

# CALL SOUNDS

The Newsletter of The CENTRAL WESTCHESTER 99°FRS



STER 99°ERS JAMMARY 1984

MEXI MEETING: January 16th, at the American Legion Hall, 56 Broad St. Hawthorne, NY. 8pm.

#### CLUB NEWS

SPECIAL PROGRAM at the January meeting: Bob Cataldo will present a comprehensive overview of telephone communications with the 99/4A. This will include how to talk to local free bulletin boards, use such services as Compuserve and The Source, Exchange programs via phone with other members of your own club, etc. As this is a topic never covered at any of our meetings and because many of our members have gutten modems recently, we expect a banker attendance.

SIG 9900 Will continue with part of Chapter 5 of the Beginners Guide to Assembly Language on the TI-99/4A (Copies still availabe at B Dalton) AFTER the main program.

FREE SOFTWARE for January: On Cassette, the updated (1985 tax tables x,y,z) Tax estimator. Remember this will run with console only in TI Basic and has the option of a screen dump to printer. It will also run in with XB module without MemX - and with the full house expensaion. On disk we will have a second disk of CAMDY - see a full listing elsewhere in this issue.

Bon't forget that the free software is an incentive bonus for meeting attendance. We do not guarantee that it will be available again until after a maiting period of a few months.

TO DATE copies of the MEW main library list should be available at the January meeting. We have stopped mailing these out to save postage.

COMING ATTRACTIONS: Hubert Deri has just received his MYARC 99/4A expansion system with two DSDD drives. We hope that by Late Spring he will be familiar enough with it to give us a good show and tell! Art Byers has a program in the works on controlling the wild dot matrix printer. This probably will be our February Program. Also in the works are two reviews of printers. Walter Price has the new Star and Carney has a new Panasonic. Those should be in the February issue of CALL SQUMDS.

CLUB IS LOCKING TO BUY EQUIPMENT: We need to pick up a used TI PEB sytem. There is a lot around. Carney bought a console and PE box (complete with everything except RS232 card) for \$300 and Joe Ortner bought a whole system; concole, PEB with all cards and a TI 99/4 impact printer for just about the same price.

We urge all members to keep their eyes and ears open read the computer ads in the classified section of the local papers. If you see anything, Call Carney at once! If you can't reach him, phone Art.

NEW FEATURE AT NEETINGS: Our club BULLETIN BOARD. Be sure look it over before the meeting or at coffee break. There ar new items on it at each meeting. This month get your Tips from the Tigercub. Also if you have items to sell, print your notice on a 3 x 5 card and post it.

#### TRIPLE-HEADER OF TI CONFERENCES

CONING OUR WAY IN MARCH and APRIL!!!

Three exciting events will take place within a few weeks of each other, beginning in about two months!

To begin, on March 15th the TICOFF T.I. Computer Owner's Fun Fest will take place in New Jersey. This will be a Combination trade show and learning foum. The date is FIRM (so mark your calendars) but the site still has to be set. The moment we have information, you will have it.

Some twelve clubs are involved in sponsoing this with Steve Citron of NEW JUG as coordinator. We hope it will be as big or bigger than the Chicago Faire. Myarc has promised several working units of the new TI compatable will definitely be there for hands on tests. Perhaps, they may even be accepting orders. With a Star attraction such as this, a BLOCKBUSTER of a convention can be expected!

NEXT, the Boston area II clubs are hosting a regional conterence on April 5th-more details as soon as we have them.

Finally, the Metropolitan Region Comference will hold its second meeting on APRIL 12TM. This will take place at Queensboro Community College and will be hosted and organized by the QB 99'ers.

With the full facilities of a college, such as auditoriums, audio visual equipment, classrooms, etc. it is plain a large attendance can be handled with ease. Peter Comber Frank Cotty, the Co-cordinators, have spoken to Craig Miller, Miller's Graphics, and Lou Phillips, Myarc, about attending. This is not planned as a trade show, however. With the large membership of the three local Long Island Clubs so close at hand, plus the New Jersey Groups and the Hudson groups, plus the drawing card of big names, this should also be a blockbuster.

Anyone wishing to contact the 08 99°ers for information can phone: (day phone) Frank Cotty 718 759-9328 and Peter Comber 718 296-4803

Again as we know more details on any of the above three TI events, you will have them.

#### IN THIS ISSUE

| 14 :1172 TOOF                                   |              |
|---|--------------|
| Club Newspage                                   | 11           |
| Triple Header TI Eventspage                     |              |
| Small-C C language for the Tipage :             | 12           |
| Notice to other clubspage                       |              |
| Notes on the new XBpage                         |              |
| Club officers & committeespage                  |              |
| Assembly language tutorial #1page               |              |
| Potpouri of 1985 Articles from 99'er clubs.page |              |
| Random Thoughts on manuals and bookspage        | #6           |
| Letter to the Editorpage                        | #4           |
| Notes on the New Computer from the Chi Fairpage | <b>#</b> 7,8 |
| Thoughts on the Chicago Fairpage                |              |
| TI Pascal at the USUSpage                       |              |
| CANDY-1/86 Free disk software listing name      |              |

INTRODUCTION TO "c99" By Ronald Albright

· First, let me clarify my qualifications. I have absolutely no qualifications to discuss this language in general or the "c99" compiler specifically, other than a desire to learn more about this language. For the first time, Clint Pulley has made it possible for users of the TI 99/4A Home Computer to use a version of the langauge, "C", on our machine. It is an implementation based on "small-c", a public domain version of the "C" language which was published as a source code listing in the May, 1980 issue of Dr. Dobb's Journal (Number 45). Like "small-c", "c99" is a slightly restricted but otherwise syntactically identical to true "C". It allows the user to be exposed to the language that, according to PC Magazine, has more versions (at least a dozen C compilers) of it than any other language. It is the language that most application software packages are written in and is used by Visicorp, Microsoft, and Digital Research in major software projects.

So what does the "c99" package do? Well, Clint Pulley gives you a basic set of documentation files on disk with the package. The documentation does not teach you C, but does show you how to run the compiler and what the compiler does and does not support. You will have to get a book to learn C, which is what 99/4A users had to do to learn Forth anyway (See list at the end of this article). Then you write a C source code listing. A couple is provided by Pulley with the c99 package. One, a c99 version of the classic prime number sieve benchmark which appeared in Byte magazine. The c99 source code is shown below as Listing 1. While I know nothing about C, a book has told me that comments are enclosed with /# and #/ to show the beginning and end of comment areas, which can extend over several lines. The main routine that a program will perform starts with the word "main". This is a special function that must be found in any C program. Any values or arguments that are being given to the program at the outset are enclosed in parentheses. The beginning and end of a group of statements are marked with braces; a C program will always end with a closed brace. Like Pascal, each complete program statement ends with a semicolon.

(In the interest of space, the listings have been deleted.-ED.)

Once the c97 source code has been written, you must then run the c99 compiler. It is loaded with the Option 5 of the Editor/Assembler package. The program, once loaded prompts you for the source code file name and then the output file name and then takes off. It is very fast. The end product to your output file is a TI 99/4A assembly language source code in D/V8O format suitable and, indeed, ready for assembly into runnable object code by the E/A assembler. The outputed assembly language source code for the above C routine is shown in Listing 2. It will certainly look inefficient and, yes, even weird to experienced assembly language programmers. But it assembled fine for me.

Once assembled, yor are ready to run your program, now in D/F80 file format. You load it with Option 3 of the E/A cartridge, then load the c99 support routines the same way, hit "enter", enter the program name "start", and the program exercites as fast as classicly written assembly language code. It is fun and efficient. And the best part is: its Fairware. It is available from the author to try and, if you use it, you then pay for it. A \$20 payment is suggested. Pulley vows continued support if the users support him and new, improved versions are planned. Pulley's address is:

Clint Pulley 38 Townsend Avenue Burlington, Ontario Canada 17T 1Y6

# BIBL TOGRAPHY

The C Programming Language, Brian Kernighan and Dennis Ritchie, Englewood Cliffs, N.J.; Prentice-Hall, 1978. (Not for beginners but considered to be the "bible" for this language; written by the originator of the language, Ritchie).

The C Puzzle Book, Alan Feuer; Englewood Cliffs, N.J., Prentice-Hall, 1982.

The C Primer, Les Hancock and Morris Krieger; New York, McGraw-Hill. 1982.

Learning to Program in C, Thomas Plum, Cardiff, N.J.; Plum Hall Inc., 1983.

C Programming Guide, Jack Purdum; Indianapolis, Que Corporation, 1983. .IN O

D/L from CompuServe by Mel Gary New Jersey User's Group

ODDS LENDS- There are three new clubs represented in the newest binder of exchange newsletters: HUG the Hoosier User's Group, Tri Cities 99'er (Kennewick Washington) and TITEX of Long Island.

We have received disks of articles from the C.A.U.6 of Harrisburg Pa. and NEW JUG (N.J.U.6) some are in this issue and some will appear in the future.

NOTICE TO OTHER TI USER GROUPS: Any article ending with the D/V80 notation is available to you on disk to save you some typing if you wish to run it. Send a postpaid mailer and blank disk to ART BYERS at the return address listed.

You may reprint any material in this newsletter. We ask only that you give proper credit to the original author and publication.

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NOTES ON THE NEW XBASIC II from the Chicago Faire by J. Peter Hoddie Boston Computer Society TI User Group

Myarc has recently released a new version of Extended BASIC which they call Extended BASIC II (XB II). Low Phillips, president of Myarc, describes this product as a stop gap program until they can get their new computer to market. Which is to say, XB II is essentially the version of BASIC that will be in the new machine with the exception of a few commands (such as mouse support) which are not included in the 99/4A hardware. The higgest advantages if XB II over TI's XB is that it runs between two and four times faster and it can use up to 512K for program storage. XB II will only work with a memory expansion/print spooler/ram disk card from Myarc with at least 128K of memory. The reason XB II is faster is that the entire interpreter is written in assembly language instead of assembly and BPL (TI's slow, interpreted proprietory language). Furthermore, XB II uses CPU memory instead of VDP memory to store strings so, that access time to string variables is drastically reduced. X9 II is 100% compatable with TI's XB. Hyarc uses the assembly loader from the Editor/Assembler cartridge instead of the TI's XB loader, so that not only is load time cut way down, but assembly programs can be linked which simplifies writing assembly code for XB significantly. The XB II cartridge also includes an empty GROM socket. Phillips said that this socket will allow you to put the GROM from your TI-Writer, Editor/Assembler, or other one GROM cartridge into the socket, thus creating, in effect a dual purpose cartrige. Now to describe some of the new commands in XB II that really make it shine. First off, in XB II you can use 40 column text mode and bit map graphics. Myarc made this possible by moving nearly all the data and tables that TI placed in VDP memory into CPU memory. Thus nearly all of VDP memory is free and can be used for graphics. To support the new graphics modes, Hyarc has added a CALL GRAPHS command to set graphics mode, CALL DRAW, CIRCLE, RECT(angle), and FILL commands which Phillips says are similar to GW BASIC from Microsoft. The DCOLOR command will allow you to set the foreground and background colors of the dots being drawn in bit map mode. The graphics routines were written by Mack McCormack who said they were the most difficult routines he ever had to write, but he now says they work flawlessly. Mack is one of the few people who could write these routines for the II, so if he says they work, they work! There is a CALL MARGINS commands which allows you to scroll one part of the screen while leaving the rest of the screen intact, which will allow the creation of some pretty fancy windowing techniques. To speed things up more there is a DEFINT command which lets you create integer variables which run faster and take up less memory. Integers will take up one full word of memory (2 bytes). Myarc has been around for a long-time and worked closely with TI when TI was developing their XB. When TI asked Phillips what he thought of IB he told them (among other things) that he thought it could use a function he called

TERMCHAR. This would allow you to know what key was used to terminate a line of input (i.e. ENTER, down arrow, up arrow, etc.). This would allow a programmer to make the program do different things (such as allow editing of the input field above if input was terminated with an up arrow) depending on how input was terminated. Thus XB II has this function and allows for eight different keys to terminate input. The line editor has also been changed somewhat. Instead of having to hold down the right arrow key to get to the fifth line of a program line to make a change, you can now use the down arrow key which will now just go down one screen line and only go to the next program line after it passes the bottom of the current program line. The same idea applies to the up arrow key. XB II uses the same tokens as XB so that they are fully compatable. The only difference is that XB II must obviously use some of the tokens that were left unused so that it could incorporate the new functions. XB II will also let you run TI BASIC programs as character sets 15 and 16 are available for use due to some moving around of things in VDP memory. This may mess up some programs that directly POKE or PEEK to VDP memory to control sprites but otherwise should cause no problems. Phillips said that there will probably not be a compiler for XB II for the 99/4A but that there probably will be one for the new computer which will use an extension of XB II. XB II is now available along with a 129K expansion card from Myarc for around \$250. This file was written by J. Peter Hoddie of the Boston Computer Society T1-99/4A User Group based on a discussion given by Lou Phillips on November 2, 1985 at the Il Faire in Chicago. This article is a rough draft but may be reprinted or used in any other way you wish as long as you include the author's name and information about where more show information can be obtained. (Uploaded for Peter by WALT HDWE [70277,3530] and downloaded by David Hultberg [72437,3215] (D/V 80)

CALL SOUNDS is the monthly newsletter of the Central Westchester 99'ers, a non-profit user group devoted to the TI-99/4A Computer.

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# TI 99/4A ASSEMBLY LANGUAGE TUTORIAL BY STEVE ROYCE -Western NY 99'ers

# (SAVING BYTES) Lesson #1

This installment of Dis'Assembler will look at one of the two main aspects of the efficiency of Assembly Language. it's memory-saving ability. We'll use a fairly simple example which uses only a few Assembler directives and instructions. Dur objective will be to place the letter 'A' in the center of the video monitor. In TI Basic or Extended Basic this is a fairly simple proposition, as the following Extended Basic example shows:

100 DISPLAY AT(12,16): "A"

110 GOTO 110

Simple enough, isn't it? However, your 99/4A really has no idea what these statements mean until they are interpreted into it's swn language, the powerful internal machine language. Assembly language is a means of producing already-translated instructions to the computer, thus avoiding the slowness and memory consumption which comes from interpreting a program as it is being run. So, let's write a program which does the very same thing and follows the same logic as the Extended Basic example above. To do this, we need only to understand a few instructions in TMS9900 Assembly Language. Since most of my readers own the Editor/Assembler (E/A) and not the Mini-Memory (M/M) ##. I'll present the E/A version, as follows. Before you get started, though, let's do a little bit of disk housekeeping to make things easy for ourselves. If you are working with one disk drive, you should copy the following files from the E/A disk to an initialized disk; ASSM1, ASSM2 and EDIT1. We will use this same disk to enter our source code and assemble the object code. This will make switching disks back and forth unnecessary as you go along. Note that the line numbers will be provided by the Editor, not by you: 7

0001 DEF LETTER
0002 REF VSBN
0003 LETTER LI R0,367
0004 LI R1,>4100
0005 BLWP 9V9BW
0006 LIMI 2
0007 JMP \$
000B FND LETTER

Ny God! Eight lines to do what can be done in Extended Basic in two lines. How can Assembly Language claim to save memory space. Well, the above coding takes only eighteen bytes of memory, compared with thirty-three for the Ex-Basic version. So much for my proof; now let me explain each of these lines.

0001 DEF LETTER

This line tells the system what the name of the program is. I have chosen to call it 'LETTER'.

0002 REF VSBN REF

Means that I am going to REFerence an external (meaning outside of my program) symbol. In this case, I am going to be calling the Utility Routine which is labled VSBW (for

Video Single Byte Write). The VSBW routine prints a single byte to a location in the Video Display Processor.

0003 LETTER LI RO.367

0004 LI R1, >4100

These two lines define the parameters to be passed to the YSBW routine. We are using the LI (Load Immediate) instruction to load each of these registers with the appropriate value to be used in the VSBW routine. The VSBW routine always requires that certain values to be in Register 0 and Register 1 of the calling program, Register 0, the VDP Address to be written to must be placed. How did we come up with 367 to be loaded here? The first thing you must know is that the first 768 bytes of the VDP define the 768 possible locations on the screen, starting with the upper left hand corner (VDP Address 0 or Hex >0000). You remember your Hexadecimal Arithmetic from last month, don't you? The first row is therefore numbered 0 to 31 (or Hex >0000 to >001F) and the last rum 736 to 767 or Hex >02E0 to >02FF. How do we convert a row and column of Basic or Ex-Basic to a VDP Address? A simple equation will do this for use

ADDRESS=32# (ROW-1) +COLUMN-1

Row 12, Column 16 thus equates to VDP Address 367, or Hex >16F. You can enter it either way:

LI RO,367 or

LI RO, >16F

The use of the label 'LETTER' at line 0003 tells the system that this is the first executible instruction of the program. The REF and DEF directives are not executible instructions, only informative directives. Similarly, TEXT and DATA directives are not executible.

The VSBW routine requires that the byte which is to be written be in the Most Significant Byte (MSB) or the left half of R1. Since we wish to write the letter 'A', we must put the ASCII Code for the letter A in the MSB of R1. The letter A is ASCII code 65, or Hex >41. So, LI R1,>4100 places the correct code into R1.

0005 BLWP SVSBW

Nowthat RO and RI are properly loaded, we can access the VSBW routine, using the BLWP instruction. BLWP stands for Branch and Link Workspace Pointer, and calls a subprogram with its own set of workspace registers. It may be considered analogous to a Subprogram call in Basic.

0006 LIMI 2

LIMI is the Load Interrupt Mask Immediate instruction. The only options are LIMI 0 (the default) and LIMI 2. All LIMI 2 does in this program is allow you to use the 'QUIT' key when you tire of the program. However, interrupts must be disabled using the LIMI 0 instruction whenever you access a video routine such as the VSBW routine. If LIMI 2 were active when the program encountered line 0005, the results would be totally ungredictable.

0007 JMP \$

JMP is the unconditional JuMP instruction. The dollar symbol means 'the current location counter', so JMP \$ means jump to the current location, or stay here. A Basic equivilant is: 150 GOTO 150

0008 END LETTER

The END directive of course means just that. The program name after the END directive allows the program to run immediately after being loaded, without further input from you.

So, there it is. Save the source code, assemble it into an object file, then load the object file. Since the E/A manual is a little fuzzy on this, here it is step by step:

After inputting the source code, press 'FCTN-9' twice, then select '3' for SAVE. Answer 'Y' to the format prompt, and call it 'DSK1.SOURCE'. Once saved, press 'FCTN-9' again, and select '2' for Assemble. Answer 'Y' to the LOAD prompt, thus loading the Assembler. The source file name is DSKI.SOURCE, and call the Object file 'DSKI.DBJ'. The LIST FILE prompt asks you for your printer specifications if you want a listing of the assembly process. Incidentally, if you don't have a printer, get one if you intend to do any serious Assembly Language programming. It's impossible to debug an Assembly Language program without a written listing. The OPTIONS prompt must be answered with 'R' so the Assembler knows that your R's stand for registers. 'C' will compress the object code, thus saving space on your disk, 'L' means you want a printed listing, and 'S' will print a list of the symbols used in the program. If you have a printer, answer RLSC to the OPTIONS prompt; if not, answer RC.

Once the Assembler is done, press 'ENTER' to return to be E/A Selection List. Press '3' for LOAD AND RUW, and answer DSK1.DBJ in response to the FILE NAME prompt. WOW! The letter 'A' on your monitor.

Next time, we'll look at the other aspect of Assembly Language efficiency; its incredible speed. We'll write the equivilant to the following Extended Basic program:X

100 FOR R=1 TO 24::FOR COL=1 TO 32 :: CALL HCHAR(R,COL,65):: CALL HCHAR(R,COL,32):: NEXT COL:: NEXT R::60TO 100

##Ed Note,CM-99°ers: listing for MM follows, It assumes the starting location is the MM usual >7000. Execute out of the Easy Bug:

| 7000 6024 VS | EQU >6024   | #VDP SINGLE BYTE WRITE   |
|--------------|-------------|--------------------------|
| 7800 02E0    | LWPI >70BB  | *PLACE WORKSPACE AT 7088 |
| 7D02 7088    |             |                          |
| 7004 0200 LT | LI R0,367   | ICENTER OF SCREEN        |
| 7D06 016F    |             |                          |
| 7D08 0201    | LI R1,>4100 | APUT HEXAL IN MSB        |
| /DOA 4100    | ·           |                          |
| 700C 0420    | BLWP avs    | *PRINT IT                |
| 7DOE 6024    |             |                          |
| 7010 0300    | LIMI 2      | *ENABLE FCTN/QUIT        |
| 7D14 10FF    | JMP \$      | STAY RIGHT HERE          |
|              | END         |                          |

1080

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A Potpouri of 1985 Articles from 99°er Club newsletters

We have put together a fine "flippy" disk of articles and programs from clubs coast to coast.

PRICE: IF You provide a blank disk and postpaid return mailer THEM it is free ELSE send \$3.00 to Art Byers, 1261 Williams Drive, Shrub Oak, NY 10588

| Contents:side #1      | Free | i Used        | 359                       |
|-----------------------|------|---------------|---------------------------|
| Article Name 5        | ect. | type          | <u>Author</u> and Club    |
| Adding Disk Drives    |      |               | Darnell Dennision         |
| •                     |      |               | Front Range 99'ers        |
| Disk map              | 23   | DVBO          | Steve Royce WNY 99'ers    |
| Freeware list         | 23   | DV80          | Various club newsletters  |
| Hidden Software       | 19   | DV80          | Victories B.C. Canada     |
| Ref.guide Peeks/Pokes | 44   | DV80          | Scott Darling, Compuserve |
| Read/DV80             | 4    | Prog          | XB Centrl West. 99'ers    |
| Schematics for add-   |      | -             |                           |
| ing 32K in console    | 93   | DV80          | Austrailian 99'ers        |
| Text for adding 32k   |      |               |                           |
| to console            | 100  | D <b>V8</b> 0 | 11 H                      |
| This Disk.            |      | DVBO          | Art Byers, EW 99'ers      |
| XLATE - convert dv80  |      |               |                           |
| back to a program     | 20   | prog          | John Ford, Compuserve     |

## Side #2 Free 1 Used 359

| 4/A-Talk by Databiotics  | 5 | DV80 | Review by Scott Darling               |
|--------------------------|---|------|---------------------------------------|
| New Myarc Computer 5:    | 7 | DV80 | Peter Huddie,Boston Comptr            |
| New Myarc Extended Bsc24 | 4 | DV80 | <ul> <li>Society TI U6</li> </ul>     |
| TI PASCAL at the USUS 13 | 3 | DV80 | Jim McCulloch C.A.U.6                 |
| 99/8 Unveiled 25         | 5 | DV80 | John Phillips, Ntnl 99'er             |
| CU Survey synopsis 1     | 0 | DVBO | Central Westch. 99'ers                |
| FORTY -XB 40 col scrn 1  |   | Proc | St. Louis 99'ers                      |
| FORTYDENG                | 4 | Prog | H B                                   |
| FORTYDENO<br>Forty Help  | 9 | DVBO | based on artcl by Ed York             |
| Genial Traveler 1        |   | DV80 | Review of Barry Traver's              |
|                          |   |      | Magazine on Disk. CW 99rs             |
| Head Clean yes/no 2      | 1 | DV80 | A. Byers, Centr Westch.99             |
| Hidden commands in 5     |   | DV80 | Newt Armstrong, LA 99'ers             |
| Person Record Keeping    | 1 | •    | •                                     |
|                          |   | Prog | Jim Peterson, tips #27                |
| Nuts&Bolts#2 product 15  |   | _    | Centr. Westch. 99'ers.                |
| review                   |   |      |                                       |
|                          | 2 | Proa | Art Byers, Cent Westch.99             |
| hidden commands in PR    |   | -    | • •                                   |
| THIS DISK                |   |      | How disk was assembled.               |
|                          |   |      | Tom Kennedy, CompuServe               |
|                          |   |      | · · · · · · · · · · · · · · · · · · · |

#### (RND\*THOUGHT+1) by ART BYERS

Seeing Jim Peterson's tip, in #25, about using IMAGE to print to a printer reminded me that tucked away in the Addendum to TI Extended Basic is an additional option to IMAGE and PRINT USING: Instead of calling an image by line number, you can define the image as a string:

100 X\$="####.## ####.##"
program lines here:
250 PRINT #1, USING X\$ and so on.

Jim just didn't remember that using IMAGE and PRINT USING to a printer, either by line number or string expression is documented, though not too clearly, both in the Addendum and in the manual on page 150. It says you can use PRINT USING to a file Number. Since the printer is opened as a file in II BASIC and XB, this is implied.

It is not at all unusual for even the best of programmers not to remember all that is in the reference books for any computer. Sitting in the bookcase next to my computer desk are not less than 15 manuals:

One each for the dot matrix and daisy wheel printers, one each for the Disk Memory System, Memory Card, Disk Drive, RS232 card, Peripheral Box, Extended Basic, Tl Basic, Tl-FORTH, Editor Asembler, plus 2 for the Mini Memory, Multi Plan and Tl-Writer. In addition, I have two texts on assembly, two on Tl Basic, one on Forth, plus countless software manuals, a large stack of varied computer magazines (all packed with helpful information). I confess there are quite a few that have never gotten read!

I doubt any of us can remember everything from all those manuals. What is surprising is the tremendous amount that fellows like Jim Peterson can remember.

What you do have to know is how to use the references when you are having a programming problem or hardware problem. It also helps if on that "lost" rainy weekend, you sit down and scan the System manuals about once a year to refresh your memory image of the overall picture.

Another <u>very important</u> piece of detail work is to update and correct each and every manual as corrections appear in magazines, club newsletters, books, etc. For example, Morley's book on TI Assembly points out several printing errors in the Mini Memory booklet. In turn, various club newsletters have highlighted an error or two in Morley's book. The back issues of Enthusiast 99 are noteable for the many corrections to TI manuals. This is one important reason why our club 3 ring binds the newsletters received from other clubs and place them in the Lending Library for all members to read.

While on the subject of manuals, - John Smith recently purchased a PE box system and is interested in using the 99/4A for word processing. He phoned 800 TI CARES and ordered a manual for TI WRITER. He was pleasantly surprised to be charged \$3.00! Yes that's correct! Only 3 bucks for the 176 page 3-hole punched TI-WRITER manual. Those of you who don't

have one - RUN do not walk to your telephone and order before the supply runs out. While you are at it, send \$6.50 to Dr. Bill Browning, 7541 Jersey Ave North, Brooklyn Park, MN 5547 for his 31 page "TI-WRITER COMPANION". It is packed with helpful material on getting the most out of TI WRITER.

NEW TOPIC - As I've noted before, the thrust of the user's groups seems to be heavily in favor of the disk drive owners. This club's policy has always been not to neglect those who have only cassette and lack the memory expansion. There are no plans to change that. At almost every meeting we give out software that runs on cassette and console only. We publish beginners programs from time to time and more than a third of our library will run in TI BASIC.

The one thing I consider a necessity, that many cassette drivers do not own, is a printer interface and printer. You severely restrict the usefulness of any computer when you omit this perepheral. I consider it more important than Extended Basic. A good brand name printer can always be used if you go to another make of computer or sold if you decide to leave home computing.

High quality printers made by Epson, Panasonic, Gemini, Okidata. etc. are available, new, at about \$700.co and a PIN interface sells at less than \$80.co - not a lot of money by comparison with what these items cost a few years ago!

#### LETTER TO THE EDITOR

Dear Art.

Thank you for the follow up to the Metropolitan Regional Conference. And may I say you did a fine job.

You now have my address and number and are aware of the TITEX UG. Please use me as a contact and plan to include us in all future TI events. I am the club's Newsletter editor and I am also a member of both other Long Island TI groups and a contributing editor to the Long Island 99'ers.

As a result of the conference, my group has subscribed to the Traveler Diskazine and there is better involvement between the long island groups. I consider this a big step. Thanks.

I'd also like you to be aware of the buleting boards of our groups which are free and of excellent quality.

> TI SOURCE (516) 475-6463 No Frills Plus (516) 661-3643

Please take advantage of our boards and let all your members know about them too.

Well, thanks again for all your work art. It is definitely worthwhile and appreciated.

Extended Basically Yours,

Jay S. Leber, TITEX NEWSLETTER EDITOR, 36 Fox Place, Hicksville. NY 11801 (516) 796-8359

NOTES ON THE NEW COMPUTER from the Chicago Faire by J. Peter Hoddie, Boston Computer Society II User Group.

As everyone is aware, Myarc is planning to introduce a new computer which is rumored to be based on the design ofthe ill-fated FI 99/8. In fact, Myarc even had a 99/8 to play with before it was cancelled just two months before II left the home computer market. The truth about the 99/8 was that it was largely incompatible with the 99/4A. Thus when Nyarc decided to design a new computer they had to make major changes to the design of the 99/8 and the result of this work is a computer originally named "Noah" (from the "arc" in Myarc . . . ) and now in search of a number for a name. It was widely expected that Myarc would show this computer at the TI/Faire in Chicago on November 2nd, but no dice. They brought along an empty shell of what the machine would look like and a mother board that they claimed was the machine. You may well ask then, why didn't they show it in operation. The answer is simple, although Hyarc wouldn't admit it straight out. They blew a chip on the board when they were working on it the day before the show and were unable to replace it in time. But Lou Phillips, president of Myarc still gave a very clear picture of what this new. unnamed machine is all about. First the basic information. It is expected to be released in the 1st quarter of '86 and sell for \$499. The machine has an IBM key board complete with a slash key where the left shift key should be. are 10 function keys, but instead of being mounted on the left of the keyboard as on the IBM keyboard, they are mounted across the top of the unit horizontally. There is also a numeric keypad like on the IBM, but instead of an oversized plus (+) key, there is a large enter key to facilitate numeric entry. The cartrige port has been moved to theupper left hand part of the machine above the first few function keys. It will come initially with 256K of CPU memory (expandable to a full 2 megs), 64K of VDP memory, 64K of ROM, a parallel output, an RS232 I/O port, two internal expansion slots, and a port to hook up a mouse. The mouse Phillips mentioned was the MS (Microsoft) Mouse which brings up the issue of IBM compatibility (more later). The internal RDM includes 48K of library routines, BK of GPL interpreter and OK (seems like a lot to me) of mouse support. When the machine powers up 16K of RAM is used for various internal tasks so that you are left with about 240K of space for your programs. And remember that all theroutines, screen and graphics tables are kept in the 64K of VDP memory, so that you really have quite a lot of memory to work with. If you choose to expand the RAM of the system, it will have to be done externally using 3 off board RAM expansion banks. The current Nyarc memory cards such as their 128 and 512K cards will work as memory expansion. The machine is built around the TMS9995 microprocessor which is a more advanced version of the TMS9900 insideyour TI-99/4A. The 9995 is 2.3 times faster and comparable in speed to a Notorola 68000 that drives Apple's Macintosh. According to Mack McCormick the 9995 can run as fast as 12 #Hz but it looks like it will only be running at an

incredible 10.7 mHz due to some techincal considerations. The 9995 uses 16 bit parallel memory on the main board which allows it to go even faster then the 9900 which has a 16 bit processor doomed to forever run on an 8bit bus thus working at only half speed (roughly...) The machine will be able to run nearly all programs written for the 99/4A through a bit on the gate array which when set will make the machine look nearly identical to a 99/4A. Thus all your software is still good. Well almost all, Myarc says 99% compatability. The exceptions they've found are programs that use non-standard methods to scan the keyboard. This is only two programs so far. No big deal. The reason for the problem is that the 99/4A has 48 keys and the new machine has 84 so that a different KSCAN routine obviously had to be used. The programs that don't work use their own KSCAN routine and thus will not work. A few more comments on compatability. There will probably not be immediate support for speech. The machine can support it but there will be no port for you to plug it into in the side of the machine. Myarc is planning to develop something like the Triple Tech card from CorComp to allow you to put the speech synthesizer inside the PE Box. There is worse news though for those of you with a P-Code card. McCornick said that that card is a techincal nightware and that the increased development timeand rosts to allow it to work wouldn't be worth it. Besides, he added, P-Code is essentially dead as even its creator has abandoned it. Now here's the bad news for everyone. You can use your current PEB, but you will have to buy a card from Myarc to be able to do it. The reason is that the flex cable and card that connect your console to your, PEB don't have the intelligence or connectors to allow the new machine to access the expanded memory in the PEB on a 16 bit bus or use the new PAB format (more later). However, having to buy this new card isn't all bad. It' won't have as bulky a cable as the TI card so you can move the console around freely and it will have a time and date function built in so that you don't need a clock card. It is an added expense however. The communications chip is the same 9901 that is used in the 99/4A running at the same speeds. The graphics chip inside the machine is perhaps the single most impressive component. Myarc is using the 9938, a chip II developed and then abandonded (like all good things). It has 64 pins and is now being produced by the Japanese (who else?). It is fully compatable with the 9918A inside the 99/4a, but supports extra modes and features. Where the 9918A has 8 control registers for graphics characteristics, the 9938 has 32, which allows for an incredible amount of flexibility and power. The 9939 has two text modes. The first is identical to the text mode of the 9918A, except that you can choose the foreground and background colors from a set of 512 colors instead of 16. Text mode two is 80 by 24 or 80 by 26 (which allows for a status line at the bottom like on the IBM) with 6 x 8 characters and a choice of two colors from the same 512. Multicolor mode is still there as well as graphics mode one. Graphics mode two allows definition of 768 different patterns and a choice of 16 colors from the 512. Graphics mode three is the same as mode 2, except that instead of

only being able to have four sprites on a horizontal line at a time, you can have up to ten on a horizontal row. Graphics mode four is similar, but has 256 x 212 resolution and graphics five can support up to 512 x 424 using interlacing, but this mode can only be displayed on an RGB monitor. Oraphics mode six has 512 x 212 resolution and 16 colors. Each pixel can have its color individually defined. This mode requires the full 64K of VDP memory for storing the screen. Graphics mode seven has the same resolution, but uses a full byte of memory to define thecolor for each pixel which means that each pixel can be one of 256 colors! This mode requires additional VDP memory to use and Myarc has made provisions for up to 196K of VDP RAM to be put in the console. One of the control bits on the 9938 allows forwhat Phillips calls "animation tricks." He says that it can do screen swapping, which essentially provides for automatic animation controlled by the 9938. The machine will support the old PAB (Peripheral Access Blocks) format inVDP memory so that, in theory, all peripherals manufactured to TI specifications will work. There is some question as to whether or not the CorComp disk controller will work, but Myarc seemed to imply that it would. A new PAB format will also be supported. It will be identical to that developed for the 99/8 and will reside in CPU memory for faster speed. It will also allow for logical record lengths of up to 4096 characters instead of the 255on the 99/4 and will have a full byte reserved for error codes which means there can be 256 error codes instead of 8 as in the old PAB format. Including support for both the new and old PAB formats is one of the major changesfrom II's 99/8. II was planning to abandon the old PAB format which would have made your PER 100% useless. Myarc has made provisions so that you don't have to buy a whole new system. Phillips said that the first twoperipherals that would be released would be the new PEB interface (described above) and a new disk controller card that will fit in the internal expansion slot for people who don't have (and don't need to buy) the PEB. This disk controller will supportquad density disks which means almost a full megabyte of storage on a single floppy. Phillips said that they already have a version of this controller working and will probably release a version of it for the 99/4A as well. After those two cards arecomplete Phillips says that the next thing he plans to work on is a card that will allow for IBM compatability. He commented that the reason for chonsing the keyboard that they are using was so that it could be made into a PC compatable computer easily. He also said that 3.5 inch drives were a definate possibility in the not too distant future. The computer will come with Extended BASIC built in, but not TI Extended BASIC. Instead it will use an advanced version of Hyarc's Extended BASIC II. Phillips smid that XB II is very similar to GN Basic from Microsoft and is somewhere between 2 and 4 times faster them II Extended BASIC. A complete description of XB II, which is now available for use on the 99/4A when using Myart's 12B/512K memory expansion card, will be given elsewhere as it is too long to fit here. The additions to XB II that will be included in the new computer include full mouse

support, advanced event driven control keys (which means that you can set your program to automatically branch to a certain line number when a given key is pressed), and support for the new PAB format. Phillips has promised to release a reference manual for the machine similar to the one released by IBM for the PC. In other words, the machine will have an open architecture and no hidden secrets like TI kept with GPL. This should help enormously in getting new software written and hardware builtfor the machineby third party companies which can fully utilize the incredible power of Myarc's new machine. Phillips has promised to release the machine and claims that Myarc has sufficient capital to allow it to bring the computer to market. He did howeveradmit that they are expecting a "hard, up-hill battle? for the first year. When asked about other languages, Phillips said that Pascal would probably not be next but that C would be. His reasoning is that C is what isreally in voque now and it would make new software development easier. Listening to Phillips talk about this new machine made a few things very clear. First, that Myarc really has a machine nearly ready to release. Second, that the machine is state of the art and really something that could compete in the current market. Third, that Hyarc is thinking long term and has big plans. Now whether or not a small engineering company from New Jersey working with a computer developed by TI that lost TI millions, can actually succeed is another question. I think that if anyone can, Myarc will, but there is no way to find out except to wait. A few notes concerning this file: This file was written on November 4,1985 by J. Peter Hoddie, co-director of the Boston Computer Society TI 99/4A user group. It is based on several pages of notes I took at the TI Faire in Chicago on Movember 2 during a talk given by Lou Phillips of Myarc. Thisfile is not complete in that I have lots more information on the product and many more editorial comments to make. However, in the interest of getting this information to you as quickly as possible, I have tried to keep this to a bare minimum (about 55 sectors!). A complete article along with a full description of the faire, the products, people, and talks will be completed in time for the November 20 BCS meeting. It should be well over 10 pages in length. If you want a copy come to the meeting or send \$1 to the address below. This file is a rough draft. You may distribute it or publish it in part or in whole as you wish, but please include the author's name as well as information as to where the final version can be obtained. Thanks. Boston Comp. Society TI 99/4A User Group, One Center Plaza Boston, MA 02018 (617)-353-7369 (author's (reconstructed and uploaded by Barry Boone phone) [76354,1637]) Downloaded by David Hultberg [72437,3215]. (D/V B0)

TIPS FROM THE TIGERCUB will be distributed at club meetings from now on. There are two reasons. First, a six page newsletter is dangerously close to costing an extra \$.17 to mail. It is such a close balance on the scale that the postal clerk might well be justified in asking the extra additional postage. Second, almost all the clubs with whom we exchange newsletters already get these tips

## THOUGHTS ON THE CHICAGO TI FAIRE BY JIM NCCRLOCH C.A.U.6

Since the "out of towner" Mizops and noteables probably didn't bring their systems along, I presume they've been partying like mad at their hotels to overcome their CIS withdrawal reactions. As a "local" I guess I'm free to put my initial reactions up before they have a chance to do so.

I agree with Ron Albright's thoughts that the importance of the Faire lies not soley in the machine, but rather in the educated, committed and downright friendly \_PEUPLE\_ who make up its constituency. I had a chance to finally meet renowned people from both coasts as well as Canada and ,to me, this "process" was more enjoable than its "content", even though there was a sizeable content to contend with.

Mack was there but was unable to demonstrate the Myarc Extended Basic IV due to a misplaced disk. The new Myarc computer was unveiled but was shown only as a prototype motherboard and keyboard (IBM) enclosure (there was nothing inside it). It sounds promising in terms of speed and variety of options but has yet to be demonstrated. Potential availability (\$499) is slated for "first quarter of 1986."

Seemingly under-recognized was the presentation (after the marathon 1 1/2 hour Myarc presentation) of the New Horizons RAM disk project development team (including John Clulow, Ron Gries, and David Romer) of their working RAM disk hardware which will be available as a kit or finished product for \$115 or \$155, respectively. This uses the HM6264LP-15 memory chips to emulate a SSSD or DSSD floppy disk only at RAM speed. It will be compatable with just about everything except p-code and is Ni-Cad battery backed for longevity and portability. It features the standard TI-BASIC CALL statement to name the RAMdisk as DSK! (or whatever) as well as (2) to set the maximum number of sectors, (3) set the write protection "notch" as being covered or uncovered, (4) turn on CRU for direct DSR access, and (5) execute machine code from BASIC. It also features a DIP switch to allow the CRU to address it as anywhere from >1000 to >1700. It will come with complete DSR source ende and includes a manual detailing all DSR routines. This may be its main advantage since any changes in the DSR can be loaded with the included (E/A option 3) loader as opposed to changing an EPROM chip. Documentation will explain how to add your own A/L CALL routines to enhance BASIC. For more information, write David R. Romer at: Box 554, Walbridge, OH 43465.

For those unwilling to travel far without their trusty TI-99/4A, I saw a working model of a "compaq-style" portable laptop 99/4A made by MicroStuph of Columbus, OH which included at least a TI keyboard, 4" monitor screen, and 2 onboard disk drives. Truly amazing! Also by the same company was a "Master- Cart"ridge which had 6(!) different GROMs onboard selectable by DIP switches for as many cartridge programs.

Craig Miller was there with a NORKING(!) example of

GRAM-KRACKER. Another useful product from Craig which will increase in value with the future release of a GPL manual as well as Assembler and dis-assembler (scheduled for 1986).

A more complete coverage will probably be found in MICROpendium but, in a general, this was a very rewarding T1-Faire. 0/9%

# TI PASCAL IS ALIVE AND WELL By JIM MCCULLOCH C.A.U.6

The USUS Fall National Meeting was held October 25th through 27th at the Omni International Hotel in Baltimore's Inner Harbor. For those of you who don't know, USUS is the UCSD (University of California at San Diego) PASCAL Users Society. Texas Instruments made version IV.0 of the P-system available for the 99/4A. To run the P-system on the 99/4A you the 32K memory expansion, at least one disk drive (two recommended) and the P-code card. To do anything other than run purchased software (if you can find any in T1 format) you also need the the Editor/Filer/Utilities, Compiler, and Assembler/Linker software packages. Since I purchased all of these items at various closeout sales, I thought that I would attend and see if they could be put to use.

I attended only the session on Saturday the 26th, since that was when the TI 318 was scheduled to meet. I took two boxes of disks with me to copy some of the group's library. I came back with 15 disks full of P-system software! While copying this software I realized just how popular our orphan is. There were more TI 99/4A computers (3) running the P-system, in the computer room than any other model. Our group was also apparently well represented in the attendence figures also. One P-system disk of FREEMARE I got during the morning I spent copying software alone was worth the trip. The disk has a FREEMARE Terminal Emulator program and a patch program that changes my system printer and modem defaults to match my system.

Saturday afternoon there was a II 99/4A SIG meeting. The author of the P-code terminal emulator program and several other well know and talented individuals were in attendence. One of the attendees reported on his successful porting of a FORTRAN compiler that runs under the P-system from another brand of computer to the TI 99/4A. This is the beauty of the P-system. PASCAL programs that don't use hardware specific routines (such as speech and sprites) can be run on other computers using the same version of UCSD PASCAL. The bottom line is that this meeting reinforces my opinion that our computer is far from dead!

I don't claim any expertise in PASCAL or the P-system, but I will attempt to help anyone interested in this system. Next month I plan to publish an overview of the II 99/4A P-system that appeared in CompuServe's II Forum. (D/V 80)

ARTICLES FROM CLUB MEMBERS still needed. We have lots of bright talented people in this club who could send us articles: For example, one member just got a 512K card and hard disk with controller. How about something in writing? another just repaired a blown main power supply. Tell us how? Come on fellas! We need you!

| DISK NAME=(<br>AVAILABLE= |      |            | Y OF | CENTRAL WESTCHESTER 99'ERS JANUARY 1986                  |
|---------------------------|------|------------|------|--|
| FILENAME                  | SIZE | TYPE       | P    | CONNENTS!  |
| CATALOG                   | 33   | PROGRAM    | Y    | Machine language master disk cataloger holds 2000 files  |
| CATALOGOOC                | 6    | DIS/VAR BO | Y    | Documentation for CATALOG                                |
|                           | 26   | DIS/VAR 80 | Y    | Documentation for JUSTIFY-SCROLL-VDP-SAVSCR-RECSCR, etc. |
| DSK <sub>.</sub>          | 49   | DIS/FIX 80 | Y    | DISKOFIXER - Search- read & write to indiv. disk sectors |
| DSK/HELP                  |      | DIS/VAR BO | γ    | documentation for DISKOFIXER a public domain program.    |
| DSRLNK                    | 7    | DIS/FIX BO | γ    | Device Service Routine Link-machine language             |
| FIX                       | 34   | DIS/FIX BO | Y    | part of DISKOFIXER                                       |
| JUSTFY                    | 6    | DIS/FIX 80 | Y    | m/l routine to left & right hand justify screen text     |
| JUSTFYDENO                | 4    | PROGRAM    | ¥    | Dean for JHSTFY  |
| LAR                       | 33   | PROGRAM    | Y    | Load & Run needed to use DISKO out of XB instead of E/A. |
| LOAD                      | 5    | PROGRAM    | Y    | Loader for this disk with comments.                      |
| LOAD-CAT                  | 2    | PROGRAM    | Y    | Loader for CAYALOG                                       |
| LOAD-DEMOS                | 3    | PROGRAM    | γ    | Loader for all demonstration programs on this disk.      |
| LOAD/DSK                  | 7    | PROGRAM    | Υ    | Loader for DISKOFIXER, TI's public domain disk fixer.    |
| LOADER-CAT                | 10   | DIS/FIX 80 | Y    | m/l loader to load CATALOG out of XB                     |
| LOADSECOPY                | 5    | PROGRAM    | Y    | Loader for public domain Sector disk copier,             |
| READ-D/V80                | 4    | PROGRAM    | γ    | This will read any Display Variable 80 file to screen    |
| RECSCR                    | 5    | DIS/FIX 80 | γ    | Will recall saved screens- see doc's and demo's          |
| SAVERECALL                | 3.   | PROGRAM    | Ÿ    | part of Save Screens and recall acreens                  |
| SAVSCR                    | 6    | DIS/FIX 80 | Υ    | Saves screens to disk for future recall and use          |
| SCREENS                   | 3    | PROGRAM    | γ    | Part of save screen/recall screen demo                   |
| SCROLL                    | 9    | DIS/FIX 80 | Y    | Scroll text gracefully from right to left.               |
| SCROLLDENO                | . 7  | PROGRAM    | Ÿ    | Dean of SCROLL   |
| SECTOR/X                  |      | DIS/F1X254 | Ý    | Public domain sector copier from Italy U.G.              |
| SORT                      | 9    | DIS/FIX BO | Ÿ    | m/l Sort. very fast                                      |
| SORTDEMO                  | 4    | PROGRAM    | Y    | Demo of m/l sort   |
| TISERLOADR                | 20   | PROGRAM    | y    | New and final version of Tigercub Disk loader. Excellent |
| TINE                      | 10   | PROGRAM    | Ÿ    | A demo screen for screen save and recall                 |
| UTIL1                     | 10   | PROGRAM    | ý    | lightning fast #/1 diskdirectory                         |
| VDP                       | 6    | DIS/FIX BO | Ÿ    | Allows you to read and write to VDP from XB              |
| VDPDEND                   | 7    | PROGRAM    | ÿ    | DEMO of VDP  |
| VENUS                     | 10   | PROGRAM    | Ϋ́   | DEMO screen for screen wave and screen recall            |
|                           |      |            | •    | arine aricen int arisen PAAR NIG PELSSU LGEST)           |

FREE DISK SOFTWARE Will be second disk of goodies accumulated to our program exchange with other clubs and active 99'ers. The listing to the left was made on the envelope printing program that was included on the disk-ADVANCED99.

The master disk cataloger is Fairware by the well known programmer, Mack McCormack. If you like and use it, you are expected to send a contribution to the address listed in the documentation.

ALSO AVAILABLE - but for advanced programmers only, is the new C language for the 99/40. The documentation with this assumes you already know how to program in C. We checked the big B Dalton Bookstore, near Alexanders on Central Avenue in Yonkers: They have 88 skillion different (and expensive) books on C from beginner to advanced. This too is Fairware with a \$20.00 contribution requested, so don't request it unless you feel you can benefit from it. Sec Page 2:

As far as this club is concerned, however, any member is entitled to a free copy of both disks. The usual rule applies, you must provide a new, initialized (SSSD) disk in exchange when you pick up your copy - and you must call Steve McCalla in sufficient time before the meeting so that he has a reasonable chance to make up the software before January 16th. His phone number is 718 740-1798.

CW 99'ers Newsletter Exchange c/o Arthur J. Byers 1261 Williams Drive Shrub Dak, NY 10588

> Dallas TI HC Gr. 1271 Masswood IRVING TX 75061

JANUARY 1986