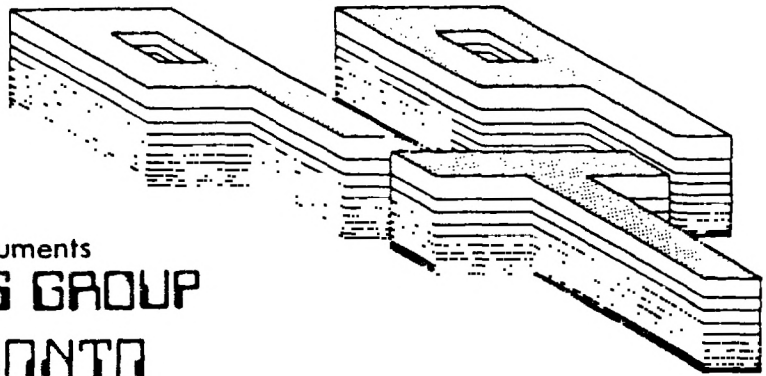Texas Instruments

USERS GROUP
TORONTO

FOR THE TI-99/4A COMPUTER

MARCH 1986

NINE T NINE USERS GROUP

29 INGLESIDE DR.
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MEMBERSHIP FEES

FULL MEMBERSHIP $25.00 / year
NEWSLETTER SUBSCRIPTION $15.00 / year

All memberships are household memberships. An newsletter subscription is only for those who do not wish to attend meetings, but wish to receive our newsletter and have access to our library. You are welcome to visit one of our general meetings before joining the group. If you wish more information contact our president in writing at the club address on the front cover or call and leave a message with his answering machine.

NEXT MEETING

The meetings are held on the last Tuesday of each month. The next meeting will be held on Tuesday, April 29, 1986 at the Downsview Public Library in Downsview, starting at 7:30 pm. The library is at 2793 Keele Street just north of Wilson Ave. The entrance to the library is on Keele Street.

COMMERCIAL ADVERTISING

Any business wishing to reach our membership may advertise in our newsletter. The rates are as follows. (width by height):

FULL PAGE   (6" x 7 1/2") $40.00
HALF PAGE   (6" x 3 1/2") $20.00
QUARTER PAGE (3" x 3 1/2") $10.00

Please have your ads camera ready and paid for in advance. For more information contact the editor.

Don't forget, that any member wishing to place ads, may do so free of charge as as long as they are not involved in a commercial enterprise.

NEWSLETTER ARTICLES

Members are encouraged to contribute to the newsletter in the form of articles, mini programs, helpful tips, jokes, cartoons and questions. Any article may be submitted in any form by mail or modem. We welcome the reprinting of any article appearing in this newsletter providing credit is given to the author and 9T9. If more information is required, call Emile Verkerk.

DISCLAIMER

Opinions expressed in this newsletter are those of the writers and are not necessarily those of the 9T9 USERS' GROUP. 9T9 cannot assume liability for errors or omissions in articles, programs or advertisements.

FROM THE EDITOR'S CONSOLE

Welcome back my friends, to the show that never ends. It's the end of March and spring is in the air.

The first item this month is the need for a new newsletter editor. As of April 1, I will no longer have a TI 99/4a at home (it's being moved to my new office to handle the word-processing duties). This, and new constraints on my time, are making it impossible for me to continue as your newsletter editor. The new editor (I need a volunteer), will receive from us at newsletter headquarters, 1) support, 2) my voluminous files, 3) help with typing and organizing. This position is crucial to the club and I would like to see somebody capable stepping forward and taking on this mantle.

The second item this month concerns a new column we would like to run in our newsletter. We call it the "Wish List". What do you want to see for your TI? A new keyboard? A different word-processor? Multiplan on disk? Write us with your comments so we can print them and send them to everyone who gets our newsletter. It may give others ideas on how to serve the TI community best.

Thirdly, what do you use your TI for? Is it to play games, balance your checkbook, run your business? Send your letters to the editor. We'll print as many as we can. Just to show others that the TI may be an orphan but it is far from dead.

The next point concerns itself with a Kids Arcade Day in the beginning of May. There will be a minimal registration fee to cover the prizes. Steve Mickelson will be announcing date, time and place as well as the games that will be in the competition. Get your joysticks ready **and stay** tuned.

As well, there is a computer show coming up in May and we need volunteers to man the booth. If you are one of these volunteers please notify Gil Tenant of your intentions. I'll be there, how about you?

As usual, I don't want to fill the whole newslett with my drivel, so I'll st here and let you read the rest of the newsletter.

Running out of time, spa and mind, until next mont . .

TI-FEST BULLETIN
by Jane LaFlamme

Things are running quite smoothly for the TI-FEST to be held here in Ottawa on the 26th of April (Saturday) co-sponsored by NUAC and Ottawa user groups. Plans are finally falling together and letters to invite distributors from across Canada and the U.S. have been mailed; so if you are speaking to one of our sponsors, give us a "plug".

Invitations to individuals and user groups that we have had contact with outside of Ottawa area will have probably been sent out by the time you are reading this. If you are corresponding with someone in another user group in Canada, (or the U.S.), be sure to mention that the "FEST" will give them a chance to "strut their stuff", meet other groups and individuals, with the same problems and joys that we have....share knowledge, show us the software/hardware they have developed! Too good to be missed... We will also find them accommodation if possible. Tell them to check transportation costs; when booked quite ahead of time, they might not be as expensive as they thought! Any groups or individuals will be quite welcome, so if by chance you do not receive an invitation, please contact us at the address on the Newsletter cover and we will rush one off to you. (we will not be sending out formal invitations to the Ottawa User Group members... to save on postage.)

Ryte Data, who have exclusive distribution rights in Canada for the German Extended Basic (adds 40 additional graphic commands to the original TI XB) have indicated to one of our members that there is a strong possibility that they will attend, I believe. (Perhaps they may also have that 80 col. card that I have heard tell of, developed in Germany!) We also had reason to speak with Lou Phillips a month ago and took the opportunity of inviting him at that time. He didn't say yes, but he didn't say NO either! If the computer /128 does "go" at the New Jersey fair, where he is slated to debut the machine, maybe he would like to meet a new market here in Canada. We are definitely keeping our fingers crossed...

Slated for the show: Tutorials, workshops, demonstrations of new and old software and hardware, door prizes, wind-up dinner, and much, much more as it falls into place. The more people attending,the more successful the endeavour. We have provided the means now YOU help us by volunteering to help or, at least, attending YOUR show! Any suggestions or ideas will be gladly accepted...

Jane LaFlamme
(613) 837-1719 or 830-5347

A LOOK AT MEMORY
by R.A.Green

In this article we will have a look at the memory system of the TI 99/4A. You have all heard the terms: ROM, GROM, GRAM, RAM used constantly in conversations at the Users' Group meetings. Maybe you are confused by all this jargon, or are not quite sure what they all mean. I hope things will be clearer by the end of this article.

To begin, there are three different kinds of memory in the TI. They are: (1) CPU memory, (2) Video Display memory, and (3) Graphics memory.

CPU memory is the most important -- it's the ONLY memory that belongs to the 9900 microprocessor (the CPU). All machine language programs must be in CPU memory before they can be executed by the CPU.

Video Display memory is the memory used mainly to generate the TV picture. It belongs to the Video Display Processor (VDP). Video Display memory cannot be accessed directly by the CPU. The CPU must ask the VDP to fetch or store bytes in the Video Display memory.

Graphics memory is the memory where the Graphics Programming Language (GPL) programs are stored. Like the Video Display memory, Graphics memory cannot be accessed directly by the CPU. The CPU must ask for bytes to be fetched or stored one at a time. This type of memory is unique to TI. I assume it was intended to

help prevent -- dare I say it pirating.

Now we have looked at the thr types of memory in the TI 99/4 Each of the three kinds memory could exist in two form (1) READ ONLY, which cannot destroyed, and (2) READ WRITE, which can be changed.

Now, we have a small problem with terminology. Originally, in the computing field, RAM meant Random Access Memory, however, since the advent of micro/home computers the term has come to mean Read/Write Random Access Memory. The term ROM is used for Read Only Random Access Memory.

We have taken a few steps along the way to understanding and now is the time for a little table to organize our thoughts.

#	OWNER	TYPE	COMMENT
1	CPU	ROM	read only
2	CPU	RAM	read/write
3	VDP ROM		read only
4	VDP	RAM	read/write
5	GRAPHICS	ROM	read only
6	GRAPHICS	RAM	read/write

Oops! In the TI 99/4A there is no VDP ROM, although there could be. It might be used to hold the character definitions as i. done in some other micros (lik the VIC 20, IBM PC).

To refine our terminology a bi- let's look at the common ter: used by the TI enthusiast.

THIS MONTH I AM GOING TO TALK ABOUT THE NEW FORMAT FOR OUR LIBRARY PROGRAMS.
EACH PROGRAM WILL BE ASSIGNED A 10 CHARACTER FILENAME IN THE FOLLOWING FORMAT :

THE FIRST THREE CHARACTERS ARE THE LIBRARY MODULE NUMBER; EACH MODULE CAN HAVE
UP TO SIXTEEN PROGRAMS DEPENDING ON THE TOTAL SIZE OF ALL THE PROGRAMS. THE
NUMBER IS A VALUE FROM 0 TO 4095, BUT THE NUMBER IS EXPRESSED IN HEXDECIMAL FOR
A VALUE OF '000' TO 'FFF' .

THE NEXT FOUR CHARACTERS ARE THE EXPANSION CODE; IT TELLS YOU WHAT ACCESSORIES
ARE NEEDED TO RUN THE PROGRAMS IN THE MODULE. TO DECODE THE EXPANSION CODE USE
THE PROGRAM NEAR THE END OF THIS ARTICLE. THE FOLLOWING IS A LIST & EXPLANATION
OF THE ABBREVIATIONS THE PROGRAM USES.

ABBREVIATION	EXPLANATION
CS1	= COMPUTER CASSETTE RECORDER #1
CS2	= COMPUTER CASSETTE RECORDER #2 (SAVE ONLY)
DSK1	= DISK DRIVE #1 AT LEAST SS/SD
DSK2	= DISK DRIVE #2 AT LEAST SS/SD
DSK3	= DISK DRIVE #3 AT LEAST SS/SD
MBX	= MILTON BRADLEY EXPANSION SYSTEM
TRIPLE TECH	= TRIPLE TECH CLOCK CARD
32K	= AT LEAST 32K RAM MEMORY EXPANSION CARD
128K	= AT LEAST 128K RAM MEMORY EXPANSION CARD
256K	= AT LEAST 256K RAM MEMORY EXPANSION CARD
512K	= AT LEAST 512K RAM MEMORY EXPANSION CARD
SPEECH	= SPEECH SYNTHESIZER
PRINTER	= PRINTER & RS232 INTERFACE CARD OR PARALLAX TI AXIOM INTERFACE
MODEM	= AT LEAST 300 BAUD MODEM & RS232 INTERFACE CARD
CP/M	= CP/M EXPANSION CARD
PASCAL	= PASCAL P-CODE CARD

THE NEXT CHARACTER IS THE SOFTWARE TYPE CATAGORY FOR ALL THE PROGRAMS IN THE
MODULE. THERE ARE SIXTEEN CATAGORIES NUMBERED FROM 0 TO 15, BUT EXPRESSED IN
HEXDECIMAL FOR A VALUE OF '0' TO 'F' .   THE FOLLOWING IS A LIST AND EXPLANATION
OF ALL THE CATAGORIES.

NO.	HEX	CATAGORY NAME	EXPLANATION OF THE CATAGORY
0 =	0	- 9T9	- LOGOS,TITLE SCREENS,MEMBERSHIP LIST,NEWSLETTERS
1 =	1	- BUSINESS	- WORD PROCESSORS,DATA BASES,SPREAD SHEETS,CHARTING
2 =	2	- UTILITY	- COPIES,DISK MANAGEMENT,PROGRAMMING AIDS,SUB-PROG.
3 =	3	- EDUCATIONAL	- TRANSLATORS,LEARNING AIDS
4 =	4	- VIDEO GAMES	- JOYSTICK AND/OR KEYBOARD CHALLENGES
5 =	5	- PERSONAL	- RECORD KEEPING

(right column, partially cut off)

6	= 6	- RELA
7	= 7	- SIMU
8	= 8	- MUSI
9	= 9	- TECH
10	= A	- POTP
11	= B	- INVE
12	= C	- HOME
13	= D	- CATA
14	= E	- MAPS
15	= F	- INTE

THE NEXT CHARACTER
THIS USE THE PROGR
ABBREVIATIONS, THE
ON. THE SECOND ABB
FOLLOWING IS A LIST

ABBREVIATION	EXPL
99/4	= ONLY
OTHER	= SPEC
99/4A	= THE
99/6	= THE
99/6A	= THE
99/8	= THE
99/8A	= THE
MYARC	= ONLY
E/A	= EDIT
XB	= EXTE
TE2	= TERM
SXB	= SUPE
XBII+	= EXTE
XBIV	= EXTE
GPL	= GRAP
FORTH	= TI F

THE LAST CHARACTER
A LETTER FROM 'A' T
ING THE SIXTEENTH P

THE FOLLOWING TI

1 CALL CLEAR
2 DIM Q$(31)
3 FOR X=0 TO 31

S THE HARDWARE AND SOFTWARE COMPATIBILITY CODE. TO DECODE
NEAR THE END OF THIS ARTICLE. THE PROGRAM USES TWO
IRST ABBREVIATION TELLS WHAT COMPUTERS THE SOFTWARE CAN RUN
VIATION TELLS WHAT COMPUTER LANGUAGE IS REQUIRED. THE
AND EXPLANATION OF THE ABBREVIATIONS THE PROGRAM USES.

```
NATION
-----------------------------------------------------------
THE TI-99/4 OR TI-99/4A COMPUTERS
AL HARDWARE AND/OR SOFTWARE REQUIRED
I-99/4A COMPUTER AND ITS COMPATIBLES
I-99/6  COMPUTER AND ITS COMPATIBLES
I-99/6A COMPUTER AND ITS COMPATIBLES
I-99/8  COMPUTER AND ITS COMPATIBLES
I-99/8A COMPUTER AND ITS COMPATIBLES
THE NEW MYARC COMPUTER
-----------------------------------------------------------
R / ASSEMBLER
OED BASIC
NAL EMULATOR II
EXTENDED BASIC
OED BASIC II PLUS
OED BASIC LEVEL FOUR
CS PROGRAMMING LANGUAGE
RTH OR WYCOVE FORTH
-----------------------------------------------------------
```

S THE PROGRAM NUMBER; EACH PROGRAM IN THE MODULE IS ASSIGNED
'P', 'A' BEING THE FIRST PROGRAM IN THE MODULE AND 'P' BE-
OGRAM.

ASIC PROGRAM WILL DECODE ANY LIBRARY FILENAME :

TIdbits
by Randy Rossetto

Just got a letter today from Ron Marissen, 61-B Fairview Ave., St. Thomas, Ont., N5R 4X7. Ron has installed 32k of CMOS RAM right in his console, the beige model. He had to design the chip select logic because this console uses one LSI chip (Large Scale Integration) to do the job of many other chips and this changed the select parameters. He also installed the memory on the 16 bit data buss by piggybacking to existing chips on the motherboard and quote "by golly, IT WORKS!".

Walter Illman from Chatsworth (near Owen Sound) has a tip that works for him from "The Plain English Repair and Maintenance Guide for Home Computers" by Henry F. Beechold. He turns his ordinary black and white t.v. into an amber or green screen by cutting an acetate film (green/amber) to size along with a smoked plexiglass (1/8 or 1/4 inch) piece to size and gluing the acetate to the plexiglass and fastening this to the front of the t.v. Wally is very pleased with the results and you may have to trim the contrast and brightness to suit.

Has anyone typed the short programes from MICROpendium???? If so, how about passing a disk/tape over to the club librarian and we'll put them up in the Club library.

```
4  READ Q$(X)
5  NEXT X
6  INPUT "FILENAME =":A$
7  IF LEN(A$)=10 THEN 10
8  PRINT :"FILENAME MUST BE 10 CHAR-":"ACTERS LONG, TRY AGAIN": :
9  GOTO 6
10 FOR X=-2 TO 0
11 Z=ASC(SEG$(A$,X+3,1))
12 B=(7*(Z>64)+Z-48)*(16^ABS(X))+B
13 NEXT X
14 PRINT :"LIBRARY MODULE NUMBER=";B: :
15 FOR X=-3 TO 0
16 Z=ASC(SEG$(A$,X+7,1))
17 A=(7*(Z>64)+Z-48)*(16^ABS(X))+A
18 NEXT X
19 FOR X=1 TO 16
20 B=A/2
21 A=INT(B)
22 READ B$
23 IF B-A<.5 THEN 25
24 PRINT B$;",";
25 NEXT X
26 A=ASC(SEG$(A$,9,1))/8-4
27 PRINT : :Q$(7*(SEG$(A$,8,1)>"@")+ASC(SEG$(A$,8,1))-32)
28 PRINT :Q$(INT(A));" , ";Q((A-INT(A))*8+8): :"PROGRAM NUMBER";
   ASC(SEG$(A$,10,1))-64
29 DATA 99/4,OTHER,99/4A,99/6,99/6A,99/8,99/9A,MYARC,E/A,XB,TE2,SXB,XBII+,XBIV,
   GPL,FORTH
30 DATA 9T9,BUSINESS,UTILITY,EDUCATIONAL,VIDEO GAMES,PERSONAL,RELAXATION,
   SIMULATION,MUSIC,TECHNICAL
31 DATA POTPOURRI,INVESTMENT,HOME,CATALOGUES,MAPS,INTELLIGENCER
32 DATA CS1,CS2,DSK1,DSK2,DSK3,MBX,TRIPLE TECH,32K,128K,256K,512K,SPEECH,
   PRINTER,MODEM,CP/M,PASCAL
```

TEE-SHIRTS

Again we have T-shirts available for CLUB Members and their families. Sizes available are XL, L, M and S adult sizes and L, M and S childrens sizes.

Cost is $10.00 for adult sizes and $7.00 for children sizes.

Call Randy Rossetto, 469-3468 between 7 and 10 p.m.

SUMMARY:

```
  CHARACTER NUMBER > 0123456789
                     !!!!!!!!!!
  EXAMPLE FILENAME = 0FC408420G

LIBRARY MODULE NUMBER    = 0FC  = 252
EXPANSION CODE           = 408  = DSK1,32K,CP/M
SOFTWARE TYPE CATAGORY   = 2    = UTILITY
HARDWARE AND SOFTWARE    = 0    = 99/4A , E/A
COMPATIBILITY CODE

PROGRAM NUMBER           = G    = THE SEVENTH PROGRAM IN THE MODULE
```

I recently picked up a console for $10.00 because it would not run. After taking it apart about 4 times a fellow named Walter Lis suagested I pull the VDP chip and clean the pins and soak the chip pins in a plate with a bit of WD-40 so as to just coat the pins. Well the pins did look very discoloured and they can be cleaned with a special bronze brush (from Electrosonic) which will not remove too much plating from the pins. After replacing the VDP chip (leaving a slight WD-40 residue on the pins) and firing up (from my old Hot Rod days, I can't help it!!) the console, AWAY it went and it's been running fine ever since. Walter has been around the Tech end of computers for quite a while and said that he has tested the WD-40 treatment for dilectric isolation to 30 volts d.c. and 12 megahertz. If you have a dead console and everything else checks out O.K. try this, you've got nothing to lose.

There are many ways to cut down the fan noise of the P.E. box and if you are looking to replace the cooling fan with one of the surplus 3 inch fans look for either a Sprite SU2C5 or a Roton WA5F, as these fans run at 1950 RPM versus 3300/3500 RPM that other models of the same likeness. This has much to do with reducing the noise level of the box.

WARNING!..WARNING!..WARNING!..

REGARDING LITHIUM BATTERIES

From a letter to the Editor in the FEB/86 issue of "MICROpendium" a WARNING about LITHIUM cells as in the TI Mini-Memory quote, "A hot soldering iron applied to the cell may be hazardous and is not recommended". The letter recommends exact replacement lithium cells with welded-on leads rather than the type sold as calculator/watch type batteries which fit into battery holders and must have leads soldered onto their cases to be used in the Mini-Memory.

There is also an article in the JAN/86 "MICROpendium" by Richard J. Bailey, page 32, that makes the following points on LITHIUM cells:
-NEVER OPEN A LITHIUM CELL!
-shelf life of 5-10 years
-measure cells with a high impedance volt-meter
-three nicad cells wired in series (1.2 volts per cell) required to replace one lithium cell (3 volts per cell)
-replacement when cell voltage is much less than 3.0 volts
-NEVER charge ANY Lithium battery
as they are primary cells and are made of a non-reversible chemical system
-they MUST NOT be discharged rapidly (as in directly shorted out)

-high current cells are pressurized to several atmospheres so the gases inside turn to liquid, which is more conductive than gas
-all cells are hermetically sealed to contain these internal pressures
-NEVER OPEN A LITHIUM CELL!
-defective seals and/or high heat which can cause seal failure cause what manufacturers refer to as "rapid venting" or as is commonly known, AN EXPLOSION
-cells used in digital watches and the Mini-Memory are not highly pressurized
-Lithium is HIGHLY REACTIVE and can BURST into FLAME in air containing more than 2 percent moisture
-NEVER OPEN A LITHIUM CELL!

by Randy Rossetto

(editor's note - last month in Tidbits, Randy told us there would be an article on soldering/desoldering the Minimem lithium battery. Hope you all waited and read the warning above.)

SALES TAX ON SOFTWARE
Lloyd Lindsay, CA

The province of Ontario has published Bulletin No. 2-85 in regards to sales tax on computer software.

The 7% tax applies to operational or systems software because the software is considered an integral part of a computer.

The tax also applies to application software which is known in the trade as "off-the-shelf", "pre-packaged" or "pre-written" software. This software is normally mass produced on discs, tapes or other media and is not intended to be modified by the purchaser.

The supply of other software is considered a non-taxable service and the seller is liable only for the tax on the materials and equipment he uses to provide such service. Such non-taxable services include:

- the transfer of any software to disc, tape or other media supplied by the purchaser;

- the sale of custom software, specifically designed for the exclusive use of a customer;

- the sale of software under a specifically negotiated and sign licence arrangement between the producer and the user.

Charges for the maintenance and upgrading of taxable software are subject to tax but are exempt if for exempt software.

ROM -- means the CPU ROM
RAM -- used, mainly by TI in its advertisements. means VDP RAM, which is the term I try to use.
CPU RAM -- means the CPU RAM (strangely enough).
GROM -- means Graphics read only memory.
GRAM -- means Graphics read/write memory like in the GRAM KRACKER or MAXIMEM.

Let's redo our table just to keep things straight.

```
*---*---------*----*-------------*
| # | OWNER   |TYPE| COMMON NAME |
*---*---------*----*-------------*
| 1 | CPU     |ROM | ROM         |
| 2 | CPU     |RAM | CPU RAM     |
| 3 | VDP     |RAM | VDP RAM     |
| 4 | GRAPHICS|ROM | GROM        |
| 5 | GRAPHICS|RAM | GRAM        |
*---*---------*----*-------------*
```

Remember that the CPU, the 9900 microprocessor can only execute programs in CPU ROM or CPU RAM. Anything in the other kinds of memory is just data for some programs executing in the CPU.

Now we know the five kinds of memory in the TI 99/4A, and we have the terminology to talk about them. This is a good time to ask, "Where is all this memory?"

CONSOLE   (bare   bones-no expansion)
CPU ROM - 8k bytes
CPU RAM - 256 bytes
VDP RAM - 16K bytes
GROM - 18K bytes
CARTRIDGE
(if it were full)
CPU ROM - 8K bytes

GROM - 30K bytes

MEMORY EXPANSION
CPU RAM - 32K bytes

I/O DEVICES
(RS232 and Disk)
CPU ROM - 8K bytes

Now that we are talking sizes let's talk about the maximum sizes. As we all know (and like to brag about), the TI 99/4A is a 16bit machine. This means that it can count (or address) bytes from 0 to 65536 (64K). So we may say it can address 66K of memory (i.e. CPU memory). The TI 99/4A also uses a 16 bit word to tell the VDP which bytes it wants. Two bits of this word are used as indicators so that there are only 14 bits of address. So the maximum VDP memory is 16K bytes. A 16 bit address is also used for Graphics memory (with no indicators) so its maximum is again 64K.

We are now ready to take another step, and find out what is in all this memory.

CPU ROM contains 3 main things, all written in assembler:
a.   The low level operating system - tem. This code is necessary to make the machine do anything.
b.   The interpreter for the GPL programs.
c.   The Device Service Routines (DSR) which provide high level access to the I/O devices.

GROM contains 3 main things:
a.   The high level operating system, written in the GPL

language. The high level operating system gives you the master title screen, the first level menus and and provides for calling other programs written in the various languages. b. The TI BASIC interpreter, written in GPL>
c. Tables of date for initializing the VDP.

VDP RAM contains 3 main things:
a. The TV screen image, character, color, and sprite tables.
b. Work areas for programs and and device service routines.
c. BASIC programs, which are interpreted by the TI BASIC or EXTENDED BASIC interpreter.

CPU RAM contains 3 main things:
a. Work space for the GPL interpreter (the 256 bytes that are in the console).
b. Assembler language programs.
c. EXTENDED BASIC programs, which are interpreted by the EXTENDED BASIC interpreter.

So there you are! We have looked at the kinds of memory, the owner of the memories, where the memory is, what's in the memories, and the terminology used to talk about all of this.

There are a few tricky and devious things we haven't looked into (like bank switching). Maybe in future articles we will have a look at them.

QUICK TIPS
Lloyd Lindsay CA

If you are using a T.V. as a monitor and are getting interference on your screen, try the Radio Shack FM filter which sells for $2.99. I did and the results were excellent.

All you do is attach the modulator output leads to the filter and the filter leads to the T.V. antenna screws.

A comparable filter at $4.99 is available for use on a 75ohm antenna terminal.

****
WANTED

Computer desk <> Call Nicos <> (416) 690-6644

****
WANTED

An enthusiastic individual who is looking for literary expression and would like to be the newsletter editor. This person must be willing to work with the present editorial staff for approximately eight hours per month. If you feel capable of assuming this position, don't hesitate to call the present editor at (416) 633-1451 evenings or (416) 638-6245 during office hours.

****