

COMPUTER RESOURCES

VERTICAL FILE Newsletter

VOLUME 2

NUMBER 1

83:09:02

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SEP 16 1983
SERIALS DEPT. LIBRARY

PERSONNEL

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

Locals shown are for BCIT's central number:
(604) 434-5734.

Director, Willy Kurz.....245

Secretary.....452

Academic Support Analysts

Lee Herberts.....798

Dan Low.....268

David Thomson.....798

ID requests, information, and assistance..351

Supervisors

Academic Support, Neil McLagan.....680

Administrative Support, Neil McLagan.....680

Data Administration, Erica Westley.....454

Data Control, Rita Richardson.....(2N209)456

Data Entry/Keypunch, Carol Tkach...(2N212)618

Processing Services, Ron Sproule.....708

COMPUTER ROOM.....246

after 1700 and weekends.....434-5746

DATA ENTRY/KEYPUNCH.....(2N212)618

DIAL-UP TO COMPUTERS

off campus.....430-3371

on campus.....448/449

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

Subscription changes to the Newsletter 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 84:01:02.

FACILITIES

The major BCIT computer is an IBM 4341 Model Group 2 with 8 million bytes of main memory and approximately 100 terminals. Both batch and online processing for academic and administrative applications are performed. The operating systems are VM/CMS and DOS/VSE.

An IBM 4341 Model 11 operating under VM/CMS has 20 terminals and 2 CAD workstations.

A Hewlett-Packard 3000/64 minicomputer with 64 terminals is available for introductory and application package training.

Fourteen Apple II Plus microcomputers are available for student instructional use.

Two Apple II Plus microcomputers, an HP125 microcomputer (terminal to the HP3000), an IBM 3178, and a Televideo 950 are available for exclusive Faculty use.

Further information on our facilities is available from the Supervisor of Processing Services, Ron Sproule (local 708).

Locations

IBM 4341

Card readers.....2N209

Student Terminal Labs:

IBM 3278.....2N329

Memorex 2078.....2N419

Televideo 950.....2N420/421

IBM 3178 System B.....2N327

Faculty Area.....2N210

HP3000

Terminals.....2N322/2N323A

*Microcomputers

Apple Cart.....Library

Faculty Resource Lab.....Library Room 308A

Student Lab.....2N319

*Access to the Apple Carts and the Faculty Resource Lab can be arranged through the Listening and Viewing desk in the Library. The Apple Carts may be used within the Library by students but they must relinquish the unit to any instructor desiring to use it.

The Student Lab (Room 2N319) may be booked through the Timetabling Department (Room 107, Trailer 2V, local 386). In non-booked times, the lab is open for scramble use.

COMPUTER RESOURCES HAS A NEW DIRECTOR

Mr. Willy Kurz was recently named as the new Director of Computer Resources. Gordon Thom announced the appointment after a four-month search and selection process which followed Ron Siddaway's resignation last February. Willy, who originally comes from Switzerland, has worked in Vancouver for several years, and is leaving a similar position at McGavin Foods Ltd to take up his new responsibilities here at BCIT. Our special thanks go to Hans Holst who very ably filled the gap as Acting Director during the selection process, and we wish him every success on his return to his teaching duties. We welcome Willy to BCIT, and look forward to bringing innovative computing services to the Institute under his direction.

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EDITOR'S MESSAGE

The Newsletter is back again for another academic year - its second. You'll notice several changes to our computer services that took place during the summer. These include:

- replacing keypunch units with terminals. This will ease data entry for DOS/VSE users and save costs.
- Installing new CMS and DOS/VSE systems which offer improved features and performance.
- Installing an HP3000/64 to replace obsolete HP2000 computers.
- Creating a new ID creation and return procedure
- Installing VS/Fortran (VS/Fortran)
- Updating and improving User's Guides

Details of these and other changes are contained in this issue. Also included is an excellent article (called Two Tin Cans...And a Piece of String) that explains concepts for communicating with a computer.

In our May issue, we requested input on the quality of this Newsletter. We thank those who provided criticism. We hope to implement these suggestions.

Due to staff shortages, the Newsletter will be reduced from five issues per year to three. Also, fewer feature articles will be produced. We will continue to provide up-to-date information on software and hardware changes and services.

Please stay tuned and have a good year.

¶

HOURS OF OPERATION

The normal operating schedule to 83:12:31 is given in the following table. Changes to these hours of operation will be posted prominently and displayed on the terminal logon message as far in advance as possible.

System	Hours	Days
IBM 4341	0800 - 2300	Monday - Friday
	0900 - 1700	Saturday, Sunday
HP3000	0700 - 2400	Monday - Sunday

Holiday hours of operation:

Labour Day Weekend	83:09:03-05	- Closed
Thanksgiving Day	83:10:10	0900-2300
Remembrance Day	83:11:11	0900-2300
Christmas	83:12:23-27	- Closed
New Year	83:12:30 to	
	84:01:02	- Closed

SYSTEM BACKUPS

System	Times	Days
HP3000	0700 - 0730	Monday - Friday
	2200 - 2400	Friday Evening

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MAINTENANCE

The Computer Resources Department is responsible for maintenance of the following equipment. Trouble calls may be made at Local 246 during regular daytime hours. After 1700 and weekends, please call 434-5746.

Units	Locations
Microcomputers: APPLE II	2N319
Terminal Labs: IBM system	2N419, 2N420, 2N421 2N329, 2N327
HP3000 system	2N322, 2N323A

SUPPLIES

The Computer Resources Department stocks supplies for all terminals. Ribbons, paper, etc. will be replaced during daily checks. Supply shortages should be reported to the Operations staff at local 246 or, after 1700 and on weekends, at 434-5746.

Print Layout Sheets are supplied to students by Computer Resources and are available in Room 2N327. Coding forms are NOT supplied, and students may purchase these through one of the campus TNT (This 'n That) stores.

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HARDWARE AND SOFTWARE CHANGES

NEW DOS/VSE SYSTEM INSTALLED

Effective 83:08:22, a new student DOS/VSE system (SDOS) was installed. The new system includes an upgrade of compilers, a new release of CICS, and the addition of VS/FORTRAN (see article in this issue).

Please note that the permittable job classes have been changed. In the new version, only CLASS=A should be used on your "* \$\$ JOB" card. Classes B, C, and P will be removed effective 84:01:01. This change helps to reduce the overhead of scheduling jobs for different classes.

When cataloging or searching a student library, a library definition statement (i.e., LIBDEF) is now required. For example, to catalog to the student core image library, the following is required:

```
// LIBDEF CL,TO=STDCLB
```

If you are searching a library (for example, to execute a module), the following is required:

```
// LIBDEF CL,SEARCH=STDCLB
```

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NEW CMS SYSTEM INSTALLED

Version 2.1 of CMS was installed on 83:08:21. This version adds several new commands:

FILELIST - an improved type of FLIST

RDRLIST - displays reader file information

PEEK - views reader files

RECEIVE - reads any type of reader file

DISCARD - erases CMS or reader files

SENDFILE - sends files to other ID's

More information may be obtained by using the CMS HELP command or refer to the BCIT CMS User's Guide (83:09:01).

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NEW FACULTY RESOURCE LAB LOCATION

The faculty resource lab (faculty professional development area) has been moved from the 2N327A to room 308A in the Library. This change was necessary because of renovations to 2N327 to accommodate new terminals.

Access to room 308A can be obtained from the Circulation desk in the Library.

¶

VS/FORTRAN (FORTRAN 77) AVAILABLE

A new Fortran compiler, VS/FORTRAN, has been installed on the IBM 4341 SDOS system. The new compiler offers the following features:

- structured programming aids
- character data types and functions
- top-down design aids
- free-format source input option
- improved diagnostics
- optimization options
- VSAM capabilities

VS/Fortran is optionally compatible with Fortran IV. For improved efficiency, existing Fortran source code should be recompiled under VS/Fortran. Fortran F will be removed by 84:01:02.

To execute the VS/Fortran compiler, use the VSFORT procedure:

```
// EXEC PROC=VSFORT
program source
/*
data, if any
/*
```

Documentation on VS/Fortran is contained in VS Fortran Application Programming: Language Reference (SC26-3986) or in any standard FORTRAN 77 textbook.

¶

KEYPUNCH REPLACEMENT

As of 83:09:02, students will no longer keypunch their programs and data. The keypunches have been replaced with 20 IBM 3178 terminals located in 2N327.

Previously, card-only users would be given a DOS/VSE ID, keypunch their jobs, and submit them through a card reader. Now, DOS jobs like PL/I, Assembler, COBOL, and SPSS can be entered at a terminal into a file. The file can then be sent to DOS/VSE for execution and printing via CMS. By using terminals, editing is easier and errors are quickly corrected.

The use of DOS/VSE (Assembler, COBOL, Fortran, PL/I, RPG, SPSS) requires a CMS ID to enter and submit a job. The CMS Users Guide, available from Computer Resources, explains how to use CMS.

¶

OPTICAL SCANNER - UPDATE

Optical scanning is used to analyze tests, instructor evaluations, and other information. Answer sheets marked in pencil are put into computer form by a scanner unit.

The OPSCAN 17 has been replaced with a Sentry 7001 scanner. The new unit communicates directly with the IBM computer and provides improved reliability and speed. Standard blue answer sheets, available from Central Stores, must be used for this machine.

Funding has just been received for purchase of this unit.

¶

THE NEW HEWLETT-PACKARD SYSTEM

The Hewlett-Packard 2000 mini-computer systems, which for many years provided time-sharing BASIC service to students and faculty at BCIT, have been retired. The terminals from these two systems are now connected to the new HP 3000/64.

This more modern system will be more reliable and economical to operate, and will support a wider variety of languages and packages as BCIT's computing requirements expand. Information and documentation are available from Academic Support, and HP 3000 manuals can be borrowed from the library or purchased from Hewlett-Packard.

Instructors' programs and files from the HP 2000 systems have been copied to the HP 3000, but some (usually minor) changes are needed before they will be ready to run.

A short seminar will be offered to introduce instructors to the new system. The next session is scheduled for 83:09:28. Please call local 351 for further information.

FEATURES

ID's - ALLOCATION OF RESOURCES

In April of this year we asked faculty to provide information on computing resource requests for the 1983/84 academic year. As a result, the majority of ID's needed were created during the summer, thus reducing delays and errors in processing.

From the requests received to date, we expect at least an overall 25% increase in the number of ID's and, consequently, disk and CPU usage.

The HP3000/64 currently limits the number of ID's to about 900. Since over 2,000 ID's were requested for the fall term, some introductory courses will have a single ID per set. This problem should be corrected by 84:01.

Instructors are asked to return the name and Student or Social Insurance Number of each student using an ID. Since the computing resource is a valuable commodity, accountability for its use is mandatory. ID's for which no accountability can be obtained will be removed from the system by 83:09:30.

Those who apply for ID's this month, should allow at least one week for processing. Please contact Computer Resources at 351 if you have questions about ID's.

BCIT AND IBM PRESENT CAD

BCIT and IBM jointly will be presenting a seminar on the benefits of CADAM. The seminar will take place during the week of 83:09:26. Included will be demonstrations on the recently installed CADAM software as well as

some related IBM hardware/software products such as FASTDRAFT, plotters, and graphics equipment.

More information will be forthcoming.

CADAM IMPLEMENTATION

The CADAM (Computer-Aided Design And Manufacturing) package donated to BCIT by CADAM Incorporated was installed in June. The initial configuration consists of two IBM 3251 work stations located in Room 2N319A. A plotter is planned for the system.

A small group was trained on the CADAM system during the summer. These people will conduct training sessions for the rest of BCIT faculty and staff starting in September, 1983. The details have not been finalized, but if you are interested, please contact one of the people listed below:

Tony Adamo, Mechanical Tech.	local 332
Peter Hobbins, Mathematics	local 401
John Lancaster, Building Tech.	local 341
Dan Low, Computer Resources	local 268

Students in Engineering, Computer Systems, and CEIS will start using the system for pilot projects in the fall term.

DOCUMENTATION UPDATE

Due to hardware and software changes, the following documentation has been revised and is recommended for reading before trying to use the IBM and HP systems again.

1. BCIT CMS User's Guide (83:09:01)
2. BCIT VSE User's Guide (83:09:01)
3. BCIT WATFIV User's Guide (83:09:01)
4. BCIT WATBOL User's Guide (83:09:01)
5. BCIT HP3000 User's Guide (83:09:01)

These User's Guides are available from the Duty Analyst in Room 2N214.

MICROCOMPUTER USER'S GROUP

The Microcomputer User's Group will hold its first meeting of this term on Friday, 83:09:30 at 12:30 in Library Room 308A to discuss forthcoming activities and election of officers. If you would like to attend but have a conflict at that time, please call Frank Knor, Chairperson, at local 764. Keep in mind that the meeting is during the week of the BCIT-IBM CAD seminar.

In the spring of 1983, the Microcomputer User's Group had prepared and presented a report on microcomputing at BCIT to the Information and Computing Committee (ICC). Ron Sterne, Chairman of the ICC, has since responded, thanking the Group for its work and stating that the report will be reviewed by the ICC for appropriate action.

The following changes in the location of microcomputing equipment should be noted:

1. The Faculty Resource Lab has been moved from Room 2N327A to Library Room 308A. Library Room 201D still contains the APPLE CARTS which may be booked at the Library Circulation Desk.
2. The Student Microcomputer Lab has been moved from Room 1A220 to Room 2N319.
3. The APPLE II microcomputer program borrowing desk has been moved from the Library Listening & Viewing Desk to the Library Circulation Desk. The programs can no longer be reserved but are available on a first-come-first-served basis, with preference given to faculty.

¶

MICROCOMPUTER PROGRAM UPDATE

Additional microcomputer programs were acquired by the Library during the summer. Please check with the Library staff at the Circulation Desk for information about the new programs, as they have not yet been listed in the Microcomputer Program Catalog.

The Library plans to acquire additional copies of popular programs such as VISICALC and PFS, as well as versions for the APPLE IIe microcomputer.

If you are aware of microcomputer programs that would be useful in your course(s), please feel free to contact Frank Knor, Librarian, for assistance in acquiring the program(s).

¶

THE ISIS PROJECT MAKES PROGRESS

BCIT is now four months into the Integrated Student Information System (ISIS) Project which, when complete, will result in the implementation of a new Admissions and Student Records system. The project is planned to take a full year's involvement by the Project Team, made up of systems users and Computer Resources personnel, and led by Janet Robertson on secondment from the Registrar's Office. Five members of Computer Resources are scheduled for up to a 100% time commitment as required throughout the project. David Cresswell, from the Administrative Systems group, is the Systems Analyst for ISIS, and Data Administration resources are provided by Erica Westley (Data Administrator,) Don Ralph (Senior Systems Analyst,) Suzanne Yabsley (Technical Writer,) and Darlene Hayes (Forms Analyst).

At this point, the TOTAL database management system and the "prototype" system software (purchased from SCT in Pennsylvania) have been installed and performance-tested. The Project Team, on behalf of the Institute, conducted a thorough study of the prototype system, and has made recommendations to the Operations Committee on changes that should be made at BCIT to accommodate the new system. Also, an extensive list of suggested modifications to the prototype system has been delivered to SCT for their analysis and costing. While SCT

contracted to make certain modifications as part of the fixed-price agreement, other modifications that arose as part of our analysis of the prototype will be prioritized and carried out either by the Computer Resources Department, or by SCT personnel at an additional cost. Such decisions will be made by the Operations Committee. Programming of these modifications is expected to begin within the next few weeks so that BCIT's operational system will be ready, beginning with Continuing Education registrations, in April 1984. It is not likely that the project can be considered complete until after the main registration period in September 1984. By that stage, it's sink or swim!

From a technical perspective, ISIS and TOTAL currently reside in a dedicated VSE system on the 4341 "System A" with CICS on-line support. The number of terminals required for user access to the database is currently under review. Data security standards and office procedures are being prepared to maximize the usefulness of ISIS across the Institute while protecting the database from unauthorized access. During periods of heavy use (e.g., at registration time) it is likely that ISIS will significantly impact the "System A" CPU. However, we will attempt to schedule CPU demand ahead of time to minimize contention with other 4341 users.

The Project Team will be issuing ISIS newsletters to the BCIT community from time to time. Information is available to all at any time by phoning Janet Robertson's office at Local 537. If you have any enquiries about Computer Resources' support for ISIS or TOTAL, please call Erica Westley at Local 454.

¶

TWO TIN CANS...AND A PIECE OF STRING

This article is adapted from Arizona State University newsletter INTERFACE by Mary Rushton and the University of Toronto version of that article.

Trying to communicate with a computer is like trying to talk with a multilingual, deaf, dumb, and blind man trapped in a windowless, doorless room. First, you have to find a way to get your message to him. Then, because the man can perceive so little - only electrical impulses - you have to determine what form your message should take. And, before the man can understand you, you must tell him which language (code) you'll be using. (Remember, this is before he can understand you).

HARDWARE TERMINALS

Getting the message inside the room is the first problem. Since the computer uses only electrical signals, you might assume that the simplest solution is to run a wire between the terminal and the computer. This is often done; the process is called hardwiring a terminal.

What's more these wires are used to solve many coordination problems. In addition to transferring data, they transmit enough information about the status of the terminal and the

- computer to ensure that the data is not garbled. Wires send and receive data, and signal when data may be transmitted or received. Usually, between 4 and 25 wires are used.

Hardwiring, though straightforward, imposes certain restrictions. Because the signal weakens over distance, the cable usually cannot exceed 50 feet. Also, in most cases, once a terminal is hardwired to one computer, it cannot be connected to another unless it is outfitted with a switchable line.

MODEMS AND DIAL-UP TERMINALS

When hardwiring isn't appropriate, you can use a telephone line to communicate with the computer. However, while a phone line solves the distance problem, it raises some others. Telephone lines were designed to transmit the human voice, an analog signal that varies continuously over a wide range.

Terminals and computers, on the other hand, produce and understand only digital signals, or electrical impulses called "bits" that are either "on" or "off", "1" or "0".

Modems (short for MODulator-DEModulator) transform one kind of signal into another. Two modems must be used, with one at either end of the telephone line.

There are two basic kinds of modems used with terminals those that hook into the phone lines directly (called datasets), and those that connect to the phone lines through the handset of a standard telephone (called acoustic couplers).

Datasets are electrically connected to the phone lines, just as are telephones. Because they use public phone lines directly, they are not portable (although some modems have modular phone jacks and thus can be used wherever such a jack will fit). However, they transmit signals very efficiently. Since they use the telephone line directly, they encounter little noise and distortion, and thus can handle very fast signals (or high baud rates, which we'll discuss later).

The other kind of modem, an acoustic coupler, goes through the intermediate step of translating the electrical signal into sound, which can then be fed into the standard handset of a telephone. This type of modem is the least expensive (at least compared to other modems that transmit information at equivalent baud rates), and it is portable (it can be used anywhere there's a telephone). But it's somewhat subject to distortion, and, because it must filter out so much "noise", it can only transmit comparatively slow computer signals (300 baud is the limit for most acoustic couplers).

DUPLEX

We now have a way to reach the man in the little room. However, we also want to reach him efficiently, which leaves us another choice to make: do we want the link to be full-duplex or half-duplex? You've probably bumped into the term "duplex" at some point: it's a duplex problem if, when you enter a character, the terminal either prints it twice or doesn't print it at all.

Basically, duplex refers to the channels through which information is sent. In full duplex mode (the more efficient way), information can be sent both ways on the same channel at the same time.

For your typing to be reproduced accurately at your terminal, both terminal and computer must be set in the same mode. That's because in full-duplex mode, the terminal transmits everything you type to the computer without displaying it. The computer is set to remote echo or echoplex. This means that it echoes back to the terminal both your typing and its response, which are then displayed. In half-duplex mode, the terminal both displays your typing and sends it to the computer, (set to local echo) which returns only its response.

If the terminal is set to half duplex and the computer is set to remote echo, your input, when printed, will appear doubled. If the terminal is set to full-duplex, and the computer is set to local echo, your input won't appear at all. Usually both the terminal and the modem have duplex switches. For full-duplex operation, both switches must be set to full-duplex. For half-duplex operation, however, one switch must be set to full-duplex and the other to half-duplex. If you have to reach into the terminal with a screwdriver to change the duplex, leave it on full-duplex and change the modem's duplex as needed. If you have a convenient duplex button on the front of your terminal, leave the modem on full-duplex and change the terminal.

CHARACTER CODES AND PARITY

We said earlier that computers are "multilingual". In this case, we're referring not to high-level languages like FORTRAN or PL/1, but to the differing patterns of 1's and 0's into which each character is transformed when you enter it at the terminal. Most terminals use one of the two sets of patterns (codes): ASCII or EBCDIC; EBCDIC is used by only a few IBM or "IBM-compatible" terminals, such as IBM 3270 type terminals).

Internally, though, each computer uses a different code. The HP3000/64 and microcomputers use ASCII; the IBM uses EBCDIC.

Since both the terminals and the computer speak ASCII, we might assume that they will have no problem communicating; but there are, in fact, several dialects of ASCII. In addition to the standard-7 bit code (often called the data bits), a terminal also sends a start bit, (optional), and 1 or 2 stop bits. Several combinations are possible.

Terminals and personal computer communication boards can be set to the different patterns of bits. Many personal computers must be reset because they have a default value of a start bit, 8 data bits, and 2 stop bits (for a total of eleven bits per character). Some home computers have little mechanical switches on the board itself; others can be changed through software. When reading your manual you may not find any reference to the start bit, because it is the same on all terminals and boards. When the terminal switches will be set, we are now speaking the same language as the man in the little room. Now we only have to let him know how fast we will be talking.

BAUD RATE

Baud rate (more recently referred to as "data rate") refers to the speed at which information is transmitted to the computer: for example, 300 baud means that 300 bits (or electrical impulses) are transmitted each second. Since one character consists of 10 bits, 300 baud also means 30 characters per second. In general, interactive terminal baud rates range from 110 to 9600 or more (although 1200 usually is the limit for non-hardwired connections).

After indicating the rate at which we will be speaking, the avenues of communication are open between us and the "multilingual, deaf, dumb, and blind man trapped in a windowless, doorless room". And all before he can "understand" us. It's a far cry from two tin cans and a piece of string!

CMS VERSION OF NEWSLETTER

If you have a CMS ID, you can access a copy of the Newsletter through one of the terminals. This file will be 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 through XEDIT.
- 3) Use the standard XEDIT commands to scroll through the Newsletter.
- 4) Type 'QUIT' when you have finished viewing the Newsletter.

NEWSLETTER SUBSCRIPTIONS

CHECK the subscription change wanted:

- ___ ADD MY NAME TO YOUR MAILING LIST
- ___ CHANGE MY NAME/DEPARTMENT
(Please attach current address lab)
- ___ DELETE MY NAME

NAME/TITLE _____
last first

DEPARTMENT/ADDRESS _____

RETURN TO: Editor
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