

CSC INTERFACE

COMPUTER SCIENCE CENTER NEWS

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Transferring Files

The subject of transferring files from one user number to another on the same machine, or transferring from one machine to the other (A and B CYBER) appears to be quite popular lately. Many calls have been received regarding the transfer of files, so here's how to do it.

First, the easy part: to transfer files from one user number to another *on the same machine*, all that need be done is to PERMIT the new user number to read the files from the original user number. This can be done on a one - at - a - time basis. Example:

```
PERMIT,filename,new user number
```

By using the procedure PERMALL (from user number AB00PLH), all files on one user number may be permitted to another user number. Example:

```
GET,PERMALL/UN=AB00PLH  
PERMALL,new user number
```

To actually perform the transfer, one must log - on the new user number and GET the files from the original user number, then SAVE the files. Example:

```
GET,filename/UN=old user number  
SAVE,filename
```

Procedure FLIST (from user number AB00PLH) will produce a list of all file names on an alternate user number, which could then be SCRIBEd into a procedure file to GET the files, then SAVE them.

The next task is transferring tapes from one user to another. To do this, the original user must have a copy of the desired tape with alternate user access allowed. This can be done either when the tape is initially assigned by the TAPEMGR program, or another tape can be gotten from TAPEMGR and the data from the original tape copied to the new tape using DUPTAPE. Once a publicly - accessible copy has been made, the new user can get a tape from TAPEMGR and use DUPTAPE to make another copy. Once the new user has made this copy, the public copy and/or original tape may be freed using TAPEMGR.

WARNING! It is a very good idea to be sure that the new tape actually contains the expected data *before* freeing the original.

(continued on page 2)

CONTENTS:

Computer Statistics	8
CYBER Cost Increase	3
CYBER Still a Bargain	4
Data Communications	6
DEC Computer Users' Group	2
Editor's Corner	3
Field Office Networking	2
HELP/WRITEUP Files	4
High Level Interface	3
Network Update	6
PASCAL Users' Group	8
People/Numbers to Know	7
Programming Efficiency	5
Recycle Hardcopy Paper	8
Transferring Files	1
User Number Security	3

DEC CUG

(continued from page 1)

Machine to Machine

The Digital Equipment Corporation Computer Users' Group at Tektronix is a relatively new organization, but if you are responsible for the technical direction of a DEC computer, this organization may be of some benefit to you.

DEC CUG represents approximately 44 DEC computer sites located throughout Tektronix. Equipment currently within their domain ranges from the smallest PDP-11/04 system to the largest VAX systems.

This group of serious minded users provides computer support for engineering design, management information, research groups, manufacturing (both planning and production), and for various support groups.

Some of the benefits of having a DEC users' group are:

- 1- "Re-invention of the wheel" can be reduced by becoming familiar with both software and hardware tools which are currently available at Tektronix.
- 2- Current problems can be presented to the group to solicit advice and suggestions from others, who may have already solved a similar problem.
- 3- Concerns about the distribution of proprietary software can be reduced.
- 4- Participants who find it difficult to attend DECUS symposia or the Portland Local Users' Group will find less travel involved.
- 5- Future networking of DEC computers can be more easily investigated and recommendations made.
- 6- Software communications throughout Tektronix can be improved.

The Tektronix DEC Computer Users' Group meets on the first Thursday of each month from 11:00 AM - noon, meeting alternately each month at Walker Road, Beaverton or Wilsonville.

If you are interested in joining this group or merely want more information, please contact Gail Jameson, WR 1742.

The transfer of tapes from one machine to the other is extremely simple. Because the list of tapes, and who owns them, resides on the shared disk, all tapes are automatically accessible by either machine.

Transferring a disk file from one machine to the other must currently be done by use of a tape. Copy the file to tape on one machine, then log-on the other machine and retrieve it from the tape to disk. At some future time, file transfer from one machine to the other may be possible by some other means, but until then tapes are the easiest way to go.

Again, WARNING! At the present time, FTF is not capable of handling a disk file which contains file marks. To save the file on tape, it must first be GATHERed, put on tape, retrieved from tape on the other machine, then SCATTERed. A version of FTF which will correctly handle multi-file files is being tested at this time, but is not yet available for public use.

The problem of transferring disk files from one machine to a different user number on the other machine is handled by using a combination of the previous techniques. The first user must put the file on a publicly-accessible tape, which may then be accessed by any user on either machine.

For more information on the programs mentioned in this article, see:

HELP,TAPEMGR	HELP,FTF
HELP,DUPTAPE	WRITEUP,FTF
HELP,PERMIT	

DUPTAPE and TAPEMGR are self-prompting, but it is recommended to have the FTF writeup available before attempting to use it.

Happy Computing...

Paul Hoefling, ext. 4004 BGTE

Field Office Networking

The Telecommunications department currently operates the TEKNET corporate field office network. This system currently links the field offices with General Services in an electronic mail network. The field office TEKNET

computer operators also enter orders, time reports, demo instrument transfers and print reports from the IBM system.

TEKNET volume is increasing rapidly and new applications are planned for field office computing and networking. Linda Todd, Telecommunications, is currently gathering information on field office network support needs for the next five to seven years. This information is needed to justify the possible replacement of the field office RT-11 systems with larger computers.

If you are working on a project that will require local processing in the field offices, or networking to the field offices, and would like to see resources allocated to your project in the five-seven year plan, please contact Linda, ext. DR 3431, 55-210. Thank you.

User Number Security and Passwords

One would believe that with the multitude of entries *required* to log on to the CYBER (user number, responsibility code and project number) that the user number would be quite immune to unauthorized use. This is definitely an erroneous belief!

User numbers and responsibility numbers are all public knowledge and no attempt is made by anyone in authority to keep these secret. Project numbers also are readily available to those who know where to look. Besides, how many times a month are project numbers given out to other groups for cost transfers? The user number and charge information is *not adequate* to protect a user number against unauthorized access. The only protection an account has against someone who really desires to compromise it is the *password*.

If you really desire security on your user number, you *must* have a password. Instructions on how to create or change a password may be obtained by logging on to a terminal and typing: HELP,PASSWOR. Passwords may be up to seven (7) characters in length.

While you're at it, take note that charge numbers can be abbreviated (you might as well save a bit of typing). Instructions on how to do this may be obtained by typing: HELP,CHARGE.

Editor's Corner

Just a brief note of explanation to those of you who may be wondering what's going on with the format of this paper. Things have been shuffled a bit and there is an article on the front page and the paper is thinner and... Well, let's just say we are conforming to the economic conditions with which we all must become accustomed. However, we have not cut the news. Paul Hoefling's column isn't really missing; he just got moved to page one for this issue. Note also that we have started reporting DEC news as well as CYBER.

CYBER Cost Increase

Due to the continual increase in the cost of providing computer support and the requirement that direct support groups must pay for themselves, we regret to announce a 10% increase in computer charges for the coming fiscal year. This increase will cover the higher cost of: labor, supplies, maintenance, communications, and the development of in-house support systems (archiving, acquiring applications programs, networking, etc.).

This is the first such increase in seven years. Even with this increase, we are still well within our guidelines for providing computer support at a cost savings of at least five times that of outside timeshare services.

If this increase, along with normal growth in computer usage, should provide more income than planned, we will adjust appropriately and rebate extra funds (based upon your usage).

There is an article on the next page which shows the cost savings of CYBER over outside timeshare.

Bob Mainero, ext. 5357 BGTE.

High Level User Interface

The CAD Development group is considering writing or obtaining "tool independent user interface" software. This software would be used in writing interactive programs with various display devices on various computers for internal Tektronix use. It would be at a higher level than PLOT10 or TCS; it would do things such as: parse user input text and check for errors, get retyped

input in case of error, generate command menus and get commands from them, handle one or more graphics or text windows, zoom and pan within windows, handle help messages, handle graphics objects output, etc.

Its operation would not be unlike that of the user interface described in "Breaking the Man-Machine Communication Barrier" in the March 1981 *Computer* magazine, but the software we need would be simpler than that in the article.

If you have, know of, or need a user interface similar to that described, please contact Philip White, ext. 1145 WR.

CYBER is Still a Bargain

In the December 1979 issue of the SCC Newsletter, the following article was run to show how our computer costs stack up against outside computing facilities. In these days of "cost consciousness," we felt you might like to see those figures one more time. Of course, inflation

being what it is, these figures are now somewhat conservative, but it should be noted that CYBER is still much less costly.

Recently, benchmarks were run to compare the central processor and timeshare costs of the Tektronix CYBER versus outside computing facilities. The benchmark consisted of a "number crunching" type of program with relatively little input or output.

The results of the central processor costs (normalized to the Tektronix CYBER) were as follows:

Tektronix CYBER 175	\$ 1.00
CYBERNET	\$ 10.40
University Computing Corp.	\$ 10.38
McDonnell Automation	\$ 12.74
United Computing Systems	\$ 13.82

Timeshare connect costs for outside facilities averaged \$9.00 per hour versus only \$3.00 per hour for the Tektronix CYBER system.

HELP & WRITEUP FILE STATUS

Contrary to what was printed last issue regarding the policy change in updating methods, there are **two** types of review dates for HELP files. Files which have been reviewed, but contain **no** informational changes carry a new "Last Reviewed" date. Files which **have** informational changes carry a new "Last Revised" date. Only files which have been added, deleted or **revised** appear on this list.

HELP files changed:	HELP files added:	HELP files deleted:
XMIT GASP LINK SAP MPASSEM MICROP USEAREA ASAP ECHO	SUMCAD CAD PRINT STAR HGANTT HOURS FIXFL MTAP	UNIDOWN SMS2PLA STOCK* RECYCLE
		TESTING NEWLOAD CURRENT FUTURE SUPPLY*

*HELP file "SUPPLY" is now available under HELP file name "STOCK."

WRITEUPS changed:

No WRITEUPS have been added or deleted.

SHORT

PROGRAMMING EFFICIENCY

Saving Time

by Kurt Krueger

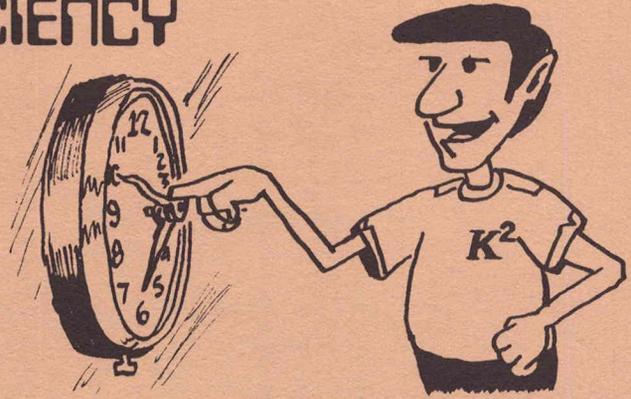
Previous installments of this series have dealt with saving CPU memory. This is only half the optimization process. The remainder of this series will deal with the saving of CPU time.

It has been said that, for a typical program, 90% of the time is spent in 10% of the program. My own personal experience is that this is quite true. Because such a small portion of the program will use most of the time, it is of little use to optimize the entire program when all you need to optimize is the 10% that actually counts. A recommended approach is, therefore, to write the entire program without regard to optimization, then identify and optimize that 10% that uses most of the time.

Identification of the bottleneck is the first step towards optimization. Two methods that work quite well are the *Pruning* method and the *Timing* method.

The pruning method involves removing sections of code and observing the effect on the time. Not all programs lend themselves to this method. In order for the pruning method to work, the removal of that portion of code cannot materially affect the work that the remaining parts of the program do. Top-down structured designs lend themselves very well to this procedure. The pruning in this case usually involves removing individual subroutines or a subroutine and all routines that it calls.

The second method is more of a brute force method. It involves actually timing a section of code. This can be done by using the FORTRAN callable routine `SECOND`. `SECOND` is documented in the FTN4 reference manual. One needs to be careful because `SECOND` does use up a small amount of time, and its use in the wrong place may disturb things to the point that the data collected is not accurate. A subroutine is available that simulates stopwatches. This can be very useful for timing sections of code. Contact me if you have a need for this.



Once the bottleneck has been identified, the next step is to optimize the code. Optimization of code on CYBER can be a little tricky. Most of the things that we have been taught actually do work, but a few things can actually work the opposite. The best way to evaluate a change is to look at the assembly code produced by the compiler (a short course will be offered in the near future). This is not necessary, however, to do an optimization. Most programs can be helped significantly without having to look at the assembly code.

The easiest first step towards optimizing for time is to use `OPT=2` compilation. It is not necessary to compile the entire program this way, but the extra cost is usually not too great. It is only necessary to compile the bottleneck routines with `OPT=2`.

FTN optimization mainly restricts itself to the innermost `DO` loop of a nest of loops. The following conditions will seriously hamper (or even prevent) the optimization of a loop and should therefore be avoided, if possible, in inner loops.

- 1- Calling a subroutine or external function. This includes math functions such as `SIN`, `SQRT`, and any I/O.
- 2- Loops that exit before completion.
- 3- Loops that do too much. Sometimes two small loops will work faster than one large loop.

In addition to the above, the normal techniques of factoring common subexpressions and pulling expressions out of `DO` loops generally work well.

The next installments will give specific examples of techniques that work well and some strange cases will be presented - cases where what appears to be deoptimization actually improves performance.

Data Communications to the CYBER and DEC10 Computers

Telephone numbers to reach the CYBER computers (VADIC and 212 MODEM compatible) as of 01 Apr 1981:

FROM 4000 - 4599 EXTENSIONS:
300/1200 Baud — Dial 3

THROUGH BEAVERTON EXCHANGE:
300/1200 Baud — 641 - 1650

FROM ANY OTHER EXTENSION:
300/1200 Baud — Dial 84+3

THROUGH TIGARD EXCHANGE:
300/1200 Baud — 620 - 3800

FROM ANY RJE STATION:
641 - 1685

FROM WILSONVILLE:
Building 60
1200 Baud only — Dial 2025 then *N
Building 63
1200 Baud only — Dial 4225 then *N

FROM Y3:
300/1200 Baud — Dial 4+3

NOTE: **N must be used to clear the telephone line whenever a session from Wilsonville is finished.

Telephone numbers to reach the DEC10 computer (Wilsonville):

300 Baud — 685 - 4510

1200 Baud — 685 - 4210

The telephone number for Telecommunications data communications *repair* is DanRay 5040. The delivery station is 55 - 241. When calling in a problem, please state:

- 1- Nature of the problem (constant ringing, no dial tone, etc.)
- 2- Which telephone number is affected
- 3- When the problem first appeared
- 4- Your name and telephone number

When your trouble is reported, a dispatcher will assign someone to your problem. That person should contact you as soon as possible about the problem. If you have any problem with this service, or do not get a timely response from Telecommunications, please contact MaryAnn Feedback, ext. BGTE 4600.

Network Update

As we told you in the last issue, the Network team is still hard at work adding more features to the systems, and there is *more* progress to report in this issue.

The CYBER 175 and the Tek Labs PDP11/70 are now communicating via Hyperchannel. In particular, it is now possible for a user level

process on one machine to connect to and converse with a user level process on the other machine.

This base level capability will be utilized by several network application processes yet to be developed. The first such process, file transfer service, is now being developed and will probably be available for general use this summer.

People and Telephone Numbers to Know

Department/Service	Name	Ext.	D/S
COMPUTER RESOURCE DEPARTMENT	Bob Mainero	BGTE 5357	50-454
Operations Support	Dawn Vance	BGTE 4600	50-454
Hardware Coordinator	Jeff Mulick	BGTE 4600	50-454
Data Communications Support**	Mary Ann Feedback	BGTE 4600	50-454
Public Support (user areas)	Jeff Mulick	BGTE 4600	50-454
Computer Operations Manager	Gayle Monroe	BGTE 5104	50-454
Computer Operators	staff	BGTE 5104	50-454
Remote Operator (WRIP)	Mary Ann Feedback	WR 1917	92-675
Remote Operator (Wilsonville)	Craig Willcox	WI 3037	63-397
Systems and Data Base Management	Andy Davidson	BGTE 7668	50-454
User Numbers/CSC Manuals	Georgene Kayfes	BGTE 6870	50-454
Systems Project Leader	Ken Hadfield	BGTE 7668	50-454
Systems Programmers/Analysts	staff	BGTE 7668	50-454
Data Base & Utility Project Leader	Glen Fullmer	BGTE 5833	50-454
Data Base Programmers	staff	BGTE 5833	50-454
Network Development	Bob Mainero	BGTE 5357	50-454
Network Project Leader	Tim Fallon	BGTE 5714	50-454
UNIX Support Project Leader	Greg Harris	BGTE 5102	50-454
Technical Communications Manager	Carolyn Schloetel	BDR 1762	58-122
CSC INTERFACE Editor	Rich Amber	BDR 1765	58-122
Component News Editor	Jacquie Calame	BDR 6867	58-122
ManuFACTuring Editor	Mike Quigley	BDR 1770	58-122
SEMINARS Editor	Lola Janes	BDR 1771	58-122
Tektronix Sourcebook Editor	Jacquie Calame	BDR 6867	58-122
HELP file maintenance	Nancy Peate	BDR 1763	58-122
WRITEUP file maintenance	Cliff Morgan	BDR 1764	58-122
Applications Support Manager	Imants Golts	BGTE 4675	50-454
User Assistance, LOBARB	Paul Hoefling	BGTE 4004	50-454
Statistical Programs	Carol Golding	BGTE 5976	50-454
Graphics, IMSL, VARIAN	Kurt Krueger	BGTE 5976	50-454
Process Simulation	Imants Golts	BGTE 4675	50-454
N5500, PERT	John Burley	BGTE 4675	50-454
MICROPROCESSOR SUPPORT MANAGER	Lynn Saunders	WR 1910	92-134
Portable High Level Languages	Lynn Carter	WR 1181	92-134
Microprocessor Software	Sue Anne Smith	WR 1890	92-134
Microprocessor Hardware	Ferrous Steinka	WR 1920	92-134
CAD/CAM DEVELOPMENT MANAGER	Ron Bohlman	WR 1141	92-112
4081 CAD Stations	Jim Murphy	WR 1146	92-112
Automated Routing (ECB Design)	Roger Bonzer	WR 1152	92-112
Circuit Simulation	Graeme Boyle	BGTE 5866	50-454
Component Library	Phil White	WR 1145	92-112
Mechanical CAD/CAM Support	Barry Ratihh	BGTE 7789 or WI 3510	50-454

**For Telecommunications repair, call Beaverton DanRay, ext.5040

Computer Science Center Statistics

CYBER 175 System Availability 99.16%

Downtime due to software	.23%
Downtime due to hardware	.33%
Tek downtime	0%
Unresolved failure	0%
Interruptions due to frontend	.27%

MTBF 76.66 hours

CYBER 73 System Availability 99.62%

Downtime due to software	0%
Downtime due to hardware	.05%
Tek downtime	0%
Unresolved failure	0%
Interruptions due to frontend	.33%

MTBF 843.00 hours

Frontend Availability 99.84%

Downtime due to software	.02%
Downtime due to hardware	.12%
Tek downtime	.02%
Unresolved failure	0%

MTBF 112.68 hours

Bob Mainero, ext. BGTE-5357

PASCAL Users' Group

A TEKCOM public users' group, temporarily being referred to simply as <Pascal>, is now being created. It is felt that it is important to provide a vehicle whereby news and other topics of interest regarding PASCAL can be communicated rapidly to Tek's software community.

In particular, it should be used to:

- 1 - Inform PASCAL - 6000 users of bugs, upcoming changes, etc. in CYBER PASCAL.
- 2 - Keep everyone updated on the forthcoming international standard (Bob Dietrich, alternate member of the Joint Pascal Committee, has agreed to do this).
- 3 - Report on the progress of TEK PASCAL, our local variant of PASCAL, and its implementation status.
- 4 - Promote discussion and an interchange of views on all of the above topics.

If you are interested in becoming a member of this group, send your name to Scott Trappe, 92 - 134, or call ext.1717 WR.

Recycle H/C Paper?

Are you in the habit of saving all your used hard copy paper? No? You should.

When you have a box filled with used hard copy paper, send it to *Material Salvage, 68-000*. They will make sure it gets recycled to save Tektronix money. And you know what that means? Profit \$hare. Thank you.

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Rich Amber - Editor,
Cartoons, Typesetting
and Paste - up.

To submit an article, contact Rich, ext. BDR 1765

For mailing list changes, contact Jill Miller, ext. BDR 4503

78-557
MILLER GOES HERE
PAUL E GRAY
CSC INTERFACE

company confidential

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