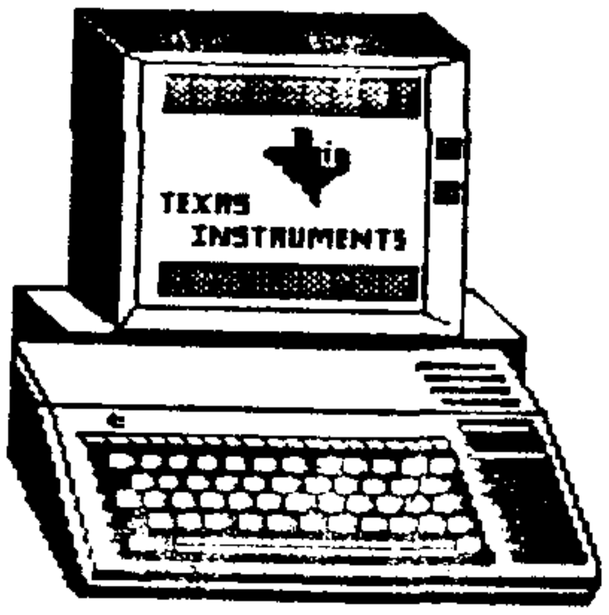
Boston Computer Society TI-99/4A User Group Meeting Newsletter March 1987

Edited by J. Peter Hoddie



April Meeting

The Boston Computer Society TI-99/4A User Group will meet on April 15, 1987 at the UMass Boston, Harbor Campus, McCormick building, 3rd floor, room 129 at 7:30 PM. As always there will be a grand collection of public domain software and fairware available before and after the meeting.

The topic of the meeting will be the 9640 in all its glory. If it isn't quite in its glory we'll show what we got, but it should be pretty glorious. We also hope to have one of the Triton Turbo XT's to show you, just to give you a fair(e) view of the options.

However, the main purpose of this meeting will be to bask in success of the fayuh on April 4. We'll have lots of good munchies and copies of all the neat new software that was available at the show. So come to the meeting, but more importantly, come to the fayuh.

THINGS MY MODEM TOLD ME - March 1987

by Walter Howe

This month's column is a short one, due in part to my accompanying article on the new Advanced BASIC for the 9640.

As this is written, the 9640 from MYARC has not quite been released yet, but just about everything is completed and release is less than a week away (knock on wood). It WILL be in dealers' hands well before the New England 99 Faire on April 4th. And speaking of the New England Faire, the list of people who have said they are coming is incredible. Besides the local talent, they include Cheryl Regena (thanks to Cynthia); Terry Masters, Tom Freeman, and George Steffen from Los Angeles; Bob Boone and 20 others from Ottawa; Clint Pulley from Canada; Mike Dodd from Tennessee; Jim Horn, Chris Bobbitt, Jeff Guide, and Richard Roseen from the DC area; Barry and John Calvin Traver from Philadelphia; Chris Faherty from Florida; Howie Rosenberg, Paul Charlton, Art Byers, Lou Phillips, and Steve Lamberti from the NY/NJ area; Franz Waggenbach and others from California; and inquiries have been received from Detroit and, believe-it-or-not, Norway! This is not just a New England Faire - this is an international celebration! Even if some of the people do not make it, it will be the greatest gathering of TI talent in one place ever seen.

You can help with publicity for the Faire. Where we need the most help is in reaching people who do not belong to a user group or have a modem. If you know someone who has a system - even an unexpanded one or one put away in the closet, tell them about the Faire. Put notices on bulletin boards at work, in local computer stores, and in the supermarket. There is more available for the TI-user now than ever before, but the sources are not as visible. If your local high school has a computer club, make sure they know about it. Getting the word out needs help from everyone. Please do what you can!

A new four-color brochure for the 9640 has now been sent to dealers. It confirms that 80-Column TI-Writer, 80-column MULTIPLAN, Advanced BASIC, the newest version 4.21 PASCAL run-time, a cartridge saver program, and the MYARC Disk Operating System will be included with the release. Here is a look at the new version of TI-Writer that you will be seeing:

The new 80-Column TI-Writer is a major improvement over Texas Instrument's original TI-Writer for the TI-99/4A. It has all the features of the original TI-Writer and more, runs with an 80-column display, and adds several very useful enhancements not found in the

original. It uses the same dot commands and menu commands as the original. If you have been using TI-Writer with the 99/4A, you can begin to use this version right away.
The new enhancements include the following:
- View File, an option which lets you read a text file without disturbing the file on which you are working
- A big 56K buffer, letting you read and work on much bigger files than before without breaking it into separate loads
- Both the EDITOR and FORMATTER routines are loaded when you first load the program. You no longer have to stop and save your text file before switching from the EDITOR to the FORMATTER and wait for the files to load
- Wild Card Searches, which let you search for different variations of a string in a file - even for wrong spellings!
- Much greater speed! You no longer have a long wait for large reformats or deletes while using the EDITOR. And you will no longer lose characters when words wrap from one line to the next while you are typing!
- Many more one-keystroke functions! With the use of the Function keys (F1, F2, F3, etc.), the arrow keys, and the PAGE UP and PAGE DOWN keys, you can manipulate your text much more easily and quickly.

A PREVIEW OF 9640 ADVANCED BASIC

This is a preview, not a review. My comments are based solely on the draft manual released by MYARC ahead of release of the 9640 computer. It is quite possible that the final version will contain differences from this.)

The new MYARC 9640 brings us a new version of Extended BASIC, which MYARC is calling Advanced BASIC. It is an outgrowth of the previously released Extended BASIC II for the 4A (or perhaps XB II is an ingrowth of Advanced BASIC - not sure which really came first).

XB II gave us substantial new graphics capabilities, integer math, and a lot more speed. The speed increase was gained by writing XB II in assembly language, whereas TI's XB was written in TI's Graphics Programming Language (GPL). GPL is very economical in its demands on memory, but leads to a slow XB, because every program step had to be doubly interpreted - first into GPL, and then into machine code. By writing XB II in assembly, the XB interpreter goes directly to machine code.

Advanced BASIC gains still more speed - partly because the new 9995 processor operates more efficiently and partly because the new 9938 graphics chip runs at blinding speed as a co-processor. In addition to the increased speed, it adds more usable memory, 80-column capability, double-precision arithmetic, better program editing and debugging support, WHILE/WEND, more efficient ways to do things, and a lot more as well. Where XB II added about 20 new commands and functions, Advanced BASIC adds over 30 more commands and functions than XB II contains. Here is a quick look at the new features:

BCOLOR and BTIME are used with ACCEPT and DISPLAY to provide BLINKing text. ACCEPT and DISPLAY appear to have multi-line capability now.

BEEP is now a command as well as a modifier.

DATE, TIME, DATE$, and TIME$ allow you to set and read information from
the new clock chip.

DEF has been expanded to include single and double precision variable types. CINT, CREAL, CDBL, and CSNG can be used to Convert variable types.

CALL FILES will print the current disk catalog.

FREESPACE will tell you how much space you have available as SIZE used to. It may also be used to force garbage collection wherever you want it. (This means that the computer gathers all no longer used memory space and makes it available again.)

HEX$ will return a hex value for a normal base 10 number. MOD returns a modulo arithmetic value (essentially a remainder) for a number to any given base.

DELETE will now delete named lines from a program. KILL is now used where DELETE used to be used to delete a file.

OUT and INP will send and receive one or more bytes to a specified port.

LPT sets a default printer device. PPR prints the current default device. LLIST lists to the default device. LTRACE traces executed line numbers to the default device instead of the screen. LCOPY is also used, but its description was missing from the draft manual. Your guess is as good as mine.

LEFT$, RIGHT$, and (perhaps) MID$ give easier partial strings than SEG$ did.

LINE appears but its description was also missing.

LPR returns the Last Point Referenced in a graphics command.

MEMSET allows you to set all variables in an array to the same value.

MOUSE includes a series of commands providing mouse support to graphics.

SPEED lets you set 4 different speed setting for the computer while running Advanced BASIC. This is necessary for many 4A programs where the faster speeds of the 9640 would interfere with the program unless slowed down.

SWAP lets you swap the values of two variables of the same type.

WHILE/WEND allows you to set up a loop that will continue to execute as long as (while) a given logical condition exists, for example, as long as a file record is not named LAST.

Several comments are worth noting:
Although the 9938 chip is capable of 512 colors, it appears that there is no support from Advanced BASIC alone for anything but the original 16 colors of the 4A. Perhaps it can be achieved through assembly links, though, and if that is the case, someone will no doubt write routines to access other colors and make them available.

Advanced BASIC has been written to permit running older programs from both TI XB and XB II on the 9640 as much as possible. Even where commands have changed names, it will normally recognize the old commands.

With the new features of Advanced BASIC, the larger memory available (64k for programs, which does not include the additional memory used for variable space, I believe), and the much greater speed of the 9640, many more programs will be feasible to write in BASIC than before. Routines that were too slow under the earlier versions may be quite acceptable now.

Some bugs are likely to be found after release, as is the case with any new product. MYARC hasn't been able to avoid these any more than any other computer developer has. It shouldn't have as many growing pains as XB II did, partly because many of the bugs have been worked out in XB II and partly because there are not the severe memory limitations that were always hindering XB II. MYARC has always been good about standing behind their products and fixing or replacing them at little or no cost to the buyer. I don't expect MYARC's handling of the 9640 to be any different.

PERIPHERAL CABLING
By Wm. Corson Wyman

INTERFACE PERIPHERAL CARD

If have an interface card for your TI and have wondered how to make your own cables, this article is for you. There have been many times when I have to get my interface to work with a printer, modem or some other kind of input/output device. It is only after hours of aggrevation trying this and that, that I finally have the answers. Here is what I have learned by trial and lots of error!

PARALLEL PORT INTERFACING

The parrallel port is used soley for a printer sending all data bits in 8 parallel data lines. Parallel printers are compatable with most computers. They make no judgement as to what kind of system you use. The cable that connects between the computer and the printer can vary greatly. This is where most of us go to the nearest computer store and try to find a preassemblied cable instead of doing it our selves. There is nothing really special about making your own cables. Most of the connectors are now built so that you don't need to strip off wire insolation or solder connections.
The tools you will need consist of the following:

SISSORS, HAMMER, A SMALL FLAT SCREW DRIVER

To make your parallel cable, you will need the following parts that can be purchased at your local RADIO SHACK store:

36-POSITION MALE PRINTER RIBBON CONNECTOR #276-1533
RS232 RIBBON CABLE 25 CONDUCTORS #278-77

The only part you may have trouble finding and need is the other 16-POSITION HEADER RIBBON CONNECTOR. There are only a few sellect stores that stock them and it is not a very standard item. I go mine at a computer trade show this past year. I still have a few left. If you have trouble finding it, I can get you one.
All of the parts will cost you about $12 to $15 dollars total. If you should find a parallel cable for $17.00 or less, BUY IT and stop reading this.

Building A Parallel Cable

1. Cut one end of the extra wide ribbon with the sissors just enough so that you can with your fingers strip away 16 wires from the rest of the ribbon. The 16 pin connector can now be added to one end of the 16 wire ribbon cable. The connector should have a bump on one side. This is the side you insert the ribbon into with the colored striped side facing the bump. This end of the cable is a "strait thru"

connection. There is no need to flip-flop or change wires.
2. Carefully tap the connector with the hammer to close it tightly.
3. Trim off the excess ribbon remaining with the sissors. Hold up the connector with the pin holes facing you and the index bump on the top side. Pin ONE is the first pin in the upper left.

Now comes the hard part.

The other end you must flip, cut and move wires. Most, but not all, of the these wires will lead into the other connector.
4. Four wires must be cut off entirely. Wires 12, 13, 14, 15 are not to be used.
5. Using the sissors, carefully cut between the wires (about 3" inward) separating them from each other.
6. Place the wires individually into the connector following the pin to pin connections below for proper placements.
Note: The 36 pin connector also has a pin ONE numbered on it as well located in the left corner on the wide edge side.
7. Again carefully tap the connector closed with the hammer.

PIN NO. FUNCTION/DESCRIPTION
36 to 16 Pin Connector

01 to 01 Handshake OUT
02 to 02 Data, LSB
03 to 03 Data
04 to 04 Data
05 to 05 Data
06 to 06 Data
07 to 07 Data
08 to 08 Data
09 to 09 Data, MSB
11 to 10 Handshake IN
19 to 11 Logic ground (GROUND)
NC to 12 10-Kilohm pull-up resistor to +5 volts
NC to 13 No connection
NC to 14 Logic ground (GROUND)
NC to 15 1-Kilohm pull-up resistor to +5 volts
16 to 16 Logic ground (GROUND)

If you have a continuity meter, check your connections for any errors. If you don't have one, try using the cable as is. The chances of damaging your system from improper placement of the pin connections is very slim. If you have made a mistake, take the connector apart with the end of the screw driver and try again.
If you are still having trouble, please contact me as your last resort. I will be happy to try and give you a hand with it. Contact me at my home number (617)839-5116.

SERIAL PORT INTERFACING

The serial port is used for communication with a computer with another serial port interface and a modem.
The serial port can also be used for a printer as well. There are some people that have the idea that if you have a parallel printer it will run faster than a serial printer. NOT SO... The speed is only relative to the printer you own. For example, having a printer rated at 120 characters per second (cps), and asking it to print at a 2400 BAUD RATE or 240 cps, won't make it go any faster. The computer will wait for your printer to catch up. Most all printers will run at any of the common BAUD RATE default values you give it, provided that the DIP switches on the printer are set for the same BAUD RATE. If you do have a serial printer it may be as fast as the next guys.
The most difficult thing for me when getting started with a serial printer was figuring out the correct software switch combonation options needed to make it work.

OPTION #1 BAUD RATE = 110, 300, 1200, 2400, 4800 or 9600 you can take your pick.(Printer DIP switches must be set for the same value)
OPTION #2 DATA BITS = 8 for a printer, 7 for everything else.
PARITY =(O)dd,(E)ven,(N)one. This is the only default that you may have to try by error.
For example : RS232.BA=2400.DA=8.PA=N

To make your serial cable, you need the following parts that can be purchased at your lacal RADIO SHACK store:

2 - SOLDERLESS RS232 D-SUB FEMALE CONNECTOR #276-1565
RS232 RIBBON CABLE 25 CONDUCTORS #278-77
All the parts will cost you a about $12 dollars.
To build this cable for your printer is extremely simple.

Building A Serial Cable

1. Slide one connector onto the ribbon and squeeze together.
2. Slide the other connector onto the ribbon with it facing the same identical direction as the other connector and tap together. This is a so called "straight thru" cable connection. It couldn't be any easier.

Building a serial cable for a modem is a different story.
1. Same as previous step 1.
2. Note that the ribbon connector makes the ribbon wire numbers different in the order that they are counted. Example :

1--2--3--4--5--6--7--8--9-10-11-12-13
-14-15-16-17-18-19-20-21-22-23-24-25-

Cut free the group of wires 2-15-3. These are stuck together in a row. Now twist them so that they get inserted in the reverse order into the connector.
3. Separate the 11th wire counting from the edge of the ribbon (wire #6).
4. Separate the 14th wire counting from the edge of the ribbon (wire #20).
5. Cross over the wires #6 and #20 and insert them into each others location into the connector.
6. Carefully tap the connector closed.
Not all of the wires need to be ckecked for continuity. There are only a few that carry the signal to the peripheral device.

PIN NO. FUNTION/DESCRIPTION
25 to 25 PIn "D" Connector

01 to 01 Protective Ground
03 to 02 Input Serial Data Port 1
02 to 03 Output Serial Data Port 1
05 to 05 Clear to Send Port 1
20 to 06 Data Set Ready Output
07 to 07 Logic or Signal Ground
08 to 08 Data Carrier Detect Output Port 1
08 to 12 Data Carrier Detect Output Port 2
05 to 13 Clear to Send Port 2
03 to 14 Input Serial Data Port 2
02 to 16 Output Serial Data Port 2
06 to 19 Data Terminal Ready Port 2
06 to 20 Data Terminal Ready Port 1

In short, the connections for a Port 1 cable, are straight thru except for pins 2 & 3 and pins 6 & 20. The connections for a Port 2 are again the same but pins 16 & 14 and pins 6 & 19.
Good luck with your cable making.

Random Ramblings
By J. Peter Hoddie

Come to the faire. April 4 1987. Waltham High School. 10 AM to 6 PM. Lots of speakers and dealers and people (we hope). So be there. Plenty of decent food and famous people (or semi-famous). If you miss this show you'll be kicking yourself for the next year. This show has the potential to be the best TI show yet, and I ain't kiddin'. So be there.

This newsletter was rushed. No doubt about it. I have been very busy doing work for the MYARC computer. In fact, I spent my spring break down in Basking Ridge working 16 hour days on the 9640. However, here just two days before the meeting, I'm getting this newsletter together. Thanks to Walt for his previews of the 9640, and to Corson for his article on cables. Hopefully next month we'll have materials from Cynthia Becker and Donald Mahler again. I forgot to remind them about the newsletter this month, so it is my fault, no theirs.

The 9640 is really working great. On my card now everything is working as it should be. Sound, clock, muose, joystick, graphics, the 99/4A emulation mode with cartridges running like TI Extended BASIC and Parsec, and all sorts of other neat things. And one totally useless thing: you can run the program to save the cartridges on the 99/4A on the Geneve. A completely useless accomplishment, but I was sort of freaked out when I found out so I figured I would mention it. The computer works with the hard disk controller, Horizon RAM Disk, and all the other hardware you would expect it to function with. All this is to say, it looks like MYARC is really going to finally be able to deliver this product, albiet a bit later then many people would have liked. If you are looking to order one, talk to Corson or some other reputable dealer. Machines are likely to be hard to come by for a few months. Also, the enhanced keyboard option is something that you should really consider. At first I was very unexcited about the idea, but after working with one of the keyboards for about 3 minutes I was hooked. The enhanced keyboard is the same as the one pictured on the color brochure.

I have spent much of my time over the past few days working on the TI-Writer upgrade for the 9640, so I figured now would be a good place to expand on what Walt wrote about it. The formatter now has 2 new "devices" that you can access. For input file you can now specify "BUFFER" which will print the file that is currently in memory, rather then you having to save it to disk and then have the formatter reload it. I am working on a similar function for the assembler so that you can easily "test assemble" assembly code while working. For output file you can specify "SCREEN" which allows you to preview the format on your screen before it goes to the printer. Note that when you exit the formatter you are returned to the editor screen with the file exactly as you left it before you entered the formatter.

The formatter also includes a few new dot commands which allow you to change the characters that invoke underline, double strike, and mail list, so that you can use the @, &, and * characters freely within your text. Many more TI-Writer features will be available in a few months in a "professional" word processor available at a separate price from MYARC.

The BCS will have a table down at the New Jersey TI show (TICOFF) the week before the Boston show. The purpose of this table will be to (hopefully) sell lots and lots of software and to promote the Boston faire. If any of you have the slightest interest in trekking down to New Jersey to see the show and help out for a few hours, please let me know. At the

very least, the group will cover the cost of admission for you.

There has been some controversy lately stirring surrounding the authors of Funnelweb, Will and Tony McGovern. They have openly admitted to having broken the protection on several Millers Graphics programs, and furthermore they have criticized Miller for his practise of protecting programs, and for making Advanced Diagnostics unable to break its own protection. While I can not support such behavior, because it amounts to piracy once more then a back up copy is made, I do wish to present a slightly different viewpoint. The McGoverns are two extremely talented programmers. They have learned their skills on the 99/4A through constant experimentation and picking apart of the inside of their 99/4A. They have managed to produce one of the most popular and useful utility program for the 99 - Funnelweb. These two are hackers in the truest sense. They have figured out what the manufacturer wouldn't tell them, they have written an incredibily powerful piece of software, and they have distributed it freely to users through out the world. The problem arises with Millers Graphics because MG protects their programs and this is offensive to a "hacker" who believes in the free sharing of ideas. Thus I don't see what they did as intentionally malicious directly towards Miller but as an action against protection in general. Which is to say, there is no way to justify their actions, but there is a better explanation then to say it was a completely malicious act against MG.

On other fronts, the latest version of Funnelweb, the February 15 update, is in our library in this month. We also have version 4.1 of Mass Transfer which includes a print spooler, disk catalog, and some other rather useful functions. We still need some help for the faire, please speak up, on paper. I don't want to have to beg, but we're getting close. Just a couple hours of your time during the day would be very helpful, and since you'll be there anyway, you won't have to go out of your way. Two major contributors to the faire this year are Tom Ward who is in the process of copying nearly 1000 disks for our library to sell at the Boston and New Jersey shows and Cynthia Becker who is almost single handedly paying to fly Cheryl REGENA Whitelaw (and family) in from Utah to speak at our faire. Other people who have been exceptionally helpful this year are Joyce Corker who again did the flyers and also locked in Waltham high school as the faire location, Walt Howe who has been promoting the faire on all the major telecommuncations networks and helping to line up speakers, and most of the same gang from last year.

This is a half column article to fill some unused space. It is very technical but should be of interest to a number of readers. Below is the definition of the Peripheral Access Block for 9640 mode of the Geneve computer. It is the same as TI created for the 99/8 and allows for massive program images, transfer of data to and from CPU and VDP memory, and for up to a 2K record length. It also supports up to a 2 megabyte address space.

```
OPCODE BYTE OPCODE BEING PERFORMED
FLGSTS BYTE FLAGS AND STATUS BITS
PABERR BYTE RETURN ERROR CONDITION
BUFADH BYTE HIGH BYTE OF BUFFER ADDRESS
BUFADR DATA BUFFER LOCATION FOR DATA
RECNUM DATA RECORD NUMBER FOR I/O
RECLEN DATA LENGTH OF RECORD
CPUFLG BYTE 0=CPU DATA. <>0 VDP
CHRCNH BYTE HIGH BYTE OF CHARACTER COUNT
CHRCNT DATA # OF BYTES TO TRANSFER
UNUSED BYTE RESERVED (Status return?)
OPTLEN BYTE LENGTH OF PATHNAME
PATHNM TEXT 'DSK.volumename.@filename@'
```

BCS TI-99/4A USER GROUP
Electronics Bulletin Boards
BBS #1: 617-331-4181
BBS #2: 617-335-8475