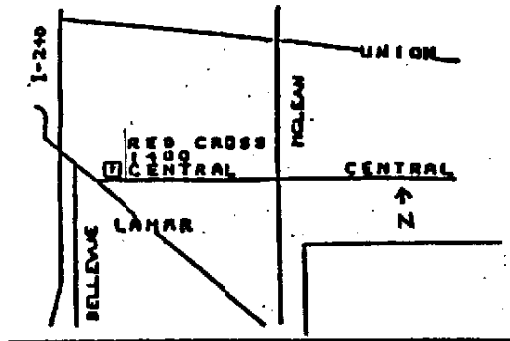
NOTICES

MEETING
7:00 P.M.
Thursday, April 21st
Red Cross Building
1400 Central Av.

WORKSHOP
9am till Noon
Saturday April 23rd
Place to Be Announced



FRANK & ERNEST By Bob Thaves

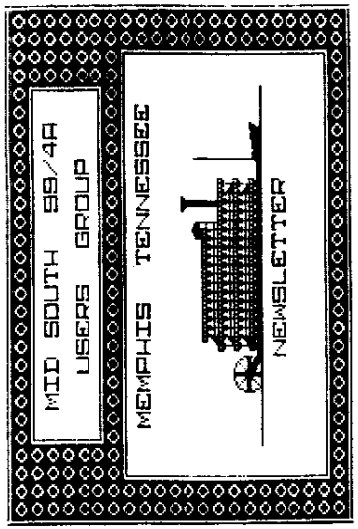
MEMBERSHIP APPLICATION

NAME _____ ☐ $15.00 FAMILY
ADDRESS _____ ☐ $10.00 JUNIOR (under 15)
CITY _____ ST ZIP _____ ☐ $10.00 ASSOCIATE (N/L only)
PHONE(___) - _____ : INTERESTS _____

EQUIPMENT, ETC. _____

Detach and mail with check payable to: Mid-South 99 Users Group, P.O. Box 38522, Germantown, Tn, 38183-0522.

UG 2/86
DALLAS TI USER GROUP
P.O. BOX 29863
DALLAS, TX 75229



P.O. BOX 38522, GERMANTOWN, TN 38183-0522

TIDBITS

APRIL 88 INDEX

Presidents Bit:

So, you're sitting there trying to read what I'm sitting here trying to write. I'll bet there are hundreds of times that you have seated yourself in front of your trusty TI computer, powered up, and your system *lox-up*! This kind of lock up is universal to all languages (kind of like "C") ... Its not machine specific. Nor is it fully environMental, unlike a static discharge ZAP or a dirty contact on the module port. No, I'm not talking about problems with the CPU, the I/O bus, or the interupt timer. I'm talking about the failure of those carbon based neurons in the so called brain, the ones that allow one to arange thoughts into sentences on paper, or to reply to a simple message on a BBS.

Fortunately, there are some members of this group that have overcome this condition and have actually written articles! Fine ones at that! My hat is off to Beery and Gary for sharing so much information!

Unfortunately, this condition isnt specific to just typing or writing. Sometimes it stops the raising hand of a capable volunteer, especially after the question: "Does anyone have a program or demo that they would like to present to the group at the next meeting?"

Please remember that this happens to all members of all groups and orginazations. We all have our trusty TIs. We all have friends and potential close friends because we participate in using them. If you ask questions, you'll get answers. Then tell the rest of the group. You'll enjoy it, and we'll enjoy it!

Something else to remember will be the upcomming MACC computer faire at State Tech. ...will have a room set up for TI users. Practically all of the other area groups ...l be represented. Doorprizes that have been donated will be given away. ...mpanies wont be allowed to actually sell their products on the campus, but they ...ill be there to show off their products and services, and provide coupons to take to their stores. So far, no TI vendors are scheduled to attend, but the MSUG will have library disks and disks for sale. Gary has more details in his article, so read on!

The "c" classes are still meeting on thursday nights. If interested call me for details.

Henry Badon has had some back surgery, and Al Doss has had a gasrtic inflamation. Best wishes to a speedy recovery for both.

Helpfulhint #1: I've found that an old architectural / drafting ruler (3 wing type) works nicely to view your function/control key tempate strips. Just tape (double sided) each strip to a wing of the ruler and set it on the present grove. If you change cartriges, just flip the ruler! GK users may need to shorten the ruler to exact fit because of limited space.

See you at the meeting.
Mac Swope
president MSUG

LOCAL NEWS

I would like to welcome several new members, Edger Tate from Memphis, Bill Gaskill of Grand Junction CO, Fred Memleb of Kenner, Lousiana and any others that I may be leaving out plus thanks for the continued renewals... Also I would like to thank those who have submitted articles for the newsletter this month, Beery Miller and Bill Gaskill who mailed us a whole disk of material which will be appearing in this and future issues.

By the way we have had on order a copy of the video tape made of the Chicago TI faire by the Chicago user group but we have yet to receive it even though we ordered it back in November! If they were not going to be able to produce it then they should have let others tape the fair! I do have about 60 pictures that I took at the fair of which I can make copies for anyone who wants them...

As you may have noticed postage has increased! For domestic mail it is now 25 cents, to Canada 30 cents and overseas 45 cents (each 1/2 ounce). For now we do not have any plans on increasing dues because of the increased postal costs.

NATIONAL NEWS

B.J. Mathis of the Southwest 99er newsletter reports a problem with some of the power supplies for the TI console from Radio Shack. Mr. Mathis reports that some of them have a problem with the +12 volt line jumping from 9.5 VDC to 11.5 VDC which causes console lockups and other annoying problems. The supplies effected are the ones with part number 1053214-2 (part number is above the serial number) and the good ones has a part number of 1053201. The problem can be fixed though by charging a few inexpensive components. I am out of room for the newsletter this month to publish the corrections so just ask me for a copy of the article if interested...

Yet another version of Telco has been released, version 1.3 adding a few additional features and the correction of a few bugs. Version 2.0 with more additions is expected to be released soon.

McCann Software of P.O. Box 34160, Omaha, NE 68134 has announced that Avanti-99 forth card will soon be released. The card fits into the PEB and contains an RISC Novix NC 4016 microprocessor. According to McCann Software the chip can be programmed directly in forth with an increase in execution speed over that of the 80386 and 68020 microprocessors. They go on to say that the card has 128K RAM and 16K ROM plus several of the cards can be placed into the PEB. The ROM contains the cmForth by Charles Moore, invertor of Forth and the NC 4016. Card works on the TI99/4a and Geneve 9640. Write for more information.

Great Lakes Software of 804 E. Grand River Ave., Howell, Michigan 48843 now has an update to Certificate 99. New features include the ability to load and save certificates by filename and the

ability to create and load personal border and graphic libraries by Filename. Those who already own version 1.0 may obtain the update for $9.95 and for an additional $5 they will include the Certificate Comparion disk which has 12 more borders and thirty six more graphics. For new purchasers of Certificate 99 the price is $19.95 plus $1 shipping and the companion disk is $9.95 plus $1 shipping. Furthermore, the price of Joypaint 99 drawing program has been reduced to $24.95 plus $1 shipping.

Asgard Software of P.O. Box 10306, Rockville, MD 20850 has released their new program called Calendar Maker 99. This program allows the user to create large, detailed picture calendars on the TI99/4A. The program is described as "ideal for the teacher, student, business person, office worker, or anyone else that wants to create a calendar." Messages and pictures can be placed on each day of the calendar... Program requires 32k, XB, Epson compatible printer or Panasonic, TI, NEC, HP, IBM etc...) and disk system. Program sells for $19.95 plus .75 shipping. If anyone purchases a copy of this program please speak up for a demonstration at a meeting...

Also new from Asgard Software is BEYOND VIDEO CHESS which is described as an enhancement to the Video Chess cartridge. Enhancements include the ability to save and load a game from disk, use of the joystick, screen dump to a printer and the ability to list all of your moves to the printer...

The program requires 32K, a single disk drive, and one of the following hardware configurations: a Navarone Widget and Editor/Assembler, A Horizon RAM-disk a Myarc or Corcomp Disk Controller or a Load-Interrupt switch (from Corcomp or various others) and the Editor/Assembler module. An Epson or compatible printer and a joystick is recommended. Written in 100% assembly language. Suggested retail $9.95 plus $.75 Shipping and Handling. Catalog number U-01. (By the way we have a simple schematic on building a load interrupt switch.)

The following from the March MICROpendium Magazine:

According to Jack Riley of Myarc, the Myarc Hard Disk controller card was to begin shipment last month. The package contains a hard and floppy disk controller card with streamer interface, A MDMS, Myarc Disk Manager which controls both floppy and hard disk drives, A manual with 3 ring birder and cables to connect a hard drive to the TI or 9640.

Jack says the controller will support up to four floppy drives in single sided, single density through double sided, quad density format using either 5 1/4 inch of 3 1/2 drives. Furthermore the controller will control up to 3 hard drives of up to 134 megabytes each for a total of 402 megabytes. The streamer interface port will allow users to backup hard disks using a standard streamer tape unit. Additional software will be required for this operation, however. The controller will control a ST506/412 compatable hard drive which is the type used in IBM-XT and their clones. It can be buffered or unbuffered although buffered is faster. Note the PEB will not support the power requirements of a hard drive so plan on providing a separate power supply. However

it may be possible to modify the PEB to handle some hard drives. See article in March 1988 issue of Micropendium for details. The hard drive controller will operate with the TI99/4A or Geneve 9640. For more information call Myarc Customer Service in Alabama (205) 854-5843.

A new version (1.1) of legends is now available from Asgard Software. The new version corrects all errors found in the previous one, according to the manufacturer. New features include Multiple attacks (capable of striking the bad guys twice), time delay (duration of messages on screen), ability to save game without returning to Wizards Rock, a new potion, a new spell, new terrain types changes made in some monsters with sometimes an option of engaging or not engaging a monster, enhanced island graphics and changes in difficulty levels. Current owners of Legends may obtain the new version by sending their original disks plus $5. Cost of Legends 1.1 is $27.95.

McWare Products of P.O. Box 2784, Fairfax, VA 22031 has available a workbook for instructional purposes called "How to Control and Printer from Any Computer". The book is described as having examples and discussions. It contains an appendex of printer control codes for Genini 10X, Legerd 880, Alps 2000, Fastex 80, Star NX10, Star NP10, Panasonic KX-P1091 and Okidata. The book is available for $14.95 plus $2 shipping. They also have other instructional books for printers. Inquire for details... Gary Cox

MACC COMPUTER FAIR

The Memphis Area Computer Council summer computer FAIR has been approved for the date of June 4th by State Tech. The fair will be held in the Fulton Building at State Tech from 10am to 5pm. State Tech is located in Northeast Memphis at 5983 Macon Cove which is just off I40 at exit 13. Among the computers represented will be Texas Instruments, IBM and compatibles, Commodore, Atari, Amiga, Radio Shack Color, Osborne, CP/M machines and Adam. Due to State Tech rules we can not have vendors selling or taking orders for equipment or software but they are allowed to demonstrate products or hand out catalogs. The major emphasis of this fair is to promote the various groups in Memphis showing the public what each group and each computer has to offer and plus just have a great time! Each group will have a separate room in which to setup.

Furthermore the auditorium will be used for special demonstrations throughout the day. At the last fair each group had something unique to show from video and sound digitizers to elaborate graphics plotting systems... The The last 2 fairs of this type have been very successful and we plan for this to be even more of a success. State Tech has even volunteered to help out in advertising the fair city wide. Admission to the fair is FREE plus drawing for prizes will be held for such items as computers systems, software and generic computer items!

Furthermore the Mid-South Microcomputer Resourcs Center will be with us this year. They will be setting up a booth of some sort and they will be giving guided tours of their center. The Resource center has volunteered a professional graphics person with equipment to help design the flyers for the fair plus they will help on mailing them out. If that wasn't already enough State Tech has indicated that they may have an "open house" of the entire campus in conjunction with the fair! We are talking about going together with FULL advertising for the fair. Also the State Tech computer department will have their ROBOTS out walking around and strutting their stuff. There may even be FREE Cokes and Hotdogs!

Peliminary plans for the presentations in the auditorium include Word Perfect 5.0 by Tom Crabb, Desk Top Publishing by Rhodes Lauck, Computerized investing by Seldon Murray of Merril Lynch, MIDI (Musical Interactive Digital Interface) demonstration plus more... Also Desk Top Publishing and MIDI related demonstrations will be continous throughout the day in the separate rooms... More plans and further details will be comming through in the next month as everything hasn't been finalized as of yet... For the latest fair information call the Flagship BBS at (901) 382-1864 300/1200/2400bd.

For this fair, however, volunteers are badly needed! Volunteers are needed to help out at the entry table, helping the groups bring in equipment and of course we definately need volunteers to bring equipment! Nevertheless if you are unable to help out in any of these ways please show your support by attending the fair as a tremendous ammount of work has been put into this fair by the officers of MACC... MACC is a consordium of different user groups in the Memphis area formed to promote the different groups and computers. MACC and member groups are non-profit organizations... Gary Cox - MACC Secretary

PROGRAM BIT

6:30pm - Doors Open, library open, newsletter table open.
7:05pm - Meeting begins, general discussion.
7:15pm - Top Secret Suprise Demonstration by Beery Miller. We will take a look at something on the TI99/4A that few people have seen but you will have to come to the meeting to see what it is!
7:45pm - Demonstration of the P-Code card and Pilot programming language. Demo by Michael Dorman.
8:15pm - To Be Announced.
8:45pm - Main system available for anyone's use.
9:45pm - Clean up period, library closes, newsletter table closes.
10:00pm - 12:00am Discussion meeting and eating at Perkins Resturant located at Poplar and Highland...Gary Cox

MAKING MAMMA HAPPY

About 2 years ago, Service Merchandise came out with a tuner for a monitor that would enable one to tune both UHV and VHF channels

into their monitor. Well, when I saw it and realized how much I hated black and white TV (Note: At this time I lived in a college dormitory and space was very limited), I decided to give it a try. Well, I had a Sanyo Color Composite Monitor, and much to my delight, the tuner worked flawlessly. I saw crisp, bright colors and in many ways, was much better than most TV's. Occasionally, depending upon what I was doing and the channel I was viewing, there would be slight interference from the computer's disk drives, but who hasn't noticed intereference for those who use a TV for their monitor??? Well, now Service Merchandise has brought the price down another $15-20 from when I bought it and it now retails for $49.97. It can also tune in up to 82 channels. The name of it is the Magnavox Component TV Tuner and can be found in the 1987-88 Service Merchandise Catalog. If you ever wanted to see that instant replay of the play you missed when you looked to see if the disk was finished formatting, and the TV is in the next room, this little device is for you. I should warn you of two things. Number 1 is only for composite monitors (I am not sure if it will work for RGB monitors), and Number 2, if your wife wants to watch her soap opera and doesn't want to watch that football game, you can give in more easily and say you will just go and play on your computer instead (and watch the game there..... Beery Miller

PHONIX ROS FOR 9640

Just recently introduced by Jim Schroeder, is the Phoenix ROS for the Horizon Ramdisk and the Geneve 9640. Currently, their are a multitude of memory combinations for the Horizon Ramdisk, and Jim has finally come out with a program written in MDOS that will check the CRU settings, and also amount of memory available, and format your ramdisk accordingly. It will even support the 800K+ Ramdisk (Phcenix) that has the additional memory added for keeping the SYSTEM/SYS file in the battery backed up RAM. With the current setup that is available, over 8,000 of sectors are available in the battery backed up memory with multiple ramdisks. The software even supports the 8/16 bit decoding necessary for access to the larger memory cards as additional decoding was necessary. When I first set this program up, the first thing I immediately noticed was that I now have an additional 30 sectors that I never knew I had. I have the 256K ramdisk in 8 bit format and from Menu V7.2, it would allow me to only format 992 sectors. With this program, I can now format 1022 sectors. This 30 sectors of additional space now allow me to include another assembly file or two that I previously would have liked stored on the ramdisk but did not have the memory (This may soon change as I hear Tsico V1.5 will soon be released and if Charles Earl adds any more modules as features, I will allocate that additional space for it instead). For Geneve owners with a Horizon Ramdisk, this piece of software is a must.... Beery Miller

SLOWMO FOR GENEVE

This program listed below is my first actual release of any source code for the Geneve that I have written. If you notice

From the code, all references to the typical KSCAN, VSBW, VMBW, and other utilities are gone. MDOS has it's own supplement of routines already built in that provides for memory management, screen access, I/O access, key scan functions, and a few other functions. One of the main advantages of programming in assembly for MDOS, is that the software will soon support multitasking and by following the suggested memory management requests, several programs can be run simultaneously. Of course, we must wait for Myarc to finish developing the software. The assembly language program below was written by me except for the memory management routine and the string display routine as it appears these are the easiest routines to access the various functions. I also need to give credit for portions of the program to Dave Ramsey as he wrote the string routine, kscan routine, and the memory set up routine. I wrote the necessary code to switch to 40 column mode, display the text, and then jump into graphics mode 6 for this program. What this program does is slow down screen access as it is in graphics mode and not text mode which is slower, but which text is still displayable. Next month I will have a program that will display an target screen that I have already written. This source code is now placed in the public domain to whoever wants to use it for whatever purpose... Beery Miller

```
*****************************************************************
       DEF  SFIRST,SLOAD,SLAST
*
       DXOP SYSC,0
*
USRWS  EQU  >F000          *Program workspace registers
MYBUF  EQU  >E000          *String output buffer
MDOS   EQU  >0000          *Return address for MDOS
*
       RORG                *Make it relocatable
SFIRST
       BLWP @MAIN$         *Go to main part of program
SLOAD  EQU  SFIRST
*
**** xop table for system calls
*
KBD    DATA >0005          *Keyboard control
VID    DATA >0006          *Video library entry vector
MMG    DATA >0007          *Memory management library
*
PGETBL BSS  10             *Reserve space for Memory management
*                           table
MAIN$  DATA USRWS,MAIN     *Set up workspaces
*
MAIN
       LI   R0,1           *Setting up for memory request
       LI   R1,7           *Request 7 pages
       LI   R2,1           *Local page #1
       LI   R3,0           *Slow RAM is OK
       SYSC @MMG           *Ask system for the RAM...
       LI   R0,4           *Get mmgt page map.
       LI   R1,PGETBL      *Put it at pgetbl
       LI   R2,10          *Pgetbl is 10 words wide
       SYSC @MMG           *Let's finally ask for memory
       MOVB @PGETBL+1,@>F111
```



```
       MOV  @PGETBL+2,@>F112
       MOV  @PGETBL+4,@>F114
       MOV  @PGETBL+6,@>F116

* Program now has access to a 64K RAM workspace.

       JMP  DRAW           *GO To Routines to execute and bypass
*                           this code
*  COPY STRING ROUTINE
*****************************
* IN: R1 - Destination CPU address of string
*     R2 - Source CPU Address of string
*     R3 - Length of String
*****************************
CPYSTR
       MOV  R3,R3          *Null terminated string?
       JEQ  CPYS$2         *Yes, copy until NULL is found
CPYS$1 MOVB *R2+,*R1+      *Repeat  Move source byte to target
       DEC  R3             *Until R3 bytes have been moved
       JEQ  FCOPY          *When done, exit routine
       JMP  CPYS$1         *Else continue
CPYS$2
       CLR  R0             *R0 <- 0
CPYS$3 MOVB *R2+,R0        *Move byte into r0
       MOV  R0,R0          *Is byte a NULL?
       JEQ  CPYS$4         *If yes, jump to CPYS$4
       MOVB R0,*R1+        *Else move byte to target  inc target
       JMP  CPYS$3         *Loop again                      address
CPYS$4 MOVB R0,*R1+        *Move the NULL char
FCOPY  B    *R11           *Exit routine
**********************
*
* TTYOUT - uses inline args of string addr and string length.
*          length may be 0 if string is null terminated.
*
**********************
*
TTYRTN DATA 0
TTYOUT
       MOV  *R11+,R2       *Get args
       MOV  *R11+,R3
       MOV  R11,@TTYRTN    *Save new rtn addr
       MOV  R3,R7          *Save length arg for later use
       LI   R1,MYBUF       *String output buffer in hig RAM
       BL   @CPYSTR        *Copy string to output buffer
       LI   R0,>0027       *WriteTTY function request
       LI   R1,MYBUF       *String at MYBUF
       MOV  R7,R2          *Length of R7 bytes
       SYSC @VID           *Put it on screen
       MOV  @TTYRTN,R11    *Restore proper return address
       B    *R11
*****************
*Start of my routines I wrote
*****************
DRAW   LI   R0,>0000       *Let's set up video mode
       LI   R1,>0000       *Let's try Text 1 mode (40 columns)
       SYSC @VID           *Let's ask system
GREET  BL   @TTYOUT        *Let's display title message
```

```
       DATA GREE,GREELN  *Let's tell system the message and length
       BL   @INKEY       *Let's check for a keypress
WHIZ   JMP  WHIZ         *Loop back to itself for future
*                         programming
KEYRTN DATA 0            *Place we will store the callers
*                         return address
HEXFF  BYTE >FF          *Value for no new key
INKEY
       MOV  R11,@KEYRTN  *Save caller's return address
KEYLP  LI   R0,4         *Pascal scan mode for "true" ASCII
       SYSC @KBD         *System call for keyboard
       JNE  KEYLP        *Status bit set? (If no, no new key...)
       CB   R1,@HEXFF    *No new key, then we go check again
       JEQ  KEYLP        *Now when key pressed, it will exit loop
*                         and we will continue
************************
PALLET LI   R0,>000D     *Let's set the color pallete
       LI   R1,>0019     *Let's tell it pallette register number
       LI   R2,>004D     *Let's put some colors in
       SYSC @VID         *Let's ask system if we can
MODE8  LI   R0,>0000     *Lets set Graphics mode
       LI   R1,>0008     *We select Graphics 6 mode 512 x 212
       SYSC @VID         *Ask system for selected graphics mode
       BLWP @MDOS        *Cheat and exit program and reboot MDOS
       B    *R11         *Not used but needed for assembler
GREE
       TEXT '        Super Slow Motion'
       BYTE >0D,>0A
       TEXT 'Welcome to the first 9640 Demo Program'
       BYTE >0D,>0A
       BYTE >0D,>0A
       TEXT 'Slows down all screen accesses for all'
       BYTE >0D,>0A
       TEXT 'M-Dos Commands except Mode which resets'
       BYTE >0D,>0A
       TEXT '            More to Come Soon '
       BYTE >0D,>0A
       TEXT '            By Beery W. Miller'
       DATA >0D,>0A
       TEXT '            1561 Galveston'
       BYTE >0D,>0A
       TEXT '            Memphis, IN 38114'
       BYTE >0D,>0A
       TEXT '      Source code provided Free'
       BYTE >0D,>0A
       BYTE >0D,>0A
       BYTE >0D,>0A
       TEXT 'Press Any Key to GO-SLOMO!!!'
       BYTE >0D,>0A
GREELN EQU $-GREE        *This tells us how long GREE text is
SLAST  END
```


EZ-KEYS REVEIW

EZ-KEYS REVIEW....by Member Bill Gaskill - Grand Junction, CO.

I realize that there have been a couple of reviews published on EZ-KEYS already, but I am going to give you my perspective of this innovative software. If you subscribe to MICROpendium you will have read Harry Brashear's review in the January '88 issue. Mr. Brashear gave EZ-KEYS glowing marks and it deserves them. Unfortunately, the review read like the documentation manual that comes with the program. It lacked, in my opinion, a true User's perspective into the utility and performance of this Harry Wilhelm product.

EZ-KEYS is a new product from Asgard Software that is designed with the Extended Basic programmer or Extended Basic program user in mind. To use it one must have Extended Basic, 32K memory expansion and a disk drive. The program retails for $14.95 and is currently available directly from Asgard Software or TENEX Computer Express. I am certain that it will be available from other major 99/4A retailers in the near future.

A MACRO GENERATOR:

EZ-KEYS is one of three keyboard macro generators that I know of that are available for the 99/4A owner. PC-KEYS II, from Techni-Graphics, and SoftKeys, from Quality 99 Software, are the other two. Another program named MicroKeys, from Tarik Isani (StarSoft) was announced a couple of years ago but I have never actually seen it available anywhere. The fact that all three programs could be generically grouped into the "macro" development classification is really about all that they have in common. PC-KEYS II offers disk cataloging, a pop-up notepad, a pop-up calendar and user-definable/selectable screen dump capability, along with the ability to define a limited number of "hot-keys" that perform common functions with one keystroke. SoftKeys is basically a "hot-key" macro generator without all of the added features of PC-KEYS II or the additional cost.

EZ-KEYS takes a different approach to the concept of macro generation. It too allows you to define "hot-keys", but the keys that you define can do much, much more than either of the other two programs. In fact, by my definition, EZ-KEYS is really the only true macro generator of the three. In my experiences as a user of "other" computers, macros are short programs that "remember" keystrokes for you, so that you can later call them up at the press of a single key. In other words they are time-savers that shorten the number of steps you have to go through to perform a desired function or series of functions.

On all of the MS-DOS macro generators that I have used macro files are built in one of two ways. One method is to use a "remember" mode that tracks and then saves keystrokes as you press them and another method is to provide a macro editor that allows you to write and save small files containing the desired keystrokes. EZ-KEYS is of the second type. It will not allow you to generate a macro by remembering keys that you press. Instead it provides a macro editor that itself appears at the press of a single key.

EZ-KEYS allows up to 55 keys to be defined for macro use, with each macro capable of being 668 characters (about 7/8 of a screen) in length. Perhaps the neatest feature of EZ-KEYS is its ability to link macros together. This means that one macro file can RUN another, thus providing almost unlimited potential to the utility the EZ-KEYS environment can offer the XB programmer or user. EZ-KEYS also RUNs Extended Basic programs or parts of XB programs. For instance, if you wished to have a disk cataloging program available at the touch of a key, you could write it in Extended Basic, LIST it to disk so that it is SAVEd in DV/80 format, then EZ-KEYS will be able to RUN it at the touch of a key when you define a macro for it. In fact, such a program is provided on the EZ-KEYS disk.

Programming a macro is simple if you are creating simple macros. It can become quite complex and demanding if you really want to build some sophisticated applications. Saving a macro is simple and straight-forward. You simply define it in the Macro Editor, exit out of the editor, do a BYE at the READY prompt and then load the program again. You will immediately be given the option of loading or saving your macros. When you elect to save them, all macros that exist in memory are saved to disk for use any time the EZ-KEYS environment is loaded.

To use your macros in a RUNning program environment you simply edit a line in the EZ-KEYS program so that it RUNs the first program you want to activate, then you must save the EZ-KEYS program as LOAD. When the EZ-KEYS LOAD program is read into memory it brings all of your macro definitions with it and then it RUNs your first program. That's it! No programming expertise required here, just a user-friendly common sense approach to interfacing with your XB program(s).

Extended Basic programs that use assembly language subroutines may also be used with EZ-KEYS. The author has included an EZLOADER that will allow you to save custom assembly routines and your macros all together. Assembly routines are loaded first, then your macros are defined. EZ-KEYS assigns pointers to your macros so that they do not conflict with the subroutines already in low-memory. The whole package is then saved as a memory-image file and can be called up whenever you use the application with the custom assembly routines. The really neat thing here is the ability to customize the EZ-KEYS environment to fit as many different uses or programs as you have.

A PROGRAMMING UTILITY:

EZ-KEYS is an assembly language coded program that is designed to operate in an Extended Basic environment. Aside from its ability to generate macros it also provides a set of utilities for the Extended Basic programmer. While in the command mode (at the * READY prompt) in XB EZ-KEYS allows you to set a timer that will automatically SAVE your work in case of a power failure or interruption. The time intervals can be from 0 to 18 minutes apart and two files, BACKUP1 and BACKUP2 are used to save your work. All work is saved only to DSK1. Another option allows the setting of background and foreground colors in the programming environment, much the same as the Gram Kracker Utilities or John

Johnson's Horizon Ram Disk menu allow. Colors may also be set for the Macro Editor and for the special characters displayed in a macro file.

Another routine that can be CALLed will highlight numbers and arithmetic operators so that they appear on screen in the reverse color of the background and foreground colors chosen. When a running program is being used you may also set all character sets to the same color by linking to a routine named RCOLOR.

Although the manual cautions that Extended Basic might not always be able to interpret it, EZ-KEYS lets you write a single program line that can be 23 screen lines long. How's that for expanding the capabilities of Extended Basic? Additionally, you can press Function 7 or Function 6 to move the cursor directly between program lines while in the programming (immediate) mode.

If you are a TI-Writer afficianado you may also write macro files in the TIW Editor, in a manner similar to writing a .BAT file for the GENEVE or any MS-DOS machine. The author includes a customized CHARA1 file to use on your TI-Writer disk. This file contains the character definitions needed to display the special characters that represent specific macro functions. This is another example of the fore thought put into this program. I would guess that few first-time users would opt for this method of development though, since it requires the use of the Transliterate Mode in TI-Writer and it is only sparsely documented in the EZ-KEYS manual. There is a chart in the documentation that shows the various equivilents that are available. For example, after pressing Control U to enter the transliterate mode you would press;

```
C to get the macro symbol for Fctn 1 (DELETE)
I .....Fctn 2 (INSERT)
G .....Fctn 3 (ERASE)
B .....Fctn 4 (BREAK)
N .....Fctn 5 (BEGIN)
L .....Fctn 6 (PROC'D)
A .....Fctn 7 (AID)
F .....Fctn 8 (REDO)
O .....Fctn 9 (BACK)
E .....Fctn = (QUIT)
```

Additional keys are documented for the four arrow keys, the <ENTER> key, the Control Key, the Function Key and the "Hold" command. Once you have created the macro file you simply print it to disk, run the POKER program provided on the EZ-KEYS disk, and the macro file is then assigned as a macro definition.

PERFORMANCE:

If EZ-KEYS has a short-coming it is in the method used to call macros from a RUNning XB program. All macros must be called at an input prompt. This means that the cursor must be displayed on screen for a macro to be accessed. You cannot for instance access a macro when the program being RUN is looping at a CALL KEY statement. Then, once the file instructions within a macro have been set in motion they are suspended only by a "hold" command in

the macro (a Control H). So you must have programmed a Control H in the macro file so that it appears at the proper point in your XB program. This can be tricky and a little confusing to the novice programmer. I would have rather seen an execution routine used that could be called at any time, similar to the method Tom Freeman used to modify Danny Michael's Screen Dump utility. In that program a Fctn Zero keypress overrides any operation in an XB program and immediately accesses the dump routine. Even I/O routines like LOADs and SAVEs to disk are interrupted, so I know that it can be done.

One curious over-sight that appears to have been over-looked in the EZ-KEYS program involves character definitions. A custom character set is used in the macro generator that is not reset when an XB program is used. What you end up with is a couple of lower case letters that are out of line with the standard TI character set in your running XB program. While this is easily overcome by restoring the offending characters with CALL CHAR statements in the program you are running, it would be nice to see EZ-KEYS take care of this for you. It is one less than professional aspect of a program that is otherwise truly representative of "commercial" quality software.

EASE OF USE:

EZ-KEYS is not an application for the first-time programmer. It IS an application for the first-time user though. While creating macros is not in the suggested domain for a new programmer, setting up the EZ-KEYS program to use macros is. More detailed documentation is needed to help the less adventuresome programmer wade through the rigors of complex macro development. Nothing more is needed to convince the new user (or the experienced user for that matter) that EZ-KEYS is a superb competitor for your software dollars.

DOCUMENTATION:

The documentation is adequate for simple macro definitions, but falls way short of being a complete tutorial for the advanced macro programmer. It does cover most of the "absolutes" of macro development in the EZ-KEYS environment, but stops short of really being a useful guide to the world of advanced macro development. However, in fairness to Asgard Software, it's pretty difficult to offer such an outstanding product and then to couple that with outstanding documentation, for $14.95. While the manual does show some evidence that it was written with TI-Writer, (some letters are lost at the end of a few words) overall it is well written and understandable. That is an important consideration in any new software purchase. If EZ-KEYS "takes-off" as I hope it will, perhaps Asgard will develop follow-up products for it such as a disk of pre-defined macros or a tutorial on advanced macro programming.

VALUE:

Harry Wilhelm is the author of EZ-KEYS. I know nothing about Mr. Wilhelm nor do I recall ever reading his name in any of the many 99/4A publications I have come across in past years. After seeing

the kind of product he is capable of producing I can only hope that he continues to write programs for the 99/4A (and hopefully the 9640). If future Wilhelm applications are anything like EZ-KEYS, we are all in for a treat. EZ-KEYS is as superb a first-release application as I have ever seen for the 99/4A. It is well thought out, professionally executed and virtually error-free. For the adventuresome programmer or user EZ-KEYS promises unlimited potential and utility. It is truly a professional application that needs only more complete documentation and some fine-tuning to push it into the "stellar" software class. If you don't have EZ-KEYS you should buy it. You won't regret the meager $14.95 investment. Even if you do not use it to do ANY macro development of your own, you will likely find another, perhaps more important, use for it. I would not be surprised to see future XB type applications developed under the EZ-KEYS environment. It is truly a powerful development tool that cries out for an imaginative programmer to come along and demonstrate some of its potential. With the right combination of good marketing, dependable customer support and continued development of the product, EZ-KEYS could become a standard among 99/4A users. It is THAT GOOD! It is only in its infancy in version 1.0. I am sure that the best is yet to come.

FINAL GRADE:

You will note that EZ-KEYS falls down to a "B" rating in some categories. In the PERFORMANCE area I knocked it down because of the less than flexible method used to call up a macro and the program's inability to suspend macro operations more effectively. In the EASE OF USE area I took some points away because of the complexities required to design more than just simple macros. The DOCUMENTATION lost points because of brevity and several typos that snuck into the final product. The VALUE category makes up for all of the little short-comings I found in this first release. If 99/4A users fail to see the value in this program then I will be truly disappointed. It is the "missing link" that we have been looking for in making more of the 99/4A than just a single purpose machine. For $14.95 you simply can't go wrong. If the TI Community supports EZ-KEYS like it deserves to be supported I am confident that the incentive will be present for Harry Wilhelm to continue development of the product. I am equally certain that other talented programmers will develop applications to run in the EZ-KEYS environment. The end result to our support of this product is sure to be an even better product in the future.

FINAL REPORT CARD:
PERFORMANCE.....B
EASE OF USE.....B
DOCUMENTATION...B
VALUE.....A
FINAL GRADE.....A

BUBBLE SORT

If you have ever taken a programming class you probably have done a "bubble sort". For those of you who haven't the term "bubble

sort" was given to the function of the computer sorting data such as arranging data in an array alphabetically. Bubble sorts are not that difficult to do and at the end of this article I have an interesting way of viewing a bubble sort in progress. The first 2 programs can be run in II BASIC, the last program must be run in Extended BASIC.

To begin with here is a simple sort program to sort an array of data numerically sorting the numbers from the least to the largest. When you run the program just type in some numbers when asked for an input.

```
1 REM By Gary Cox
10 REM ENTER DATA
20 DIM A(6)
30 FOR I=1 TO 5
40 PRINT "DATA #";I;
50 INPUT A(I)
60 NEXT I
70 REM SORT DATA
80 FOR I2=1 TO 6
90 FOR I=1 TO 4
100 IF A(I)<=A(I+1)THEN 140
110 TEMP=A(I)
120 A(I)=A(I+1)
130 A(I+1)=TEMP
140 NEXT I
150 NEXT I2
160 FOR I=1 TO 5
170 PRINT A(I)
180 NEXT I
```

In lines 10 to 60 data is entered into an Array called A. The sorting of the array is done from line 70 to 150 while lines 160 to 180 print out the sorted array. The program works by checking each element in the array. If array element 1 is less than array element 2 then it is in the correct sequence. If array element 2 is less than array element 1 then the data in those elements are switched. The computer then compairs array element 1 with the rest of the array, in this case elements 2, 3, 4 and 5. If any of those elements are less than array element 1 the elements are exchanged thus array element 1 will contain the lowest number of the set. Since array element 1 now contains the lowest number of the entire array, array element 2 is compaired with the rest of the array to see if there is a number less than what is currently in array element 2. If a number less than what is in element 2 is found that number is placed into array element 2 and what was in array elenent 2 is placed into that element that was just checked. This process continues until the array contains all sorted numbers from the higest to the lowest. Lines 160 to 180 just prints out the contents of the array to show that the array has been sorted. If I had wished to sort the numbers in decending order I would replace the <= with a >= help clear it up.

Not only can numbers be sorted but letters as well as every letter has a numeric value to the computer. So here is again the above program but this time words are sorted alphabetically using a string array to contain the data. Try entering some names when

you run this program.

```
1 REM By Gary Cox
10 REM ENTER DATA
20 DIM A$(6)
30 FOR I=1 TO 5
40 PRINT "DATA #";I;
50 INPUT A$(I)
60 NEXT I
70 REM SORT DATA
80 FOR I2=1 TO 6
90 FOR I=1 TO 4
100 IF A$(I)<=A$(I+1)THEN 140
110 TEMP$=A$(I)
120 A$(I)=A$(I+1)
130 A$(I+1)=TEMP$
140 NEXT I
150 NEXT I2
160 FOR I=1 TO 5
170 PRINT A$(I)
180 NEXT I
```

Now that we have sorted both numeric and alphabetic characters the following is a unique program written by member Jim Johnson of San Antonio Texas. This program will display what goes on as an array is sorted alphabetically. The following program must be run in Extended BASIC.

```
100 !----------------------
110 ! BUBBLE SORT DEMO
120 ! BY J. JOHNSON 1-5-85
130 !----------------------
140 CALL CLEAR
145 CALL CHAR(42,"3C4242424E7422418")
150 DIM S(26)
160 FOR J=1 TO 26 :: S(J)=J :: NEXT J
170 FOR J=26 TO 2 STEP -1
180 K=INT(RND*J)+1
190 T=S(J):: S(J)=S(K):: S(K)=T
200 NEXT J
210 FOR K=1 TO 26 :: CALL HCHAR(12,K+2,S(K)+64):: NEXT K
220 REM +++++BUBBLE SORT++++
230 DISPLAY AT(1,8):"BUBBLE SORT"
240 FOR I=1 TO 25
250 FOR J=I+1 TO 26
260 DISPLAY AT(8,1):"I=";STR$(I);" J=";STR$(J)
270 CALL HCHAR(10,3,28,32):: DISPLAY AT(10,I)SIZE(1):"**"
    :: DISPLAY AT(10,J)SIZE(1):"*"
280 FOR D=1 TO 200 :: NEXT D
290 IF S(I)<S(J)THEN 390
300 CALL HCHAR(12,I+2,32):: CALL HCHAR(12,J+2,32)
310 CALL HCHAR(11,I+2,S(I)+64):: CALL HCHAR(11,J+2,S(J)+64)
320 FOR D=1 TO 200 :: NEXT D
330 CALL HCHAR(11,I+2,S(J)+64):: CALL HCHAR(11,J+2,S(I)+64)
340 FOR D=1 TO 200 :: NEXT D
350 CALL HCHAR(12,I+2,S(J)+64):: CALL HCHAR(12,J+2,S(I)+64)
360 CALL HCHAR(11,1,32,32)
370 FOR D=1 TO 200 :: NEXT D
```

```
380 T=S(I):: S(I)=S(J):: S(J)=T
390 NEXT J
400 NEXT I
410 END
```

This above program should clear up how sorting operates. Note it will take the above program quite a while to complete the sort as not only must it sort but it has to print the data on the screen. For a really fast sort you can use Assembly Language. If you can not program in Assembly Language use an assembly language routine written by someone else. I have seen several public domain assembly language sorting routines around. Check the bulletin boards... Gary Cox

QUESTIONS AND ANSWERS

What do you think about the Turbo XT from Triton? As far as an IBM compatible it is ok but I would not recommend getting your TI99/4A mixed in with it as they suggest. All that they are doing is using the TI99/4a console to control the Turbo XT. The Turbo XT does NOT allow any compatability between your TI99/4a programs and IBM compatible programs... The console is simply being used to control the Turbo XB in which case it would be much better to purchase a cheap IBM style keyboard and use it because the TI99/4a does not provide some of the keys necessary for many IBM compatible programs Triton does allow a way around the missing keys problem by using mode switching but that is inconvenient so why not just spend a few more dollars and get a IBM style keyboard with everything that you need? Triton probably just used this method to introduce TI99/4a owners into the IBM compatible market... Gary Cox

SHOPPERS CORNER

Tedd Scott has the following items for sale: 2 Black and Silver consoles, PEB with 32K, TI disk controller, TI SS/SD disk drive, Extended BASIC, Speech Synthesizer, Microsurgeon and several other programs. No reasonable offer will be refused. Equipment is in good shape. Call Tedd at 388-4479.

Games N Gadgets in the Mall of Memphis still has a few programs for the TI99/4A. They are the only place that I know of in town who still has any items specifically for the TI99/4A.

If you have anything that you would like to buy or sell, non commercial members may place an ad here FREE of charge. Commercial business rates are $15 for center double page (8 1/2 by 11), $10 for full page ad (8 1/2 by 5), $6 for half page ad (4 by 5) and a business card for $5. Commercial ads must be photo copy ready... Gary Cox

NOTICE

Workshop and c99 meetings locations are different each month and locations are announced at the main meeting or you may call an officer or the BBS for the location. Main meetings are always at the Red Cross. The MSUG is a non-profit organization.

GROUP INFO

Visitors and potential members may receive 3 free issues of TiDbits while they decide if they wish to join (no obligation). A Dollar sign ($) indicate that your dues are due. On the top of your lable is a code. An Y means you are a member, N means 3 free list, UG means user group and S means a business. Beside the Y is a date, one year from that date your dues are due. The library is open only to FULL ($15) members. Library list is $1. Mail order disk library access is $2 per disk max of 5 disks per month order by disk number only. At meetings library access is FREE if you exchange your disk for ours or $1 per disk for our disks. Send all mail order library requests to librarian's address! Send dues and correspondance to group address.

CALENDAR

MEETINGS: April 21, May 19, June 16 (3rd Thursday!)
WORKSHOPS: April 23, May 28, June 25 (4th Saturday!)
c99 CLASS: Every Thursday except meeting night, location TBA.

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24HR TI BULLETIN BOARD

TI-NET (Mid-South User Group)	300/1200 bd	901-386-1760
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