A History of Computing at UNT

By Claudia Lynch, Benchmarks Editor (BITNET: ASK@UNTVM13)

Since we are celebrating our centennial this year at UNT, it seems appropriate to look back at the history of the Computing Center. Obviously, computers were not used here back in 1890, so there was no need for a Computing Center at that time. Time and technology, however, changed all that.

In the Beginning...

Computing at the University of North Texas got its start in 1962 when the University (it was called North Texas State University at that time) purchased an IBM 1620 to support academic users. According to Richard Harris, Associate Vice President for Computing, J.B. Harvill was teaching a numerical analysis class in the Math Department and had arranged to have the class run some programs on an IBM 1620 that was owned by Texas Instruments in Dallas. Meanwhile, a committee was formed at NT to study the feasibility of the University acquiring its own computer. As it turned out, the NT committee recommended that the University purchase an IBM 1620 of its own. This was done, and Gene Milner from Texas Instruments was hired to administer it. Thus, the numerical analysis class ended up running their programs on a computer here instead of at TI.

Gene Milner left NT after only a year, but while he was here he hired two young men who had been students in that numerical analysis class, Richard Harris and Charlie Ellis. At the time of their employment, they were both working halftime in the position of programmer/operator. Soon after the employment of Harris and Ellis, another bright young man from the Math Department was hired to be a programmer/operator. His name was Jerry Waldon.

Richard Harris was appointed Acting Director of Academic Computing in 1963. At this time, academic and administrative computing were two separate entities,

Continued on page 5.

The Centennial Issue:
History Lives Inside These Pages!
SERVICES AVAILABLE TO USERS OF THE UNT COMPUTING FACILITIES

The UNT Computing Center is located in the Information Sciences Building (ISB), Room 119. Phone Numbers:
- Computing Center: (817) 565-2324
- Help Desk: (817) 565-4050
- Micro Support: (817) 565-2316, 565-2319
- Graphics Lab: (817) 565-3479
- ISB I/O Area: (817) 565-3890
- BA I/O Area: (817) 565-2350

All personnel listed below can be contacted either by calling the Computing Center or by sending them electronic mail on MUSIC/SP (ID-codes follow each name. All IDs are on BITNET node UNTMUSIC).

Benchmarks - Claudia Lynch (ASCX)
Information & ID-Codes; Disk Space Problems - Theresa Russell
Statistical/Research Support - George Morrow (ASCX), Panji Sittiwong (ASCX)
Academic ADABAS/COM-PLETE - Cathy Hardy (ASCX)
CRISP & COMPUSTAT Problems - Panji Sittiwong (ASCX)
Student Programming Problems - CSCI Dept., GAB Room 550; BCIS Dept., BARoom 152
Problems with JCL, Passwords, or Operating Systems; or Communication/Terminal Problems - Help Desk
Data Entry; Test Scoring & Analysis - Betty Grise
Administrative Applications - Coy Hoggard
Printout Retrieval - ISB or BA I/O Operators

DIALING-UP UNT COMPUTERS OVER THE TELEPHONE

Phone numbers for the Local Area Network (LAN) are:
- 300-2400 BAUD: (817) 565-3300
- 300-1200 BAUD: (817) 565-3499
- 300-9600 BAUD: (817) 565-3461
- 300-9600 BAUD: D/FW METRO 429-6006, 429-9314

Area code 214 must also be dialed before the METRO.

The numbers that accommodate multiple baud rates have an autobaud feature that requires you, once connection with the remote modem is made, to hit the RETURN key repeatedly so that the receiving modem sends the appropriate baud rate. When you have established a communications link, the prompt will appear on your screen and you can enter one of following CALL commands to connect with the computer of your choice.

CALL 8040 connects with the HDS/8083 (supports line editing or PCWS). Operating environments available are: MUSIC/SP, VM/CMS.

CALL 3270 connects with the HDS/8083 through a 3270 protocol converter (supports full-screen editing). Operating environments are: MUSIC/SP, VM/CMS, ADABAS/COM-PLETE.

CALL DEC connects with the VAXcluster (VMS)

CALL 780 connects with the Research VAX (Unix)

CALL 3000 connects with the Libraries' HP-3000 (Bibliographie database).

CALL 6800 connects with the NBI (Unix)

Communications Settings

<table>
<thead>
<tr>
<th>LAN address</th>
<th>Data Bits</th>
<th>Parity</th>
<th>Stop Bits</th>
</tr>
</thead>
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<tr>
<td>DEC, 3000</td>
<td>8</td>
<td>N</td>
<td>1</td>
</tr>
<tr>
<td>8040, 3270, 760, 6800</td>
<td>7</td>
<td>E</td>
<td>1</td>
</tr>
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</table>

HOURS FOR UNIVERSITY OF NORTH TEXAS COMPUTER ACCESS AREAS: Summer 1990*

<table>
<thead>
<tr>
<th>Location</th>
<th>Days</th>
<th>Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing Center RJE</td>
<td>Sunday, Monday, Tuesday-Saturday</td>
<td>Noon-Midnight, 7 a.m.-Midnight, 7 a.m., Tues. Midnight Sat. (Open 24 hours/day)</td>
</tr>
<tr>
<td>ISB 110 Terminal Area</td>
<td>Sunday, Monday-Thursday, Friday, Saturday</td>
<td>1 p.m.-10 p.m., 6:00 a.m.-10 p.m., 8:00 a.m.-6 p.m., 9 a.m.-6 p.m.</td>
</tr>
<tr>
<td>College of Business</td>
<td>Sunday, Monday-Thursday, Friday, Saturday</td>
<td>Noon-11:45 p.m., 8:15 a.m.-11:45 p.m., 8:15 a.m.-7:45 p.m.</td>
</tr>
<tr>
<td>GAB 550C</td>
<td>Sunday, Monday-Thursday, Friday, Saturday</td>
<td>4-11 p.m., 9-11 p.m., 9 a.m.-3 p.m., CLOSED</td>
</tr>
<tr>
<td>Graphics Lab</td>
<td>Sunday, Monday-Thursday, Friday, Saturday</td>
<td>Noon-10 p.m., 7 a.m.-10 p.m., 9 a.m.-6 p.m., Noon-6 p.m.</td>
</tr>
<tr>
<td>Willis Library</td>
<td>Sunday, Monday-Thursday, Friday, Saturday</td>
<td>1 p.m.-10 p.m., 7:30 a.m.-10 p.m., 7:30 a.m.-9 p.m., 9 a.m.-9 p.m.</td>
</tr>
</tbody>
</table>

*Hours may vary. Check MUSIC/VAX News and/or posted schedules for exceptions.

This issue of Benchmarks was produced by the Documentation Services section of Academic Computing. It is a bi-monthly publication, produced by the University of North Texas. It is available in print and online. It contains news, announcements, and information about the UNT Computing Center. The publication is intended for students, faculty, and staff of the University of North Texas. It is published by the University of North Texas.
Computing Center Chronology

- 1962  IBM 1620 purchased to support academic users. The 1620 had 20K, which works out to be about 10K bytes as we know it now. The printer was the operator's console, which was an IBM electric typewriter. The first Director of Academic Computing, Gene Milner, was hired. His office, and the IBM 1620, was located on the first floor of the Business Administration Building, in the area now occupied by the BARJE and microcomputer labs.
- 1963  Gene Milner left to work for IBM. Richard Harris was appointed as Acting Director of Academic Computing.
- 1964  IBM 1440 purchased to perform administrative data processing. Richard Harris appointed Director of Computer Systems. Jerry Waldon appointed Associate Director of Academic Computing and Coy Hoggard hired to be Associate Director of Data Processing. Harris, Hoggard and the IBM 1440 were housed in the basement of the Administration Building.
- 1969  Computing personnel consisted of Richard Harris, Director of Computer Systems; Jerry Waldon, Associate Director of Academic Computing, who supervised one secretary/data entry operator and several part time people; Coy Hoggard, Associate Director of Data Processing, who supervised one programmer/analyst, one programmer, one computer operator, one keypunch supervisor, and three keypunch operators. The total operating budget for the Computing Center was $163,738.
- 1970  IBM 360/50 CPU acquired to support academic and administrative computing. The original configuration of the 360/50 was one multiplexor channel, one selector channel, 256K core memory, a 1403 line printer, a 2540 card reader/punch, three 30KB tape drives, and five 2314 single density disk drives. The original operating system was OS/MFT/HASP supporting a maximum of three user partitions. Ray Sanders hired as Operations Supervisor.
- 1971  First Computing Center newsletter published, called NTSU Computing Center Newsletter. The editor was Jerry Waldon.
- 1973  The capacity of the IBM 360/50 was doubled to a capacity of 512K bytes. The 7-track tape drive was removed, leaving three 9-track tape drives.
- 1974  Several administrative inquiry/update terminals were connected to the 360/50. CICS used for on-line transactions.
- 1976  An HP-2000 minicomputer was purchased to provide low cost, BASIC language only, timesharing terminal support. SPSS was purchased with a faculty research grant through the efforts of Dr. Jim Glass of the Political Science Department.
- 1978  The capacity of the IBM 360/50 was doubled again when the leased CPU was replaced with a purchased unit with a full megabyte of core memory. Sixteen Apple microcomputers were installed in the Computer Science Department. Technical Support section created. Jerry Waldon became Associate Director of that group. Douglas Lillard hired as Associate Director of Academic Computing.
- 1979  The IBM 360/50 was upgraded for the last time when an additional bank of disk drives were added. OS/MFT replaced as the batch operating system. A remote job entry station (RJE) was installed in the Business Administration Building.
- 1980  First issue of Benchmarks was published. The editor was Claudia Putnam. Sandy Franklin, who was an Administrative Assistant at the time, typed it. Lynne Adkins, in Computer Operations, drew the logo. A National Advanced System AS/5000 4 megabyte CPU and 3.5 billion byte disk storage subsystem was purchased. Academic disk storage was set to 1.1 billion bytes, 4.7 times that available on the IBM 360/50. VM/370 installed – memory requirements no longer used to determine job class. SAS installed for the first time. MUSIC acquired as the academic interactive operating system for the AS/5000. Access to MUSIC was gained through 300 baud asynchronous dial-up terminals and 1200 baud hardwired terminals. The College of Business and Computer Science "Computer Centers" formed. Doug Lillard left the Computing Center to work in private industry.
- 1982  Construction of the cable television based local area network began. Automated tape library management system (TMS) acquired.
• 1983 Construction completed on the computer rooms on the 5th floor GAB. Three VAX 11/780s purchased and installed in the new facilities on the 5th floor GAB. Two of the machines are used for general timesharing and managed by the Computing Center. The third is used for research purposes and is managed by the Computer Science Department. Kim Stickney hired to be the VAX Administrator. National Advanced Systems AS/8040 and AS/6650 replaced the AS/5000. The AS/8040 used primarily for instruction and research, the AS/6650 used primarily for administrative computing. Began development of Student Information System Management System (SIMS). The Sytek local area network became operational. SPSS-X installed. The Computing Center is reorganized so that there is a Manager of Information System (Coy Hoggard) and a Manager of Computer Services (Tom Madron). Reporting to the Manager of Computer Services was an Academic Services Manager (vacant), Computer Operations Manager (Ray Sanders) and Technical Support Manager (Steve Minnis). HP2680A laser printer capable of printing 45 pages per minute added to the AS/8040. Eight metro lines installed. Sixty-four terminals installed on the 5th floor of the GAB and in the BA, twenty-four terminals replaced the IBM 029 keypunch machines in the ISB.

• 1984 OS/MVS/IES2 operating system replaced OS/MVT on AS/8040 and AS/6650. Became possible to create VSAM datasets. Four megabytes of memory added to the AS/8040 bringing the total capacity to twelve megabytes. Dr. Bob Brookshire promoted to Manager of Academic Computing. The HELP DESK is ISB 110 established. Dave Molta hired as a part-time employee to administer the HP-2000 and do statistical consulting.

• 1985 NTSU became node in the Tager microwave network. Scott Barber publishes memorable article in Benchmarks linking fishing, kissing, and computers. Human Resources Management Information (HRMIS) project begun. City power outages result in UPS battery fire in the GAB. AS/8040 upgraded to sixteen megabytes of main memory, making it an AS/8043. Kim Stickney returned to work for Digital Equipment Corporation in Massachusetts. Ron Brashear hired into the position. NTSU became a BITNET site. Richard Harris appointed Associate Vice President for Computing.

• 1986 VAX 11/780s upgraded to 785s and configured into a cluster. Graphics Lab opened in the basement of the ISB. NAS/8043 upgraded to a dual processor NAS/8083, increasing academic CPU power 80% and administrative CPU power 211%. Keypunch machines replaced with microcomputers in the Data Entry section of the Computing Center. HP-2000 moved to the Physics Department.

• 1987 Tom Madron left to become Executive Director of the New Jersey Educational Computer Network (NJECD). Bob Brookshire left to become Director of Academic Computing Services at James Madison University in Virginia. The Computing Center reorganized with Dave Molta (Acting Manager of Academic Computing Services), Coy Hoggard (Manager of Administrative Information Systems), and Steve Minnis (Manager of Computing Services) reporting to Richard Harris, the Associate Vice President for Computing. HP-2680A laser printer installed in the BA. NTSU joined TEXNET.

• 1988 Dave Molta named Manager of Academic Computing Services. Ron Brashear went to work for Mobil Oil Corporation. Billy Barron named VAX System Manager later in the year. UNT BBS implemented on the VAXcluster. Project Eagle, the NTSU and GTE voice response project, begun. North Texas State University became the University of North Texas. Eight 2400/1200/300 BPS modems installed on the metro lines. UNT became an ARPANET node.

• 1989 Title changes went into effect for the following individuals: Steve Minnis became Director of Computing Technical Services, Coy Hoggard became Director of Administrative Computing, Dave Molta became Director of Academic Computing. The official count of employees for the Computing Center was 76.75 Full Time Equivalent. The total operating budget for the Computing Center was $3,776,270. A Microcomputer Support group, reporting to the Director of Academic Computing, was formed from the consolidation of academic and administrative microcomputer support groups. HP ScanJet installed in the Graphics Lab. Six IBM AT compatible PCs and six Macintosh SEs linked to a file server on a Novell Local Area Network installed in ISB 110. Desktop laser printing available from ISB 110 to an Apple LaserWriter II and an HP LaserJet II. The last keypunch machine available for public use was removed from the area near the ISB RJE. ANUNews and Nctware VMS installed on the VAXcluster. VAXcluster connected to USENET. Sixteen 2400 baud modems installed on local dial-up lines.

• 1990 An additional NAS/8083 mainframe installed to support academic computing in a dual processing configuration. Administrative computing done in dual-processing mode on the NAS/8083 already in place at NT NAS, bought out by Hitachi, changed its name to Hitachi Data Systems (HDS). Academic Computing Services reorganized so that Kyle Capps is Microcomputer Support Manager, Philip Baczewski is Mainframe User Services Manager, Billy Barron is VAX System Manager, and Claudia Lynch is Documentation Services Manager. Willis Library Microcomputer Lab opened. VAX 6310 replaced 11/785s.
Why Is MVS So Slow?

By Dr. Philip Bazewski, Mainframe User Services Manager (BITNET: ACIS@UNIVM1)

If you have been submitting batch jobs to the MVS system, you have undoubtedly noticed that the turn-around time for processing your job seems longer than it has in the past. This condition is a result of several factors, the most influential of which is the current upgrade process to the VM system. Because we now have three levels of operating systems (VM/XA, VM/SP, and MVS/SP) more total overhead is generated by those systems. MVS seems to come out on the short end of the stick.

The temporary reduction in MVS's computing power has highlighted a situation which might ordinarily have gone unnoticed: that is, the nature of jobs processed under MVS has changed dramatically in the last five years. Many more SAS and SPSS jobs are being run which require large amounts of CPU and storage resources, and which perform large amounts of I/O. When several of these jobs are running at the same time, the MVS system must spend much of its processing time shifting resources between jobs.

The upgrade process that we are now undertaking will greatly improve the performance of all the mainframe operating systems. This current situation is a necessary part of the process - it is necessary to give up some performance now in order to gain system performance in the future. We chose the summer terms for the upgrade period because, traditionally, this has been a time when processing demands are at their lowest during the year. Steps are also being taken to try to better "tune" the MVS system to its current environment. There are some steps that you can take to improve your batch turnaround and lessen the load on the system:

- Be sure to adhere to the Academic Computing policy of having not more than 5 jobs executing or waiting on the input queue at the same time.
- Although not normally recommended, if you must submit multiple SAS or SPSS jobs, use the same name (on the job card) for all of them, so they cannot execute at the same time. Often, if two or more of your jobs are executing and using the same input data file, they can be contending for the same resources. In this case, only one job will actually be able to do processing at a time, leaving the others in the MVS "initiator" not actually doing any work, yet preventing other jobs from running.
- Don't overestimate when specifying the amount of time, number of lines, and amount of region space your job will need. The JES2 part of the MVS system prioritizes jobs based, in part, on these estimates - if you overestimate, your job could be given a lower priority unnecessarily.
- Double-check your program syntax before submitting your job. Programming errors are sometimes inevitable, but the more you catch before you submit the job, the less the likelihood you will have to submit it again.

By following the above guidelines, you may be able to improve the turn-around on your own batch jobs, and maybe help improve the overall situation. The Computing Center realizes the necessity for improving performance on the Academic mainframe system, and much work is currently being done towards that end. Please realize that the current situation is a temporary one while the new system is put into place.

The Computing Center as We Know it Today...

The Computing Center as we know it today came into being in 1970, with the acquisition of a leased IBM 360/50. Academic and Administrative Computing joined forces, and offices and computer equipment were moved to the Information Science Building. Computer equipment has been upgraded and personnel have been added throughout the years, attempting to keep pace with, but frequently a little behind, the needs of the University community. You can take a "walk" through Computing Center history by reading the "Chronology" beginning on page 3.

Prior to that time, the computer and support personnel for Academic Computing were housed in the Business Administration Building, in the same area on the first floor that now house the BARJE and microcomputer labs.

As you might suspect, budgetary constraints are responsible for this lag.
ARPANET is Gone!

Old Networks Never Die, They Just Fade Away

By Billy Barron, VAX System Manager (bitnet:billy@untvax)

On June 1st, ARPANET was deinstalled after 21 years of service. ARPANET was started in 1969 as the Advanced Research Projects Agency's (ARPA) network. The purpose of the early ARPANET was to provide resources to DoD contractors. This early network utilized 56Kb/sec leased links and a protocol known as NCP. In those days this was a revolution in Wide Area Networking technology.

In the mid '70s it became apparent that the NCP protocols would not be able to handle the needs of networks. At this time, development of the TCP/IP protocols to meet the new requirements. Eventually, NCP was totally phased out and TCP/IP became the protocol of the ARPANET. In 1983, the next major step was taken when ARPANET was split into two networks. One of these continued to be called ARPANET and focused on research. The other was called MILNET and became the military production network.

In the latter '80s, ARPANET's success started its downfall. The network backbone still depended on the same 56Kb/sec circuits it had in the 60s. The problem was that the network had grown greatly beyond the bandwidth available. Also, the DoD was not happy about the very high usage of the network for non-defense matters. The National Science Foundation agreed during this time to build a new high speed backbone (NSFNET). During the last couple of years, the NSFNET has become increasingly important while the ARPANET has waned.

THE BITNET CONNECTION

By Billy Barron, VAX System Manager (bitnet:billy@untvax)

This Column is a continuing feature of Benchmarks intended to present news and information on various aspects of the BITNET wide area network. I am a guest columnist this month since our normal columnist Dr. Philip Bacewski is off at Stanford University learning all about NeXTs. He will return in the next issue.

BITNET History

As we look back in this Centennial Issue, I thought it would be appropriate to take a little tour of the history of BITNET. BITNET started operation on May 5th, 1981 when a 9600 baud leased line was put in place between the city University of New York and Yale University. In February 1984, the first international connection was made in Rome. Since this time Europe has developed its own major segment of BITNET known as EARN (European Academic Research Network). Then in September 84, Canada formed their own part of BITNET known as NetNorth. Tokyo connected to BITNET on July 1st, 1985. On October 6th, 1985, NTSU joined BITNET as the 282nd site. In 86, Mexico was connected. In the current set of routing tables, approximately 3000 nodes are defined.

In the early days of the network, there were only IBM Mainframes. Eventually software was written to allow VAXes, Cybers, and some Unix machines to connect to the network. Currently, VAX is the most popular machine type on BITNET though there seems to be some discussion whether there are more IBM or VAX users on the network.

According to BITNET lore, the early network had a whole set of incompatible servers which lead to many problems. Then Robert Hernandez and Eric Thomas wrote a program called LISTSERV which became the standard for mailing list servers. A little later on NETSERV and RELAY were also written. Now BITNET has a whole set of incompatible user directory (name) servers. Hopefully, in the near future we will see a standardization process for these servers.

Topology wise the network was tree structured for many years. Then starting in 1988, THENET (Texas Higher Education Network) did a matrix interconnect that greatly improved the BITNET network in Texas. At roughly the same time, Princeton developed a version of the BITNET software, known as BITNET Phase II, that could use the Internet to transport BITNET data. BITNET Phase II has been installed on the BITNET backbone now and this backbone is matrix interconnected. Work is currently being done on something known as BITNET Phase III.

BITNET has grown over the last 9 years. With the merger of BITNET with CSNET and the regionalization proposal being considered by the CREN board, the future of BITNET looks promising. For more information on these topics, see the BITNET Connection in the November/December 1989 Benchmarks and the March 1990 Benchmarks.
Finally, on June 1st of this year, the plug was pulled on the ARPANET. The most interesting part of it was that its removal went almost unnoticed among Internet users. MILNET still lives and the DoD has developed a new network called the Defense Research Internet (DRI) that replaces the duties of the ARPANET. Though ARPANET has faded into history, its child the Internet is growing exponentially and will be the premier network of the 1990s.

Report on the Sixth Conference on Computers and Writing

By Michael Holcomb, UT Austin Graduate Student

The Sixth Conference on Computers and Writing, held at the futuristic Radisson Hotel in Austin, May 17-20, 1990, was a successful four days of networking. Panels convened in three rooms simultaneously, so that in all, 98 papers were presented and entertaining speeches provided with each evening's dinner.

The majority of the papers concerned the use of computers in writing programs such as Freshman Composition. For example, William Van Felt discussed the ways the computer environment changes the student-teacher relations. Pamela Gay showed that the computer is not a neutral writing tool that can empower basic writers by itself. Gay and others reported that the social organization of the classrooms changed when the computer was introduced. On-line dialogue with pseudonyms allowed the students to write with they really thought— with sometimes startling results.

Roger Easson discussed the social implications of computer literacy projects. He pointed out that the US ranks 11th in literacy as a nation and stated that underfunding education is a political objective. Easson maintained that an educated portion of society was able to oppose a war and cause a president to leave his office — thus education is underfunded.

Strictly technical papers included that of Joanne Gates, who distributed sources and explained the use of Shakespeare On-line. Noel Williams of the University of Sheffield (UK) explained his disk-based hypertext conferencing tool. Feroza Jussawalla reported that her use of Time and Newsweek writing programs caused students to engage with important social issues.

Michael Campbell reported on his subversive approach to Robert Pinsky's interactive computer novel Mindwheel. Campbell showed that, by choosing to spend time in a particular "room" and conversing with the minor "characters" found there (against the advice of the story's narrator), he demonstrated that reading is non-sequential, non-linear, as readers, we pay attention to what interests us, helping to create the works we're reading.

All of the many papers presented provided benefits to writing or research programs in one way or another. Each of the abstracts was published in a 144-page small-book, available from the Computer Research Lab, UT Austin. Next year's conference — the seventh — at the University of Southern Mississippi in May '91 promises to be just as informative.
The Computing Center is offering the following short courses for the 1990 summer semesters. Please pre-register to attend (a registration form can be found at the end of this issue). A maximum of 10 people will be admitted to each of the courses held in ISB 110. A maximum of 7 people will be admitted to each of the courses held in the Graphics Lab. A maximum of 8 people will be admitted to each of the courses held in ISB 123.

PLEASE NOTE: Faculty and students have first priority to register for these classes.

**MAINFRAME COURSES**

1. Introduction to MUSIC/SP - MUSIC/SP is an interactive operating system employed by academic users to access the Academic HDS/8083 IBM-compatible mainframe computer at UNT.

   Introductory sessions to MUSIC/SP will be held in Room 110 of the Science Library (ISB) on a bi-weekly basis. NO PRE-REGISTRATION IS REQUIRED FOR THESE COURSES. Consult the HELP DESK (565-4050) for a schedule of classes and/or to request a class on a specific day. All courses will be taught by Help Desk staff.

**MICROCOMPUTER COURSES**

1. Introduction to Microcomputer Labs: ISB 110, Willis Library, Graphics Lab - Special emphasis is placed on the unique features of networked microcomputers in these labs.

   A one-hour session to be held in the Science Library (ISB 110):
   - Wednesday, July 11: 3:30-4:30 p.m. Instructor: Staff

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**BENCHMARKS FORUM**

BENCHMARKS FORUM is intended to serve as a vehicle for answering questions that may be of general interest to the user community. If you have a question, please send electronic mail to the Benchmarks editor (answernews@untvm1) or write it down and drop it by the Computing Center. We will try to answer it in the next issue.

**Question:** Why don't you people in the Computing Center spend time doing things that need to be done around campus instead of producing this newsletter?

**Answer:** Glad you like our newsletter. :) Actually more would be lost than gained if the newsletter were scrapped. Benchmarks is the vehicle with which the Computing Center informs the academic and administrative communities about changes in policy and procedures as well as current computing concerns/events. One person is charged with its production — the editor. Contributing authors usually write articles in their spare time (i.e. at night or on weekends) or while they are waiting for something such as programs to execute.

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Benchmarks

Reader/User feedback is encouraged. Send all letters, suggestions, etc to (ANSWERS@UNTVM1), FAX 817-565-4050 or to the Benchmarks Editor at: Academic Computing Services, University of North Texas, Computing Center, NT Station, Box 13495, Denton, Texas 76203.
WordPerfect Users Group Report

By Sandy Franklin, Microcomputer Support Staff Member

The WordPerfect Users Group met June 22, 1990, in Marquis Hall, Room 105 during the noon hour. The Users Group is open to any interested faculty, staff, or students who wish to share information or ask questions about the WordPerfect products supported by Microcomputer Support.

I talked about the WordPerfect Users Conference I attended in Orem, Utah, June 11-13. I purchased five VCR training tapes that are now available for checkout from Microcomputer Support (ISB 224/249, phone 2316). They include instruction on the following topics for WordPerfect 5.1: Forms/Labels and Equation Editor; Macro Language; Merge; Tables; Tips and Tricks.

I also distributed copies of the handout from the Equation class showing samples of Equations using the Equation Editor, copy of the handout from Forms/Labels class with instructions for creating an invitation with an 8 1/2 x 11 sheet, 2 page program, etc., mailing labels, envelopes, and letterhead, and a copy of the handout from the WP Tips and Tricks class.

Also, on the agenda, was a “fix” for 1-up labels for Epson Printers. When designing the paper size and type, adjust the Text Alignment like this:

Text Alignment - Top - 0.45° Down
- Side 0°

Delores Argo from Petroleum Accounting reported a problem she resolved with help from WordPerfect Support. In the primary file, 5.0 required ^N^P^P to cause the merge program to go to the secondary file to get another record, but continued using the same primary file. WP 5.1 read her old 5.0 file commands and executed them perfectly. However, when she attempted to create a new primary file in WP 5.1 and used the same sequence of codes (^N^P^P) the program only read every other record. WordPerfect now says that only the ^P code is needed to perform the same function in WP 5.1.

The next meeting of the WordPerfect Support Group will be July 20, 1990, in Marquis Hall, Room 105 from 11:30 a.m. to 1 p.m. Since the Personnel Office is using the training lab for typing tests, we have to quit at 1 p.m. The August meeting will be August 10, 1990, instead of August 17 because of the semester break. The September meeting will be September 21, 1990. See you there.

This column is intended to serve as a forum for sharing useful tips on making more productive use of microcomputers. If you have a tip that you feel may be of use to campus users, submit it to the Benchmarks editor for possible inclusion in a future issue.

News From Micro Maintenance

By Jim Curry, Director of Micro Maintenance

Before ordering equipment from the Micro Maintenance Shop (MMS), remember to call and request a new price sheet. Price sheets are updated periodically, and your old one may not reflect the current pricing or equipment in stock.

Current crisis: heat — for reliable operation PCs should not be operated outside of the range of 65-75 degrees F. File servers should be limited to 80 degrees max. These figures are conservative compared to manufacturers’ minimum and maximum ratings and represent MMS observations of operating environments that are conducive to reliable operation. File servers or workstations used when it is too hot or cold typically become “flaky.” Sudden, complete loss of data can occur.
New Kermit Installed on the VAX

By Billy Barron, VAX System Manager (BTRNET: BILLY@UNITVAX)

A new version of Kermit-32 has been installed on the VAXcluster. A couple of new features are available.

The first new feature is the ability to set the blocksize on a binary upload to the VAX. The command is \texttt{SET FILE BLOCKSIZE n}, where \texttt{n} is the blocksize in bytes. This is useful in those cases where you must have a certain blocksize on the resulting VAX file.

Extended length packets are now supported. This is a very useful feature. By default Kermit uses 94 byte packets to send data. However, on reliable lines (i.e., with very little phone noise), you can greatly increase your throughput by having longer packets. VAX Kermit now supports up to 1000 byte packets. In theoretical models, the basic Kermit algorithm (94 byte packets) has an efficiency rate of 88.6\% on an average text file$^1$. Meanwhile, using 1000 byte packets, Kermit achieved an efficiency rate of 93.8\%. However, in reality the efficiency rates are much lower due to the speed of light, response time on computers, etc. Some benchmarks showed that at 2400 baud, 73\% efficiency was typical for the standard Kermit algorithm. Benchmarks on the 1000 byte packets showed an efficiency rate of 90\%.

To use the extended length packets, you use the \texttt{SEND PACKET 1000} command on the sender Kermit and the \texttt{RECEIVE PACKET 1000} on the receiver Kermit. Please note that not all versions of Kermit support this command. For example, Procomm does not and MS-Kermit does.

---

$^1$ da Cruz, Frank and Christine Gianone, "How Efficient is Kermit?", Kermit News, Columbia Univ, Issue 4, June 1990

HELP NETWORKS Topic Expanded

By Billy Barron, VAX System Manager (BTRNET: BILLY@UNITVAX)

The NETWORKS help topic on the VAX has been greatly expanded. It now contains subtopics on every known network in the world.

A new Countries subtopic has also been added. This Countries topic contains a subtopic for every nation in the world that has a computer network. For example, to see what networks are available in Canada, type:

\texttt{HELP NETWORKS COUNTRIES CANADA}

To help reduce the number of first level help topics, the help topics ARPA\textsc{net}, BIT\textsc{net}, and THENET are being phased out and replaced by the topics NETWORKS INTERNET, NETWORKS BIT\textsc{net}, and NETWORKS THENET respectively. $^8$
VAX COMPUTER CLUSTER

VAXCLUSTER USAGE STATISTICS

May Top Ten Programs: CPU Time Used

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th>CPU Time</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. User programs</td>
<td>Compiled Programs</td>
<td>15:15:37:37:92</td>
<td>82.1</td>
</tr>
<tr>
<td>2. NEWS</td>
<td>ANU News Utility</td>
<td>1:09:36:24:85</td>
<td>5.1</td>
</tr>
<tr>
<td>3. PACE PROCESS</td>
<td>Accounting</td>
<td>0:10:12:10:60</td>
<td>1.5</td>
</tr>
<tr>
<td>4. BACKUP</td>
<td>Disk Backup</td>
<td>0:09:30:56:54</td>
<td>1.4</td>
</tr>
<tr>
<td>5. NNTP_TCPWIN</td>
<td>News Transfer Utility</td>
<td>0:08:46:18:59</td>
<td>1.3</td>
</tr>
<tr>
<td>6. BBS</td>
<td>Bulletin Board</td>
<td>0:04:33:41:92</td>
<td>0.7</td>
</tr>
<tr>
<td>7. EDIT</td>
<td>Editor</td>
<td>0:04:30:37:84</td>
<td>0.7</td>
</tr>
<tr>
<td>8. MAIL</td>
<td>VMS Mail</td>
<td>0:03:11:25:29</td>
<td>0.5</td>
</tr>
<tr>
<td>9. PASCAL</td>
<td>Pascal Compiler</td>
<td>0:03:12:25:77</td>
<td>0.5</td>
</tr>
<tr>
<td>10. LOGOUT</td>
<td>User Log</td>
<td>0:02:55:12:39</td>
<td>0.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

May Top Ten Programs: Frequency of Runs

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th>Number of Runs</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. LOGINOUT</td>
<td>User login</td>
<td>45998</td>
<td>15.4</td>
</tr>
<tr>
<td>2. User programs</td>
<td>Compiled Programs</td>
<td>38482</td>
<td>12.9</td>
</tr>
<tr>
<td>3. SET</td>
<td>VMS Utility</td>
<td>38017</td>
<td>12.7</td>
</tr>
<tr>
<td>4. DIRECTORY</td>
<td>VMS Utility</td>
<td>30583</td>
<td>10.2</td>
</tr>
<tr>
<td>5. DELETE</td>
<td>VMS Utility</td>
<td>21271</td>
<td>7.1</td>
</tr>
<tr>
<td>6. SEND</td>
<td>Btsc Message Utility</td>
<td>21690</td>
<td>3.9</td>
</tr>
<tr>
<td>7. TYPE</td>
<td>VMS Utility</td>
<td>9993</td>
<td>3.3</td>
</tr>
<tr>
<td>8. EDT</td>
<td>Editor</td>
<td>9720</td>
<td>3.2</td>
</tr>
<tr>
<td>9. SYSLOGIN</td>
<td>User Log</td>
<td>9488</td>
<td>3.2</td>
</tr>
<tr>
<td>10. SHOW</td>
<td>VMS Utility</td>
<td>6678</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>299434</td>
<td></td>
</tr>
</tbody>
</table>

UNIX and the 32bit version of OS/2 when it comes out you should spend the bucks for at least a SX. Of course the i386 would be even better if you can swing it. §

WAM in Dallas

The 1990 Winter Annual Meeting (WAM) of the American Society of Mechanical Engineers (ASME) will be held at INFOMART in Dallas November 25–30. Five presentations tracks will be presented:

- Track 1: Advanced Computation, Analysis and Methodology
- Track 2: Artificial Intelligence and Expert Systems
- Track 3: Computer Integrated Engineering and Manufacturing
- Track 4: Databases and Information Management
- Track 5: Advanced Architecture, Supercomputing and Parallel Processing

For more information, contact Ms. June Leach, ASME, 345 47th Street, New York, NY 10017 (212) 705-7795. §
Mainframe Performance Statistics

Operating Systems Performance Statistics for May

<table>
<thead>
<tr>
<th>CPU</th>
<th>SYSTEM</th>
<th>Planned Production Hours</th>
<th>Production Hours Achieved</th>
<th>System Uptime</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACAD</td>
<td>VM/XA2</td>
<td>221.00</td>
<td>221.00</td>
<td>100.0%</td>
</tr>
<tr>
<td>ACAD</td>
<td>VM/SP5</td>
<td>719.00</td>
<td>576.23</td>
<td>80.1%</td>
</tr>
<tr>
<td>ACAD</td>
<td>MUSIC/SP</td>
<td>689.82</td>
<td>545.53</td>
<td>79.1%</td>
</tr>
<tr>
<td>ACAD</td>
<td>MVS/ES2</td>
<td>719.00</td>
<td>570.47</td>
<td>79.3%</td>
</tr>
<tr>
<td>ACAD</td>
<td>COMPLETE</td>
<td>708.04</td>
<td>558.68</td>
<td>78.9%</td>
</tr>
<tr>
<td>ADMN</td>
<td>MVS/ES2</td>
<td>744.00</td>
<td>743.00</td>
<td>99.9%</td>
</tr>
<tr>
<td>ADMN</td>
<td>COMPLETE</td>
<td>297.00</td>
<td>297.00</td>
<td>100%</td>
</tr>
<tr>
<td>ADMN</td>
<td>ADABASA</td>
<td>713.93</td>
<td>710.24</td>
<td>99.5%</td>
</tr>
</tbody>
</table>

- The ACAD CPU achieved 100% uptime in May.
- The HDS/7360 DASD achieved 100% uptime in May.
- The HDS/7380 DASD achieved 100% uptime in May.
- The ADMN CPU achieved 100% uptime in May.
- The HDS/7360 DASD achieved 100% uptime in May.
- The HDS/7380 DASD achieved 100% uptime in May.
- The EIC Solid State Disk achieved 100% uptime in May.

Key Causes Of Lost Productivity In April: ACAD CPU

CPU, Tape, and Disk Subsystems (HDS)

1. Upgrade of microcode on 8083 MPU to resolve VM/XA installation failures. 34.67 HOURS
2. Research and analysis of abortive attempts to start up VM/XA in MP mode on the 8083 MPU. 22.60 HOURS
TOTAL 57.27 HOURS

Miscellaneous

1. Resolving uncompatibility of VM/XA software while installing this IBM product. 72.16 HOURS
2. Scheduled install of IBM VM/XA software. 25.00 HOURS
3. Applying required system maintenance to VM/XA. 9.01 HOURS
4. Abortive attempts to run VM/SP under VM/XA in virtual=real (V=R) mode. 7.87 HOURS
5. Applying system maintenance to synchronize VM/SP TOD clocks with VM/XA TOD clocks. 6.18 HOURS
6. Undetermined causes for systems restarts. 1.53 HOURS
TOTAL 121.75 HOURS
GRAND TOTAL 179.02 HOURS

Key Causes Of Lost Productivity In April: ADMN CPU

Miscellaneous

1. Operator mistakes in recycling ADABASA. 2.44 HOURS
2. Systems software development. 1.25 HOURS
TOTAL 3.69 HOURS

Benchmarks
ACADemic (HDS) Program Hit Parade

### May Top Ten Programs: Frequency Of Runs

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th># of Runs</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGM=*.DD</td>
<td>Compiled Program</td>
<td>6810</td>
<td>18.9</td>
</tr>
<tr>
<td>IEWL</td>
<td>Linkage Editor</td>
<td>6298</td>
<td>17.4</td>
</tr>
<tr>
<td>IDCAMS</td>
<td>VSAM Utility</td>
<td>3609</td>
<td>10.5</td>
</tr>
<tr>
<td>SASLPA</td>
<td>SAS</td>
<td>3208</td>
<td>8.9</td>
</tr>
<tr>
<td>IEV90</td>
<td>Assembler H</td>
<td>2561</td>
<td>7.1</td>
</tr>
<tr>
<td>IE8BGENER</td>
<td>IBM Utility</td>
<td>1998</td>
<td>5.5</td>
</tr>
<tr>
<td>SPSSX</td>
<td>SPSS-X</td>
<td>1739</td>
<td>4.8</td>
</tr>
<tr>
<td>KFCBL00</td>
<td>VS COBOL Compiler</td>
<td>1353</td>
<td>3.7</td>
</tr>
<tr>
<td>IGYCRCTL</td>
<td>VS COBOL2 Compiler</td>
<td>1238</td>
<td>3.4</td>
</tr>
<tr>
<td>SPCHLCOB</td>
<td>COBOL2 Report Writer</td>
<td>1160</td>
<td>3.2</td>
</tr>
</tbody>
</table>

### May Top Ten Programs: CPU Seconds Used

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th>CPU Seconds</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGM=*.DD</td>
<td>Compiled Program</td>
<td>67598</td>
<td>33.3</td>
</tr>
<tr>
<td>SASLPA</td>
<td>SAS</td>
<td>38553</td>
<td>19.0</td>
</tr>
<tr>
<td>COMPLET4</td>
<td>Academic COM-PLETE</td>
<td>24094</td>
<td>11.9</td>
</tr>
<tr>
<td>SPSSX</td>
<td>SPSS-X</td>
<td>21063</td>
<td>10.4</td>
</tr>
<tr>
<td>ADARUN</td>
<td>ADABAS Utility Module</td>
<td>9865</td>
<td>4.9</td>
</tr>
<tr>
<td>SSS4001</td>
<td>Operations Automation</td>
<td>5174</td>
<td>2.5</td>
</tr>
<tr>
<td>SPCHLCOB</td>
<td>COBOL2 Report Writer</td>
<td>4812</td>
<td>2.4</td>
</tr>
<tr>
<td>ISTMN01</td>
<td>VTAM Utility</td>
<td>4428</td>
<td>2.2</td>
</tr>
<tr>
<td>IEWL</td>
<td>Linkage Editor</td>
<td>2556</td>
<td>1.3</td>
</tr>
<tr>
<td>IEV90</td>
<td>Assembler H</td>
<td>2512</td>
<td>1.2</td>
</tr>
</tbody>
</table>

The programs listed in this section were used the most frequently on the HDS ACADemic CPU during May, 1990. Please Note that ACAD is the official designation of the HDS/8083 CPU that is dedicated to faculty and student use. The HDS/8083 CPU reserved for University administrative purposes is termed ADMN.$

---

The next meeting of AppleSEED is planned for July 24, 1990 at the Westin Galleria. The discussion will be on Developer Tools for the Macintosh. Speakers and their topics will be:

- Charlie Lindahl, UT Arlington — Use of LISP to prototype user interface.
- Baylor University staff — MPW.
- Dennis Carellil — Aranda by Soft-Set Technology.
- Michael Palmer, EDS — Development with Smalltalk.

For further information call or write Debbie Peltz, Apple Computer, Inc., 12770 Merit Drive, Suite 1000, Dallas, Texas 75251 (214) 770-5865.$
## Disk Backup Schedules

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>BACKUP</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative MVS/SP</td>
<td>Daily</td>
<td>Monday - Friday around 7 p.m. (after COM-PLETE is shut down) &amp; on Saturday &amp; Sunday if COM-PLETE has been up that day.</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>Full pack dumps taken each Sunday morning.</td>
</tr>
<tr>
<td></td>
<td>Monthly</td>
<td>Full pack dumps taken on the first day of each month.</td>
</tr>
<tr>
<td>Academic MVS/SP</td>
<td>Daily</td>
<td>Monday - Sunday during the early hours of the morning.</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>Full pack dumps taken each Sunday.</td>
</tr>
<tr>
<td></td>
<td>Monthly</td>
<td>Full volume dumps taken on the first day of each month.</td>
</tr>
<tr>
<td>MUSIC/SP</td>
<td>Daily</td>
<td>Wednesday - Monday starting at 4 a.m. and lasting about 30 minutes.</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>Tuesday mornings at 3 a.m., these last about 2 hours.</td>
</tr>
<tr>
<td></td>
<td>Semester</td>
<td>Once a semester, a permanent backup is taken.</td>
</tr>
<tr>
<td>VM/SP</td>
<td>VM Weekly</td>
<td>Early every Wednesday morning.</td>
</tr>
<tr>
<td></td>
<td>CMS mini-disks</td>
<td>Daily backup performed early every morning. Weekly backup every Wednesday starting at 3 a.m.</td>
</tr>
<tr>
<td>VAXcluster</td>
<td>Daily</td>
<td>Incremental backups are performed Monday - Thursday at 6 p.m. Saturday &amp; Sunday at 5 p.m.</td>
</tr>
<tr>
<td></td>
<td>Weekly</td>
<td>Full backups are performed every Friday beginning at 8 a.m. and generally last all day.</td>
</tr>
<tr>
<td></td>
<td>Monthly</td>
<td>A &quot;stand alone&quot; backup is performed monthly. Dates and times are given in the system log-on message.</td>
</tr>
<tr>
<td></td>
<td>Semester</td>
<td>Once a semester, a permanent backup is taken.</td>
</tr>
</tbody>
</table>

A full description of the system backup procedures can be found by typing HELP BACKUP on MUSIC/SP or the VAXcluster.
Computing Center Short Course Registration Form

Please complete this form and return it AS SOON AS POSSIBLE if you wish to attend any of the short courses listed below. You may also register over the phone by calling (817) 565-2324. FACULTY AND STUDENTS HAVE FIRST PRIORITY TO REGISTER FOR THESE CLASSES. STAFF MEMBERS ** MUST ** REGISTER THROUGH THE PERSONNEL OFFICE.

NAME: ______________________ FACULTY __ STAFF __ STUDENT __

DEPT: ______________________ UNDERGRADUATE __ GRADUATE __

PHONE: ______________________ MAILING ADDRESS: ______________________

SUPERVISOR SIGNATURE ______________________

I wish to attend:

- Introduction to Microcomputer Labs (ISB 110):
  ___ Wednesday, July 11: 3:30-5:30 p.m.

I would like to see more classes offered: ___ on weekends; ___ at night.

The classes I am interested in are:

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Mailing Address: ________________________________________

____________________________________

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