techniques, how to customize PROFS for your needs and some timesaving features of PROFS. Open to all PROFS users.

File Transfers with Kermit and ZSTEM -- The use of Kermit and ZSTEM to transfer files from a PC to the IBM mainframe will be discussed. A basic knowledge of CMS is required.

Intermediate SPSS -- The use of the SPSS procedures SCATTERGRAM, PEARSON CORRELATION, and REPORT will be covered. A knowledge of elementary SPSS programming is required.

Minitab for Beginners -- An introduction to Minitab, an interactive statistical analysis package on the HP3000. Prior knowledge of MPE and QEDIT is required.

These courses are open to all Staff and Faculty, but please register well in advance as space is limited and so that we can ensure that you will have your own ID to access the BCIT system(s). All these courses have hands-on sessions.

To register for these courses, call the User Help Centre (8561 or 8628) or if you have any questions about the May or August courses. For more information on the June courses, call Dan Low (8268) or Dave Thomson (8560).

Class locations will be announced one week prior to class time.

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#### Computer-Based Education

The Computer-Based Education (CBE) Department will be arranging a workshop on CAI/CML software and hardware used at BCIT. It is planned to take place near the end of May. Contact Ann Richmond (8817) for more information.

Also of interest is the "Fantastic Flames" CAI package developed by the CBE Department under the direction of D. Bowles in the Piping Department. The package is now being evaluated by students and is available for demonstration to interested faculty. Included in the lesson are simulations, graphics, testing, glossaries and many other features. It is a very good example of what CAI can do.

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#### People Changes

Willy Kurz, our Director for the past three years, has sought greener pastures. Willy was instrumental in the BCIT 20th anniversary million dollar equipment donation of IBM Canada, the recent IBM deal for a large amount of PCs, the acquisition of office automation (PROFS) and fourth generation software, and the creation of the User Help Centre. His leadership in developing a service attitude was likely his strongest achievement. The Acting Director is Ron Sproule.

Also leaving the Institute is Ann Brown. Much of the success of DOBIS, our Library system, is due to Ann.

Debbie Stammes, our incontrovertible intenerate secretary, has accepted a challenging position outside of BCIT. Much of our success in helping clients is credited to Deb's ability to smooth the way. We will miss her.

In addition, Steve MacDonald is leaving. Steve did much of the "behind the scenes" work for the User Help Centre and Academic Systems. He is now at Burnett Surveys Ltd.

One final note. Janet Robertson, on leave from the User Help Centre, continues her job in implementing ISIS in California. Her tennis game is improving.

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#### Faculty and Student Survey Results

In March/April of this year, Craig Larman (with consultative assistance of Dan Low) undertook to survey computer users on various topics. We thank the over 200 people who responded. The preliminary results include:

- \* 40% of the computer users have a microcomputer useful for BCIT work
- \* 57% of the users would like proctors for daytime students
- \* 87% believe that the HP system should have more CRTs
- \* 98% believe that BCIT needs more microcomputers.

What are we doing about these (and other) issues? The need for microcomputers is being resolved, slowly, with the IBM special offer and the Excellence in Education proposals. Computer Resources is also replacing many of the older HP terminals with new CRTs. Finally, the delivery of proctor service has been proposed through



the budget process, although higher Institute priorities may preclude its implementation.

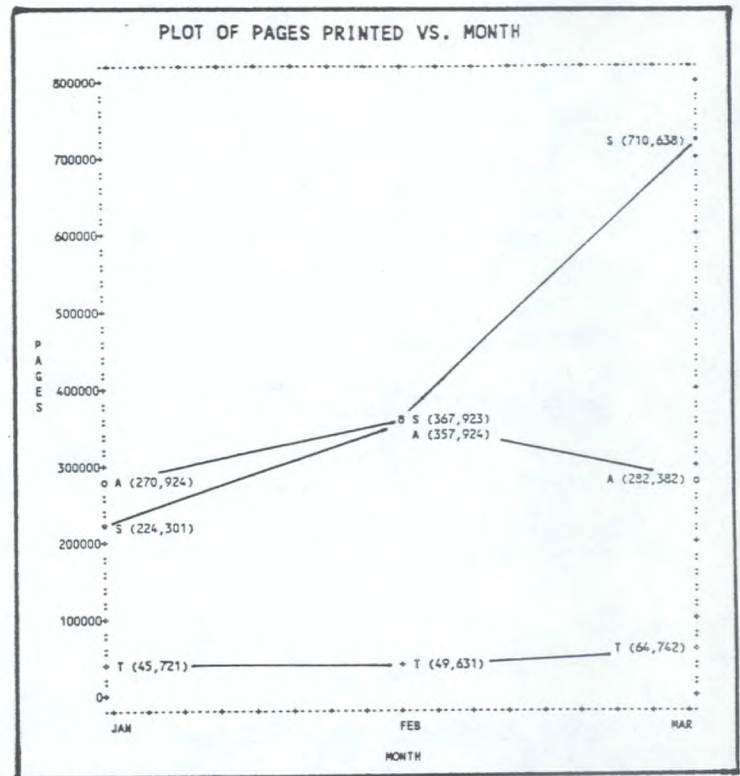
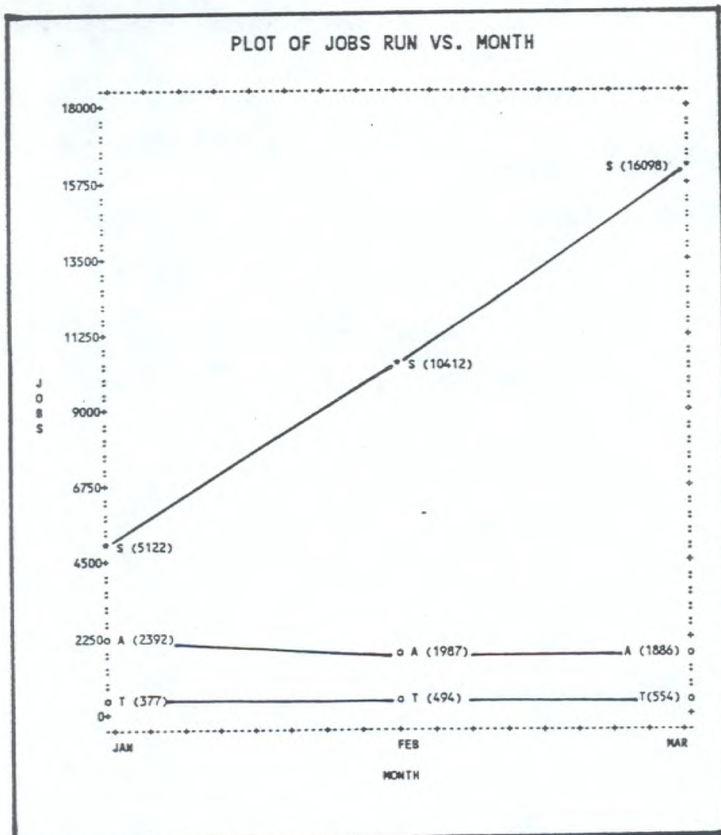
Further analysis of the survey will help in the planning and budgeting functions during the current year.

#### General Statistical Information

The following table lists the number of jobs run and the pages printed by the VSE batch systems at BCIT. All student programs using the COBOL, VS FORTRAN, PL/I, and RPG languages are run on the Academic VSE system -- ACADEMY.

	ADMIN. VSE (A)	STUDENT VSE (S)	TEST VSE (T)	TOTALS
<u>January</u>				
Pages Printed -	270,924	224,301	45,721	540,022
Jobs Submitted -	2,392	5,122	377	7,891
<u>February</u>				
Pages Printed -	357,924	367,923	49,631	775,478
Jobs Submitted -	1,987	10,412	494	12,893
<u>March</u>				
Pages Printed -	282,382	710,638	64,742	1,057,762
Jobs Submitted -	1,886	16,098	554	18,538

This information is shown more dramatically in the following graphs which were prepared with the aid of the SPSS PLOT procedure.



#### Computer System Availability Report

The table below indicates the availability of the academic and administrative systems on the HP3000 and the IBM 3083 mainframe computers. The availability is affected by hardware and software problems, and is a measure of operational efficiency.

	HP3000	VM/CMS	ISIS
<u>January</u>			
Scheduled hrs -	527.0	480.0	260.0
Actual hours -	526.0	476.0	257.5
Availability -	99.8 %	99.2 %	99.0 %
<u>GLOBAL DOBIS CHRIS</u>			
Scheduled hrs -	220.0	392.5	220.0
Actual hours -	216.25	388.5	216.25
Availability -	98.3 %	98.9 %	98.3 %
<u>February</u>			
Scheduled hrs -	527.0	448.0	240
Actual hrs -	526.0	439.0	230.75
Availability -	99.8 %	98.0	96.1 %
<u>GLOBAL DOBIS CHRIS</u>			
Scheduled hrs -	200.0	366.0	200.0
Actual hrs -	198.0	359.0	198.0
Availability -	94.5 %	97.5 %	94.5 %
<u>March</u>			
Scheduled hrs -	527.0	480.0	232.0
Actual hrs -	526.0	475.75	232.0
Availability -	99.8 %	99.1	100.0 %
<u>GLOBAL DOBIS CHRIS</u>			
Scheduled hrs -	230.0	374.5	230.0
Actual hrs -	229.0	374.5	229.0
Availability -	99.5 %	100.0 %	99.5 %



## Hardware Problem Report

(Period ending 86:03:31)

ACADEMY VSE System - 86:03:23 (16:00 - 17:15)

Students unable to batch jobs. Academy VSE was IPLed in an attempt to clear the problem. Problem was related to SPOOL space on VM. Technical Support deleted files and the Academy system was brought back up.

### VM Operating System

86:02:12 (0700-1000)	System failure due to faulty power supply on a 3370 disk drive
86:03:29 (1345-1630)	System failure, problem due to 3380 disk drive
86:03:31 (1330-1530)	System failure, problem due to 3380 disk drive

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### Problems Or Inquiries

#### Computer Operations - Data Control - User Help Centre

Computer Resources has several internal groups that manage the various systems and resources available to the administrative staff and faculty of BCIT. In order to receive fast and efficient response to your inquiries it is necessary to contact the right group directly, so that your problem or inquiry can be handled immediately.

#### Computer Operations

Hours: (0700 - 2400) - Monday--Friday  
(0900 - 1700) - Saturday--Sunday

General Inquiries: Call 8246 (432-8246)

All calls pertaining to general information such as Hours of Operation, supplies required, tape mounts, etc. will continue to be received on local 8246 (432-8246).

Problem Reporting: Call 8407 (432-8407)

Computer Operations has installed a second phone to be used for problem calls ONLY! i.e. broken terminals, printers and online system problems which have occurred AFTER regular office hours. A Problem Log Number will be given to the caller to be used as reference if a follow-up call is necessary.

#### Data Control

Hours: (0830 - 1630) - Monday--Friday

Local 8456 - Asst. Manager - User Liaison  
Local 8671 - Data Control Staff

## Online System Information or Problems

Data Control supports the following online systems: ISIS, GLOBAL, CHRIS, DOBIS. Please call the Assistant Manager - User Liaison for inquiries or problem reporting. If there is no response, calls will be automatically forwarded to the next level as shown below.

1) Local 8456 - Asst. Manager User Liaison  
(If no response )

↓  
2) Data Control staff  
(If no response )

3) ↓  
Receptionist  
Message will be relayed to Data Control staff as soon as possible.

### User Help Centre

Hours: (0830 - 1630) - Monday--Friday

Local 8561 - Michele Becket  
Local 8628 - Carol Berg

General Information, System IDS, PROFS, etc.

The User Help Center is available to assist with the following:

- Stuck? (How do I do this or get out of that? etc.)
- Problems OPERATING terminals or printers
- Information on problems with PROFS, CMS, XEDIT and SCRIPT
- Assistance or information in selecting software
- PROFS INQUIRIES - New ID's, training, problems or questions
- EDUCATION - PROFS, CMS, XEDIT, Script/GML, Introduction to PC's

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## HARDWARE CHANGES

### IBM Mainframe Upgrade

The bulk of the IBM mainframe upgrade was performed during the Spring Break. More terminals, multiplexors and another IBM 7171 protocol converter will be added to the system in the near future. The computer room will be reorganized to meet IBM's spatial requirements for each device.

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## SOFTWARE CHANGES

### Waterloo C Removed

The Waterloo C compiler has been removed from the IBM VM/CMS system due to lack of use.

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### GDDM Updated

The IBM GDDM (Graphics Data Display Manager) software was updated during the Spring Break. Unfortunately, the new release was not functional with the new IBM 3179-GX terminals until after Open House. Computer Resources apologizes for any difficulties caused. However, it was impossible to test the installation for functionality with an IBM 3179-GX terminal since Computer Resources does not have any IBM 3179-GX terminals. GDDM is used to display graphics on IBM 3279 and 3179-GX type terminals.

Currently, the primary users of GDDM are Surveying and Computer Systems Technology. In the future, Mining Technology will also make use of GDDM via the GEOLOG package.

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### VS FORTRAN Updated

In the spate of changes at the beginning of the Spring Break, VS FORTRAN was updated. Some procedures were adversely affected. However, by now, all problems have been corrected. We apologize for the lack of advance warning.

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### VM Updated

The VM operating system was updated at the start of the Spring Break to accommodate the installation of IBM 3380 disk drives and has provided improved response times. Most users did not notice the change.

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### LAST WARNING! SPSS X In; SPSS 9 Out

On 86:05:31, SPSS 9 will be gone! Its replacement, SPSS X, offers more facilities but requires learning some new commands.

For information on SPSSx, see the BCIT SPSS User's Guide (85:05:29) (available from Computer Resources) or the SPSSx Reference Manual (available for loan from the Library).

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## Minitab Release 5.1 Installation

Release 5.1 of Minitab will be installed in 86:07.

Some new features of Release 5.1 are:

- \* FORTRAN-like format specifications for input and output statements
- \* COPY replaces the USE and OMIT subcommands
- \* STACK replaces the JOIN command
- \* CODE replaces the RECODE command
- \* DELETE deletes rows as well as columns
- \* multiple time-series plots are available

More details on release 5.1 will be published in a revised BCIT Minitab User's Guide, (86:09:08).

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### VSE 2.1 Installation

VSE Release 2.1 will be installed in 86:07. As indicated in the past, VSE 2.1 is a more powerful batch processing operating system than VSE 2.0.

A new feature is that there is only one library instead of three; i.e. the source statement, the relocatable and the core-image libraries. Details will be provided in an updated BCIT VSE User's Guide, (86:09:02). In all likelihood, the BCIT system will have three libraries for security reasons -- a system library for compilers and utilities, a library with read-only access by students, and a library with read and write access for everyone.

Files in the current VSE libraries will be "ported" to the new system and all "public" procedures will be updated by Academic Systems.

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### WATFOR77 Replaces WATFIV

In 86:09, the WATFIV compiler will be removed and replaced by the WATFOR77 compiler.

WATFOR77 supports the 1977 FORTRAN standard with extensions for structured programming. For example, WATFOR77 provides the CASE statement which is not in VS FORTRAN or the 1977 FORTRAN standard.

A major benefit is that all FORTRAN language compilers supported by Computer Resources -- VS FORTRAN, WATFOR77 and Microsoft FORTRAN -- are at the 1977 FORTRAN standard. This makes it easy for the student to move from an easy-to-use academic compiler to a commercial compiler or to a PC-based compiler.

A BCIT WATFOR77 User's Guide will be available 86:09:15.

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## FEATURES

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### Technical Support

The Technical Support (Tech Support/TS) group of Computer Resources reports to the Director of Computer Resources and is responsible for the support of operating systems and program products for the IBM 3083, HP3000 and DEC MicroVAX II. Technical Support also works in a project mode to provide technical assistance to various other departments within BCIT.

Operating systems are complex software systems, almost always provided by computer manufacturers to deliver physical and logical management of computer hardware. Operating systems control the processors, memory, and peripheral devices. Program products, compilers, interpreters, editors, etc., rely on operating systems to provide an interface to the actual hardware.

The operating system on the IBM 3083 is VM (Virtual Machine). VM allows multiple operating systems to run on the same computer by simulating a virtual computer for each system. BCIT runs three VSE (Virtual Systems Extended) batch operating systems under the control of VM. These VSE operating systems -- ADOS, TDOS and SDOS -- are used for administrative, testing and student batch processing, respectively. Also running under the control of VM are two versions of CMS (Conversational Monitor System), one for administrative users and the other, a subset of full-function CMS, for student users.

On the IBM 3083, over forty different program products are installed. Of these products, almost half are IBM-supplied; the remainder come from fifteen different vendors. IBM-supplied products range from compilers like COBOL and PL/I to major subsystems such as PROFS and CICS. Other vendor products supported include the database for ISIS, TOTAL and the fourth generation language FOCUS.

On the HP3000, MPE (Multi-Programming Executive) is the operating system. HP-supplied program products include MTS, FORTRAN, PASCAL, BASIC and OPT300. Also installed are numerous other vendor products like QEDIT, Minitab and Powerhouse.

DIGITAL's MicroVAX II is a recent addition to the computer systems supported by TS. The operating system on the MicroVAX II is VMS (Virtual Memory System). CBTS software is used by the CBE department for development of computer-based training programs.

It is the responsibility of Technical Support to install and customize operating system and program products. The process of installing and customizing products varies with the complexity of the product. The installation of an operating system or major program product is broken down into many phases. The first phase is planning. It involves receiving the distribution media from the vendor, determining changes or enhancements made to the operating system and their effects on other systems. The next phase is to create a test system, then install and customize the operating system. The operating system is then thoroughly tested. This involves not only Technical Support but also other

groups within Computer Resources. The final phase is to put the operating system into production. This involves shutting the operating system down and then performing an IPL (Initial Program Load) to load the new system. This is usually done after normal operating hours to minimize the effect on users of the system.

Tech Support provides technical assistance and problem resolution for operating system and program products. Problems occur for many reasons -- misunderstanding the function of a product, programmer error, hardware error, bugs in the operating system, or even problems caused by Techy (this rarely happens). For vendor-related problems, Technical Support works with the vendor to resolve the problem. To provide timely contact with the vendors, Technical Support can communicate via a computer-to-computer link directly with IBM's support centre in Toronto and HP's support centre in Cupertino, California. There is also 24-hour telephone support from DIGITAL and numerous other vendors.

Operating systems and their program products are the backbone of computer operations. Problems that occur with the operating system can crash or severely restrict the use of the entire computer system. Consequently, Technical Support staff are on-call 24 hours a day.

Technical Support writes programs and subsystems to enhance operating systems and program products. Examples of these enhancements are programs like the S/DOS VSE POWER monitor in the student output area, CMS execs DOC and MPRT.

Technical support is also involved in application systems -- providing operating system resources, disk space, libraries, VSAM allocation. For on-line systems, e.g. ISIS and DOBIS, Technical Supports generates and tailors a CICS subsystem for that specific application.

System tuning and capacity planning is also part of Tech Support's responsibility. System tuning involves monitoring and modifying processor allocation, memory usage, channel balancing, disk access and disk allocation to improve computer performance and throughput. Capacity planning plays a important role in forecasting computer resources required to support current and future activity.

Technical Support has taken an active role in numerous projects concerning micros's and their evaluation. However, due to constraints, no ongoing support is available.

To provide accurate and timely responses to technical issues it is imperative that all members of Technical Support keep current with advancements in both software and hardware. This is accomplished by close liaison with the various vendors, via computer journals and participation in numerous user groups -- VM Share, HP BCRUG, PROFUSERS and FOCUSERS.

Tech Support trivia : There are approximately half a million lines of assembler code in VM/HPO 3.4

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## Applied Industrial Computing (AIC)

John Fairley

AIC is a new post-diploma course at BCIT, planned to start next September, under program head Charles Goodbrand. Its objective is to give the graduate technologist the tools to carry out advanced computerized analysis specific to his own vocation. This is to be accomplished with a curricula of computer technology, mathematics, project management, and technology-specific training. One could view the system as an umbrella or shell with three basic options and further specialties within each.

Three options are planned:

### Spatial Information

- a civil-engineering/natural-resource group concerned with image-processing, spatial modelling, statistics, database, and technology-specific courses.

### Resource Processing

- a production/natural-resource group concerned with real-time systems, database applications, systems design, and related projects.

### Advanced Manufacturing

- an electrical/mechanical group involved with machine shop work, codes, modelling, design, programming, and some robotics.

In each option, a specific technology will be responsible for maintaining relevant courses in the optional area. For example, Mining might introduce geostatistical analysis in the spatial information option.

Since much of the curricula has a "hands-on" requirement, the lab requirement is extensive with networked microcomputer-graphics, microcomputers and CAD/CAM equipment and associated software.

This course is aimed at an engineering-group technologist-level graduate, with a second-class average standing, particularly in mathematics subjects.

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## Introducing SPSS REPORT

In some surveys, it is required to know how each individual responded. The common routines of SPSS, e.g. FREQUENCIES and CROSSTABS, provide only summary statistics. They do not yield information on how any individual responded. In the past, it was often easier to write FORTRAN programs to provide such information. However, this extra effort is unnecessary! SPSS provides the procedure REPORT to give details on the response for a single case.

REPORT has been available in SPSS from Release 7 (and has been available at BCIT since 1979).

REPORT allows greater control of the appearance of your computer output. For example, if you used REPORT without defining any headings, REPORT will take the

variable label and fit it within the column width as shown below.

ID	SAFETY EQUIPMENT LOCATION	USE & STORAGE OF CHEMICAL COMPOUNDS	DECONTAMINATE BIOHAZARD SPILL
WEST COAST GEN HOSP	1	30	30
ARMSTRONG-SPALLUMCHE	59	59	39
G R BAKER MEM HOSP	.	.	.

To make the headings more meaningful, you can explicitly define them yourself. Where necessary, you can define the length of the field. An improved listing is shown below.

ID	SAFETY EQUIPMENT LOCATION	USE & STORAGE OF CHEMICAL COMPOUNDS	DECONTAMINATE BIOHAZARD SPILL
WEST COAST GEN HOSP	1	30	30
ARMSTRONG-SPALLUMCHE	59	59	39
G R BAKER MEM HOSP	.	.	.

The REPORT procedure coding for the above output is as follows:

```
TITLE REPORT EXAMPLE
UNNUMBERED
DATA LIST FIXED RECORDS (1)
      /1 Q11 TO Q13 (1X,3F1.0)
REPORT   FORMAT=LIST/
      VARIABLES=Q11 'SAFETY' 'EQUIPMENT' 'LOCATION'
              Q12 (9) 'USE &' 'STORAGE' 'OF'
              'CHEMICAL' 'COMPOUNDS'
              Q13 'DECON-' 'TAMINATE' 'BIO-'
              'HAZARD' 'SPILL'/
      BREAK=ID (LABEL)/
```

Note that a title line of a certain field is enclosed by single quote marks. The default column width is 8 characters. If the heading line is longer than 8 characters, you can specify a greater width, provided that the sum of the column widths does not exceed the width of the report paper.

For more information on the REPORT procedure, refer to the SPSSx Reference Manual or consult Academic Systems. Since the REPORT procedure remains virtually unchanged in version 10, you can also refer to the SPSS 7-9 Update if you do not have access to the SPSSx Reference Manual. A short description of REPORT will be included in the next BCIT SPSS User's Guide scheduled to be available by 86:09:01. Also attend the June course described on page 3.

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#### PROFS/CMS NOTE Communication

Did you know that CMS users can send notes to PROFS users and vice versa? When a CMS user sends a CMS note to a PROFS user, the PROFS user receives it in their PROFS mailbox and works with it as though it were a normal piece of PROFS mail. (By the way, it will still look like a CMS note.) When a PROFS user sends a PROFS note to a CMS user, the PROFS note will arrive in the CMS users reader queue where it can then be worked with. (It will look like a PROFS note.)

As you can see, this opens up all sorts of communication networks at BCIT. Many faculty members already have CMS IDs but are not aware of the CMS NOTE facility. (Many CMS users used to send notes to each other long before PROFS was around!)

The most important thing to remember is that if the person you will be communicating with is a CMS user they must also know how to work with the notes you send them. Also you will need to know the ID of the person you are planning to send the note to. This will allow you to set up an "easy to remember" nickname for that person so you won't have to remember their ID all of the time

The User Help Centre offers two courses which will help you with sending CMS notes to CMS and PROFS users and PROFS notes to CMS users:

CMS for Beginners - This is an introductory course to CMS which also includes sections on how to set up nicknames, how to send CMS notes and how to work with notes that are sent to you.

Advanced PROFS - The advanced course covers many advanced features of PROFS but it also has a section on setting up your own nicknames so that you can send CMS users notes.

The next dates for these courses are listed on page 3 of this Newsletter. For more information, please call 8561 or 8628 or drop into the User Help Centre on the 3rd floor of the Library, Room 301!

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#### Powerhouse - A 4th Generation Language

Programming languages have evolved through several generations of sophistication. The most common languages in use today are third generation languages such as PL/I, COBOL and Pascal. But there is a rapid growth in the use of fourth generation languages (4GL) such as Powerhouse and Focus. BCIT runs Powerhouse on the HP3000 and Focus on the IBM 3083 mainframe.

Programming productivity gains can be very dramatic with a 4GL. The Bank of America realised an approximate 10 to 1 gain by switching to a 4GL. Such significant increases are not uncommon but the price paid for this gain is an increased demand on hardware resources. However, with hardware prices falling and salaries increasing, programmer productivity is often the greater concern.

Powerhouse is produced by Cognos Inc., an Ottawa-based software firm which is now one of Canada's leading software exporters. Powerhouse is quite widely used, having been installed in over 2000 sites worldwide. In BC, there are numerous users, such as the Ministries of Education, Health, and Labour, the Bank of BC, MacMillan Bloedel, and BC Telephone. The federal government is also a major user. Within BCIT, Operations Management students employ Powerhouse to quickly analyze data and generate reports.

Powerhouse (and most 4GLs) contains the following components:

- \* an easy reporting language
- \* a file and data base management facility
- \* online screen creation for data entry and queries
- \* a system to update files by 'batch' transactions

In Powerhouse, these components are tied together very neatly by a common 'data dictionary' -- a file which describes all the other files and their contents.

For more information on using or teaching Powerhouse, please contact Craig Larman (8629).

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#### PROLOG On the IBM Mainframe

A popular language for artificial intelligence applications is now available on BCIT's IBM mainframe. PROLOG stands for PROgramming in LOGic, and was developed in the '70s by Alain Colmerauer at the University of Marseilles.

PROLOG is rapidly growing in use and importance, due in large measure to the Japanese, who have chosen PROLOG for their 5th Generation Project. This coordinated effort by Japanese government, industry and universities plans to create the next generation of computer hardware and 'intelligent' software by 1995.

Among other things, PROLOG is well suited for creating knowledge-based systems (KBS's), programs that solve problems using a data base of knowledge about a specific area.

Developing a KBS involves encoding problem solving knowledge into a program, and they are being created and used within many disciplines. For example, KBS's have been written to solve the following problems:

- \* selecting the best fastener type, given stress and temperature, in airplane construction. (Boeing)
- \* diagnosing and prescribing a solution to soup cooker breakdown. (Campbell's Soup)
- \* helping technicians to diagnose and fix broken air conditioning units. (Westinghouse)
- \* interpreting instrumentation output from respiratory tests. (Pacific Medical Centre)



- \* identifying subjects such as bacteria, rocks, machinery breakdown, chemical analysis.
- \* selecting an item from among a large number of candidates, like the best drugs for a given disease, the best wine for a meal.

BCIT's version of PROLOG conforms to the 'Edinburgh' standard, described in the book "Programming in PROLOG". This PROLOG works well with the system editor, making it easy to edit and run PROLOG programs. It has good execution speed, and operating system commands can be executed from within the PROLOG interpreter.

For academic users, to run PROLOG on the IBM mainframe, sign on as usual and type:

PROLOG B

Limited copies of the manufacturer user's manual are available from Computer Resources. A BCIT user's manual will be in the bookstore by September. An excellent and widely available introductory text is "Programming in PROLOG" by Clocksin and Mellish. Contact Craig Larman (8629) for more information.

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#### Microsoft FORTRAN -- A First Impression

This article discusses the Microsoft FORTRAN compiler and some problems areas.

Academic Systems is examining the feasibility and practicality of converting some mainframe FORTRAN programs to run on the PC. After an initial study of the FORTRAN compilers available for the IBM PC, Academic Systems chose the Microsoft FORTRAN compiler as a good compromise between cost, performance and capability.

The Microsoft FORTRAN compiler is a "classic" two-pass compiler. In the first pass, the compiler builds the symbol table and translates FORTRAN source statements into intermediate code. In the second pass, the intermediate code is optimized to produce an object file for input to the linkage editor where you can include previously-compiled object files and library files to generate an executable file. The latest version of the Microsoft FORTRAN compiler has a third phase for printing the object file.

Being PC-based, Microsoft FORTRAN has limitations such as:

- source file size limit of 64K bytes
- array size limit of 64K bytes
- COMMON block size limit of 64K bytes
- maximum number of 32,767 FORTRAN source statements
- maximum number of variable names of 1000
- the number of disk drives available

Of course, these limitations can be overcome. For example, to compile source code greater than 64K bytes, simply design your FORTRAN program in a series of subroutines smaller than 64k bytes and compile each subroutine separately. Many of these limitations, especially the space limitations on a microcomputer system without a hard disk, are reminiscent of the early days of mainframe computing. When these limitations become inhibiting, consider using the mainframe for compilation and execution of your job while using diskette files for backup.

Examination of the techniques in using the Microsoft FORTRAN compiler and details on the FORTRAN language supported will appear in future issues. Further information on using the Microsoft FORTRAN compiler can also be found in the BCIT FORTRAN User's Guide (86:05:12).

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#### Page Reader Evaluation

This spring, a study into the availability and costs of page (or document) readers was performed by Dan Low. A page reader is a device which will optically scan a page of typewritten or printed material and input it into a computer or word processing system.

There is a low-cost unit costing around C\$5,000 for connection to a PC with a serial port. This unit is a manually-fed single-sheet system suitable for occasional use. It can only read material printed in Courier 10 type at 2 pages per minute.

The least expensive device, the Oberon Omni Reader, costs only US\$499 and is designed to be connected to microcomputers. However, it is completely manually-driven. You have to push the scanner read-head along the line of print that is to be read! Obviously, this is not a suitable input device for an office.

More practical units having automatic paper feed are more suitable for office environments but cost in the range C\$10,000 to C\$25,000. Many of the units in this price range have the ability to automatically switch between different type of print fonts. The price depends on the number of fonts supported. For example, the DEST Turbo PS Model 213, a top-of-the-line model, costs C\$21,590 and can automatically read from a 75-sheet paper tray at 4 pages per minute with automatic switching between 12 font styles.

Heavy-duty units costing over C\$100,000 are suitable for high volume production environments. Many of these can read more than 4 pages per minute.

Most document readers cannot perform image or graphics scanning. The one exception is the Compuscan Model 240 which can input graphics along with text.

The choice of page reader is dependent on the nature of the work to which it will be applied and budgetary restraints.



One conceivable application at BCIT is the input of existing course outlines, notes and exams into a computer system for storage and easy revision with a text editor. In the administrative area, existing paper hard copy can be input into the mainframe system for storage and revision.

Computer Resources has made a proposal to the Ministry of Education for capital funding for a page reader. Until funds are made available, a page reader will remain on our "wish list".

The leading manufacturers of this new technology are:

CompuScan Inc.  
Fairfield, New Jersey

and

DEST Corporation  
Milpitas, California

This technology is still relatively young. As it matures and production increases, unit costs should be reduced.

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## DOCUMENTATION UPDATE

A revised BCIT HP3000 User's Guide (86:04:01) including a description of Business BASIC is available.

A new BCIT FORTRAN User's Guide (86:05:12) is available.

The revision of the BCIT Minitab User's Guide scheduled for 86:05:15, is rescheduled to 86:09:02. An ADDENDA discussing time-series analysis with Minitab will be available 86:05:26.

A BCIT WATFOR77 User's Guide will be available on 86:09:15.

One copy of each User Guide is available to faculty (or staff) users from the Computer Resources Receptionist in Room 2N214. For a list of user guides published, refer to page 24 of the Computing Services at BCIT (85:09:01).

## DUTY ANALYST'S CORNER

### CMS BACKUPS

Q. I have a few infrequently-referenced files on my CMS disk which I would like to copy to magnetic tape. How do I do it?

A. There are actually two methods for backing up your CMS files. One is, as you suggest, to copy them to magnetic tape. An alternative, which may be more convenient, is to "download" your files to diskettes.

I. To copy to magnetic tape, follow the steps below:

1. Get a tape assigned to you. The best way is to contact an analyst in Academic Systems to request a tape for you from Data Control. After a tape is assigned, you can then request it to be made available to your terminal session whenever a tape drive is free.

2. To have a tape mounted, log on to CMS, and phone Data Control (8671) to tell them the number of your tape and your CMS ID. They will take the tape in to the Computer Operator. (For security and audit reasons, operators are not allowed to remove tapes from the tape library.)

3. When the tape is ready, you will get the message:

TAPE 181 ATTACHED

4. You are now ready to write to, or read from, the tape.

a. To copy your CMS files to tape, enter:

TAPE DUMP fn ft fm      where:  
                              fn = file name  
                              ft = file type  
                              fm = file mode;  
                                      usually 'A'

b. To reload files from tape, enter:

TAPE LOAD fn ft fm

5. When you get the "R;..." message, the job is done.

6. Now detach the tape drive from your virtual machine to make it available to other users with the command:

DETACH 181

The tape will be automatically rewound and unloaded by the DETACH command.

II. To download your CMS files to diskettes:

If you have an IBM 3270-type terminal emulator board on your PC, type

RECEIVE B:fn.ft    fn ft fm (ASCII CRLF

to copy your file fn ft fm to the B: drive on your PC. (The MS/PC DOS file extension corresponds to the CMS file type but has a limit of 3 characters.)

NB: You must be logged on to CMS and not be in any utility such as XEDIT, FILELIST or FLIST.

If you do not have an emulator board, you require a serial communications board and the Kermit software to "download" CMS files. Kermit/PC is available for loan from the Library; appropriate versions of Kermit are on the HP3000 and IBM 3083 computer systems.

For details on using Kermit, refer to the Data Communications Guide (85:12:01) or come to the June course on File transfers with Kermit and ZSTEM described on page 3.



## =====

## HOURS OF OPERATION

## =====

### I. ACADEMIC SYSTEMS

#### Regular Hours -- Academic Systems

System	Hours	Days
IBM 3083	0800 - 2300	Monday - Friday
	0900 - 1700	Saturday & Sunday (to 86:06:29)
HP 3000	0700 - 2400	Monday - Thursday, Saturday & Sunday
	0700 - 2130	Friday
Micros	0700 - 2300	Monday - Sunday

On weekends, the HP3000 runs in UNATTENDED mode from 1700-2400 during the school year.

Summer Hours: Monday - Friday (0900 - 2300)  
 Saturday & Sunday : CLOSED  
 Exceptions: 86:07:19 & 20 (0900 - 1700)  
 86:08:09 & 10 (0900 - 1700)

#### Computer Operations Statutory Holiday Hours:

Victoria Day, 86:05:19 : (0900 - 2300)  
 Canada Day, 86:07:01 : CLOSED  
 BC Day, 86:08:04 : CLOSED  
 Labour Day, 86:09:01 : CLOSED

### II. ADMINISTRATIVE SYSTEMS

#### Regular Hours -- Administrative Systems

System	Hours	Days
GLOBAL/CHRIS	0800 - 1800	Monday - Friday
	unavailable	Saturday, Sunday
DOBIS	0730 - 2230	Monday-Thursday
	0730 - 1900	Friday
	1000 - 1800	Saturday, Sunday
ISIS	0830 - 2030	Monday-Thursday
	0830 - 1630	Friday
	0830 - 1230	Saturday
	unavailable	Sunday
PROFS	0730 - 2300	Monday-Sunday

Hours of Operation for all systems (academic and administrative) and exceptions to posted hours are noted on the CMS Logon message.

The CMS Logon message display is in two parts. The first will be displayed every time you log on. Temporary changes to scheduled hours, system downtimes, or new releases of system software packages will be noted on this part.

The second part of the CMS Logon Message will only be displayed when Q LOGMSG is entered. This will display all regular system scheduled hours and any long term information about scheduled holiday hours, system downtimes for maintenance, planned system software or hardware upgrades, etc.

## =====

## MAINTENANCE

## =====

Computer Resources maintains equipment in the table below. In case of problems, call 432-8407.

Micro/Terminal Labs	Locations
APPLE II+	2N321
IBM PC / Zenith	2N318
IBM 3083 system	2N419, 2N420, 2N421 2N329, 2N327, 2N319
HP3000 system	2N322, 2N325

#### Scheduled Preventive Maintenance:

HP3000 -- 86:05:15 (0700 - 1400)

#### Moving of Terminals (CRT's) and/or Printers

Relocation of terminals/printers used on the IBM mainframe should only be performed by Computer Operations. For assistance, contact Lee Korman (432-8351) or Computer Operations (432-8407).

There are three reasons for this request:

1. These terminals have been set up to access the different systems (PROFS, DOBIS, etc.). If the device is moved without FIRST notifying Computer Operations, there is no guarantee that it will work. The BCIT logo may be present but the systems previously accessed could now be unavailable.
2. Terminals and printers are cross-charged. If a device is relocated without FIRST notifying Computer Operations, the last known department or individual who had the terminal would continue to be charged.
3. Maintenance calls for problem terminals/printers are recorded by serial number (which is cross-referenced with the device's location). If the device is moved without notifying Computer Operations, considerable delay could occur in servicing the problem device.

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## IBM Terminal (CRT) Trouble Shooting

The following procedure applies to IBM 317x, 327x and Memorex terminals. If the terminal is not working, please follow the steps outlined below to correct the problem. If after checking these items and the terminal fails to display the BCIT logo, contact Computer Operations (432-8407).

For assistance, please contact Lee Korman (432-8351) or Computer Operations (432-8407).

1. Shut the terminal off.
2. Check that the power cord is plugged in at the electrical outlet and at the terminal.
3. Check that the COAXIAL CABLE connection at the back of the IBM 3178/3179 (or front of the IBM 3278) terminal is secure. The connector is a PUSH-TWIST type.
4. Turn the terminal on.
5. Check that the BRIGHTNESS control knob is turned on. It is marked by the o symbol. On IBM 3278/3178 terminals, it is on the lower right hand side of the screen bezel. On IBM 3179 terminals, it is a thumbwheel below the screen.
6. If the CURSOR is at the top RIGHT HAND CORNER and there is a line at the bottom going straight across the screen and nothing else, this could indicate a communication problem. It will require attention. Call Computer Operations (432-8407).

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### DID YOU KNOW ...

how many users there are on the BCIT computer systems? The following table gives the numbers for this past year.

		1985:09	1986:01	1986:04
HP 3000	Part-Time	558	478	608
	Full-Time	1,578	1,076	1,076
	Subtotal, HP	2,136	1,554	1,684
IBM 3083	Part-Time	388	492	485
	Full-Time	495	1,115	1,154
	Subtotal, IBM	883	1,607	1,639
Faculty IBM		164	174	192

\* The number of faculty IDS on the HP3000 was constant at 105, with 52 unused by 86:04:28.

## LAB BOOKING

The IBM terminal labs and the HP terminal lab 2N322 are for scramble use only.

The HP125 CRT terminals in Room 2N325 may be reserved by instructors of courses which use packages requiring the use of the HP125 terminals.

Room 2N325 and the Microcomputer Labs (Rooms 2N318 and 2N321) may be booked through Timetabling (Room 107, Trailer 2V, local 5386). In non-booked times, Room 2N321 is open for scramble use.

## SUPPLIES

Computer Resources stocks supplies for the student labs -- 2N318, 2N321, 2N322, 2N325 and 2N329. (Other labs are maintained by other departments.) Report supply shortages to Computer Operations (432-8407).

Coding forms are NOT supplied but may be purchased at the campus TNT (This 'n That) stores.

Central Stores provides:

- 5 1/4 inch diskettes:
  - double-sided, double-density for the IBM PC and compatibles
  - single-sided, double-density for the APPLE II+
- paper and ribbons for microcomputers
- scanner sheets (5-bubble and 10-bubble)

## CMS VERSION OF NEWSLETTER

If you have a faculty or staff CMS ID, you can access a copy of the Newsletter via a terminal connected to the IBM mainframe. This file is updated with each issue of the Newsletter.

The procedure is as follows:

1. Logon to CMS.
2. Type 'NEWS' and the current version will be displayed at your terminal.
3. Use XEDIT commands to scan through the Newsletter.
4. Type 'QUIT' when you have finished.



NEWSLETTER SUBSCRIPTION

\_\_\_\_\_ ADD my name to your MAILING LIST

\_\_\_\_\_ CHANGE my mailing label information  
(I have attached my mailing label and indicated the  
changes below.)

\_\_\_\_\_ REMOVE MY NAME (I have attached my mailing label.)

MAILING LABEL INFORMATION ( Please print. )

NAME/TITLE: \_\_\_\_\_  
                                    last                                    first

MAILING ADDRESS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Postal/ZIP Code \_\_\_\_\_

Business Phone: \_\_\_\_\_

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

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FEEDBACK

If you have a comment or a suggestion about any of our  
services, we would like to hear from you. Please take  
the time to jot it down and return this form to us.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



3300 01  
MR D NELSON  
C.E.I.S. INSTRUCTOR 125297

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TO: Editor, Newsletter  
BCIT Computer Resources Department  
3700 Willingdon Avenue  
Burnaby, B.C. Canada V5G 3H2

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Please fold