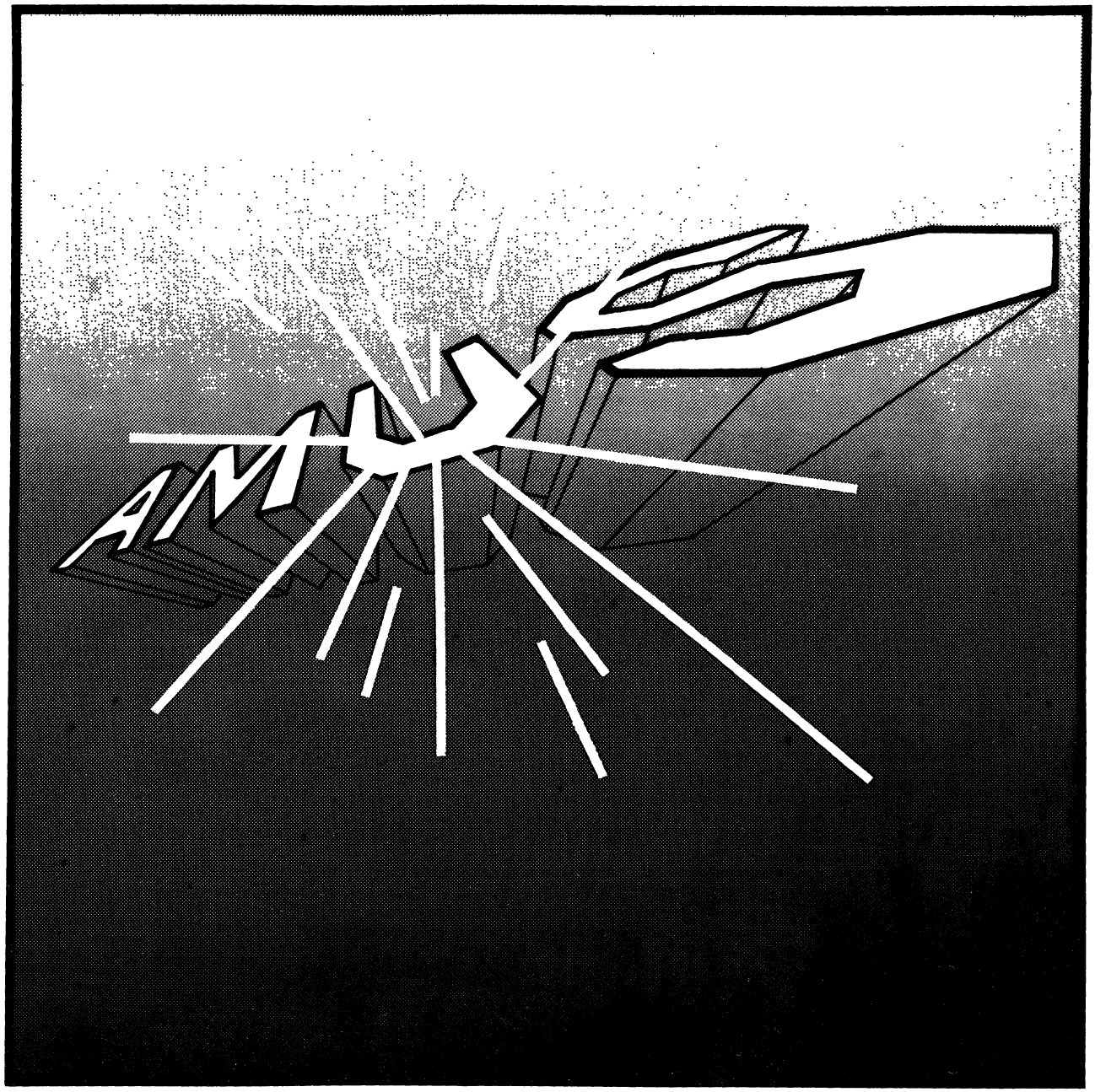

OCTOBER newsletter

VOLUME 4 ■ NUMBER 10 ■ 1981

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ALPHA MICRO USERS SOCIETY

1911 11th St., Suite 210
Boulder, CO 80302
(303) 449-6917

BOARD OF DIRECTORS

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FROM THE PRESIDENT

I have been recently encouraged by articles and editorals in *Computer Decisions* and other magazines about the value of user groups. In essence, what these articles are saying is that user groups offer services and information that are not available from any other source. The catch is that you must get actively involved if you wish to take advantage of the free exchange of information that takes place.

AMUS provides a focal point for the exchange of information about the Alpha Micro Computer, but you, as an **AMUS** member must help provide the information and participate in the activities if you want to make the best use of your computer. This does not have to be a massive effort.

Take advantage of the **AMUS** Newsletter free classified ads. You can sell and find equipment, software, and information through them, and it only takes a phone call or a post card to get the information flowing.

Attend conferences and local chapter meetings. It is not uncommon to hear someone say during a conference that one piece of information that they learned was worth the time, money and travel. You can only learn that there is a solution to a problem that has been dogging you for months if you ask the question. Conventions are an excellent place to ask such questions since there are enough people gathered to either confirm that the problem exists, or offer solutions.

AMUS office hours are from 8:00 AM to 4:00 PM mountain time. Our overworked manager is Sharon Greene. She is happy to assist you with any questions you might have about **AMUS**, or the Alpha Micro Computer. If she doesn't know the answer to your question, she will try to direct you to someone who does.

The **AMUS** Newsletter is published monthly by **AMUS,** 1911 11th St., Suite 210, Boulder, CO 80302. Subscription rates are $10.00 per year. Each member representative receives a one year subscription, the cost of which is included in the annual dues.

Additional copies and back issues of the newsletter may be ordered from Sharon. Bug fixes, articles, letters, reviews of software and information about Alpha Micro applications are happily accepted. Material must be received by the 10th of the preceeding month for inclusion in the following month's edition.

Second class postage is paid at Boulder, CO 80302, ISSN 0273-8708, USPS 567-330.

The Alpha Micro Users Society Network is a computer system meant to give members access to information and other Alpha Micro users with similar interest. It consists of an Alpha Micro computer with a Hawk disk drive, a 300 baud modem, a 1200 baud modem, and 160k of memory. **AMUS** members are given an individual account and password on the Network. Contact Sharon Greene for your account and password. Many thanks to Alpha Micro Systems of Irvine, CA; North American Title Co. of Houston, TX; and Dravac, of New Jersey who have donated equipment and software to the Network.

AMUS has a library of programs which have been donated by members for distribution to other members. Programs are available either through the **AMUS** Network, or, if you prefer, we can make floppy of Hawk cartridge copies and mail them to you. Order may be placed through Sharon.

Write a letter or an article to be published in the Newsletter if you discover a solution to a problem, or you discover a problem that you have no solution for. Only by getting the information flowing can other members recognize that you are an authority, or offer their help. In either case, you have worked towards the solution of a problem, and made valuable contact with a fellow computer user.

If you have something that you think all **AMUS** members should know, you can either place one free ad in the Newsletter each year, or you can prepare letters for mailing and we will direct mail information to all of the **AMUS** members from our office for a modest fee.

We are anxious to help, and if you have any other ideas about special interest groups that should be organized, or ways that we can help get the right information to the right people, we will be glad to help.

Local chapters are rapidly forming, and are an excellent place to find instant help when you have hardware problems that require you to borrow the use of someone else's computer to print out your payroll while the field engineer has your machine scattered all over the floor. Knowing the other Alpha Micro owners in your neighborhood is invaluable when you need to have a floppy disk converted to a Phoenix disk pack, or you need to test out your new phone communications equipment. There is nothing so valuable as the advice of someone who has already made the mistakes you are about to make, and local chapters are one of the best places to find these experts. Once you've made the mistakes, you can become an expert too.

AMUS is about to assemble a notebook about information that all Alpha Micro owners should know that is not included in the documentation supplied by Alpha Micro. If you have something that you think should belong there we would like to hear from you. Specifically, we would like material about preventive maintenance that a user can perform, information about how to install and test modems and other communication equipment, hints about designing and creating a new driver for a printer or a terminal, how to rebuild a disk that has lost it's master file directory, how to recover from disk crashes, how power supply problems may be eliminated, and how to find and evaluate a software package that you need. We will be able to offer fame, glory, and modest payment for material that we include in this notebook. (Emphasis on the fame and glory.)

As always, we are seeking articles for the Newsletter. You appreciate reading articles that have a direct influence on your use of the Alpha Micro computer, and so will other **AMUS** members when you share the information that you have gained through experience. Chances are that if you have wrestled with a problem, so has someone else. You will discover that others will be anxious to share information with you if you have taken the first step to divulge what you know.

Here at **AMUS** central in Boulder, Colorado we have finally moved into an office that is just us. This means that Sharon and I will be able to focus all of our attention on **AMUS** and better respond to your requests. We are in the process of settling down and organizing everything, and getting the feel of the place. We have been audited by the post office and granted our second class mailing permit for the Newsletter even though the inspector was suspicious of a computer handling the mailing list.

FROM THE PRESIDENT CONTINUED

Minor frustrations (and a two week vacation on my part) have slowed down the installation of the DRAVAC TSASS system on the Network, but it seems to be coming together, and you should be receiving a post card in the mail soon with information about your new name, password, and logon proceedures.

Bill Miller tells us that the reservations are already rolling in for the **AMUS** convention in Miami in January, and we are preparing meetings for special interest groups and a host of sessions on every aspect of the Alpha Micro computer that we can find. You should be thinking about the topics you would like to have discussed there and letting us know if there is something that should be on the agenda. You should also be making your reservations for plane tickets and hotel accommodations now so that you can get cheaper rates through advance ticket purchases. If all you can manage is one day, I'm sure you will find it worthwhile.

Steve Elliott

What runs four times faster than BASIC?

FORTRAN 77 for the Alpha Micro Computer!

Some FORTRAN 77 programs run as much as ten times faster than they would if written in BASIC. Most average more than four times faster — letting you really use the Alpha Micro Computer's incredible processing power.

And you can use the wide range of FORTRAN programs written over the past 35 years — for engineering, mathematics, scientific and statistical uses. With the features and extensions of the ANSI 77 standard, FORTRAN 77 now has the flexibility to implement the structured design of modern business applications.

FORTRAN 77 is a full implementation of the ANSI standard, not a microcomputer subset. FORTRAN 77 for the Alpha Micro Computer offers features that make it one of the most flexible and powerful FORTRAN versions:

- Six data structures, including enhanced character manipulation
- Reentrant object code — all jobs share one runtime package
- Compiles in only 22K of memory
- Three pass compiler for fast execution — compiles directly to machine code with no pseudo code
- Dynamic memory allocation and virtual paging — to execute large programs in small amounts of memory

FORTRAN 77 is also fully compatible with Alpha Micro files generated using BASIC programs, so you can choose the programming language most appropriate to your application while maintaining the integrity of your data base.

FORTRAN 77 has been successfully installed, tested, and is in use throughout the U.S.A. and internationally. It is available with full documentation and includes the compiler, utilities, a mathematics library, and over 70 scientific subroutines. It even includes a utility that lets you compile programs directly from AlphaVue.

For more information, call or write:

soma international
...the software source

SOMA INTERNATIONAL
1740 E. Garry #108
Santa Ana, CA 92705
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TELEX: 65-5383 Answer Back PHOTOBANK

LOCAL NEWS

CH-AMUS

Meetings are held the third week of every month alternating between Wednesday and Thursday at 1612 E. Algonquin Rd., Schaumburg, IL 60195. The main purpose is to get together and discuss problems. For further information, contact Jeff Fisher, (212) 397-8700.

SC-AMUS

SC-AMUS is the chapter that has been around the longest. They hold meetings one Sunday each month at Fullerton Savings and Loan (just north of Garden Grove Blvd.). They also publish a newsletter each month with lots of good information. Membership dues are $10.00 initially plus $12.00 per year. Send $22.00 for the 1st year to Phil Putnam, 16168 Beach Blvd. #141, Huntington Beach, CA 92647 or call him at (714) 842-4484. SC-AMUS has many helpful activities going on and knowledgeable and interesting speakers at their meetings.

FAMOUS

FAMOUS, the Northern California chapter of AMUS is progressing rapidly. Elections were held on September 3 and the officers elected will start planning future FAMOUS activities. Some of the current activities include a disk of FAMOUS freebies available to paid members; a library of all known and accessible newsletters and many interesting speakers at the FAMOUS meetings. For more information about FAMOUS, contact Bob Fowler, 800 San Antonio Rd., #1, Palo Alto, CA 94303 or call him at (415) 494-6221.

DC-AMUS

DC-AMUS is progressing very well and is involved in a number of activities. Their timesharing system is up and running with success. They have a new security system available which is much simplier than those currently available. For more information on this, contact Jay. If you want to be involved in DC-AMUS, contact Jay Gourley, 903 C St., N.E., Washington, D.C. 20002 or call (202) 547-7607. Meetings are held the 1st Monday of each month at the above address.

TWO NEW CHAPTERS FORMING!!!

For those of you in the **Phoenix, Arizona** and **Portland, Oregon** areas, don't despair. People in these areas have started to form AMUS chapters.

In Phoenix, contact Charles Gale, 6975 W. Crafco Way, Chandler, AZ 85224 or call (602) 961-1645. They have already had an introductory meeting and activities should soon be arranged.

In Portland, contact Ormand Beyl, 15051 SE Mt. Royale Ct., Milwaukee, OR 97222 or call (503) 241-5353. Hopefully by the time everyone receives this newsletter, there will be a structured plan for this chapter.

NOW! the total "what if" program

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the financial modeling program for executive decision makers

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All sheets "magically" updated. Think of the Forecaster as a magic sheet of paper. Each time any figure on the sheet is changed, the other figures which depend on it are magically updated. The sheet makes sure that at all times the figures on the sheet have the proper relationships the user predefines in his "model."

Split screen feature. The terminal provides a window over the magic sheet of paper, and the window cleverly follows the user's cursor commands. The split screen feature allows several important lines or columns to be always displayed. Displays are so impressive that most users never realize their terminals could do so much.

Interactive data sheets. Data sheets are created with highly interactive screen formatting, in tabular form. Data sheets are large enough for comprehensive financial statements, and *multiple sheets may interact or be posted to each other.*

Models define the relationship of all the numbers on a data sheet, and cause the proper calculations to be made. The user can explore his own viewpoint of the company's future with the Model Builder or use the sample models for standard prediction methods.

Independent data sheets and models. Now you can run the same calculations on volumes of data, or treat the known data in a variety of new ways—without once duplicating your effort. The user can compare the profitability of a group of divisions, or *measure any division against several different criteria.*

Trace feature creates Command Files. After a sequence of commands is executed once manually, it can be performed forever automatically through the Command File. Forecaster can consolidate a whole corporation's departmental budgets, use the totals to predict the coming year's cash flow and print a fully annotated report ready for the board or the bank—all while the user has his morning coffee.

See reverse side

Analogics, Inc.

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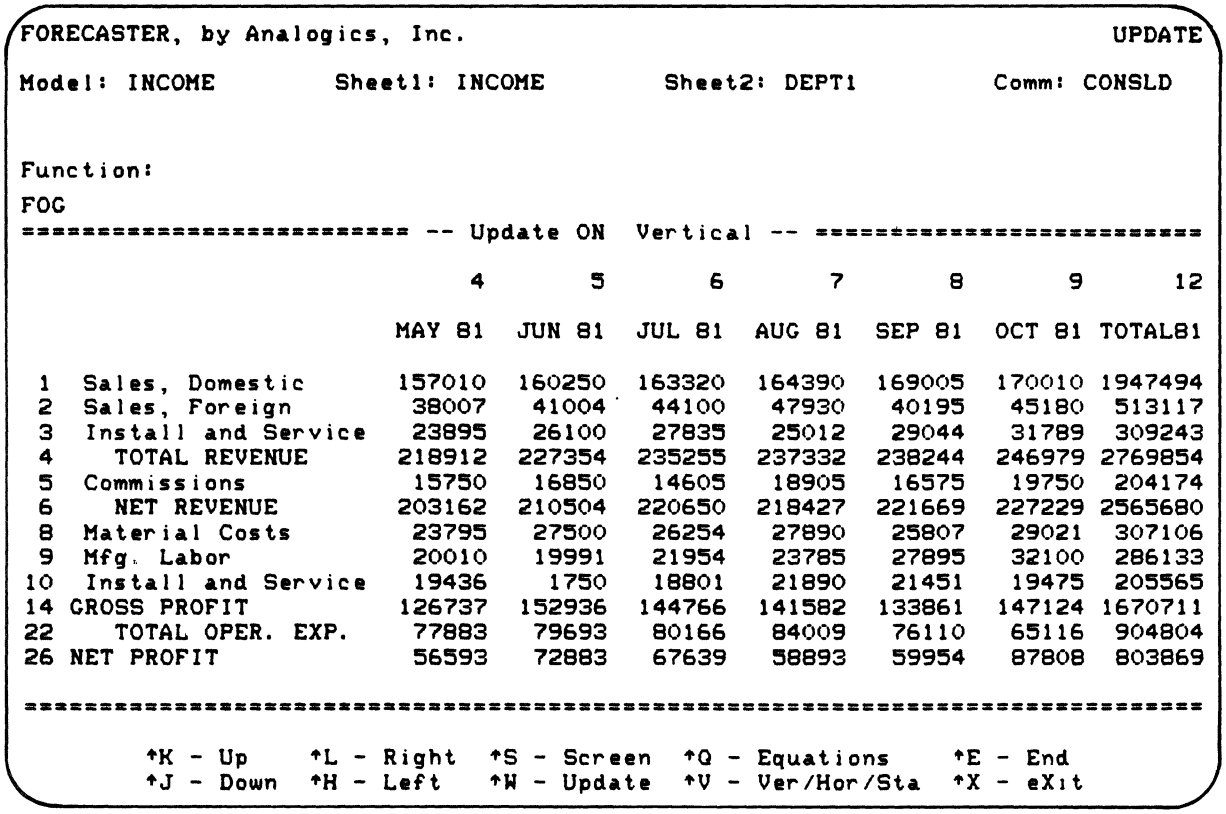
TYPICAL SCREEN



```
FORECASTER, by Analogics, Inc.                                        UPDATE

Model: INCOME        Sheet1: INCOME        Sheet2: DEPT1        Comm: CONSLD

Function:
FOG
========================= -- Update ON  Vertical -- =========================

                                4       5       6       7       8       9      12

                          MAY 81  JUN 81  JUL 81  AUG 81  SEP 81  OCT 81 TOTAL81

 1  Sales, Domestic       157010  160250  163320  164390  169005  170010 1947494
 2  Sales, Foreign         38007   41004   44100   47930   40195   45180  513117
 3  Install and Service    23895   26100   27835   25012   29044   31789  309243
 4    TOTAL REVENUE       218912  227354  235255  237332  238244  246979 2769854
 5  Commissions            15750   16850   14605   18905   16575   19750  204174
 6    NET REVENUE         203162  210504  220650  218427  221669  227229 2565680
 8  Material Costs         23795   27500   26254   27890   25807   29021  307106
 9  Mfg. Labor             20010   19991   21954   23785   27895   32100  286133
10  Install and Service    19436    1750   18801   21890   21451   19475  205565
14 GROSS PROFIT           126737  152936  144766  141582  133861  147124 1670711
22    TOTAL OPER. EXP.     77883   79693   80166   84009   76110   65116  904804
26 NET PROFIT              56593   72883   67639   58893   59954   87808  803869

================================================================================

        ↑K - Up     ↑L - Right  ↑S - Screen  ↑Q - Equations     ↑E - End
        ↑J - Down   ↑H - Left   ↑W - Update  ↑V - Ver/Hor/Sta   ↑X - eXit
```


FORECASTER MODULES:

FORECAST—The entry point to the Forecaster, and the module which performs editing and execution of Command Files.

MODEL—The "Model Builder," which allows the user to define all the mathematical relationships on a Data Sheet, as well as set up Titles and print formatting.

UPDATE—The module where interactive data entry and Visual Calculations are done.

REPORT—The module which prints Data Sheets in "Boardroom-ready" format, and also lists the contents of Models for user convenience.

APPLICATION MODELS provided with Forecaster meet many general prediction needs, and the Model Builder allows the user to customize these or create whole new approaches to viewing his particular problems.

TO RUN FORECASTER, THE USER NEEDS:

- ALPHABASIC
- 32K User Partition
- 80x24 ASCII Terminal
  Alphavue Compatible

MAXIMUM SIZES:

DATA SHEETS—32 lines, 13 columns.

MODELS—50 powerful equations, including conditionals.

COMMAND FILES—100 commands.

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Demonstration Diskette and manual: 50.00
Dealer inquiries are invited

STRUCTURED PROGRAMMING PART III

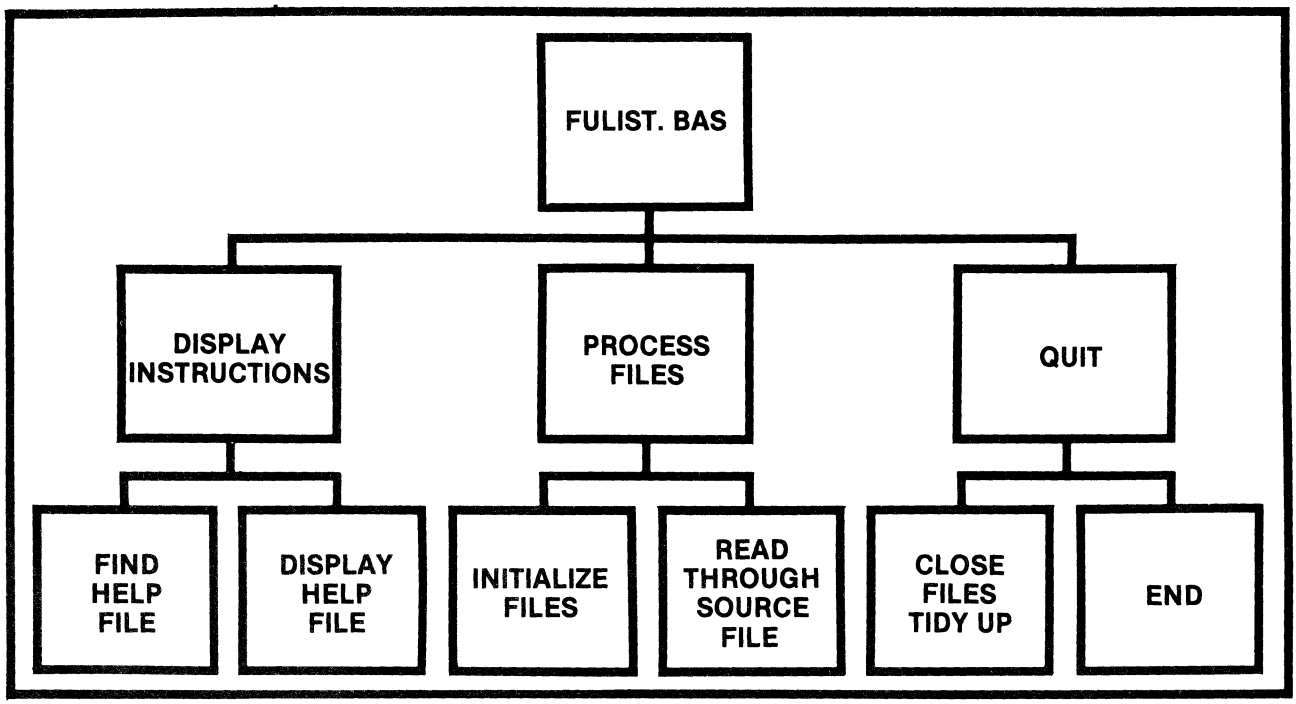
by Steve Elliott

In the previous issue we discussed how the + +INCLUDE command could be used in AlphaBASIC, and we also noted that with this feature one did not get a complete listing of one's programs, that is, the subroutines were not in the program, only their file name. In this article, we will begin the process of building a program that gives us a complete listing of a program by finding the INCLUDed subroutines and copying them into a complete file of the program. During this process, we will also watch the generation of a top-down designed program, and discuss the mental processes that a programmer/designer goes through to bring an idea into reality as an AlphaBASIC program.

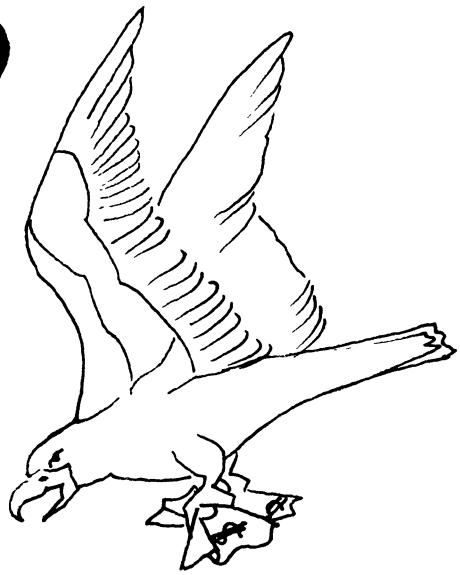
Step one is to specify what the program will do. In this case, we can state the programs purpose in one paragraph. In a more complex system, this might take several pages. The idea is to be as specific as one can, while giving the overview of the program's purpose.

> PURPOSE: This program is a programmer's debugging aid. It will read an AlphaBASIC program that has made use of the + +INCLUDE feature, and replace the + +INCLUDE line with the contents of the + +INCLUDed file. The result will be written to a file with the same name as the original program, but with an easily recognizable extension. The original program, and the final product should compile and run exactly the same.

Next we name the program, and create the first few levels of top-down design. At this point, all that is needed is enough information to begin thinking in general terms about what the program will do. Deciding on a name for the program is a good idea at this time too. I've decided to call this program FULIST, short for Full Listing. With this information, we can create the first two levels of top-down design as in the following diagram.



SUPER DEALS



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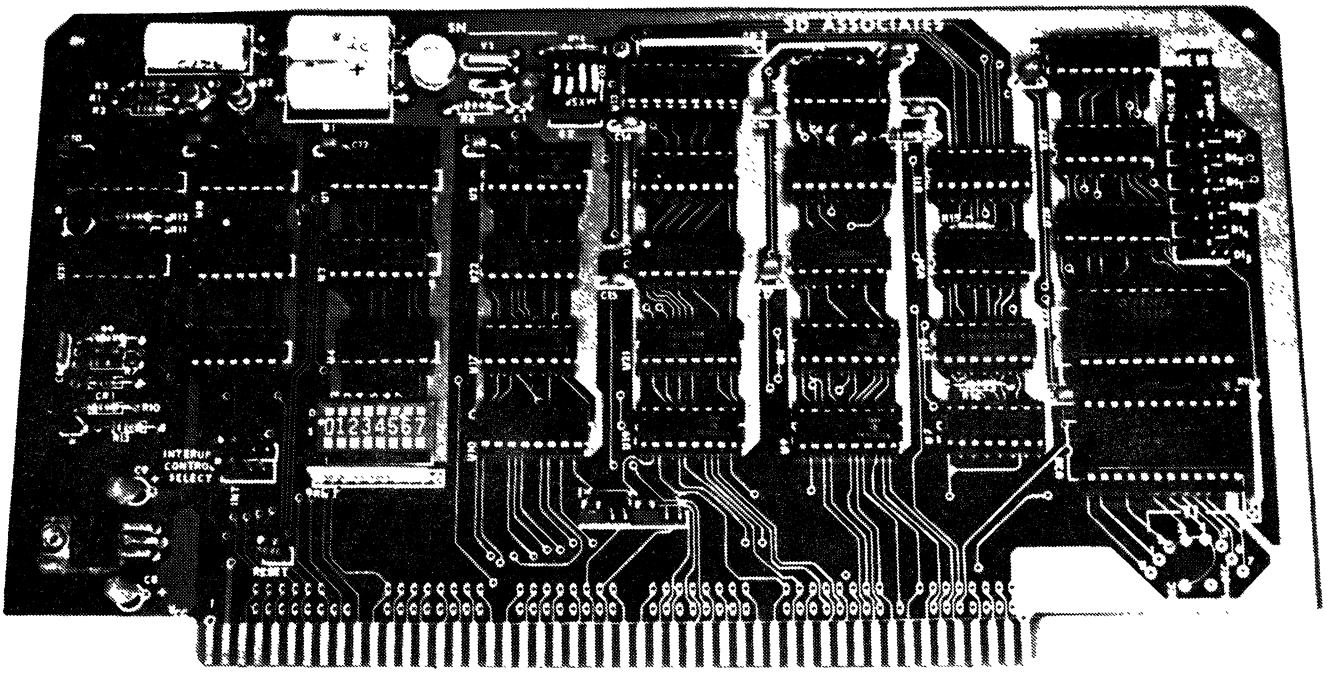
Does your Computer know what time it is?



The 3D TIME CARD gives seconds, mins, hours, day of week, day of month, and year with quartz crystal accuracy (+/- 15 secs/mo). Nicad battery backup; powerfail/reset; programmable hard reset; write protect switch; Realtime Interval Interrupts of 16ms or 1 sec; Direct system software Interface for Alpha Micro Users.

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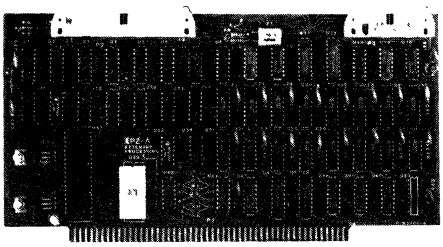
APPLICATION ORIENTED DISTRIBUTED PROCESSING FOR THE S-100 BUS



Don't make one CPU run multiple programs Make multiple CPU's run one or more programs The EPZ is a complete Z80A computer designed to work in PARALLEL to your existing CPU. It is designed to do YOUR applications. Use it in applications where your present CPU isn't quite fast enough by itself or where intelligence is needed to control a peripheral and your present CPU doesn't have enough time.

If even more processing capability is needed then add a second EPZ As many as 64 EPZ's could be added if you had enough slots in your system Each one operating independently and not taking any RAM or ROM from your present system or from each other This is your chance to add processing power and expandability to your system and still keep your present hardware and software intact

Features include:

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- The EPZ features the latest in PC board design. Including 4 layer construction for the ultimate in noise suppression Silk screen and solder mask are also used All IC's are in sockets
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- Optional utility software to interface the host to the EPZ Contact Microbyte for details
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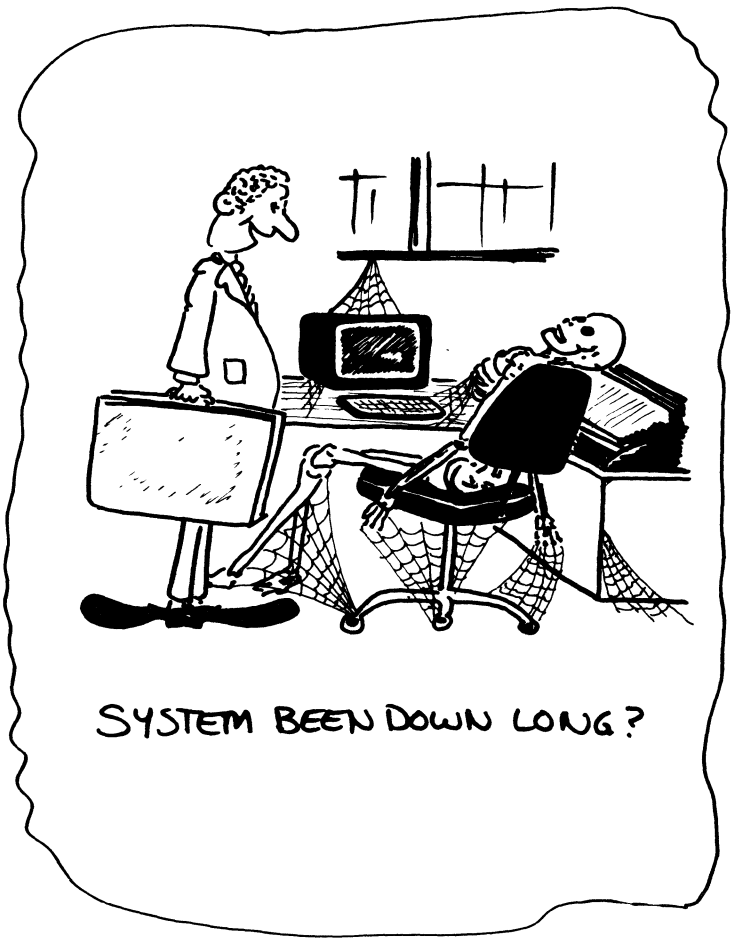
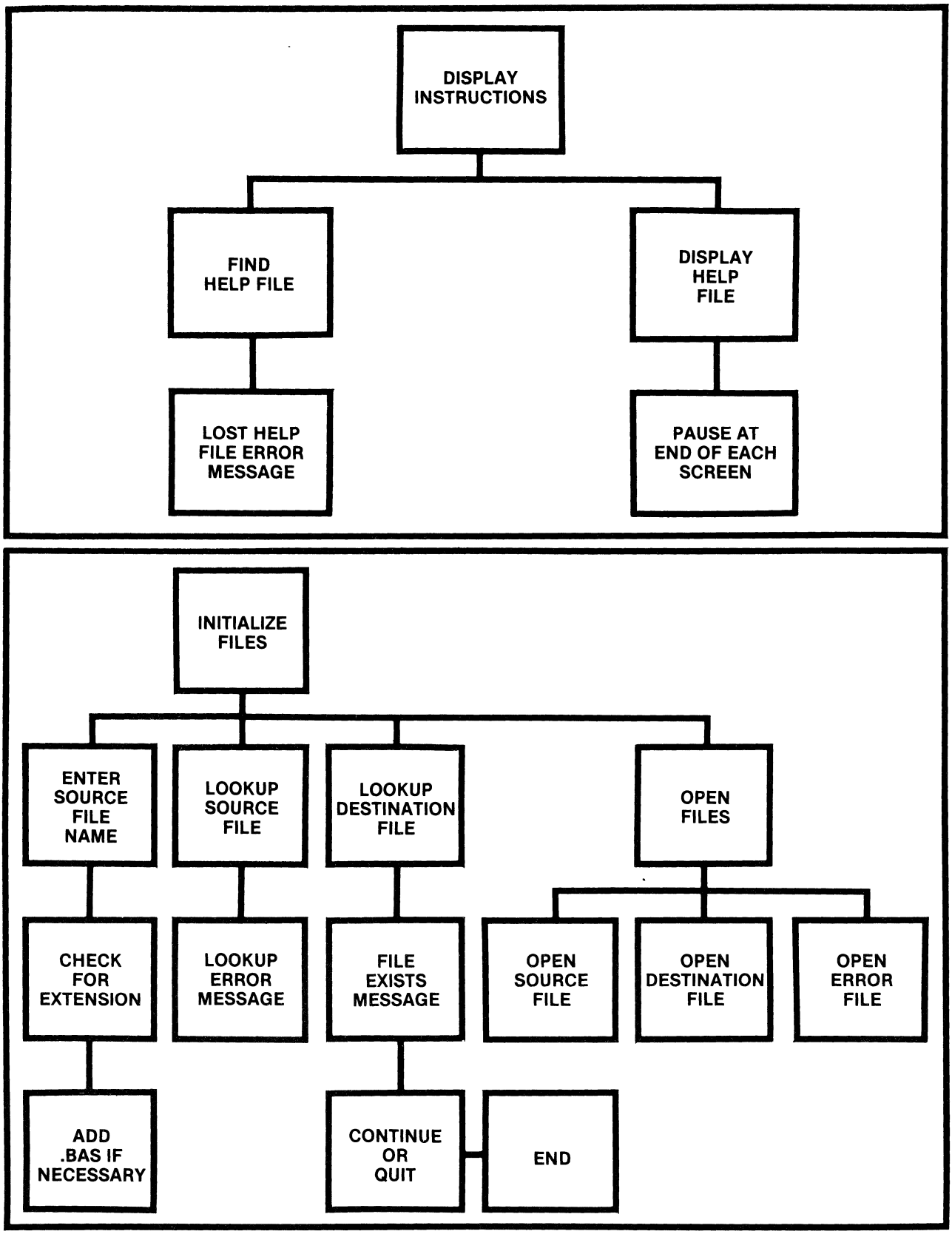
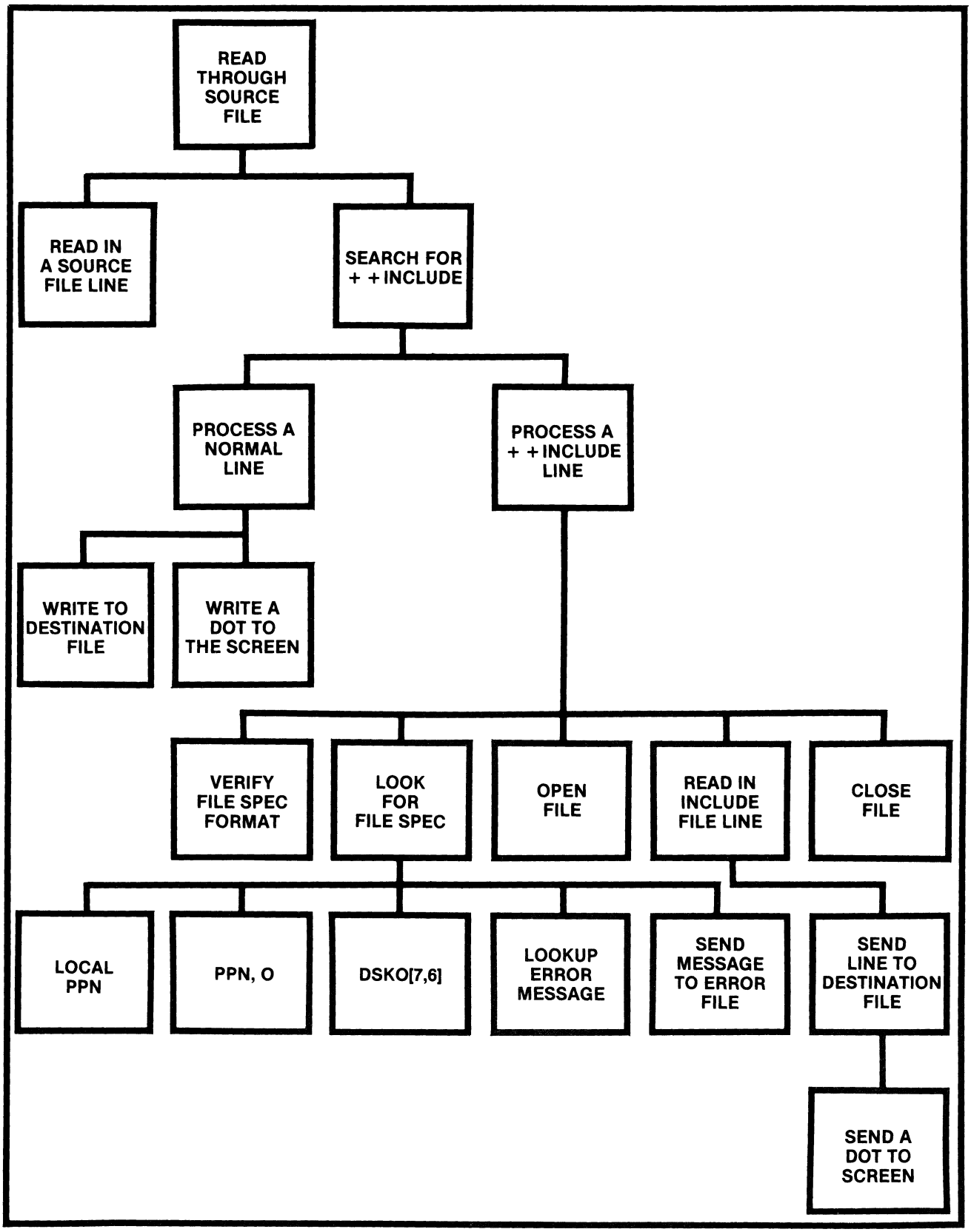
This seems to be a resonable start, without going into exhausting detail about each section. Note though that there is no mention about what processes take place in the heart of the program — the actual reading, location of subroutine files, and their movement into the destination file. These processes will begin taking shape in the next level. Also note that I am going to be breaking a rule that was established in the last article on structured programming: opening and closing the subroutine files as we move through the source program instead of opening all of the files at once. The process of reading through the source code and opening files as we encounter them lends itself to this technique much easier than the rule presented in the last issue. It is much easier to bend the rules here than to produce convoluted code that conforms to a stringent rule.

Due to limitations on paper size we will now make one drawing for each of the main sections in the top-down design to display the completion of the diagrams. In real life you can either use this method which works well for notebooks and orderly filing, or, you can do as I sometimes like to and put the whole thing on a long piece of butcher paper. Look over these three diagrams and note how the lower levels deal with more and more detailed information. Also, locate any subroutines that will be used in more than one place. These will be important, because you want to be doubly sure that these are written so that they will function properly for all of the superior levels that call them.




DISPLAY INSTRUCTIONS
FIND HELP FILE
DISPLAY HELP FILE
LOST HELP FILE ERROR MESSAGE
PAUSE AT END OF EACH SCREEN
INITIALIZE FILES
ENTER SOURCE FILE NAME
LOOKUP SOURCE FILE
LOOKUP DESTINATION FILE
OPEN FILES
CHECK FOR EXTENSION
LOOKUP ERROR MESSAGE
FILE EXISTS MESSAGE
OPEN SOURCE FILE
OPEN DESTINATION FILE
OPEN ERROR FILE
ADD .BAS IF NECESSARY
CONTINUE OR QUIT
END


READ THROUGH SOURCE FILE
READ IN A SOURCE FILE LINE
SEARCH FOR + + INCLUDE
PROCESS A NORMAL LINE
PROCESS A + + INCLUDE LINE
WRITE TO DESTINATION FILE
WRITE A DOT TO THE SCREEN
VERIFY FILE SPEC FORMAT
LOOK FOR FILE SPEC
OPEN FILE
READ IN INCLUDE FILE LINE
CLOSE FILE
LOCAL PPN
PPN, O
DSKO[7,6]
LOOKUP ERROR MESSAGE
SEND MESSAGE TO ERROR FILE
SEND LINE TO DESTINATION FILE
SEND A DOT TO SCREEN

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2. Hawk disk space availability: FREBLK.SBR returns the number of free blocks and the largest group of contiguous free blocks on a Hawk disk.

3. Bank switched I/O package: Perform all I/O through I/O program running in its own memory bank. Includes complete file locking protection for up to 16 users. Eliminates all RANDOM/ISAM file buffers in user programs. Does require fairly large module in sharable memory. This package is not for the timid, but offers many advantages to those designing new, multiuser applications.

4. Subroutine to allow bank switching of subroutines: coming soon, this subroutine which will permit the placing of many (but not all) MACRO subroutines XCALLed from AlphaBASIC programs in their own memory bank. Will permit significant reduction in sharable and/or user memory requirements for many applications.

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Easy way to underline when using VUE: UNDERL underlines all words and imbedded blanks between leading and trailing underline characters in any sequential file. Eliminates the control "G", control "H" hassle.

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2. Communication: TPHONE communicates at either 300 or 1200 baud, via a Ventel MD212 PLUS modem. Stop diddling around at 300 baud when 1200 baud is available.

3. Change baud rate: CHBAUD changes the baud rate of any terminal on an AM-300/301, AM-100T, or AM-310 board.

4. Change terminal driver: CHGDVR changes the terminal driver for any terminal on the system, providing the new driver exists in at least one TRMDEF statement.

5. Change terminal driver: SETDVR is similar to CHGDVR, but changes terminal driver only for user's terminal.

6. Simple timekeeping program: JOBTIM keeps track of the time spent on various jobs throughout the day. Just enter "JOBTIM" followed by new job name to stop timing prior job and start timing new job. Keep track of those five minute telephone calls and other diversions.

Programmers' Tools.

1. Memory dump program with bank swapping: DUMPER/DUMPTF dump system memory in any memory bank. Displays one word per line in octal (or hex), decimal, two-byte, ASCII, RAD50 and binary formats. One version displays at terminal, the other creates a sequential output file. Includes absolute and relative addressing. Invaluable for system debugging.

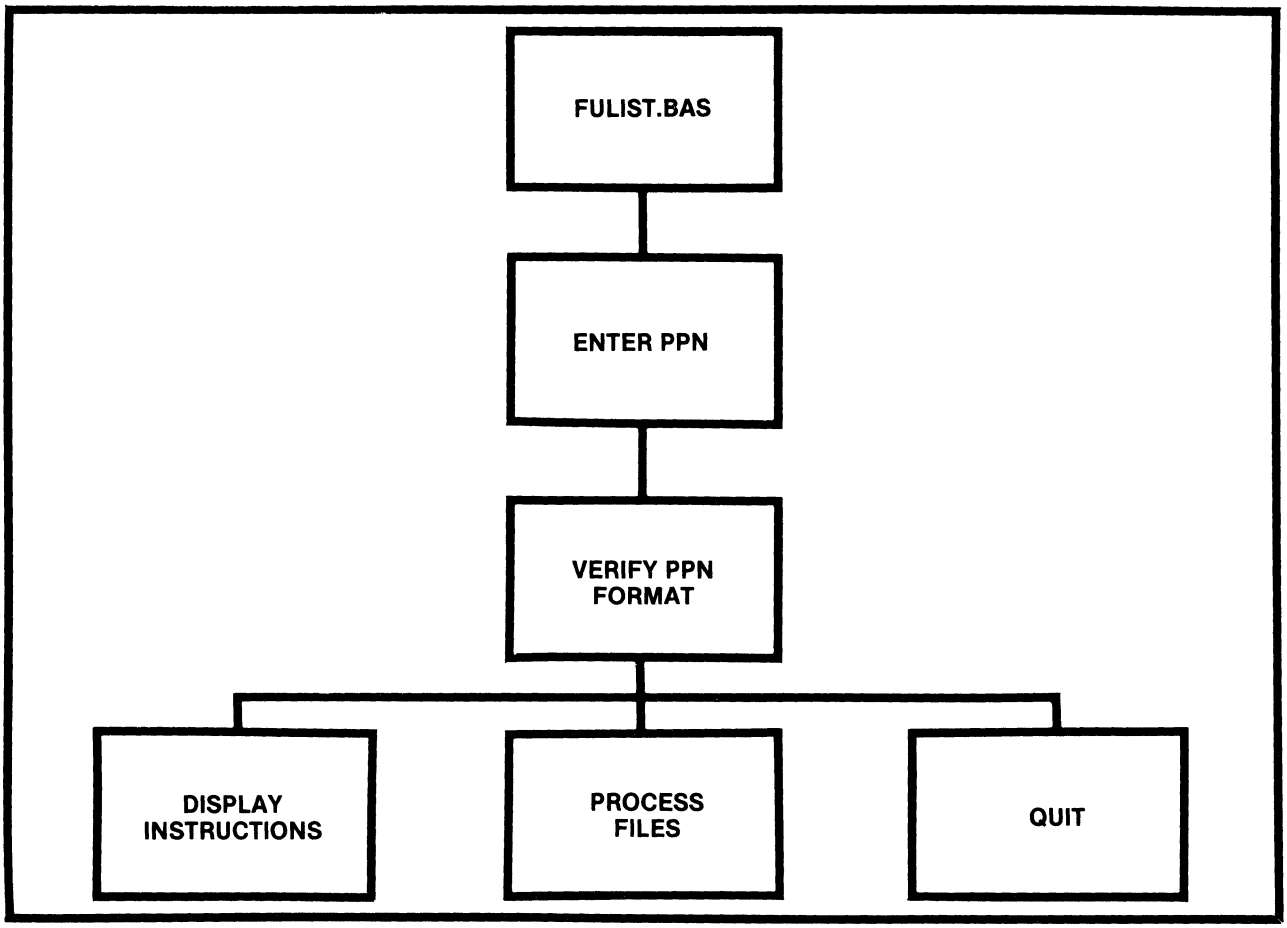
2. Processor load monitor: CPUMON runs at user terminal or in 'background' job to monitor average CPU load.

3. Input/Output port status: IO300/IO301 displays status of all six ports on an AM-300/301 board. (Useful for 'unsticking' a locked up AM-300/301 board. This program has eliminated all unexplained 'crashes' on our system.)

4. Terminal status: TRMBUF displays selected data from any terminal's Terminal Definition Table, and displays in ASCII format the contents of the input and data buffers.

CALL OR WRITE FOR INFORMATION

After reviewing the diagram for completeness, I discovered that we did not find out what PPN the program is being run in, and that is necessary for proper searching of the + +INCLUDed files. It seems that the best place to do this is at the very beginning of the program, so we will revise our original top down design to look like figure 5. If someone can tell me how to determine from within BASIC what PPN you are in, I would appreciate it. This seems like a question that a program operator should not have to deal with.



At this point, there is enough information to create a rough draft of some MAP statements and notes about filenames to be used if they are going to be specific, or extensions for filenames that will be used. If you want to be revolutionary about the programming of the project, you can create a HELP file now, outlining the instructions for using the program. Print out the HELP file and have it along side the terminal as you create your program to guide you. This will force you to think about the results from the user's point of view.

FULIST.BAS
Full Listing

This program will give you a complete listing of BASIC files that use the + +INCLUDE feature within AlphaBASIC. It is

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very helpful for debugging a program when there is a problem within a subroutine that would not normally appear in a listing of the program that only shows the + + INCLUDE statements.

For more information about how to use the INCLUDe command, please refer to the AlphaBASIC Users Manual (revision BO2 or greater) Chapter 3.

To use the program, you need only know the name of the BASIC program that you wish to see the full listing of. The program will create a file with the same name as your BASIC program, with the extenstion .FUL. If you had a previous program with the .FUL extension, FULIST will inform you and you can choose to exit, or the old version of the program will be destroyed, and a new one will be created.

FULIST assumes a default extension of .BAS for your program, but you may specify any extension you desire. FULIST will only operate on a source file within your account, but it will find + + INCLUDed files in your account, the PPN matching yours ending with 0, and on DSKO:[7,6]. (This follows the normal searching mechanism that COMPIL would go through to locate an + + INCLUDed file.)

FULIST prints a dot for each line that is being processed, and gives you some summary information at the end of it's run that may be of some use to you during debugging. If a file is not found, FULIST will show an error message on the screen, but complete its run. It will leave the + + INCLUDe line in the final program, and append a list of files not found at the end of the expanded listing.

FULIST has no effect on your original file so you may use it without fear of changing your source programs.

To invoke FULIST, just type RUN FULIST, the program will prompt you for the name of the file you wish to process.

I now assemble all the notes that have been made including the completed top-down design, the HELP file, and the notes about MAP statements in front of the terminal. We are now ready to begin the actual coding of the program.

I locate the MAP statements used with files at the very top of the program, the MAP statements associated with the major variables used in the program next, and follow up with what I call necessary nusicences at the end. The nusicences include variables for the date, print using masks, and a dummy variable or two that are used to do nothing more than accept any key to continue processing if the screen is frozen for the user. (See the subroutine called PAUSE.) I then create the labels for the main blocks of the program that appear on the top line of the design. The program will now look like figure six, and can be compiled to see if there are any errors in the MAP statements.

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WHERE? The Deauville Hotel, Miami Beach, Florida

WHEN? January 24 through January 29, 1982

WHAT? Seminars, conferences, demonstrations, and meetings for businessmen, systems analysts and programmers based on the Alpha Micro System.

The Second Annual AMUS Convention is being held to bring end users of Alpha Micro systems together with the various software firms that provide software for the Alpha Micro and representatives of Alpha Micro. We have scheduled five days of meetings and software demonstrations where the customers can see the products first hand. This is the time and place to ask questions and get the answers you need. What can a word processor do for me? Is VUE and TXTFMT enough? What is a data base? Do I need a data base system? What data base system should I purchase? Has anyone documented the fixes to Alpha Accounting? What are other users doing with their system? How can I save money with my system? How can I use my system to make money? What steps should I take to prevent unauthorized access to my data? How can I possibly evaluate software systems? These questions and similar ones will be addressed during the AMUS convention.

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WHAT DO I HAVE TO DO? Make out two checks. Make the first check payable to: William L. Miller & Associates for Registration and optionally the banquet. Make the second check payable to the Deauville Hotel for the amount of $60.00 per room you wish to reserve. Complete the form below. Send both checks and completed form to:

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Do not send reservation requests to the hotel as this will delay matters. Reservation requests must be accompanied by the reservation deposit. Due to the limited number of rooms available, registration is limited to AMUS members. Sorry, travel agency commissions will not apply due to the special group rate. Reservation confirmation will be sent by mail. Make your reservations early to avoid disappointment.

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```
! FULIST.BAS  FULL LISTING of BASIC programs that use the $INCLUDE
!       feature. See the instructions for further information
!       There is also a HELP file in DSK0:[7,7]
!       Steve Elliott 2/5/81

MAP1 SOURCE$FILE$,S=10          ! only works on files within the user's PPN
MAP1 DESTINATION$FILE$,S=10     ! Always has the extension .FUL
MAP1 INCLUDED$FILES$,S=24       ! will take a full file spec: DSK0$:[7,7]SAMPLE.INI
MAP1 ERROR$FILE$,S=10,"ERRORS.FUL"
MAP1 FILE$NAME$,S=24            ! holding bucket for files while error checking

MAP1 ERROR$MESSAGE$,S=80        ! Get tacked onto the end of the destination file
MAP1 TEXT$LINE$,S=150           ! lots of room - you never can tell...
MAP1 INCLUDED$TEXT$LINE$,S=150

MAP1 PPN$,S=7                   ! Wish I knew how to set this with BASIC!
MAP1 DUMMY$,S=1

CALL GET$PPN

MENU:
        ? TAB( 1,0)
        ? TAB(0,30);"FULIST.BAS"
        ? TAB(4,10);"Full Listings for BASIC programs using the INCLUDE statement"
        ? TAB(10,10);"Would you like:"
        ? TAB(12,15);"1. Instructions"
        ? TAB(13,15);"2. A full listing of a BASIC program sent to a file"
        ? TAB(14,15);"3. To quit."
        ? TAB(16,1);
        INPUT "Enter your choice      ";CHOICE
        ON CHOICE CALL INSTRUCTIONS,PROCESS,QUIT
        GOTO MENU

INSTRUCTIONS:
        ? "NOT YET COMPLETED   TRY QUITTING THIS PROGRAM AND TYPING IN"
        ? "HELP FULIST"
        CALL PAUSE
        RETURN

PROCESS:
        ? "The following subroutines will be called during processing:"
        ? "CALL DETERMINE'SOURCE'FILE'NAME"
        ? "CALL READ THROUGH'THE SOURCE'FILE"
        ? "CALL WRITE'ERROR'MESSAGES'TO'DESTINATION'FILE"
        CALL PAUSE
        RETURN

QUIT:
        ? "CLOSE THE FILES"
        ? "ERASE ANY ERROR FILES"
        ? TAB(23,1);"THE END"
        END

! ************************ LEVEL 1 ****************************

! ************************ LEVEL 2 ****************************

! ************************ LEVEL 3 ****************************

! ************************ LEVEL 4 ****************************

PAUSE:
        ? TAB(23,1);
        INPUT LINE " press RETURN to continue      ";DUMMY
        RETURN
```

This program has been COMPILed, run, and tested. During that process, I discovered some spelling errors and a loose set of quotation marks that were easily repaired. I timed the process of writing the program and testing it up to this point, and it took about one and one-half hours. What we have now is a running program that we can expand one block at a time and test each step of the way. I have had people suggest that my programs are too wordy, and it takes too long to type all those long variable names and labels for subroutines. This is very true. However, there is a corrallary to Murphy's law that says if a program is good, it will have to be changed, and if Alpha Micro should ever (heaven forbid!)

make a change to AlphaBASIC that would affect this program, think about what little effort it will take to fix this program to conform to needed changes two years from now.

Figure 7 shows the program after the next few blocks have been added. We have gone through several changes, added MAP statements when necessary, and tested each module as it was written. Time and space require that we wait until next month to see the final product.

After writing the entire program, and debugging it as much as possible, the completed program should be given to someone else to test. This person should be able to read the instructions, run the program, and use the results without encountering any trouble. If they do, they write a note about ambiguous documentation, genuine operation bugs, or any other suspect item. The programmer should not be within reach when the testing is done. He/she could bias the testing, or direct it past errors that other users will uncover.

Next month's article will include the completed program, and discuss what documentation should accompany the finished product. For those of you who can't wait, call the AMUS office, and we will be glad to make a copy of the program for you and mail it out. If you have comments, suggestions, or questions about structured programming with AlphaBASIC, please send them to Steve at the AMUS office.

```
! FULIST.BAS  FULL LISTING of BASIC programs that use the $$INCLUDE
!       feature. See the instructions for further information.
!       There is also a HELP file in DSK0:[7,11]
!       Steve Elliott 9/5/81

MAP1 SOURCE'FILE,S,10          ! only works on files within the user's PPN
MAP1 DESTINATION'FILE,S,10     ! Awaless has the extension '.FUL'
MAP1 INCLUDE'FILESPEC,S,24     ! will take a full filespec: DSK0:[xxx,xxx]FILE.EXT
MAP1 ERROR'FILE,S,10,"ERRORS.FUL"
MAP1 FILE'NAME,S,24            ! holding bucket for files while error checking

MAP1 FILE'CHECK,S,2            ! Returns 'OK' if file name is a valid format
MAP1 FILE'FOUND,S,2            ! Returns 'OK' if file is found
MAP1 ERROR'MESSAGE$,S 80       ! Get tacked onto the end of the destination file
MAP1 TEXT'LINE,S,150           ! lots of room - you never can tell....
MAP1 INCLUDE'TEXT'LINE,S,150

MAP1 DUMMY,S,1

MENU:
        ? TAB( 1,0)
        ? TAB(2,30); "FULIST.BAS"
        ? TAB(4,10); "Full Listing for BASIC programs using the INCLUDE statement"
        ? TAB(10,10); "Would you like:"
        ? TAB(12,15); "1. Instructions"
        ? TAB(13,15); "2. A full listing of a BASIC program sent to a file"
        ? TAB(14,15); "3. To quit."
        ? TAB(16,15);
        INPUT "Enter your choice -   "; CHOICE
        ON CHOICE CALL INSTRUCTIONS, PROCESS, QUIT
        GOTO MENU

INSTRUCTIONS:
        ? "NOT YET COMPLETED   TRY QUITTING THIS PROGRAM AND TYPING IN"
        ? "HELP FULIST"
        CALL PAUSE
        RETURN

PROCESS:
        CALL DETERMINE'SOURCE'FILE'NAME
        CALL READ'THROUGH'THE'SOURCE'FILE
        CALL WRITE'ERROR'MESSAGES'TO'DESTINATION'FILE
        CALL PAUSE
        RETURN
```

```
QUIT:
        ? "CLOSE THE FILES"
        ? "ERASE ANY ERROR FILES"
        ? TAB(23,1); "THE END"
        END

! ************************* LEVEL 1 ******************************

DETERMINE'SOURCE'FILE'NAME:
        CALL ENTER'SOURCE'FILE'NAME
        IF FILE'CHECK$ <> "OK" &
            THEN &
                CALL BOGUS'FILE'NAME :&
                GOTO DETERMINE'SOURCE'FILE'NAME
        CALL LOOKUP'SOURCE'FILE
        CALL LOOKUP'DESTINATION'FILE
        RETURN

READ'THROUGH'THE'SOURCE'FILE:
        RETURN

WRITE'ERROR'MESSAGES'TO'DESTINATION'FILE:
        RETURN
! ************************* LEVEL 2 ******************************

ENTER'SOURCE'FILE'NAME:
        ? TAB(10,1); TAB(-1,10);
        ? "Please enter the name of the file to be listed."
        INPUT LINE "(.BAS is assumed as the extension) -  "; FILE'NAME$
        FILE'NAME$ = UCS(FILE'NAME$)
        CALL CHECK'FILE'NAME
        RETURN

LOOKUP'SOURCE'FILE:
        RETURN

LOOKUP'DESTINATION'FILE:
        RETURN

BOGUS'FILE'NAME:
        ? "HUH? THAT'S NOT A VALID FILE NAME! "
        CALL PAUSE
        RETURN

! ************************* LEVEL 3 ******************************

CHECK'FILE'NAME:
        ? "FILE CHECKING NOT COMPLETE, FOR NOW WE'LL ASSUME"
        ? "THAT EVERYTHING IS OK."
        FILE'CHECK$ = "OK"
        CALL PAUSE
        RETURN

! ************************* LEVEL 4 ******************************

PAUSE:
        ? TAB(23,1);
        INPUT LINE " Press RETURN to continue  -  "; DUMMY
        RETURN
```

BUG FIX

by BOB FOWLER

BUGLIST #18 (Version 4.5)

Releases and sub-releases since last buglist:

- 4.5 AlphaMAIL, AM120, 11 New Monitor Calls, TDV Driver Writer
- 4.5(1) Patch to 4.5 given in Software Notes II-4 (06/17/81). Changed was DSKANA, and the version number in SYSTEM.MON.
- 4.5A Sub-release for Winchester systems (AM420) (next buglist).

AMOS 4.5 came out in the middle of May 1981.

My humorous instincts have placed heavy pressure on me to change the titles of the 3 buglist sections to "bugs, suggs, and ughs;" well, maybe later. . . .

Some significant problems with 4.5 have surfaced; most have fixes.

Bob Fowler / A.I.S. / 800 San Antonio Ave. / Palo Alto, CA 94303.

AMOS BUGS (Version 4.5)

(1) BASIC documentation—reserved words were not updated.

Appendix C in the 4.5 BASIC manual should be updated to contain the new reserved words APPEND, FORCED'RANDOM. [thanks, Gerry]

(2) BASIC documentation—MEM table errata

The table of MEM function values is incorrect as follows:

entry	says	should be
MEM(7)	dummy data	array indices
MEM(8)	array indices	variable storage
MEM(9)	variable storage	dummy data

(3) BASIC MAPS and continuations—don't work well past 250 bytes.

It is convenient to initialize large (eg, 256-byte) string variables, using the continuation syntax character "&." For example, consider a string initialized with 50 bytes on each line, like this:

```
10 MAP1 A$,S,400,"123456789.123456789.123456789." + &
"123456789.123456789.123456789.123456789.123456789." + &
"123456789.123456789.123456789.123456789.123456789."
```

This is a 3-line version; in what follows, we consider versions that contain up to 10 or more lines, by replicating the middle line. A 10-line version LOADed into BASIC will get "source line overflow." An 8 or 9-line version will LOAD ok, but hangs up job if RUN. A 6 or 7-line version will LOAD, but a RUN will report "out of memory." In a 32K user partition, there are actually over 10K bytes left. A 5-line version will pass RUN, but a subsequent PRINT A$ will show that A$ is now missing its 1st, 2nd, 239th and 240th bytes!!! Try it A 4-line version has no problems, but is only 200 bytes—not fair!

[thanks, Gerry]

(4) RUN—branching out of FOR loop leaves control variable "sensitive"

Branching out of a FOR loop is known to consume 18 bytes of memory. However, if another FOR loop is later run using the same variable, then BASIC evidently begins to mis-interpret the pseudo codes. This problem did NOT occur in 4.4; it began with the 4.5 RUN. The simplest example appears to be the following:

```
10    FOR I = 1 TO 1:GO TO SKIP:NEXT
20  SKIP:
30    GOSUB ROUTINE:PRINT "DONE"
40  ROUTINE:
50    FOR I = 1 TO 1:NEXT
60    RETURN
```

When the above is executed, no output occurs except the message: RETURN without GOSUB in line 60 of A.RUN. If J (not I) is used in line 50, there are no problems. Another example of this problem also goofs up at the RETURN command; no error is given, but in effect a STOP is executed instead of RETURN.instead of the RETURN command.

[thanks, Ron]

(5) RUN—INPUT #n and READ no longer support space or tab delimiters

Enter the following program:

```
10    DATA 81 82 91 999 091 092
20    READ A,B,C,D,E,F
30    PRINT A;B;C;D;E;F
```

The output is "81 82 1 99 91 92." Leading 9's are truncated. Another sample is:

```
10    DATA 1 TEST
20    READ A,B$
30    PRINT A;B$
```

The output is "1 EST." After a numeric field, blanks, string field, the string has the first character truncated. The same truncations will happen when using INPUT #1 on an ASCII file. None of these truncations occur when using 4.4 RUN. For those of you with nicely formatted data files, there is hope: as long as 1 comma occurs between each field, no truncation occurs; (additional spaces and/or tabs on either side of each comma are ok). This can take a while to diagnose and track down. . . .

[thanks, Gerry and Jerry]

Addendum: Software Notes for July 1981 (arrived 08/07/81) is humorous. It says that pre-4.5 INPUT "did not handle inputting consistently," which is not true—pre 4.5 allowed anything that was not ambiguous. Effectively, all string inputs had to end with a comma or a return. It then says that all data must be separated by commas, except numeric. This is also not true, due to the bug described above (eg, 81 82 91 92). Finally, the last (fifth) example given is not correct (try it).

A fix to the truncation of leading 9's, comes from AM over the phone:

```
DDT RUNSML
23260/ BHIS 23266 BHI 23266
DDT RUNLRG
26136/ BHIS 26144 BHI 26144
```

I'll bet that a similar fix is also possible for the string truncation. We may have a case here of a bug being turned into a feature. Even if this change was indeed intentional, rather than accidental, AM still implemented it incorrectly, and didn't originally document it even though it was imperative to do so because of pre-existing software.

[thanks, Compuwest]

(6) RUN—problem with un-MAPped/un-DIMed arrays

Create, COMPIL, and RUN the following program:

```
10 ! DIM b (10)          ! WORKS OK IF THIS INCLUDED
20 ! C = 1               ! WORKS OK IF THIS INCLUDED
30  B(C + 1) = 1
40  FOR D = 1 TO 1
50  C = 1                ! WORKS OK IF THIS DELETED
60  NEXT
```

It gives the error: NEXT without FOR in line 60 of <filnam>.RUN. RUN is evidently having trouble allocating the array at RUN time. This problem will happen even if line 30 is NEVER EXECUTED!!! To demonstrate, insert these two lines and COMPIL and RUN.

```
15    GO TO A
35    A:
```

[thanks, Lai]

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Thanks AMUS user's

We would like to THANK all AMUS user's for there support of both our hardware and software products and hope to continue to improve and increase the use of the Alpha Micro. See Aug. Issue of AMUS for additional Software.

For Further information contact Keith A. Zessin

BUG FIX CONTINUED

(7) RUNSML—careful of accounting goodies

The new small RUN package has no transcendental functions (no powers). Thus, at least 1 line in the accouting package will give you problems. In PRXPND.BAS, line 2310, a stall is executed by doing the following:

```
FOR ZZ = 1 TO 80:GG = (2**5):NEXT ZZ
```

This was the only exponentiation left in our Accouting programs, but we have probably removed others over the past year + .

(8) COMPIL— + + INCLUDE's mess up error reporting

Consider the following program with 1 INCLUDE and 1 missing label(A):

```
+ + INCLUCE B.BAS
20  GO TO A
30  END
```

Where B.BAS contains one line of code, for example:

```
10  PRINT
```

COMPIL will detect the error, but blames it on line 30 If line 30 is removed, the error is blamed on a blank line. If the INCLUDE line is removed, the error is correctly reported.

In general, it appears that if x lines of code are INCLUDEd, and a pass 2 error occurs on the y-th line, the error will be blamed on line x + y. If the program is shorter than x + y lines, a blank line will display.

[thanks, Gerry & Lai]

(9) VUE—problems using SBLK with REPLACE and GLOBAL

Create a file containing 4 lines of "A A" in VUE, then do exactly this:

(a) mark off first 2 lines (using control-P)
(b) go to menu and do an SBLK command
(c) do a REPLACE command, changing "A" to "B"
(d) type "Y" responses; only 3 REPLACEs are found!

Bug #1—VUE fails to find an SBLK match at the very end of the block

(e) CLEAR the markers
(f) set new markers on the 3rd and 4th lines
(g) Do a GLOBAL command, changing "C" to "D"; VUE makes 3 changes! Effectively, it GLOBALs "A" to "D", instead of "C" to "D".
As in Bug #1 above, VUE fails to find the last (pseudo-) match

Bug #2—After doing a REPLACE with SBLK, and the markers are reset, a subsequent GLOBAL will sometimes use the same match as the REPLACE, ignoring the string actually entered by the user.

[Thanks, Gerry]

(10) VUE—if first line UNYANKed is blank, it doesn't get UNYANKed

Create a 3-line file in VUE containing a blank line + a non-blank line + a blank line. Then UNYANK the first 2 lines to a second file (do control-P on 1st and 2nd lines, position cursor on 3rd line). You will find that the second file is missing the first (blank) line. In general, when the first line UNYANKed is blank, it isn't UNYANKED. When UNYANKing several blank lines, one doesn't get UNYANKed. Remember: "If first line is blank, it don't get UNYANKed."

(11) VUE—minor bug causes low intensity in command screen

In any file, mark off a section with control-P's, and position the cursor inside the section, then type the following 9 characters (no blanks) esc A B C D E control-U control-L control-Y. You will now see low intensity.

(12) TXTFMT—/CENTER too long a line can crash system

A user reports that if a CENTERed text exceeds the value of LINESIZE AMOS crashes.

NOTE: The DSPLY and INPUT subroutine are only distributed to Alpha Accounting license holders.

(13) DSPLY.SBR—problems when numeric output field is on odd byte address

Create the following program and RUN it:

```
10  MAP1 A
20    MAP2 B,S,1
30    MAP2 DECMAL,F,6,500
40  XCALL DSPLY,3,12,1,DECMAL,3,0
```

On my terminal, I get the following output.

```
415,387,115,880,3,i3,Vs,T.-
```

When line 20 is removed, the output comes out correctly, as "5.00." This took a while to track down. . .

(14) INPUT.SBR—doesn't ding-dong on row 12

Enter following, COMPIL it, LOAD SYS:FLTCNV, LOAD BAS:MESAG, and RUN it.

```
MAP1 ENTRY,S,10
PRINT TAB(-1,0);
XCALL NOECHO
XCALL INPUT,10,1,1,0,"# ",ENTRY,INXCTL,1
XCALL INPUT,12,1,1,0,"# ",ENTRY,INXCTL,1
```

If you type 2 characters on row 10 you get beeped at, but not on row 12.

(15) INPUT.SBR—doesn't check date fields very well

The "D" format command is for entering 6-digit dates in format mmddyy. The validity checking is confined to the following tests:

all characters must be digits
mm < 13, dd < 32

The following are NOT checked and will always slip by:

mm > 00 , dd > 00
mm > 28 for the appropriate months and leap/non-leap years

[Thanks, Jan]

(16) MEMDEF—picky about blanks between parameters

If extra blanks occur within the MEMDEF parameter list, it can fail.

```
MEMDEF 101,3,0     ; is ok, but doesn't visually "line up
                     nice"
MEMDEF 101, 3,0    ; gives error message
```

This should be easy for Alpha Micro to change in MEMDEF.

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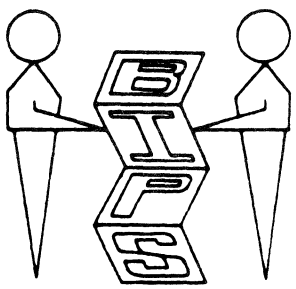


The Service People

(17) TRMDEF—doesn't like trailing blanks after parameters

The following works fine:

```
:T
JOBS JOB1
TRMDEF CRT1,AM300 = 1:16,SOROC,80,80,40
DEVTBL DSK1,DSK2,DSK3,DSK4,DSK5
BITMAP DSK,1818,0,1,2,3,4,5
SYSTEM
CLKFRQ 60
MOUNT DSK1:
MEMORY 0
```

However, put a blank after "40" in the TRMDEF line, and reset will die.

[Thanks, Ray)

(18) DSKPAK—one bug fixed, another one put in

DSKPAK finally works; that one-bit DDT was incorporated (Buglist 16). However, one other bit was changed and should be changed back, thus:

```
DDT DSKPAK                      (in 4.5 AMOS)
572/  BNE 612   BNE 602
```

The above instruction is contained in a chunk of DSKPAK code that is moved onto the user stack, and then executed there. It turns off user's bank, turns on bitmap bank, fiddles around, then returns to user's bank. The BNE 602 stays within that chunk of moved code, but not BNE 612; thus, if the branch ever occurs, it executes garbage on the user stack. From what we can decipher, this will crash system whenever the disk being packed shares a bitmap area with another disk, and that other disk was occupying the shared bitmap area when DSKPAK was invoked. The DSKPAK will finish, re-write bitmap properly, crash system, & scare the pants off the system's programmer ("are my files screwed up?"). But a simple re-boot should be sufficient cure.

(19) SUSPND—only suspends a job if it is already executing

Consider 2-crt system with CRT1 attached to JOB1, CRT2 attached to JOB2. If JOB1 is executing, then SUSPND/REVIVE JOB1 both work fine from CRT2. If JOB1 is at monitor level, then SUSPND JOB1 effectively does nothing; a SYSTAT will now show JOB1 as suspended ("SP"), but JOB1 will accept an AMOS command (on its crt or FORCEd), and upon exit will REVIVE itself. This can probably be best remedied by changing TRMSER to only pass on a command string if a job is not suspended.

[Thanks, Gerry]

(20) MEMORY—evidently doesn't correctly reset JOBMEM parameters

If 2+ banks are brought up, and SYSTEM.INI's last line is MEMORY 0, then job #1's bank parameters are evidently not properly set up. If a JOBMEM is subsequently entered on job #1's terminal, the destination bank will be (correctly) turned on, but the original bank will also (incorrectly) be left on. This leads to buss errors, etc.

[Thanks, Gerry]

(21) DDT—doesn't input CALL or JSR

I just know this must be ancient news to Assembler fans, but here we go. DDT will disassemble CALL just fine, but will input neither CALL nor JSR. I made up a DDT fix and was finally forced to settle for "WORD" commands!

(22) FMT500—re-usable, but looks suspicious the second time

A customer of ours does a Hawk backup sequence where FMT500 is loaded into memory, used once ok (all blocks become FMT500'ed to zero bytes), and then used later a second time with the following funny results: block 0 (the label) from the disk being FMT500'ed is copied to all 9695 other blocks on that disk. There was also on the label on the first disk being FMT500'ed, so this is a different kind of result. The hash code on RES:FMT500 is different from DSKO:FMT500 after usage.

[Thanks, Tom]

(23) FIX—problems with USREND (but not USRBAS nor USRFRE)

Create, VUE, MACRO, SYMBOL. And then use FIX to single step through this program:

```
        COPY    SYS
        LEA     RO,HERE
        USRBAS  O(RO)       ; always ok
        USRFRE  O(RO)       ; always ok
        USREND  O(RO)       ; disassembles wrong.
                              Prematurely exits.
;       USREND  RO          ; this has no pro-
                              blems in FIX
        ADD     RO,RO       ; exits before this
                              instruction
        EXIT
HERE:   WORD    O
        END
```

FIX incorrectly disassembles USREND O(RO), displaying a "NOP" after it. Evidently, FIX is confused about the O offset, & disassembles it twice. Also, single stepping prematurely exists at the USREND instruction.

(24) 200DVR and 210DVR—errata in last buglist

The DDT fix given in Buglist 17 bug#15 should read, for the 2nd line

1264/ CMP @#122,R1 BR 1520 [not] 1264/ SVCA 22 BR 1520

Thus, the fix and hash were utilizable, but the writeup was unsettling.

Buglist 17 bug #11 should have said that bug (c) was already in 4.4, not added with the DDT fixes given in Software Notes.

AMOS SUGGESTIONS (Version 4.5)

(1) VUE—clear any control-Q state at beginning

Try the following: type "VUE <filnam>" and immediately type control-Q. VUE will then come up, leaving the control-Q in effect (should clear it). Any subsequent attempts to free up the output (control-S) will be interpreted by VUE as its own control-S command (ie, "center display").

(2) BASIC—allow READing into substrings

I've said it before, and I'll keep saying it till I'm blue in the face: In order to code BASIC programs that can manage files of ANY record size, BASIC must either allow the syntax "READ #n,var[a,b]", or else the "record size overflow" error checking must be disabled. Implementing the latter would be tedious, the former would be fairly easy BASIC has allowed substrings in WRITE since 4.0, so the idea is not new In fact, READ statements are the ONLY place where substrings are illegal, and thus one could consider this implementation oversight as a bug Using this syntax, it is possible to combine dozens of programs into one, especially within the Alpha Accounting program itself!

[Thanks, Gerry]

(3) BASIC—SPACE(-n) should return null string

Type "PRINT SPACE(-1)" in BASIC and you will get "out of memory " We would suggest that BASIC return a SPACE(0), ie, a null string

[Thanks, Gerry]

(4) BASIC—"throw away" unreferenced variables after COMPIL

Certain variables are MAPped, but never used by the program, namely

(a) MAP "fillers"—see Alpha Accounting for many examples
(b) MAP "junk"—leftover from better days, not used anymore
(c) MAPs from + +INCLUDE statements (each program uses some, not all)

Each such variable takes 6 bytes in the RUN module, which is never used, in addition to the actual variable value itself. I suggest changing COMPIL to "throw away" the variable reference data. This could be implemented fairly easily, would save 6 bytes per variable, and would produce no incompatibilities anywhere. To throw away unused variable VALUES may be tougher to implement, depending on whether BASIC assigns variable codes DURING or AFTER pass 1.

(5) BASIC—implement format code to suppress zero output

For example, implement the following syntax:

```
PRINT USING "*S", I;
```

So that the output is two spaces when I is zero, and is " 1" when I is 1.

(6) DUMP DIRECTORY—change PPN default

"DUMP DIRECTORY" currently executes the same as "DUMP DIRECTORY [0,0] " I recommend that it be changed to default to the user's PPN

(7) COPY—display number of blocks copied

If /Q option in effect, display the number of blocks copied in each file.

[Thanks, Gerry]

(8) Monitor Calls LOOKUP—add note about Z bit to section 6.2.3

After a LOOKUP, Z bit is set to 1 if file was found. Handy to know.

(9) QUEUE reference sheet—add reference to table in Monitor Calls 5.2

This table tells how various programs make use of the QUEUE blocks. If you don't know where to look, this table can be hard to find .

(10) AMOS Disk Directory Structure—"self-recovery" ability [future]

Certain systems are able to automatically rebuild their disk directories This is possible, however, only by storing certain redundant data items In particular, storing the PPN itself in each UFD block would allow this. Descriptions of the "future AMOS disk file structure" have included such items as backward pointers, file-by-file protection parameters, etc The "non-standard" AMOS directories generated by WINFLP, FLPWIN,FLPDIR include date and time. Another useful addition to the future UFD

AMOS NOTES (Version 4.5)

(1) BASIC—substrings on F or B variables gives syntax error

The following program

```
10  MAP1 A,B,1          ! or F,6
20  a[1,1] = 1
```

will give a "syntax" error message, which may lead you astray for awhile.

[Thanks, Lai]

(2) BASIC—handy hint for clearing out mixed variable groups

The following program demonstrates a simple way of clearing out a whole group of variables of all variable types

```
10  MAP1 XCLR
20    MAP2 SCLR,S,512," "
30  MAP1 REC
40    MAP2 F,F,6,123
50    MAP2 B,B,1,234
60    MAP2 S,S,6,"345"
70  PRINT F,B,S,LEN(S) : REC = XCLR : PRINT F,B,S,LEN(S)
```

Limitations: F & B variables become zero, S variables become all nulls. Any other desired values must be initialized individually afterwards.

[Thanks, Lai]

(3) BASIC—X format variables are initialized differently in 4.5!

Enter and run the following program under pre-4.5, and then under 4.5

```
MAP1 MPG,X,5
MPG[1,1] = "X" : MPG[5,5] = "X"
PRINT MPG
```

The outputs are as follows

```
X    X     (4.4; X variables initialized to blanks)
XX         (4.5; X variables initialized to nulls)
```

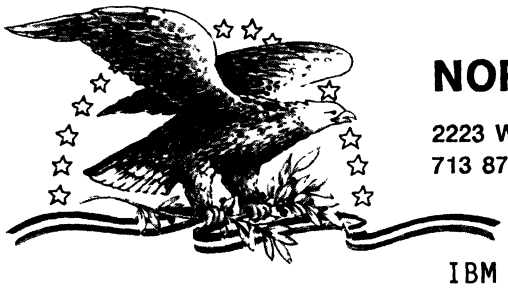
It appears that Alpha Micro "cleaned up" the initialization, but neglected to tell anyone. This took quite a while to track down.

[Thanks, Ron]

(4) BASIC—SACLE 35 (to -35) is legal, SCALE 36 is illegal(!)

(5) BASIC—KILL filename should check for filename OPEN

BASIC allows you to OPEN a file, KILL it, WRITE to it, then CLOSE it. Obviously, no programmer should do this, but if he does, BASIC allows it to happen, and goes on to allow exotic multi-user problems (below). We suggest that BASIC close any



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file which is OPEN before KILLing it. To demonstrate what you can do with this "loophole," LOG two crt's onto the same PPN, and type the following (no other user's, please):

```
crt #1 :  BASIC
          ALLOCATE "A.A",1
          OPEN #1,"A.A",RANDOM,512,FILE1
          KILL "A.A"
crt #2 :        CREATE B.B,1
                DUMP B.B (note first 5 bytes)
crt #1 :  FILE1 = 0
          WRITE #1, "ABCDE"
          CLOSE #1
crt #2 :        DUMP B.B (different now!)
```

[Thanks, Gerry]

(6) BASIC—4.5*.RUN modules don't run under 4.4

RUN files COMPILed under 4.5 are about .5% smaller than under 4.4; 4.4 RUN files RUN under 4.5, but 4.5 RUN files crash under 4.4. It is possible to waste a lot of time trying to figure this out.

(7) VUE—implement "APPEND <filename>" command

This command would take the marked section of text (control-P markers), and copy it into the end of the destination file. Using the open-for-append capability, this should be easy to implement.

(8) SERCH.SBR—may write to file

Upon discovering this, I thought that it would make a cute test question. "When does SERCH.SBR write to a data file?" (Answer at end of buglist.)

(9) BASORT.SBR—specify which disk to use as work area

I know it's been suggested a million times already, but it's my turn: allow BASORT to do its dirty work on another disk.

(10) PASCAL—some irritations for those familiar with AlphaBASIC

From a reliable source, I pass on the following:

PASCAL can only manipulate even-byte record lengths, hence, it cannot interface to any of the Alpha Accounting files with odd record-lengths. Also, there is no easy way to convert an "array of characters" to 1 string variable.

[Thanks, Gerry]

(11) SORT—problems with records > 512 bytes

The monitor level SORT.PRG can evidently crash the system if you pass it a record longer than 512 bytes (inclusive of cr + lf). This is true even if you enter (eg) 520 to the query "record size."

[Thanks, Jim]

(12) DSKANA—control-C aborts error displays but continues DSKANA

There are times when (through use of tricks or whatever) a bitmap must be rebuilt and is totally out of whack with the old bitmap. When this happens, DSKANA finishes up with a nice display of the 29000+ faulty blocks, which just takes forever (especially over a modem). Well, as it turns out, a control-C in the middle of either of those two error displays will skip over the remainder of that display, but does not exit DSKANA (thus, that hard-won bitmap IS re-written). This is not documented, but definately should be.

(13) SYSTEM.INI—how to save one TRMDEF (78 bytes) per spooler

In these days of shrinking monitor room, every byte counts, right? The 4.5 SYSTEM.INI documentation suggests ATTACHing all spoolers to the same pseudo-terminal, but the motivation for doing this is not given. The reason: it saves about 78 bytes of room for each spooler after #1. However, if you have a second crt terminal (eg, CRT2), then you can save 78 more bytes of monitor room. Simply ATTACH all spoolers to CRT2. After LPTINI finishes all its dirty work, CRT2 is free to ATTACH to JOB2. The net effect is that the spoolers require no TRMDEFs of their own. This trick has been known by too few people for too long a time.

[Thanks, Gerry]

(14) SYSTEM.INI—saving more room

Over 90% of all spoolers require no special drivers. In such cases, use SOROC.TDV (or whatever your own crt happens to be) as the spooler TDV.

(15) "Shape" of memory banks—one "piece" per user, please

A customer had memory banks set up thus (each M,B below is 16K, not 1K):

```
Banks 0,1,2,3 : MBBB (Jobs 1,2,3,4)
Banks 4,5,6   : M B  (Spooler job, DC Hayes job, Bitmap)
```

Thus, a 16K monitor, four 48K user banks, and three 16K "islands." Although this is not the most economical configuration, nor perhaps the "nicest looking," it still came up and functioned under 4.4; then 4.5 rode into town, and the spooler refused to come up during INI (it died on the first FORCE). It was remedied by changing to:

```
Bank 4        : MBBB (Banks 4,5,6 consolidated into 1
                bank)
```

Looking back, there had been unpredictable problems with the Bitmap going kaput, especially during DSKCPY backups (made everyone nervous). The system is a Hawk + 3 CRT + 1 printer + 256K(Measurement systems).

[Thanks, Tom]

(16) SYTEM.MON—now converts all command input lines to upper case

Create and MACRO the following program (TEST.MAC):

```
        COPY    SYS
TEST:   TTYL    @R2
        EXIT
        END
```

Type "TEST a" at monitor level. The response is "a" in 4.4, "A" in 4.5. This means that it is IMPOSSIBLE to pass lower case via the input line. Programs that used this in pre-4.5 must be re-designed somewhat. Nothing was mentioned about this in the 4.5 notes.

[Thanks, Gerry and Bill]

(17) MONTST—what exactly happens

Ideally, the MONTST command wants to see the following specs:

```
MONTST DSKO:SYSTEM.MON[1,4],DSKO:SYSTEM.INI[1,4]
```

Any missing parameters will default to the parameters given above. The shortest command which may be entered, however, is:

```
MONTST< filnam >
```

MONTST first locates the monitor, using the original boot disk as DSKO. After the monitor is loaded, the first fixed disk is now considered DSKO, AMOS goes out to find the INI file based on this (possibly-different) device-naming convention.

Thus, it is possible for the boot disk, the re-boot disk, the monitor, and the INI file to physically reside on 4 different disks. . . . Limitation: the re-boot disk MUST be the first fixed disk.

[Thanks, Gerry]

(18) 200DVR and 210DVR—change in 4.5

The net effect of 4.5 on the floppy drivers was to change the timer check from BNE to BLOS in both cases (1 bit difference). This reduces the odds of a lockup occurring by a factor of 16384; adequate, but not AM quality. See Buglist 17 bug #15 for program details on the above.

(19) AM-410 error messages—some clarification

A Phoenix booted off the fixed disk, with crashed DSK1 block 52222 got:

AM410 Error code 100 for drive 0 surface 21 block 52222 (cylinder 1131 sector 16)

From what I can deduce using the Phoenix manual, this is interpreted:

AM410 Error code 100 [crc error], for [6-disk] drive 0, surface 21 [= "2 or 1" = DSK2 or DSK1, depending on boot], block 52222 [AMOS block #], [octal] cylinder [track] 1131, [octal] sector 16

The "drive/surface" nomenclature is confusing when first encountered, especially when one is used to the "device/drive #" naming system used throughout much of AMOS.

(20) Zero vs Letter O—beware, beware

It still happens to me too. A classic problem, as old/older than IBM. Typed "GOTØ" instead of "GOTO" and it took a while to track down. Strive to use crts that display these two quite differently.

(21) Manuals—"Whole new lease on life" references are disappearing

Monitor Calls section 7.3.1 used to have one; doesn't anymore. Stuffy.

(22) AlphaNEWS—Issue #1 came out in late June, 1981

Thus is an attractive mini-Newsletter/Advertisement put out by Datalab. Issue #1 had some informative timing compares between BASIC/PASCAL/MACRO, a listing of DATEIT.MAC (which parallels the 4.5 DATE/ROLLOVER function), plus several promos for Datalab software (sorry, guys, no free plugs!).

(23) MicroNEWS—Issue #1 (Jul 1981) and Issue #2 (Aug 1981)

This is the official voice of IAMDA, International AM Dealers Association. It is put out by Bob Moody of Alpha Information Systems plus others. It is currently being sent to 200+ AM dealers, and has some articles by yours truly, as well as software reviews, and straight dealer info.

(24) SuperVUE—how to insert control characters

I don't normally comment upon dealer products, but this seemed useful. SuperVUE uses its own special characters, so it cannot permit free insertion of control characters by users. If you manage to insert them, you may get unpredictable SuperVUE results, but you may not. Beware. If you use the following, and it fails, don't call Jim Rae and complain! Trick: create a file in EDIT or VUE with your controls. Yank into SV.

(25) AM100 vs AM100T—timing comparisons

See below. To summarize, for pure number crunching, the speed ratio is consistantly 1:1.7. For Benchmark #7, ratio is 1:1.53.

(-) Answer to test question: if a record is marked for update before SERCH is called, and SERCH has to READ a different record, then it must do a WRITE.

AlphaBASIC Function Timings

Following are average execution timings for AlphaBASIC functions. Timings represent the difference in execution time between statement lines of the form "B = A" and "B = fn(A)" (or "B = A + AA", etc, for arithmetic). Sample sizes of 500,1000,2000 were used to ascertain probable limits. The argument ranges were adjusted to best suit each function All timings are in milli-seconds per (average) single function evaluation.

Func	Range	AM100	AM100/T	+/1	Ratio
A + AA	[0,1]	0.52	0.29	.01	1.79
A-AA	[0,1]	0.53	0.30	.01	1.77
A*AA	[0,1]	0.78	0.44	.01	1.77
A/AA	[0,1]	0.95	0.57	.01	1.67
SIN(A)	[0,pi]	16.39	9.87	.01	1.66
COS(A)	[0,pi]	16.51	9.91	.02	1.67
ASN(A)	[0,1]	11.12	6.68	.01	1.66
ATN(A)	[0,10]	7.21	4.30	.01	1.68
EXP(A)	[0,10]	20.34	12.27	.03	1.66
LOG(A)	[0,10]	7.02	4.21	.01	1.67
SQR(A)	[0,10]	3.45	2.08	.01	1.66
RND(1)		0.83	0.49	.01	1.69

The Kilobaud benchmark programs (see Kilobaud #6 and #10) were also run. For each program, RUN, TIME, and <benchmark>.RUN were LOADed into memory, then the benchmark was run 10 times, with time readings before & after. The timings were then divided by 10 to get the values below (in seconds).

Benchmark	#1	#2	#3	#4	#5	#6	#7
AM100	2.2	4.0	7.5	6.9	7.9	14.0	26.3
AM100/T	0.7	1.7	3.8	3.4	3.9	7.3	14.4

Environment for both sets of timings: AMOS 4.4B, 1 job, 9600 baud crt, AM300, no memory management, no other programs operating in system memory. (Phoenix disk drive, but that shouldn't matter.)

R. Fowler

CONTEMPORARY CYBERNETICS GROUP

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Utility MACRO Programs:

___	$ 5.00	ALLOFF.PRG	Detach all other terminals. Loops until all are detached.
___	5.00	ATTEN.PRG	Ring the terminal bell until ^C is typed.
___	5.00	CRAM.PRG	Like FORCE, but will send anything except ^A.
___	25.00	DIRFND.PRG	Searches a disk for Directory Blocks.
___	5.00	JOBX.PRG	Real-time system status display.
___	300.00	LETTER.PRG	General Letter Writer. Uses any fixed length record file.
___	25.00	LSTALL.PRG	List of ASCII files; save for VUEing, delete, variable speed.
___	10.00	PAGE.PRG	Types a list file one page at a time. Has restart.
___	5.00	PHONE.PRG	Display a Phone Directory on a CRT. Searches directory.
___	5.00	PLOCK.PRG	Processor locking program - good for changing cartridges.
___	5.00	RAD50.PRG	Pack or Unpack using RAD50.
___	5.00	RDUMP.PRG	Display files on CRT with vertical HEX or OCTAL.
___	5.00	SETDAY.PRG	Set the system Date and Time. Not for AM-120 board users.
___	5.00	WACLOD.PRG	Loads disk files into your memory. Faster than LOAD.
___	10.00	WINOFF.PRG	Winchester power down; like ALLOFF, sets heads for spin down.

Utility BASIC Programs:

___	$ 5.00	DIRHLP.BAS	Build a Directory HELP file. Nice for cleaning PPn's.
___	20.00	ISMBUF.BAS	Calculate memory and disk requirements for ISAM files.
___	10.00	KEYWRD.BAS	Key Word In Context program. Good for documentation.
___	5.00	LINKAG.BAS	Produce indented list of program linkages.
___	10.00	MENU.BAS	Universal menu program.
___	10.00	PROBE.BAS	Read/write data items to any random file. (Hammer it)

AlphaBASIC Subroutines:

___	$ 5.00	ATTEN.SBR	Ring the terminal bell until ^C is typed.
___	5.00	BITCOD.SBR	En-code/decode one binary byte into/from an 8-byte string.
___	5.00	CMDRUN.SBR	Determine if you are running under a command file.
___	5.00	CNTDWN.SBR	Puts job to sleep for "X" seconds. Has screen display.
___	50.00	CURSOR.SBR	Input fields using (some) VUE commands and arrows.
___	10.00	DAYTIM.SBR	Spell out System Date and Time.
___	5.00	ECHON.SBR	Restore terminal echo.
___	15.00	EDIT.SBR	Put ASCII characters in an edit mask. Phone, Date, etc.
___	5.00	EXCLOR.SBR	Exclusive OR on string using X'FF'. Sort descending.
___	10.00	FIXKEY.SBR	Standardize an ISAM key.
___	5.00	GETDSK.SBR	Find out what Disk you are logged on. Part of LOGX.
___	10.00	LOGX.SBR	Find where you are logged and relog DEV# [PPn].
___	15.00	MATSRT.SBR	Matrix sorting subroutine.
___	50.00	MINVUE.SBR	A mini-VUE for basic programs.
___	10.00	MOVE.SBR	Move data from (to) a record into (from) a variable.
___	5.00	PASWRD.SBR	Input a password with echo turned off.
___	5.00	RAD50.SBR	Pack or Unpack using RAD50.
___	5.00	REDVOL.SBR	Read Volume ID of a Mounted disk without mounting it.
___	5.00	SPDATE.SBR	System or User-supplied date; returns one of three formats.
___	5.00	STATES.SBR	Spell out the State Name based on two-character code.
___	15.00	TRANSL.SBR	Translate into UPPER/lower case. Great for file conversions.
___	5.00	USERNO.SBR	Returns your Job number. 1st job, 2nd job, 3rd job, etc.
___	10.00	WCCOMP.SBR	Wildcard compare, optionally will do wildcard INSTR.
___	5.00	XSLEEP.SBR	Sleep - time out. No screen display.
___	5.00	XTIME.SBR	Get System Time and convert to print format.

___	125.00	5MB Hawk Cartridge
___	375.00	15MB Phoenix Cartridge

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LETTERS

This letter is in response to the article in the August issue of the AMUS newsletter, entitled "Care and Feeding of the Phoenix Disk Drive." Where did the author of this article get the totally false idea that the data density of the cartridge is twice that of the fixed media? Let's think about this now. There are 6 logical disks each storing 15 Megabytes. The fixed media is composed of 3 fixed platters with 6 sides. One of these "sides" is reserved for servo information. That leaves 5 sides for data. The cartridge is composed of one platter with two sides. One of these sides is reserved for servo information and the other for data. As we all know the Phoenix cartridge will hold 15 Megabytes of data — on one side. If we divide the remaining 75 Megabytes evenly among the remaining 5 fixed surfaces or sides we get 15 Megabytes each. Unless my math is very faulty 15 = 15. The data density is NOT twice as high on the cart as it is on the fixed surfaces. It IS, however, 6 times as dense as a Hawk, since the Hawk does not use a servo surface and only records 2.5 Megabytes of data on each of its four surfaces for a total of 10 Megabytes of formatted storage.

Thank you for this opportunity to set the record straight.

David Reid
Customer Service
Cahmpaign Computer Co.
406 Elm
Mahomet, IL 61853

I've known for some time now that with some terminals if you turn them off the system continuously "monitors" them for further activity, consequently loading the system. If you have a fourteen terminal system such as ours and your here alone at night the thing looks like its running at 300 baud. It's really surprising how much degradation even one terminal in this state can cause.

I've heard a few explanations as to why . . . such as the terminal sends a suspend code out and the CPU is checking to see if it needs servicing. Whatever the excuses are, I think I've found a simple way around the problem rather than having to tour 14 terminals and power them up everytime you need the system after hours.

Most of my terminals have been wired with nine conductor unshielded cable with pins 1-8 and 20 being active. I've been having weird troubles with the system and the last suggestion I implemented was to install fully shielded cables to all of my terminals (most of them exceeded the maximum recommended distance of 50 feet for RS232 specifications, which my dealer didn't inform me about). In the interests of reduced costs I elected to use four conductor cable for the CRT's since all you really need are pins 1, 2, 3 and 7. After changing the wiring to four conductors I no longer have this "terminal off" CPU loading problem!

I therefore must assume that one of the other pins (4, 5, 6, 8 or 20) has been causing the false interrupts (or whatever is happening). I suppose it could have been the shielding also. In any case, it worked and I thought someone else may find this information useful.

Terry L. Hulseberg, President
Engineering Services Division
Coaxial Analysts Incorporated
333 Logan Street
Denver, CO 80203

PS: On another subject—do you know why AM is charging so much money for its memory systems? List price for 512Kb of 16 bit memory is over $20,000.00 while HP is only charging $5,000.00 for the same amount of 16 bit memory with its 1000L Series system! (Does this have anything to do with the 32 bit rumors I've heard?)

I am writing in follow up to the note in one of the prior newsletters concerning my problem in booting up. Many thanks to those that replied to me. I believe that we are on the way to solving the problem. As you will remember, I was unable to boot up at all on 4.4, would have to boot under 4.3 and then do a MONTST to get up under 4.4. I had taken my memory boards to the local dealer and there was no trouble booting up his Hawk system with them. We had started to think that it was a fault in the software causing this, so had

ordered a 4.5 Phoenix system disk from Alpha Micro so we could try rebooting on what should be a good system.

On receiving the disk, tried it, can't even read the disk. I experienced a head crash last November, and obviously when CDC realigned the disks, they have moved it slightly off. Am now waiting for equipment to arrive at the local dealers and we will realign back to Alpha Micro.

In the meantime on one hot day, experienced difficulty with the system, having system errors occurring almost continually on proven programs. On trying to track this down, assuming it was in the Problem Solving boards which we are running as the bottem 32 K (16 K per board), the two boards got switched. Imagine our surprise as the system booted under 4.4. However, there was still one small problem, the RUN module would not load into the system — comes up with DDB error.

Experimented more, if you reboot using either MONTST or SMDLOD, the system boots perfectly, RUN is correctly loaded. If, however, the booting takes place using the reset button, or boots when the Khalsa communications board is being used, system reboots without RUN being loaded in. This starts to look more and more like a memory chip error — so move the boards into the higher memory space and run DIAG4. On repeated running there are no errors detected. Switch boards back to original positions, system will not reboot without using MONTST again.

Obviously there is some type of error in the memory boards and we will be pursuing this more in the future to determine exactly what is causing the problem. At least we can now run directly on 4.5 even though we have to use MONTST program to get fully up.

As we have been experiencing a mail strike here for the last month and a half, no newsletters have been received, so the following observations on 4.5 may be out of date but will report them anyway. Am having one small problem with DSKCPY. If you copy from a disk with, for example, 5,000 blocks free to a disk with 1,000 blocks free, will proceed normally, verification okay, but running SYSTAT after shows 1,000 blocks free on the backup. DSKANA now shows that extra blocks are not in use, will properly set up disk to being identical to one copied from. I am not sure if this is fault in DSKCPY or a related problem to our booting problem. If files are checked, all are identical to original that you copied from, so the copy is being done properly.

Next - Scale will not work with exponentials on RUNLRG program. Try the following small program.

```
10  MAP1 NUMBER, F, 6
20  MAP2 HTCM, F, 6
30  HTCM = 161.9
40  NUMBER = 3.3 * 10 ** -3 * HTCM ** 2.72
50  ? NUMBER
60  END
```

Now if you run program answer will be 3370.28 which is correct. If you now put in a statement with line number 5 to set scale the following results for different scale values:

scale	value
2	92.7501
3	87.2486
4	86.5874

So if you are using exponentials, don't use scale with them.

W. J. Blight, M.D.
Maginot Medical Centre
690 Elizabeth Road
Winnipeg
Manitoba, Canada R2J 1A4

As a future purchases or the Alpha Micro 90 Meg System to replace our Hawk Drive, I was very interested in the latest AMUS issue concerning the "Care and Feeding" of the 90. We unfortunately have had a head crash caused by dust getting into the Hawk during remodeling, but more importantly we have had lightening related problems.

Our system is protected by a very large "SOLA" like transformer which works fine, but we have discovered that this is not enough protection. A lightening bolt hit a utility pole outside of our building and the resultant high voltage entered the building through the electrical ground system. The terminals were not on, but were plugged in, and the computer was unplugged. The current jumped the terminal switches and shorted out the terminal boards, and continued on its merry way into the computer. Destroying some ICS in the CPU.

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The conclusion that we drew from all this was to always unplug all the computer components at night and if a lightening potential exists. We have been doing this for a year now, and on several occassions during storms have seen our building lights go off, but as planned, we were "unplugged."

Just previous to installation, a customer of ours experienced a lightening hit on a utility pole with reslultant damage to video equipment that he sells.

My advice is that dust can be controlled via filtration and dust covers at night, but no filter exists that will stop a 50,000 volt charge, thus unplug at night and when a storm is coming or carry a very large insurance policy with a low deductible. Head crashes on Hawks run about $1000.00 and on Phoenix's about $4000.00.

Joseph Volpe
M.V. Software Company
4819 Leafdale
Royal Oak, Michigan 48073

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SOFTWARE LEGAL GUIDES AND TIMESHARING SERVICES. CCC has published a Software License Planning Guide, authored by I. J. Kerner, Attorney, which is a useful publication containing information and forms designed to enhance the ability of the software owner to protect his proprietary interests when licensing use of his product. The guide is available for $15.00. CCC provides DEC VAX 11/780 timesharing services via Telenet at nominal rates. For more information:

Cross Communications Company
934 Pearl Street
Boulder, CO 80302
(303) 499-8888

ADVENTURE: Will the person or persons who have Adventure for sale on the Alpha Micro, please contact:

Steve
(303) 449-6917

FOR SALE: Phoenix Drive and Controller. Used 2 months. Checked by Control Data.

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CDC HAWK PACKS: Includes mfg. lifetime warranty. 1-3, $90.00 each; 4-7, $85.00 each; 8+, $80.00 each.

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1204 Willow Green
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(804) 599-4749

FOR SALE: 2 used Piiceon 64K memory boards — $800 each. Contact:

Steve Elliott (303) 449-6917.

HELLO: Anyone who wants to send friendly hellos to the AMUS office, please do. Its those little things that keep us going.

FOR SALE: We have a Basic callable Assembler subroutine which will flush buffers for random files. Can be used more effectively than random forced mode. Will not cause a physical write if no logical write occurred; will cause a physical read if a read for the same logical record is performed. Source code—$100.00.

Comtemporary Cybernetics Group
1204 Willow Green
Newport News, VA 23602
(804) 599-4749

WANTED: Program for Path Analysis for the Alpha Micro. Please reply to:

Dr. John C.
Ft. Steilacoom Community College
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FOR SALE: General Electric Terminet 1232 Line Printer, like new condition. Worth over $6,000.00 new and a bargain at $1,900.00. This is an impact printer with very high quality print and not a dot matrix printer. Tektronics 465 Oscilloscope with extra probes $2,000.00. Also wanted to buy used AM100 CPU. Contact:

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