

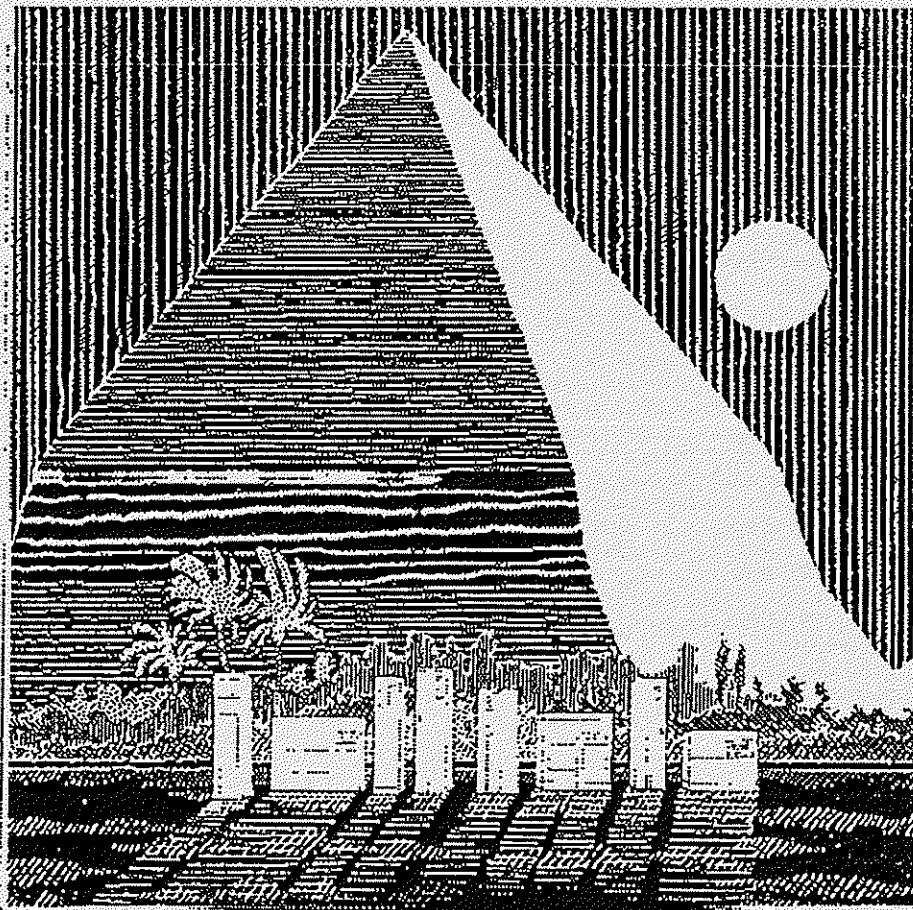
NEWS DIGEST

Focusing on the TI99/4A Home Computer

Volume 12, Number 10

November, 1993

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TisHUG (Australia) Ltd.
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TisHUG News Digest

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TisHUG News Digest

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Membership and Subscriptions
Annual Family Dues \$35.00
Associate membership \$10.00
Overseas Airmail Dues A\$65.00
Overseas Surface Dues A\$50.00

TisHUG Sydney Meeting
The November Meeting will start at
10.am on the 6th November 1993
at Meadowbank Primary School,
Thistle Street, Meadowbank.

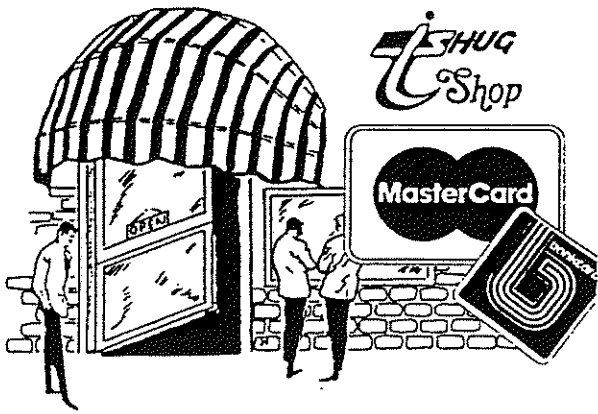
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TiSHUG Shop
with Percy Harrison

Just a reminder to all of our members who attend the monthly meeting please remember that the November meeting will be held at the Meadowbank Primary School, Thistle Street Meadowbank and parking is available at the rear of the school with entry from Gale Street, refer to the September TND or your street directory.

The October meeting was reasonably well attended considering that it was a long weekend and both the TI er's and IBM er's were well represented. The November meeting will be an all day tutorial starting at 10 am so let's all make a concerted effort to come along and make it a worthwhile day.

The club has purchased a new Inkjet Printer since we last went to press so hopefully, if our editor has managed to master the machine (no worries, matey- ED) this issue of our TND should reflect an improvement in print quality. We did have a lot of difficulty in getting it to accept print commands but with the expert help of Geoff Trott and Ross Mudie assisting I think that he solved the problem and has shown Bob how to make it do what he wants it to do.

As I mentioned back in the May issue, the Commercial software has not been selling so I am going to withdraw all but the master disks from stock so that I can re-use the rest of the stock for producing the club's freeware programs that we release each month. This will reduce the club's inventory on software and also free up some storage space at my home (goody goody says my wife). They will still be available against firm orders but after this month they will not be listed again in the magazine. I suggest that if you want any of the Commercial Disks listed below you order them now and give them to yourself for Christmas.

The December meeting will be our Annual General Meeting (See notice of meeting elsewhere in this issue) and your current Directors will step down from office and be eligible for re-election. We desperately need some new faces on the committee especially now that the club has been opened up to IBM compatibles so if you are prepared to put something back into the club please let us know at the October meeting so that we can put a nomination form in for you. The Directors meet once a month immediately after the monthly meeting so that we do not have to give up two days for meetings each month.

There are three IBM compatible program disks being released this month, one with a couple of anti-virus programs and a Virus Clean program, one with some financial calculation programs and the last with about a dozen Disk Utility programs all of which you should use!

PRICE LIST
COMMERCIAL SOFTWARE

Artoons SSSD	\$12
BABA Brewery Beer Labels SSSD	\$10
Bride of Disk of Dinosaurs SSSD	\$14
Character Set Graphic Design Cataloguer SSSD.....	\$6
Character Set Graphic Design I SSSD	\$12
Character Set Graphic Design II SSSD	\$10
Character Set Graphic Design III SSSD	\$14
Disk Utilities (Memorial Edition) DSSD	\$11
Disk Utilities (Memorial Edition) SSSD	\$12
Disk of Dinosaurs SSSD	\$10
Disk of Horrors SSSD	\$14
Disk of Pyrates SSSD	\$12
Display Master SSSD	\$15
Edu-pak Module + Book	\$25
FilmLib Vers 3.0 (TI-Base) SSSD	\$8
Fonts and Borders I SSSD	\$8
Fonts and Borders II SSSD	\$8
Fonts and Borders III SSSD	\$10
Fonts and Borders IV SSSD	\$8
Genial Traveler SSSD	\$6
GIF-Mania SSSD	\$15
Legends (2 Disk Set) SSSD	\$30
McPaint (5 Disk Set)-DSDD	\$10
McPaint (10 Disk Set)-DSSD	\$20
Microdex I SSSD	\$16
Microdex II SSSD	\$11
Nuts and Bolts #1 DSSD	\$6
Nuts and Bolts #1 SSSD	\$7
Page Pro 99 Program SSSD	\$28
Page Pro Applications #1 SSSD	\$2
Page Pro Line Fonts SSSD	\$9
Page Pro Medical Clipart-DSDD	\$10
Page Pro Medical Clipart-DSSD	\$13
Page Pro Templates Vol1-SSSD	\$8
Page Pro Templates Vol3-SSSD	\$8
Page Pro Utilities SSSD	\$17
Picasso Publisher Version 2.0 SSSD	\$14
Picasso Publisher Support Disk SSSD	\$6
Picasso Applications Disk DSSD	\$2
Screen Preview SSSD	\$20
Smart Connect SSSD	\$15
Son of Disk of Dinosaurs SSSD	\$12
Spell It! (DSDD version)	\$24
Spell It! (SSSD version)	\$27
The Missing Link Companion Disk SSSD	\$2
The Ring Companion SSSD	\$12
TI Casino SSSD	\$16
Word Processor Harrison Software SSSD	\$10
X Basher SSSD	\$15
XB : Bug SSSD	\$22
Typewriter Module	\$25

IBM SOFTWARE

As Easy As (Spreadsheet)	
Flash (Horse Racing Data Sheet)	
Powermenu (Menu)	
PC Files (Data Base)	
VDE (Word Processor)	
Anti-Virus Programs 1.....*	
Calculators Programs 1.....*	
Disk Utilities 1.....*	
*...New releases this month.	
Above Disks on 5.25 Format	\$3.00
Above Disks on 3.5 Format	\$3.50

Note: Where possible please order 5.25 format.

Packaging and postage extra on all items.

Bye for now.

END OF ARTICLE

TISHUG (AUSTRALIA) LIMITED
MINUTES OF 6TH ANNUAL GENERAL MEETING

HELD SATURDAY 5 DECEMBER 1992,

RYDE INFANTS SCHOOL, TUCKER STREET, RYDE NSW.

1. OPENING:

Chairman Dick Warburton opened the meeting at 2.15pm welcoming those members present.

2. MEMBERS PRESENT AND APOLOGIES:

There were 29 members present.

Apologies were recorded and accepted from H Schade, W Welham, J Aeberhard, J Scott, D Wilkinson, A Lynn and V Maker.

3. READING AND CONFIRMATION OF MINUTES OF 5TH ANNUAL GENERAL MEETING HELD ON SATURDAY 7 DECEMBER 1991 AND READING AND CONFIRMATION OF MINUTES OF SPECIAL GENERAL MEETING HELD SATURDAY 6 JUNE 1992:

a) 5th AGM Minutes - Moved Geoff Trott seconded Percy Harrison that they be confirmed. Carried.

b) Special General Meeting Minutes - Moved Percy Harrison seconded Geoff Trott that they be confirmed. Carried.

4. CORRESPONDENCE AND DEALING WITH SAME:

The Secretary advised that there was no correspondence.

5. READING AND DEALING WITH RECOMMENDATIONS FROM THE BOARD OF DIRECTORS - LIFE MEMBERS AND OTHER MATTERS:

The Chairman advised that the Directors had no recommendations.

6. DIRECTORS REPORTS, PRESENTATION OF ACCOUNTS AND AUDITORS REPORT:

Moved Geoff Trott seconded Percy Harrison that they be confirmed. Carried.

Discussion points:

Tom Marshall - queried if the club still held other "zero" asset items. Geoff Trott confirmed that a list was held but only those written down to "zero" this year were shown on current asset register.

Percy Harrison - queried whereabouts of item 67 on asset register. Dick Warburton confirmed it was not in his possession.

Geoff Trott advised that the list was current when last updated and this item was likely sold through the shop. Percy Harrison thought this also to be the case.

Peter Young - queried amount shown as pre-payments. Geoff Trott confirmed that in the main this was for TIM Cards.

7. UNFINISHED BUSINESS FROM LAST AGM (IF ANY):

Nil.

8. ELECTION OF RETURNING OFFICER AND TWO (2) SCRUTINEERS:

The Chairman advised the meeting that at the close of nominations for the office of Director only the requisite number of five (5) candidates had nominated. The nominees Messrs Bohlsen, Harrison, Sullivan, Warburton and Welham were declared duly elected.

9. ELECTION OF DIRECTORS:

Not required - see item 8 above.

10. ELECTION OF AUDITOR:

The current auditor, F H Spender (Wollongong) was nominated by Geoff Trott seconded Tom Marshall. Carried.

11. NEW BUSINESS (IF ANY):

a) Bob Relyea asked if a list of members could be published in the newsdigest. This was not agreed to as it was considered some members may object to having such details published.

b) Ian Mullins moved a vote of thanks for the retiring Directors. This was done by acclamation from the floor.

12. MEETING CLOSURE:

There being no further business to discuss the Chairman declared the meeting closed at 2.40pm.

Minutes Recorded By:	Minutes Confirmed By:
Terry Phillips	Richard Warburton
Honory Secretary	Chairman
5 December, 1992+	

END OF ARTICLE

TREASURER'S REPORT

by Cyril Bohlsen

Income for previous month	\$ 521.85
Expenditure for previous month ..	\$ 909.95
Loss for previous month	\$ 388.10
Membership accounted for \$ 35.00 of Income.	
Shop sales	\$486.85 of Income.
The expenditure was made up of the following	
Printing & Postage of TND	\$ 372.75
Replacing Editor's printer	\$ 499.00
Postage & Telephone etc.	\$ 38.20

NEW MEETING VENUE

The TISHUG meeting place for the November meeting and onwards will be Meadowbank Primary School on the corner of Thistle Street and Belmore Street, Meadowbank. Cars can enter from Gale Street and park in the School grounds. See the September issue for more details.

ATTENTION PARRAMATTA USERS

Anybody interested in forming a group in the Parramatta area please contact Ian Mullins on (02) 8711514.

NOTICE TO MEMBERS

All members are advised that the 7th Annual General Meeting of TISHUG (Australia) Limited will be held on Saturday, 4th December, 1993 at Meadowbank Primary School, Thistle Street, Meadowbank NSW, commencing at 2.00pm.

Members attending are requested to arrive by 1.30pm to enable them to sign in and to ensure a prompt 2.00pm start.

The following relevant paragraphs from the club's Articles of Association are brought to your attention:

16(i) - Nomination for the office of Director shall be delivered to the Secretary by 8.00pm on the twenty-first day prior to the day fixed by the board for the Annual General Meeting.

17(b) - Nominations for election of the Directors shall be made in writing and signed by two (2) members of the club and by the nominee who shall signify his consent to the nomination.

17(d) - If the full number of candidates for the positions of Directors is not nominated as prescribed then additional nominations may be made at the meeting. If there be more than the required number nominated an election by ballot shall take place but if there be only the requisite number nominated the Chairman shall declare those nominated duly elected.

In accordance with paragraph 16(i), nominations for the office of Director shall close with the Secretary at 8.00pm on Saturday, 13th November, 1993, while in accordance with paragraph 17(b) a suitable nomination form is enclosed.

Percy Harrison (for Honorary Secretary)

TISHUG (Australia) Limited
SEVENTH ANNUAL GENERAL MEETING
Saturday 4th December, 1993
Meadowbank Primary School
Thistle Street Meadowbank NSW

Agenda

1. Meeting opening.
2. Members Present and apologies.
3. Reading and confirmation of minutes of the 6th Annual General Meeting held on Saturday 5th December 1992.

4. Correspondence and dealing with same.
5. Co-ordinator's Report.
6. Treasurer's Report, Accounts and Auditor's Report.
7. Unfinished Business from last AGM (if any).
8. Election of Returning Officer and two (2) Scrutineers.
9. Election of Directors.
10. Election of Auditor.
11. New Business (if any).
12. Close Meeting.

END OF ARTICLE

Vincent's Corner

ADVENTURE #9:GHOSTOWN

PRELUDE: You are in a country town. It is haunted by Ghosts, a snake, a horse and an American Indian. There are 13 treasures in it. You have to find them if you want to win.

HINTS

1. At the start, Go to the Barber Shop and Shake Hat. You can wear it if you like, but it is not necessary...
2. Jail not an option? Well, it should not be ... But anyway, this is not your ordinary jail... It has got MAGNETIC locks and guess what the horseshoe is?
3. Snake a problem? He shouldn't be, not with your gun or GOLDEN ...
4. Ravine not jumpable???
5. Is the same impassable? I would be watching out for BUSHFIRES if I were you.
6. Not got a place to sleep at night? Ring for ROOMSERVICE???
7. Not got a cup yet? You will be fascinated in what goes on in the saloon at night ... you might even have a go yourself ...
8. You can get light from matches...
9. Pianoman not playing your song? What do you do at the end of a performance?
10. Maybe we have not been to the TEEPEE yet. If not, why do we not get the hammer and use the spurs ... and say 'GIDDY'?
11. Fed up with the TEEPEE? Can you keep the beat?
12. Still there???. What is the recognised custom?
13. No good at SAFE cracking? Make your gunpowder using the yellow powder, white crystals and your charcoal. Put it in the _____ and use an electronic

means of a fuse ...

14. Not got \$200? Have we played monopoly lately?

Leave hint 14 for the last in the game ...

Cheers 4 now,

Crocodile Jones

P.S. If you want to contact me on the BBS, my user name is:

CJONES

Information can be found in sub-editor, file no. 5

END OF ARTICLE

From the International Electronic Mail
Edited by Geoff Trott

The following is an edited version of information taken from the electronic news available on computer networks. I accessed this from my computer at work and then did an xmodem transfer through a modem hookup to my TI99/4A at home. There is some evidence of people responding to different "articles" which may or may not be present in this group of items. I hope you get something of interest out of these.

From: jhwhit01@u1kyvx.louisville.edu
Subject: Re: "TIFILES" protocol wanted
Date: Mon, 19 Apr 1993 05:53:14 GMT

In article ton2@sysmanz1.zld.rws.nl (Ton Brouwer) writes:

"The work on my MS-DOS based TI-emulator is now in a phase where I am implementing disk access. I have build a disk interface that supports load and save operations. This means I can use OLD DSK1.xxx and SAVE DSK1.xxx, to load and save basic programs I actually created using the emulator. Of course these saved program images should also run on a genuine TI-99. To facilitate this I am thinking of a disk interface that adds a "TIFILES" header as designed by (was it?) Paul Charlton, by default. Exchanging files between the TI99/4A and the emulator should be very simple with this scheme."

"So now I need a precise description of the TIFILES protocol. I can vaguely recall that it is a 128 byte header that contains about the same information that can also be found in the index sectors on TI99/4A's disks. But instead of figuring it all out, I assume someone has this info ready in some text file!"

Paul Charlton created the TIFILES header for Xmodem transfers. I do not have a text file describing it, so I will create one right now from my notes.

byte 1 >07
bytes 2-8 'TIFILES'
bytes 9-10 Total_Number_of_Sectors
byte 11 File_Status_Flags
byte 12 Number_of_Records_Per_Sector
byte 13 End_of_File_Offset
byte 14 Logical_Record_Length
bytes 15-16 Number_of_Level_3_Records_Allocated
bytes 17-128 >00 (112 times)

Values for bytes 9-16 are taken directly from the File Descriptor Record with a slight shuffle and shift. Here are the locations in the FDR record used for the values in the TIFILES header:

Total_Number_of_Sectors. bytes 15-16
File_Status_Flags byte 13
Number_of_Records_Per_Sector byte 14
End_of_File_Offset byte 17
Logical_Record_Length byte 18
Number_of_Level_3_Records_Allocated bytes 19-20

In the case of the TIFILES header, I counted bytes 1-128. In the case of the FDR, I counted bytes 1-256. Normally, I would start counting at 0, but that is of little consequence.

Most, if not all, terminal emulators that support the TIFILES header do not add it if the file is Display/Fixed 128 and Unprotected. In this case the File_Status_Flags will be >00, the Number_of_Records_Per_Sector will be >02, and the Logical_Record_Length will be >80.

One more thing to note. In MOST cases of an unprotected DF128 file you will see the value >00 for File_Status_Flags. If, however, the file has passed through a system with a Myarc HFDC, the unprotected DF128 file may have the value >10 for File_Status_Flags. The bit that is set in this case is the BACKUP flag used for MDM5 hard drive backups. If this bit is set, this means the file has been modified or created since the last hard drive backup.

This is certainly something to remember. Clear the BACKUP flag bit when you are moving a file with the TIFILES header.

Jeff White jhwhit01@u1kyvx.louisville.edu

From: daven@vx.cis.umn.edu (David Nieters)
Subject: V9938 Graphics Mode 4 Tutorial Part 1 (repost)
Date: Mon, 19 Apr 1993 15:48:00 GMT

This is a tutorial on using the V9938 in Graphics 4 mode. In part 1, I will be explaining a program called LINES that was written for the 9918A processor to demonstrate its graphic mode. This program came from TI with the Mini-Memory module. I will extend this program to use Graphics 4 mode. In later tutorials, we will try to increase the performance of this program using the V9938's built in commands.

OVERVIEW OF GRAPHICS 4 MODE

In Graphics 4 mode, there is no Pattern Generator Table like we have been used to in the 9918A. Instead, each pixel on the screen is controlled by a 4-bit colour assignment in the Pattern Name Table. Therefore, each pixel can be one of 16 colours and each byte in the Pattern Name Table describes two pixels on the screen. The screen size is either 256 X 192 or 256 X 212 pixels depending on the LN bit of VDP register 9. Therefore, the Pattern Name Table will be 24,576 or 27,136 bytes respectively. The Pattern Name Table can be located in only four areas of memory. They are 0, >08000, >10000, >18000. The location is determined by Register #2. For this program, the Pattern Name Table will start at 0.

OVERVIEW OF THE LINES PROGRAM

The lines program is in basically three parts. One part determines where the end points of each line will be. It then calls another part which draws a line between the end points. That part then calls another routine to plot each individual point.

REF VWTR,VSBW,VMBW,KSCAN,VSBR
REF VDPWO,VDPWA,VDPSTA

HEIGHT EQU 212 HORIZONTAL LINES ON THE SCREEN
NUMLIN EQU 100 LINES DRAWN BEFORE ERASING SCREEN

```

* CLEAR THE SCREEN
*
* THIS ROUTINE CLEARS THE SCREEN BY WRITING ZEROS IN
* THE PATTERN NAME TABLE. WHEN DEALING WITH THE LARGER
* MEMORY SPACE OF THE V9938, WE HAVE TO BE SURE THAT
* REGISTER #14 IS CLEARED BEFORE WE START. OTHERWISE
* WE MIGHT BE ZEROING OUT HIGHER AREAS OF MEMORY THAN
* WE WANT TO.
*

```

```

CLEAR LI R0,>0E00      RESET OUR VDP ADDRESS
      BLWP @VWTR
      LI R0,>0040
      MOVB R0,@VDPWA
      SWPB R0
      MOVB R0,@VDPWA
      LI R2,HEIGHT*128 WE WILL WRITE 24,576 ZEROS
      CLR R0
CLEAR1 MOVB R0,@VDPWD
      DEC R2
      JNE CLEAR1
      RT

```

```

* RANDOM NUMBER GENERATOR
*
* THIS PROCEDURE RETURNS A (NOT SO) RANDOM NUMBER IN R1
* IT ENSURES THE RANDOM NUMBER WILL NOT BE 0.
*

```

```

RAND  MOV @SEED,R1
RAND1 AI R1,>1D6B
      JEQ RAND1
      MOV R1,@SEED
      RT

```

```
SEED  DATA >690A
```

```

DX1  DATA 0      THESE LOCATIONS ARE USED TO STORE
DX2  DATA 0      HOW FAR THE END POINTS MOVE EACH
DY1  DATA 0      TIME A LINE IS DRAWN
DY2  DATA 0

```

```
* COLOUR FLAG
```

```

* WHEN COLOUR FLAG IS ZERO, THE LINES WILL APPEAR IN
* DIFFERENT COLOURS. WHEN IT IS NOT SET TO ZERO, ALL
* LINES WILL BR DRAWN IN THE SAME COLOUR. IT IS
* TOGGLED BY PRESSING THE 'C' KEY WHILE LINES ARE BEING
* DRAWN.
*

```

```
CFLAG DATA 0
```

```
* POINT
```

```

* POINT WILL TAKE AN X COORDINATE IN RQ AND A Y
* COORDINATE IN R1 AND A COLOUR IN R2 AND PLOT THAT

```

```
* POINT ON THE SCREEN
```

```

POINT SLA R1,8      OFFSET IN PATTERN NAME TABLE
      A R1,R0
      SRL R0,1

      JOC POINT1    SEE IF LEFT HAND OR RIGHT HAND
      LI R3,>F000
      MOV R2,R4
      SLA R4,12
      JMP POINT2
POINT1 LI R3,>0F00
      MOV R2,R4
      SLA R4,8
POINT2 MOV R0,R2
      ANDI R0,>C000  WRITE UPPER 2 BITS OF ADDRESS
      SRL R0,14     TO VDP REGISTER 14
      ORI R0,>0E00
      BLWP @VWTR
      MOV R2,R0
      ANDI R0,>3FFF
      BLWP @VSBW    READ BYTE ALREADY THERE
      SZCB R3,R1    CLEAR OUT OLD COLOUR
      SOCB R4,R1    PUT IN NEW COLOUR
      BLWP @VSBW    REWRITE OUT TO THE SCREEN
      RT

```

```
* PLOT
```

```

* THIS ROUTINE PLOTS A LINE FROM (X1,Y1) TO (X2,Y2)
* THESE COORDINATES ARE LOCATED IN THE CALLERS
* REGISTERS R6,R7,R8 AND R9. THE COLOUR IS
* SPECIFIED IN THE CALLER'S R10.
*

```

```
PLOT  DATA >8300
      DATA PLOT1
```

```

PLOT1 CLR R12
      LI R5,1
      LI R6,1
      MOV @16(R13),R7
      MOV @12(R13),R9
      S R9,R7
      JLT PLOT11
      JMP PLOT2
PLOT11 NEG R7
      NEG R5
PLOT2 MOV R7,R7
      JNE PLOT3
      SETO R12
PLOT3 MOV @18(R13),R8
      MOV @14(R13),R10
      S R10,R8
      JLT PLOT4
      JMP PLOT5
PLOT4 NEG R6
      NEG R8
PLOT5 MOV R9,R0
      MOV R10,R1
      MOV @10(R13),R2 GET COLOUR
      BL @POINT
      C R9,@16(R13)
      JNE PLOT6
      C R10,@18(R13)
      JNE PLOT6
      RTWP

```

```

PLOT6 MOV R12,R12
      JLT PLOT7
      A R5,R9
      S R8,R12
      JMP PLOT5
PLOT7 A R6,R10
      A R7,R12
      JMP PLOT5

```

```
* MAIN PROGRAM
```

```

*
START LWPI >8320
      LI R2,VDPREG  SET VDP REGISTERS
LI     MOV *R2+,R0
      JLT L2
      BLWP @VWTR
      JMP L1

      BL @CLEAR    CLEAR THE SCREEN

      CLR @CFLAG
      CLR R3       R3 COUNTS THE NUMBER OF LINES
DRAWN

      LI R6,>80    SET END POINTS FOR FIRST LINE
      LI R7,>60
      LI R8,>D3
      LI R9,>13

      CLR R0       SET INITIAL AMOUNTS END PNTS
      INCT R0      MOVE BY
      MOV R0,@DX1
      INCT R0
      MOV R0,@DY1
      INCT R0
      MOV R0,@DX2
      INCT R0
      MOV R0,@DY2

```

```

LOOP  MOV  @CFLAG,R0
      JNE  L5
      BL  @RAND          PICK A RANDOM COLOUR
      ANDI R1,>F
      MOV  R1,R5
      CI  R5,2          MAKE SURE WE DON'T HAVE BLACK
      JHE  L5
      ORI  R5,2
L5    A   @DX1,R6        MOVE THE END POINTS
      A   @DY1,R7
      A   @DX2,R8
      A   @DY2,R9

* CHECK TO MAKE SURE THAT NO END POINTS HAVE MOVED OFF
* THE SCREEN. IF SO, REVERSE ITS DIRECTION.
*
      MOV  R6,R6
      JLT  L6
      CI  R6,>100
      JLT  L7
L6    NEG  @DX1
      A   @DX1,R6
L7    MOV  R8,R8
      JLT  L8
      CI  R8,>100
      JLT  L9
L8    NEG  @DX2
      A   @DX2,R8
L9    MOV  R7,R7
      JLT  L10
      CI  R7,HEIGHT
      JLT  L11
L10   NEG  @DY1
      A   @DY1,R7
L11   MOV  R9,R9
      JLT  L12
      CI  R9,HEIGHT
      JLT  L13
L12   NEG  @DY2
      A   @DY2,R9
L13   BLWP @PLOT
L14   CLR  R0          CHECK TO SEE IF A KEY PRESSED
      MOVB R0,@>8374
      BLWP @KSCAN
      MOVB @>8375,R0
      MOVB @>837C,R1
      JEQ  L16
      CI  R0,>0500      CHECK FOR QUIT KEY
      JNE  L15
      B   @QUIT
L15   CI  R0,>4300      CHECK FOR "C" KEY PRESSED
      JNE  L14
      INV @CFLAG      TOGGLE THE COLOUR FLAG
L16   CI  R0,>FF00
      JNE  L14
      INC  R3
      CI  R3,NUMLIN    SEE IF MORE LINES TO DRAW
      JNE  LOOP        IF SO, GO BACK AND DRAW THEM

      CLR  R3
      LI  R2,10
      LI  R4,>FFFF
DLY   DEC  R4          WAIT BEFORE CLEARING SCREEN
      JNE  DLY
      DEC  R2
      JNE  DLY

      BL  @RAND          COMPUTE NEW RANDOM MOVEMENTS
      MOV  R1,R1
      JLT  L17
      ANDI R1,7
      JMP  L18
L17   ORI  R1,>FFF8
L18   MOV  R1,@DX2
      BL  @RAND
      MOV  R1,R1
      JLT  L19
      ANDI R1,7
      JMP  L20
L19   ORI  R1,>FFF8

```

```

L20   MOV  R1,@DY1
      BL  @RAND
      MOV  R1,R1
      JLT  L21
      ANDI R1,7
      JMP  L22
L21   ORI  R1,>FFF8
L22   MOV  R1,@DX1
      BL  @RAND
      MOV  R1,R1
      JLT  L23
      ANDI R1,7
      JMP  L24
L23   ORI  R1,>FFF8
L24   MOV  R1,@DY2

```

```

BL  @CLEAR          CLEAR SCREEN
B   @LOOP          START OVER

```

```

QUIT  LI  R2,REG2    RESTORE VDP REGISTERS TO NORMAL
QUIT1 MOV  *R2+,R0
      JLT  QUIT2
      BLWP @VWTR
      JMP  QUIT1
QUIT2

```

```

LIMI 2
BLWP @0

```

```

* VDP REGISTERS TO SET VDP TO GRAPHICS 4 MODE
*
VDPREG DATA >0006
      DATA >0160
      DATA >021F          LOCATE NAME TABLE AT ADDRESS 0
      DATA >0711          SET BACKGROUND TO BLACK
      DATA >080A          INHIBIT SPRITES
      DATA >0980          212 LINES
      DATA >FFFF

```

```

* VDP REGISTERS WHEN WE EXIT
*
REG2  DATA >0000
      DATA >0F00
      DATA >01F0
      DATA >0200
      DATA >03FF
      DATA >0401
      DATA >0560
      DATA >0E00
      DATA >FFFF

```

```

END START

```

```

From: daven@vx.cis.umn.edu (David Nieters)
Subject: V9938 Graphics Mode 4 Tutorial Part 2
Date: Mon, 19 Apr 1993 15:51:00 GMT

```

In part 1, we saw a program that would draw lines on the screen in multiple colours. To do this, we had to plot each point by calculating a memory address, reading the contents of that location, and storing the colour of the dot we wanted to display.

In this part, we are going to tell the 9938 where to put the dot and what colour to make it. The 9938 will then do the work of determining the correct memory address to store the colour value and making sure it is properly put in either the high or low nybble. Before we see the new source code, we will review some of the command registers of the 9938 that make this possible.

Registers #32 through #46 are used by the 9938 for executing commands. The ones we will use are #36-#39, #44 and #46. Their usage is as follows -

```

R#36 - Lower 8 bits of the X coordinate
R#37 - Higher 1 bit of the X coordinate
R#38 - Lower 8 bits of the Y coordinate
R#39 - Higher 2 bits of the Y coordinate
R#44 - Colour of the point
R#46 - Command register

```


Since our screen is 212 x 256, the high bits of the X and Y coordinates will always be zero. Therefore, R#37 and R#39 are always zero. Also, since we have only 4 bits per colour in Graphics 4 mode, the lower 4 bits of R#44 contain the colour and the higher 4 bits contain zeros.

The upper 4 bits of the command register (R#46) tell the 9938 what operation we want to perform. To plot a single point, this value is 0101 binary. The lower 4 bits tell the 9938 what we want to do with the point that is already on the screen. In our case we want to replace the existing point with the new point, so we put in a value of 0000 binary.

Once you write to R#46, the command gets executed by the 9938. Therefore, it is necessary to write data to all the other registers before writing R#46. The 9938 will take a finite amount of time to perform a command before it can be ready to execute another. The 9938 provides a status bit in one of the status registers to let you know if it is ready to accept a new command yet. I've found in this program that the 9938 can plot a point faster than the 9900 can compute where the next point will be, so I do not check the status bit. We will see in Part 3 where a command will take a sufficient amount of time that we may have to wait for it to complete before trying to execute another.

We have now turned our TI99/4A into a parallel processor by getting the 9938 to perform one task while the 9900 performs another. The speed up is not that noticeable (in my opinion) over the program in part 1. In part 3, however, we will get the 9938 working more and realize some serious performance gains over what we have done so far.

The source for part 2 follows. It is identical to that from part one, except for the routine POINT now sets the command registers to plot the point rather than directly writing to VDP memory. I have also changed the register usage slightly since R0 must be used in the VWTR routine.

```

REF VWTR,VSBW,VMBW,KSCAN,VSBR
REF VDPWD,VDPWA,VDPSTA
HEIGHT EQU 212          NUMBER OF LINES
NUMLIN EQU 100         NUMBER OF LINES WE DRAW BEFORE
*                          ERASING SCREEN

```

* CLEAR THE SCREEN

* THIS ROUTINE CLEARS THE SCREEN BY WRITING ZEROS IN THE PATTERN NAME TABLE. WHEN DEALING WITH THE LARGER MEMORY SPACE OF THE V9938, WE HAVE TO BE SURE THAT REGISTER #14 IS CLEARED BEFORE WE START. OTHERWISE WE MIGHT BE ZEROING OUT HIGHER AREAS OF MEMORY THAN WE WANT TO.

```

CLEAR LI R0,>0E00      RESET OUR VDP ADDRESS
      BLWP @VWTR
      LI R0,>0040
      MOVB R0,@VDPWA
      SWPB R0
      MOVB R0,@VDPWA
      LI R2,HEIGHT*128 WE WILL WRITE 24,576 ZEROS
      CLR R0
CLEAR1 MOVB R0,@VDPWD
      DEC R2
      JNE CLEAR1
      RT

```

* RANDOM NUMBER GENERATOR

* THIS PROCEDURE RETURNS A (NOT SO) RANDOM NUMBER IN R1
* IT ENSURES THE RANDOM NUMBER WILL NOT BE 0.

```

RAND MOV @SEED,R1
RAND1 AI R1,>1D6B
      JEQ RAND1
      MOV R1,@SEED
      RT

```

SEED DATA >690A

```

DX1 DATA 0      THESE LOCATIONS ARE USED TO STORE
DX2 DATA 0      HOW FAR THE END POINTS MOVE EACH
DY1 DATA 0      TIME A LINE IS DRAWN
DY2 DATA 0

```

* COLOUR FLAG

* WHEN COLOUR FLAG IS ZERO, THE LINES WILL APPEAR IN DIFFERENT COLOURS. WHEN IT IS NOT SET TO ZERO, ALL LINES WILL BE DRAWN IN THE SAME COLOUR. IT'S TOGGLED BY PRESSING THE 'C' WHILE LINES ARE BEING DRAWN.

CFLAG DATA 0

* POINT

* POINT WILL TAKE AN X COORDINATE IN R9 AND A Y COORDINATE IN R10 AND A COLOUR IN R2 AND PLOT THAT POINT ON THE SCREEN

```

POINT LI R0,37*256    CLEAR VDP REGISTER #37
      BLWP @VWTR
      LI R0,39*256    CLEAR VDP REGISTER #39
      BLWP @VWTR
      MOV R9,R0
      AI R0,36*256    SET THE X COORDINATE IN R#36
      BLWP @VWTR
      MOV R10,R0
      AI R0,38*256    SET THE Y COORDINATE IN R#38
      BLWP @VWTR
      MOV R2,R0       SET COLOUR REGISTER
      AI R0,44*256
      BLWP @VWTR
      LI R0,46*256+>50 SET THE COMMAND REGISTER
      BLWP @VWTR
      RT

```

* PLOT

* THIS ROUTINE PLOTS A LINE FROM (X1,Y1) TO (X2,Y2)
* THESE COORDINATES ARE LOCATED IN THE CALLERS REGISTERS R6,R7,R8 AND R9. THE COLOUR IS SPECIFIED IN THE CALLER'S R10.

PLOT DATA >8300
DATA PLOT1

```

PLOT1 CLR R12
      LI R5,1
      LI R6,1
      MOV @16(R13),R7
      MOV @12(R13),R9
      S R9,R7
      JLT PLOT11
      JMP PLOT2
PLOT11 NEG R7
      NEG R5
PLOT2 MOV R7,R7
      JNE PLOT3
      SETO R12
PLOT3 MOV @18(R13),R8
      MOV @14(R13),R10
      S R10,R8
      JLT PLOT4
      JMP PLOT5
PLOT4 NEG R6
      NEG R8
PLOT5 MOV @10(R13),R2 GET COLOUR
      BL @POINT
      C R9,@16(R13)
      JNE PLOT6
      C R10,@18(R13)
      JNE PLOT6
      RTWP
PLOT6 MOV R12,R12
      JLT PLOT7
      A R5,R9
      S R8,R12
      JMP PLOT5

```

```

PLOT7 A R6,R10
      A R7,R12
      JMP PLOT5

* MAIN PROGRAM
*
START LWPI >8320
      LI R2,VDPREG SET VDP REGISTERS

L1 MOV *R2+,R0
   JLT L2
   BLWP @VWTR
   JMP L1

L2 BL @CLEAR CLEAR THE SCREEN

   CLR @CFLAG

   CLR R3 R3 COUNTS THE NUMBER OF LINES

DRAWN
      LI R6,>80 SET END POINTS FOR FIRST LINE
      LI R7,>60
      LI R8,>D3
      LI R9,>13

      CLR R0 SET INITIAL AMOUNTS END POINTS
      INCT R0 MOVE BY
      MOV R0,@DX1
      INCT R0
      MOV R0,@DY1
      INCT R0
      MOV R0,@DX2
      INCT R0
      MOV R0,@DY2

LOOP MOV @CFLAG,R0
     JNE L5
     BL @RAND PICK A RANDOM COLOUR
     ANDI R1,>F
     MOV R1,R5
     CI R5,2 MAKE SURE WE DON'T HAVE BLACK
     JHE L5
     ORI R5,2

L5 A @DX1,R6 MOVE THE END POINTS
   A @DY1,R7
   A @DX2,R8
   A @DY2,R9

* CHECK TO MAKE SURE THAT NO END POINTS HAVE MOVED OFF
* THE SCREEN. IF SO, REVERSE ITS DIRECTION.
*
   MOV R6,R6
   JLT L6
   CI R6,>100
   JLT L7
L6 NEG @DX1
   A @DX1,R6

L7 MOV R8,R8
   JLT L8
   CI R8,>100
   JLT L9
L8 NEG @DX2
   A @DX2,R8

L9 MOV R7,R7
   JLT L10
   CI R7,HEIGHT
   JLT L11
L10 NEG @DY1
   A @DY1,R7

L11 MOV R9,R9
     JLT L12
     CI R9,HEIGHT
     JLT L13
L12 NEG @DY2
     A @DY2,R9

L13 BLWP @PLOT

L14 CLR R0 CHECK TO SEE IF KEY IS PRESSED
     MOVB R0,@>8374
     BLWP @KSCAN
     MOVB @>8375,R0
     MOVB @>837C,R1
     JEQ L16
     CI R0,>0500 CHECK FOR QUIT KEY
     JNE L15
     B @QUIT
L15 CI R0,>4300 CHECK FOR "C" KEY PRESSED
     JNE L14
     INV @CFLAG TOGGLE THE COLOUR FLAG
L16 CI R0,>FF00
     JNE L14
     INC R3
     CI R3,NUMLIN SEE IF HAVE MORE LINES TO DRAW
     JNE LOOP IF SO, GO BACK AND DRAW THEM

     CLR R3
     LI R2,10
     LI R4,>FFFF
DLY DEC R4 WAIT BEFORE CLEARING SCREEN
     JNE DLY
     DEC R2
     JNE DLY

     BL @RAND COMPUTE NEW RANDOM MOVEMENTS
     MOV R1,R1
     JLT L17
     ANDI R1,7
     JMP L18
L17 ORI R1,>FFF8
L18 MOV R1,@DX2
     BL @RAND
     MOV R1,R1
     JLT L19
     ANDI R1,7
     JMP L20
L19 ORI R1,>FFF8
L20 MOV R1,@DY1
     BL @RAND
     MOV R1,R1
     JLT L21
     ANDI R1,7
     JMP L22
L21 ORI R1,>FFF8
L22 MOV R1,@DX1
     BL @RAND
     MOV R1,R1
     JLT L23
     ANDI R1,7
     JMP L24
L23 ORI R1,>FFF8
L24 MOV R1,@DY2

     BL @CLEAR CLEAR SCREEN
     B @LOOP START OVER

QUIT LI R2,REG2 RESTORE VDP REGISTERS TO NORMAL
QUIT1 MOV *R2+,R0
      JLT QUIT2
      BLWP @VWTR
      JMP QUIT1

QUIT2
      LIM1 2
      BLWP @0

* VDP REGISTERS TO SET VDP TO GRAPHICS 4 MODE
*
VDPREG DATA >0006
        DATA >0160
        DATA >021F LOCATE NAME TABLE AT ADDRESS 0
        DATA >0711 SET BACKGROUND TO BLACK
        DATA >080A INHIBIT SPRITES
        DATA >0980 212 LINES
        DATA >FFFF

* VDP REGISTERS WHEN WE EXIT
*

```

REG2 DATA >0000
DATA >0F00
DATA >01F0
DATA >0200
DATA >03FF
DATA >0401
DATA >0560
DATA >0E00
DATA >FFFF

END START

From: cohen@GOMEZ.phys.virginia.edu
Subject: Serial mouse on the TI
Date: Tue, 20 Apr 1993 18:26:23 GMT

Hello,

Some time ago, there was a discussion here about serial mice connected to the TI RS232 card.

I have seen NEW mice selling from electronics liquidators for as low as \$10.

Can somebody with a hand-on experience please tell me what kind of mice are compatible, how do they connect to the RS232 card, what can be done with them?

Please be specific, as I know zip about mice hardware and brands.

Thanks to all!

From: andrew.webster@outlan.ersys.edmonton.ab.ca (Andrew Webster)
Subject: Serial mouse on the TI
Date: 22 Apr 93 13:07:00 GMT

In reply to your mouse questions, I bought one from a fellow who sold all his TI99/4A stuff and went IBM. He bought his mouse package from Bud Mills. It is called the horizon mouse.

First off the standard connections for using a serial mouse with the TI-RS232 and the DSR from Bud Mills is as follows:

Port 1 connections:

<u>DB 9 MOUSEEND</u>	<u>PORT 1 TI RS232</u>
pin 2	pin 2
pin 3	pin 3
pin 4	pin 6
pin 5	pin 7

Port 2 connections: (preferred! As modem cable is wired to port 1)

<u>DB 9 MOUSE END</u>	<u>PORT 2 TI RS232</u>
pin 4	pin 6
pin 5	pin 7
pin 2	pin 14
pin 3	pin 16

These connections will work with the Asgard mouse DSR too which is not too far off from the Horizon DSR.

I use the GENIUS 6000 mouse which has 3 buttons and a slide switch to go from 2 button to 3. The DSR is designed to work in the 3 button setting only. I've tried using other standard serial mice with the DSR and not all serial mice work! Why, I do not know. There must be some peculiarities to other one that make them 'not so standard'. Perhaps someone out there could really elaborate on this.

Uses for the mouse are few, really, but it does work very well with YAAP, and not so well with TI-Artist, due to the design and math intensive functions of TI-Artist.. If you are a programmer I suppose it would not be too darn hard to program in a mouse DSR. One fellow in our group hacked away at BOOT and got the RS232 mouse to work well with it.

From: rdg@po.CWRU.Edu (Robert D. Gilpin)
Subject: Re: Is the Geneve 9640 gathering momentum?
Date: 21 Apr 1993 23:26:32 GMT

Is there really another machine in the works? Geneve compatible that is.

I would guess that Cecure would have the ability to create another or improve upon the Geneve since he is the official repair guy.

Wouldn't it be nice to have a new machine using the 99105? Most everything would still be compatible but with more speed. It would be nice to have a few meg of memory on the 16 bit bus instead of on another 8 bit card in the PEBox.

Here I go daydreaming again.

Don Oneal Are you working on my dream TI upgrade? :-)

Bye

From: oneil@dynamic2.arc.nasa.gov (Don O'neil)
Subject: Re: Is the Geneve 9640 gathering momentum?
Date: Thu, 22 Apr 1993 00:19:37 GMT

In article <1r4178\$s80@usenet.INS.CWRU.Edu> rdg@po.CWRU.Edu (Robert D. Gilpin) writes:
"Is there really another machine in the works? Geneve compatible that is."

"I would guess that Cecure would have the ability to create another or improve upon the Geneve since he is the official repair guy."

He has the ability to improve on but not re-design. The gate array designs at this point are still missing (the key to the project)

"Wouldn't it be nice to have a new machine using the 99105? Most everything would still be compatible but with more speed. It would be nice to have a few meg of memory on the 16 bit bus instead of on another 8 bit card in the PEBox."

Actually, an 8 BIT memory card such as the 4a Memex running at 0 WAIT is fast enough for what we would ever do with the 9995 or 99105. If you went 16 Bits, you are talking about a whole new world of card design. Noise is much more of a problem, determining which accesses are 16 vs 8 bit in a multi vendor environment etc... WHT (That's me) has drafted specs for a new HIGH SPEED backwards compatible 8 BIT bus based on the current TI99/4A BUS. ALL new WHT products (SCSI, 4a Memex, etc...)

We have plans to fully implement WHBus, but at this point, how I cannot say. Soon I will be publishing a document describing WHBus and how to implement it on peripheral cards and computers (IE Don Walden may consider implementing it on the next Geneve rev to speed up things a bit).

As for a 99105 Machine, I cannot claim to be working on anything, but I know that the possibility of someone out there working on something is pretty high. The 99105 is definitely the highest performer out there, and I have personally had one running at 30 Mhz (6 Mhz faster than rated) which makes it a real screamer, around 2 MIPS or so (same as 12 Mhz 386's) which makes it a decent performer. There are other 9900 series compatible chips, such as the 68689 but they are still not as fast as the 99105.

"Here I go daydreaming again."

"Don Oneal Are you working on my dream TI upgrade? :-)"

We are working on upgrades, peripherals and the like, but until we have built and tested hardware in house we

cannot release information on the projects. Look for product announcements from us this summer, around Chicago Faire time, and next January.

From: tstark@access.digex.com (Timothy M. Stark)
Subject: PC99 Emulator and other stuffs?
Date: 25 Apr 1993 01:35:06 -0400

Hi Everyone:

I heard new PC99 emulator from Genie. Does anyone have complete information about new PC99 emulator? If so, I will appreciate that. Thanks you!! I am looking for PC99 emulator for PC. I still have underdeveloped TI99/4A emulator with assembly source codes (improved TI99/4A emulator from Ton). :)

Can you give me a pointer about TI-based magazines? I will apply for new subscription.

I still am looking for GRAM emulators. I cannot find them. Where are they? Or does someone have a blueprint of it? If so, can you send me them? If so, I will appreciate that! Thanks!

I keep my TI-99/4A computer with TI PEB system for many years. They are my first computer. Later, I upgraded to C64 computers then Amiga computers. In near future, I will upgrade to PC! :)

-- Tim Stark

From: tstark@access.digex.com (Timothy M. Stark)
Subject: Re: PC99 Emulator and other stuffs?
Date: 25 Apr 1993 11:35:02 -0400

cohen@GOMEZ.phys.virginia.edu writes:

Yes, I am interested in that demo tape from TI Faire. Can you give me information about TI Faire? Address? etc...

"The GRAMULATOR (cartridges-port) and P-GRAM card (for PEBox) are being made and sold without problems."

I know about GRAMULATOR from Brand. Where can I find P-GRAM card from warehouse? It does not matter with US or Europe market.

-- Tim Stark

From: cohen@GOMEZ.phys.virginia.edu
Subject: Re: PC99 Emulator and other stuffs?
Date: Sun, 25 Apr 1993 11:44:36 GMT

In article <lrduak2s@access.digex.net>, tstark@access.digex.com (Timothy M. Stark) writes:
"Hi Everyone:"

"I heard new PC99 emulator from Genie. Does anyone have complete information about new PC99 emulator? If so, I will appreciate that. Thanks you! I am looking for PC99 emulator for PC. I still have underdeveloped TI99/4A emulator with assembly source codes (improved TI99/4A emulator from Ton). :)"

This is Mike Wright's project. It will also be demonstrated at the upcoming Lima TI Faire. Video tape of the Faire are available for \$5 per tape (they usually have 3 tapes per Faire) from Charles Good of the Lima Users Group.

"Can you give me a pointer about TI-based magazines? I will apply for new subscription."

MICROpendium is the monthly magazine.

"I still am looking for GRAM emulators. I cannot find them. Where are they? Or does someone have a blueprint of it? If so, can you send me them? If so, I will appreciate that! Thanks!"

The GRAMULATOR (cartridges-port) and P-GRAM card (for PEBox) are being made and sold without problems.

END OF ARTICLE

Editor's Comments

THOUGHTS FOR 1994
by Bob Rejya

I hope you noticed the result of the recent club purchase- the Hewlett Packard Deskjet portable printer also mentioned in Percy's article. By result, I mean the quality of the print. I do most, but not all, of the articles that appear in the magazine so you might be able to distinguish the ones that are from the ones that are not in this issue. This article is printed with the new printer so you can use it as a guide. The other printer, a Brother HR 15 (Daisy Wheel) was purchased by the club ten years ago and has done its whack. We got our moneys worth out of it. The new one is a little beauty. The only thing that you hear is the quiet paper feed. The printing itself is only heard by my dog, and, it is fast. In fact, there are times in the printing when it waits for more information from the computer before it will carry on printing. It makes the printing side of editing a breeze! The old daisy wheel would take ages and make a real clatter throughout the whole process. You would not want to go to bed with it on and running!

While we are on the topic of editing you would remember, if you have read my articles, that this is my last year as editing. A new editor has been secured but has not been announced yet by the directors (perhaps in this issue?). I have done the job for four years and want a change for something else. I have been approached as a possible director for 1994 which I am ready to do and make a contribution on the condition that everybody realises that I am a TI man. I do not plan on opposing any director or anybody else who wants to take the IBM aspect of the club and run with it. However, I am dedicated, for TISHUG club purposes, solely to the TI/994A and have little interest and no time for any other computer. I use the PCs at work because I have to and neither find them to be user-friendly or fun. I think the TIs are fun and I will do all I can to encourage members to carry on finding out all we can about this marvellous machine, including the running of tutorials next year. Will you join in? Let me know at the next club meeting what things you want to do and learn. For instance, I would like to take some ideas from past issues, such as making an 'interrupt board' for purposes of being able to send any screen in TI LOGO II and sending it off to a printer. And what about following up on Ross Mudies idea of a few years back of making our printers run off of the joystick port? All you need is a 32K console, a little assembly program and the fabrication of a simple interface board for the joystick port. I have seen Ross's run and it is 'magic'. I would be willing to get all of the instructions together, buy all of the components and instruct members on the day. Remember the 32K expansion

day in 1986? I loved it! It was the first meeting that I attended, the first one held at Burwood (I think) and I thought to myself, "why haven't I been coming to meetings before- this is great stuff!". We could have our own tutorial in one of the rooms. That is the kind of thing that I want more of at our monthly meetings. I will do the organisation if there are users who will make definite commitments and pay the relatively small amount of cash for the components.

In the paragraph above I made mention of TI LOGO II. The only serious defect that I could find with the package is the inability to print the beautiful designs that are created on the screen. You can save the patterns and the procedures that created them but, despite what I have been told, there is no way to get a hard copy of the patterns. Well, a computing teacher at the school where I teach recently bought a fairware PC LOGO program for our school to use with instruction with our year 7 and 8's. After having had a good look at it I can see why he got it cheaply. I cannot understand why a system with megamemory could produce such a pathetic package! The 32K TI LOGO II leaves it for dead! The amount of editing commands are far less than with the TI version for one thing and there is no provision for animation (sprites). The 'ol TI has a lot going for it and most of us have not even scratched the surface. Well, why not make 1994 the year that we dig out some of these ideas and really get on with it? I will be in it. What about you?

END OF ARTICLE 

LEARN TO KNOW YOUR TI
LESSON 10
with Percy Harrison

In this lesson I am going to introduce you to numeric variables and arithmetic operations and, at the same time, give you some revision on the use of the LET, INPUT and PRINT commands.

The idea of memory as a shelf of "boxes" is extended to numbers and, again, the use of variable names will be limited to one letter for simplicity.

The four basic arithmetic operations will be illustrated. The "*" symbol for multiplication will probably be unfamiliar to some of the beginners but just remember that it is the TI sign for the conventional multiplication sign "X". The division exercises will, or can, result in decimal numbers so it is assumed that you will be familiar with the decimal place. Most examples will be addition and subtraction with a very few multiplication and division examples so if you are unfamiliar with decimal numbers there is no cause for concern.

LESSON 10 INTRODUCING NUMBERS

INPUT, LET AND PRINT

So far we have used only strings. Numbers can be used too. Enter and run this program:

```
10 REM BIGGER
15 CALL CLEAR
20 PRINT"GIVE ME A NUMBER"
30 INPUT N
40 LET A=N+1
50 PRINT"HERE IS A BIGGER ONE"
60 PRINT A
```

ARITHMETIC

Operation	Symbol	key
Addition	+	SHIFT=
Subtraction	-	SHIFT/
Multiplication	*	SHIFT8
Division	/	/

Computers use "*" instead of "X" for a multiplication sign.

Try this. Change line 40 so that N is multiplied by 5.

Computers use "/" for a division sign and quite often the answers are given in decimals, do not let this disturb you as you will soon learn about decimals at school if you are not yet familiar with them. On the other hand, if you are elderly and of the senior citizen vintage and cannot handle decimals it is too late to start now anyway so just ignore them as they will not affect your lifestyle or well-being.

Try this: Change line 40 so that A is N divided by 5. What do you say in line 50?

VARIABLES

The name of a box that contains a string must end with a dollar sign. Examples: N\$, A\$, Z\$.

The name of a box that contains a number does not have a dollar sign. Examples: N, A, Z.

The thing which is put into the box is called the "value" of the variable.

ARITHMETIC IN THE LET COMMAND

```
10 LET A=2
20 LET B=3
30 LET C=B-A
40 PRINT A;B;C
```

Let's try another example:

```
10 LET B=15
20 LET A=B/5
30 LET X=A*4+2
40 PRINT X;A
```

CAREFUL!

Numbers and strings are different. Example: "1993" is not a number, it is a string constant because it is in quotes.

Rule: Even if a string is made up of a number of characters it is still not a number.

Some numeric constants: 5, 22, 3.14, -50

Some string constants: "HI", "7", "TWO", "3.14"

Rule: You cannot do arithmetic with the numbers in strings.

Correct: 10 LET A = 7 + 3

Wrong: 10 LET AS = 7 + 3

Wrong: 10 LET A = "7" + "3"

If you run either of the two wrong lines, the computer will print:

STRING-NUMBER MISMATCH
IN 10

The two types of variables are "string" and "numeric". You cannot mix them.

```
Enter: 10 LET A=5
20 LET B$="10"
30 LET C=A+B$
```

Lines 10 and 20 are OK, line 30 is wrong. What will the computer do when you run this little program?.....Try it.

Try to work out what each of these statements will print, write it down and then enter the line to see if you were correct.

```
PRINT 5 .....
PRINT "5" .....
PRINT "5+3" .....
PRINT "5"+"3" .....
PRINT 5 + 3 .....
```

MIXTURES IN PRINT

You can print numbers and strings in the same PRINT command. (Just remember that you cannot do arithmetic with the mixture.

Correct: PRINT A;"SEVEN";" 7"
PRINT A;B\$

Run this line: 10 PRINT 5/2;" IS EQUAL TO 5/2"

A FUNNY THING ABOUT THE EQUAL SIGN

The "=" sign in computing does not mean "equals" exactly. Look at this program:

```
10 LET N=N+1
```

This does not make sense in arithmetic. Suppose N is 7. This would say that:

```
7=7+1
```

which is not correct.

BUT it is OK in computing to say N=N+1 because the "=" sign really means "replace". Here is what happens:

```
10 LET N=N+1
```

The computer goes to the box with N written on the front.

It takes the number 7 from the box.

It adds 1 to the 7 to get 8

Then it puts the 8 in the box.

Another way to say the same thing is:

```
10 LET N=N+1 means
```

```
10 LET N = N + 1
```

Let (new N) equal (old N) plus 1

NOT BACKWARDS

In arithmetic, these two equations mean the same thing:

```
N = 6
6 = N
```

But in computing you cannot put the LET statement backwards!

Right: 30 LET N = 6
Wrong: 30 LET 6 = N

Assignment 10:

1. Write a program which asks for your age and the current year. Then subtract and print out the year of your birth. Be sure to use PRINT statements to tell what is wanted and what the final number means.
2. Write a program which asks for two numbers and then prints out their product, ie multiplies them.

ANSWERS TO LESSON 9

Assignment Question 9A-1

```
10 REM NICKNAMES
15 CALL CLEAR
20 PRINT "WHAT IS YOUR LAST NAME?"
22 PRINT
24 INPUT L$
28 CALL CLEAR
30 PRINT "SOMEONE TYPE THE NICKNAME"
32 PRINT
34 INPUT N$
36 CALL CLEAR
38 PRINT TAB(5);L$;TAB(15);N$
40 FOR T=1 TO 500
41 NEXT T
50 GOTO 10
```

Assignment Question 9A-2

```
10 REM PRAISES
15 CALL CLEAR
16 PRINT
17 PRINT
20 PRINT "HI, WHAT IS YOUR NAME PLEASE?"
22 PRINT
25 INPUT N$
30 CALL CLEAR
31 PRINT
32 PRINT
35 PRINT N$
36 PRINT
37 PRINT
40 PRINT "THAT'S A VERY NICE NAME"
41 FOR T=1 TO 300
42 NEXT T
43 PRINT
44 PRINT
45 CALL SOUND(500,300,10)
50 PRINT "YOUR MOTHER SURE HAD TASTE."
```

Assignment Question 9B-1

```
10 REM SLOW POKE
20 CALL CLEAR
30 FOR T=1 TO 500
32 NEXT T
40 CALL SOUND(400,300,10)
50 PRINT "STEP ";
60 FOR T=1 TO 500
62 NEXT T
70 CALL SOUND(400,500,10)
80 PRINT "BY ";
90 FOR T=1 TO 500
92 NEXT T
100 CALL SOUND(400,700,10)
110 PRINT "STEP"
120 PRINT
130 GOTO 30
```

Back again next month.

END OF ARTICLE 

Letter from Australia - No. 3 Dec 92
by Tony McGovern

It is quiet at the back door of Funnelweb Farm these nights and we are pretty sad about it. No possums come there any more and, as far as we can tell, those two have been the victims of large dogs. One was a tiny orphan when it first came, and for some while we had to give it a finger to rest one front paw on for balance on the narrow ledge while it ate the bread or fruit with the other. I have not seen any of the big lizards around in the yard for a while either. I just find it difficult to understand why some people come to live in a area next to Blackbutt Reserve, the major nature reserve in Newcastle City and then keep large dogs and many cats which wreak havoc on the native wildlife. Cats are natural hunters and prey heavily on small animals and birds, even the domesticated and fed ones are estimated to kill about 30 birds a year. Curiously enough, cats are immune to funnelweb spider venom, so the spiders do not help. Cats that have gone feral are a major problem, even in the remotest areas of Australia, and "feral" is one of the current buzzwords in the Australian vernacular. An adult possum is a match for a domestic cat, but a small possum or a mother hauling around a baby might not be. Dogs are the problem there. Same goes at Hawks Nest, where the koalas are in danger from dogs and in even more danger under pressure from developers and tree haters. There used to be a slow moving old golden retriever next door, who was always lazing around our place to soak up affection and co-existed with all the possums and lizards for years. Recently a whole bunch of rather more vicious large dogs have moved into the area. Rottweilers and pit bulls running loose do not make me smile. The main offender, and we suspect it as the possum killer, is a large black hairy dog a few doors away. When this bitch is on heat, packs of dogs of all sizes gather around, which is mostly when we see the others. No cloud is without its silver lining though. Whatever dog is murdering the possums is also killing all the cats in the neighbourhood and giving the birds a chance. One of the most soul restoring things around here is to listen to a pair of whipbirds calling away. They are just small nondescript dark-colored birds that flit around the branches in dense bush, but make a noise like the whistle and crack of a stockwhip.

After the US elections, Arkansas seems to be everywhere. Even invades the music programs. Usually when computing I have the radio on, and one time I thought I must have been listening to one of John Briscoe's Jimmy Driftwood tapes. No, it was Radio

National, the public broadcaster. Even found a Sydney record store with a stock of bluegrass CDs during the year. I bought what I could afford at the time which, at the ripoff prices charged in Australia, was not very many, but last time I looked it had closed up.

Will was out last night at what has become a Newcastle institution. For some years now, on the Friday night preceding Christmas, the Santa Claus Pub Crawl takes place. It does boggle the mind a little to think of 700 Santas and helpers carousing their way across the city, but it usually seems to go off peacefully enough.

Actually there was a substantial break in programming here. There was great pressure to reorganize the computer room cum drawing office. It was just to be a couple of shelves put up. The idea had been resisted passively for a long time, but Val brought it to a head by going out to a commercial shopfitters and buying some wall standards and brackets. This left no excuse for not using those lengths of 10" by 1 1/4" stair tread bought years ago at a closing down sale at a joinery works. So the TI99/4A was packed away and the drawing board dismantled. Then the fun started. It seems that you may not fix shelves without first filling the cracks in the plaster, even the historic ones that predated the Newcastle earthquake. Then the repainting... I managed to stop the process just short of digging up the foundations. So now the TI99/4A is

newly installed in glory alongside the 486 PC, with the old Amiga 500 squeezed in beside it. One of these days I may even have them talking to each other, but I never could get a updated RS232 ROM from DIJIT to allow terminal programs to run with the AVPC.

Very curious what is happening in the PC business. Reminds me of another time and world far, far away, when a certain company brought out a Home Computer with a then powerful processor but slugged it down with layers upon layers of interpreted code to give a slow user interface, but one very easy to use even by current standards. Now I look at Windows or OS/2 and there does not seem to have been all that much improvement in speed. Layers upon layers of software repainting screens at a crawl on 33 MHz 486s that are more powerful than many computer centers could boast of at the time of the first TI99/4As. Ever notice how 40 columns or thereabouts has reappeared? Unless you have a monitor of resolution beyond the reach of most home budgets, by the time you have a window out of many, you have only room in it for very limited amounts of text, about like an old TI99/4A screen. Those advertisements you see of screens with layers upon layers of windows are pushing a scene that is intrinsically useless.

As all my recent work on the TI99/4A has been on new editors and as there is a PC a meter away running OS/2, I have been reflecting on the fundamental approaches to editing text on the two machines. I am quite comfortable with the OS/2 System Editor; after all it is in the same tradition that I first encountered with Turbo-Pascal on a CP/M machine. But there is one consistent feature that annoys me every time I use a PC. This must go right back to that awful CP/M system that grew into MS/DOS. It is that you cannot use the cursor keys to put the cursor anywhere on the screen that you want to, even on machines running massive resources in full graphics mode. All you can do is move it over areas you have already typed on. As those of you who have ever corresponded with me know, my normal mode is pen and paper (for people to read; editors and diskfiles only if a machine needs to read it) and when I put pen to paper I do not have to trace each line to get where I want. Maybe Constable Plod needs to, but most of us treat a blank page as randomly accessible. Guess which editor is people-friendly rather than teleprinter friendly and does things just the way we do - good old TI-Writer - where you can position your pen and make your mark wherever you want. Maybe the longevity of the TI99/4A system is not so surprising after all. One thing the PC is good for - I can play OS/2 Solitaire while the TI99/4A grinds away slowly on long batch assemblies.

When pondering on continuing HRD-3000 problems, I realized that I had never seen a thorough discussion of how RAMdisks and the like fit in with the TI99/4A system in so far as CRU base address settings and machine capture on power-up are concerned. Writers of HRD ROSSs obviously have faced the problem, but it is worth chatting about in public. During power-up, the monitor program in a standard TI99/4A system, amongst its other housekeeping chores, sequences through the peripheral CRU base addresses, and at each one executes the power-up routine, if the card has one, and finally executes from GPL any cartridge power-ups in the GROM library. TE-2 snatches some more VDP memory below the disk buffer area, possibly for text to speech work area. The nature of the routines varies from device to device. For instance the TI disk controller spins the drive motors briefly, while Myarc FDCs do not. This is the point at which a device may capture control of the machine from the monitor program; all it has to do is usurp the monitor program and not hand back control. TI made two well known but not common devices which did capture the machine this way: the p-code card and the Plato module. Notice that Plato, being a module, was the last little piggy of all at the power-up trough, while p-code at CRU base >1F00 was the last card to be found in the PE-box. Also there was only one possible peripheral master in the system, the p-code card, which did not care about the cartridge anyway. This meant that every other peripheral box card in the system could do its own initial housekeeping first.

Now with the introduction of Horizon and similar devices with re-programmable DSRs and switchable CRU bases, it is possible to have the user configure a card to capture the machine from any CRU slot and also hand over to the cartridge at any time later. This implies that for correct operation of the system, the card which captures the machine must take the place of the monitor and execute the power-up routines of all cards normally later in the search and strictly, resume the monitor power-up sequence at the cartridge rather than just starting the cartridge. Fortunately it does not seem to matter for Extended BASIC, which is the only module GROM

normally entered from programs loaded at several stages of remove from a HRD power-up capture. The TI99/4A system specifications allow for power-up to use GPL workspace registers R0 to R10. R12 contains the CRU base address and R13 to R15 are already set up. The various documents do not all agree on just what PAD RAM is available. The 1983 System Software comprehensive specification says PAD+>4 to PAD+>BF may be used, but does not mention any of the specific bytes to be preserved, when clearly the VDP pointer at PAD+>70 is important information for other DSRs at the very least. Why does this matter? Well, if a card is to execute power-up routines in other cards, it must run from code placed outside its own DSR ROM and this must not be killed by other power-ups. Why outside the DSR ROM? Only one DSR can be active at a time; you switch yourself off before switching the other one on. The p-code did not need to do this as all power-ups had already been executed. The method adopted in the Miami ROSs was to assume memory expansion present and tip some code out at >A000 (better for FW compatibility at >A050 so the system workfile name is not trashed). I assume, in the absence of published descriptions or source code, that the OPA 8,14 ROS does much the same. The assumption is that no other power-up uses the same area. TI never allowed for card capture except by p-code and so made no provisions for it in general.

Not all the design problems are simply and universally solvable unless the system is restricted to having only one auto-boot card active at a time. I always set up my systems so that the auto-boot HRD (192Kb device) is at CRU >1600 or >1700, safely above the AVPC or Mechatronics at >1400 and have the main system RAMdisk as DSK5 at CRU >1000 for speed as this is the first DSR accessed by normal (and Funnelweb) DSRLinks.

That is just about all for this letter from Australia and for 1992 as well. By the time you read this it will be 1993, so a happy New Year to all.

Tony McGovern
Funnelweb Farm
Dec / 20 / 92

END OF ARTICLE

Nostalgia Time

by Geoff Trott

This series of articles consists of my observations on the contents of the early TNOs. Assuming that you find it interesting, I am continuing with the series this month. Please stop me if you do not want me to continue. I will repeat my general disclaimer in case anyone reading this article gets the wrong idea. I am attempting to describe the look, layout and content of the newsletters without any critical intent. I will try to avoid using any adjectives which could cause offense and if anyone takes offense, that is purely their interpretation of the words and not my intention. I hope that makes my position clear and that no one will be offended.

As I mentioned in the last issue, the covers of the rest of the issues in 1984 all have a shadow outline of the Sydney skyline, with the Centrepoint Tower along the left side and the Opera House at the bottom right. The October cover was on buff card with brown printing and featured the renewal of membership message. The rest of the cover was taken up with information and cut-up pages on the back. There were changes in the committee. Andrew Nutting ceased to be Assistant Librarian and Greg Hope took on Advertising. The Communicators reported an improved version of the BBS program from Robert and that Peter had designed a modem to plug into the PEBox. A company was also designing a modem to plug into the side of the console.

Graphx was announced with an advertisement telling of its capabilities. This program was written by Ron Davis and is still a very good graphics program. "Gowfar" contributed reviews of the games "Microsurgeon", "Moonsweeper" and "Fathom". The shop reported problems with software on tapes as well as the arrival of the game "Tennis" and the marketing of "Torpedo Attack" by Tony Imbruglia. There was a review of programs for MiniMemory which provide an editor, assembler and disassembler running in BASIC. Greg Hope (Gowfar) resumed his report on the game "Space Empires". There were Regional Group Reports from Nepean, Bankstown, Liverpool, Newcastle and Central Coast.

Craig Somerton presented some cryptic clues for "Return to Pirate's Isle". Mike Slattery continued with "Logo Corner" and showed how to move the turtle about. There was a review of "Torpedo Attack" and a random number speaking program from Brian Rutherford. There was an article about using arrays from Don Owens and two programs from John Luck called "Blind Man's Bluff" and "Sprite Pick-up". In Younger Set, Jenny responded to a request for a Younger Set Club by saying, amongst other things, that there were only about 5 members of the committee running the entire club of 1000 members. Sounds like a very efficient administration. There were a number of programs to type in including: The Flintstones, by Stevens Gerber; TI-Squares; a shoot-em-up game; and a simple speech program from Duane Fisher, who is blind. In the Editorial Shane mentioned that another version of the BBS program had arrived which had changed to using Extended BASIC instead of BASIC and MiniMemory.

The November 1984 issue had a pale pink card cover with the printing in dark pink. It had 24 pages with another 4 pages printed on yellow paper in the middle with all the information about the AGM on these pages. Secretary's notebook mentioned that there were 46 new members in the last month. A note from Marcello Zannini of Italy showed how to change the screen colours for Extended BASIC until power is turned off. Dr. A N Greacen reported that there appears to be an invisible ceiling that descends slightly as the game of Parsec progresses. This causes the same result as "crash with ground" if contacted.

Mike Slattery continued with the articles on Logo. Tony McGovern returned with his Extended BASIC tutorial to discuss a program to print out program listings in two columns, side by side. Ross Mudie wrote about the way Extended BASIC uses memory expansion. He pointed out that string data is always stored in VDP memory. There was an article and a program from Tony McGovern for disassembling contents of memory, written in BASIC. The Communicators told how to transfer programs and files between two TI99/4As directly via the telephone but not through the BBS. Peter Day in Beginning BASIC explained how to define new characters. Regional Group News came from: Newcastle, Illawarra, Liverpool, Central Coast, Marrickville and a picture from Bankstown.

December 1984 was a gala issue with 32 pages. The cover was in thick white card and was printed in two colours, red and green. The city outline was in red with a Christmas message in green. The colours did not extend past the front cover as all the rest of the cover was in black printing. The inside front cover information was taken over by an advertisement, but the back two pages were cut-up pages as usual. Secretary's Notebook mentioned that the committee were investigating a new venue for the monthly meetings. This would be a move from the church at Darlinghurst to a place like the Woodstock Centre at Burwood. John mentioned that entries into his competition to write an assembly language program to produce a non-blinking cursor of any shape had started to come in.

Jenny's Younger Set contained a few programs: Target Blast by Chris Develin; and Go Australia by Darren Watkins. Regional Group News came from Blaxland, Liverpool, Nepean, Illawarra, Marrickville and Sutherland. Sydney Michel provided an article with assembler routines for doing screen scrolling in four directions along with a demonstration program. There were the following programs to type in: Totem Mice by Batz in the ATTIC; Double Height Character Set by Paul Dunderdale; and Rabid by Cullhane Gibbs. Extended BASIC Tutorial from Tony McGovern gives good advice on use of sub-programs and the use of the pre-scan switch commands. A list of a large number of modules, tapes and disks of programs was published with their current prices.

The Communicators announced that the BBS program written by Robert had been upgraded by Steven Williams. There is also a list of all the BBS available then. Graham Baldwin provided an article about providing sounds and planning other features in games programs. The Shop explained some of the problems of copying tapes with the expensive high speed tape copier. The problems of making hundreds of copies of tapes and expect them all to be readable by just as many different tape recorders was obviously a nightmare. Mike Slattery's Logo column had a Christmas flavour with a program for playing a Carol while watching Santa arrive.

Mark Nielsen reviews a spelling checker program (Dragon Slayer) which he finds very useful. Peter Lynden reviews some books for children and others and finally there is a screen text layout sheet which would be useful for planning screens. This concludes the look at 1983 and 1984 through the pages of the Newsdigest. I found it interesting to trace the people of the club through the information in the pages. I was ultimately disappointed in the lack of really useful material over these two pivotal years. There was also a lack of local content, considering the club had so many members at that time. I do not think I will continue with this series, so someone else can feel free to take over with my blessings. I believe the next few years were more interesting, but perhaps I am biased because that is when I started to contribute to the newsletter.

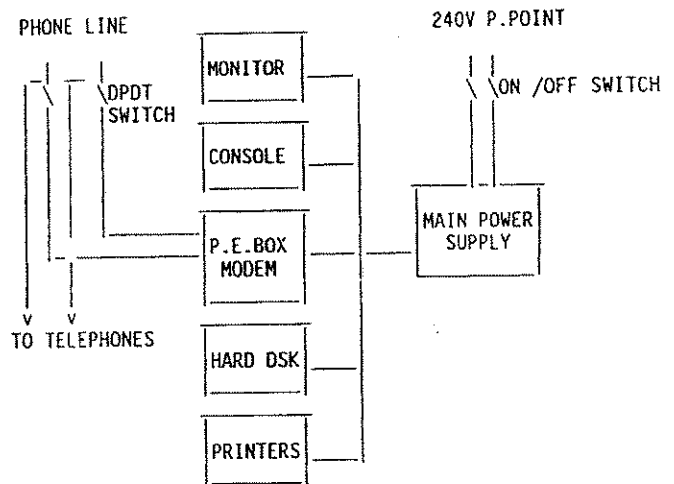
END OF ARTICLE

My Modem Was Smoking
by B.v.Takach

One of the essential and very useful add-ons to my TI was Peter Schuberts PE-Box resident modem card. It joined the other cards some time in 1985, and performed without a hiccup until the end of August this year. Give or take a few months, this is 8 years of service. Compared to my first IBM clone, which was dismantled after 12 months, Peter's modem card is a very reliable piece of hardware.

We had a violent thunderstorm on the 27th August. I discovered on the 28th that my modem was dead. The first cursory investigation revealed that the +12V input fuse was blown and the two positive regulators (+12V +5V) were also faulty. Obviously the damage was caused by one of the close-by lightning strikes.

But how could it be? The computer system is isolated by a double pole switch, which interrupts both the active and neutral conductors, the modem is also isolated from the phone line by a double pole switch. Not one of the other cards in the P.E. Box suffered any damage. The block diagram below illustrates the connections of the system.



At the time of the storm the system was turned off and the phone/modem switch was in the phone position.

When I had eventually repaired the modem the following items were damaged:

1-0.5A fuse, 1-7812 regulator, 1-7805 regulator, 1-12V relay, 1-7910 modem IC, 2-BC549 transistors, 1 MC 1488 RS232 IC, 1 MC 1458 op amp.

As you can see it is quite a list! The modem was repaired in about 3 hours. It was a straight forward job thanks to my foresight:

- I had requested and obtained a circuit diagram of the card from Peter at the time of purchase;
- I do keep a full set of spare transistors, chips and relays for just such an emergency,
- I made an extender board for the P.E.Box.

My usual method of printed board repair is to socket any chips that have been removed from the board. This saves lots of time and trouble if it has to be changed again.

The extender board permits trouble shooting a card under actual working conditions. The puzzle however, still remains to be solved, how can such massive damage be caused to one card only by an electric storm when all lines to the outside world were isolated. At the same time 3 telephones connected to the phone lines survived undamaged?

From here on in the modem plug will be pulled out of the socket whenever the system is not used.

END OF ARTICLE

Hardware Solutions: Adding memory

Memory is typically added to computers using a memory board or system-board memory modules. Both give you additional memory and increase the performance of software on your system. One or the other may be best for you, depending on your system and the advantages of each method.

Memory Boards

Memory Boards (like the Intel Above Board) are used most often since they fit into virtually any IBM PC* or compatible computer. They install in the computer's expansion slot and provide up to 32MB of memory. They

Memory for Windows 3.0

Microsoft Windows 3.0 has sparked tremendous interest in the PC world - not only because it replaces DOS's command lines with a graphical user interface, but because it breaks the DOS 640K memory barrier. By taking advantage of Intel's 80386 microprocessor, Windows 3.0 provides outstanding performance for multitasking applications:

Getting most out of Windows 3.0 calls for plenty of memory. In referring to memory, in fact, Microsoft says, "The more you will give Windows to work with, the more it will do for you".

Depending on how much memory you have and which CPU your system uses, you can run Windows in one of three operating modes: real, standard or 386 enhanced.

Real mode is the base level for 286 or 386 systems with 640 K to 1MB of memory, and the only mode 8088-based systems support. In real mode, Windows 3.0 uses expanded memory for multitasking of applications that support EMS 4.0.

provide conventional, expanded and/or extended memory.

Parallel/serial ports are available, eliminating the need to use two expansion slots for this functionality.

System-Board Memory

System-board memory chips, such as Intel Matched Memory modules, are available for select 386 and 486 microprocessor-based computers. They fit into empty sockets on the motherboard, and add 1MB, 2MB or 4MB of memory. They're a little easier to install than memory boards, and less expensive. And they offer somewhat higher performance due to faster access time.

For most people, adding system-board memory is the first choice, if the computer is designed for it. Many computers aren't, however, so a memory board is the only choice. Even systems that do use system-board memory are limited in the amount that can be added, due to space constraints. Therefore, to add memory beyond the limits (typically 1 to 8MB) requires a memory board.

Also, system-board modules provide extended memory only. For the hundreds of applications that take advantage of expanded memory, a "LIM-ulator" will be necessary (see next page).

Standard mode calls for a 286 or 386 processor and at least 1MB of memory (640K conventional, 256K extended). Standard mode uses the microprocessor's "protected" mode of operation to provide access of up to 16MB of extended memory. In standard mode, you can use memory-intensive programs such as Word for Windows and Excel. You can write larger documents and build bigger spreadsheets. And you'll see an increase in processing speed when switching between multitasking applications. If your system has LIM EMS 4.0 expanded memory, standard mode also runs EMS applications.

Windows 3.0's 386 enhanced mode gives you the full power of Windows 3.0 and the 386 processor. Enhanced mode requires a 386 system with at least 2MB of memory (640K conventional 1MB or more extended). Enhanced mode offers all the features of standard mode, plus access to virtual memory. With virtual memory, the PC can treat a portion of your hard disk as if it were memory, in essence giving applications more memory than is physically available in the system.

Over and above the Windows operating environment itself, you'll need plenty of extended memory to hold your Windows applications. In particular, moving back and forth between applications requires large amounts of memory.

Several kinds of software are available to help make the most out of whatever amount and kind of memory our system has.

Memory management software, for example, moves device drivers and TSRs out of conventional memory and into unused areas of reserved, expanded or extended memory, depending on the memory management software and the computer. The result is to relieve the crunch in conventional memory, freeing it for programs and data. For example, you might use a program such as QRAM or Headroom to move network drivers out of conventional memory, so you could work with a large spreadsheet while the system is connected to a

network printer. Memory management packages are available for all categories of PCs.

DOS Extenders

If your PC has an 286 or 386 processor and extended memory, a DOS extender makes it possible for DOS to access extended memory. A DOS extender is a software routine built into some applications. By providing access to extended memory, DOS extender technology allows an application to offer more features or commands, handle large documents or run faster. Lotus 1-2-3 Release 3 is one of the best known programs that includes a DOS extender.

LIMulators

Finally, for 386-based systems, LIM emulators (LIMulators) are device drivers that use the 386 processor's special memory-mapping capabilities to emulate expanded memory. So, if you have extended memory in the system but want to run applications that use expanded memory, a LIMulator lets application programs "see" extended memory as expanded memory. Some LIMulators, available for 8088/8086- and 286- based PV's use hard disk space as expanded memory. Hard disk LIMulators usually perform many times slower than true expanded memory managers.

Conflicts can arise when DOS extenders, multitasking applications, and other memory management software run at the same time. One attempt to resolve memory management conflicts is the Virtual Control Program Interface (VCPI), a specification developed by Phar Lap Software and Quarterdeck Office Systems in 1987. VCPI

allows expanded memory managers and DOS extenders to coexist, but doesn't address a range of other multitasking considerations.

A more recent effort is the DOS Protected Mode Interface (DPMI) specification, developed by a consortium including Intel and Microsoft as well as Borland

International, Lotus, Phar Lap, Quarterdeck and other companies. DPMI is an open standard that provides a comprehensive solution to memory management conflicts for multitasking applications and extended memory.

Working Together

Regional Group Reports

Meeting Summary For NOVEMBER

Banana Coast	14/11/93	Sawtell
Central Coast	13/11/93	Saratoga
Glebe	11/11/93	Glebe
Hunter Valley	13 or 20/11/93	
Illawarra	16/11/93	Keiraville
Liverpool	12/11/93	Yagoona West
Northern Suburbs	25/11/93	
Sutherland	19/11/93	Jannali

BANANA COAST Regional Group (Coffs Harbour Environs)

We never miss meeting at Kerry Harrison's residence 15 Scarba St. Coffs Harbour, 2 pm second Sunday of the month. Visitors are most welcome. Contact Kerry 52 3736, Kevin 53 2649, Rex 51 2485 or John 54 1451.

CENTRAL COAST Regional Group

Regular meetings are normally held on the second Saturday of each month, 6.30pm at the home of John Goulton, 34 Mimosa Ave., Saratoga, (043) 69 3990. Contact Russell Welham (043)92 4000.

GLEBE Regional Group

Regular meetings are normally on the Thursday evening following the first Saturday of the month, at 8pm at 43 Boyce Street, Glebe. Contact Mike Slattery, (02) 692 8162.

HUNTER VALLEY Regional Group

The Meetings are usually held on the second or third Saturday of each month at members homes starting at 3pm. Check the location with Geoff Phillips by leaving a message on (049) 428 617. Please note that the previous phone number (049) 428 176 is now used exclusively by the ZZAP BBS which also has TI support. Geoff.

ILLAWARRA Regional Group

Regular meetings are normally held on the second Tuesday of each month after the TISHUG Sydney meeting (except January) at 7.30pm, at the home of Geoff & Heather Trott, 20 Robsons Road, Keiraville. A variety of activities accompany our meetings, including Word Processing, Spreadsheets and hardware repairs. Contact Geoff Trott on (042) 29 6629 for more information.

LIVERPOOL Regional Group

Regular meeting date is the Friday following the TISHUG Sydney meeting at 7.30 pm. Contact Larry Saunders (02) 644-7377 (home)

After 9.30 PM or at work (02) 708-1987
Liquorland Yagoona for more information.

*** ALL WELCOME ***

12th November 1993 *****
34 Colechin St * Preview of *
Yagoona West 2199 * some NEW games *

Bye for now. Larry.
Liverpool Regional Co-Ordinator

NORTHERN SUBURBS Regional Group
Regular meetings are held on the fourth Thursday of the month. If you want any information please ring Dennis Norman on (02)452 3920, or Dick Warburton on (02) 918 8132. Come and join in our fun. Dick Warburton.

SUTHERLAND Regional Group

The September meeting was attended by four members, Kevin, Herbert Derek and myself. Much of the time was spent in re-aquainting myself with the Page Pro software and reviewing a recent disk purchase from the TISHUG Shop. This was catalogued as PP037, which was a collection of Page Pro pictures.

We also spent some time in checking the Pin-out connections and Dip Switch settings on a daisy wheel printer, which Derek donated to the club.

Regular meetings are held on the third Friday of each month at the home of Peter Young, 51 Jannali Avenue, Jannali at 7.30pm. Peter Young.

TISHUG in Sydney

Monthly meetings start promptly at 2pm (except for full day tutorials) on the first Saturday of the month that is not part of a long weekend. They are held at the MEADOWBANK PRIMARY SCHOOL, on the corner of Thistle Street and Belmore Street, Meadowbank. Cars can enter from Gale Street and park in the school grounds. Regular items include news from the directors, the publications library, the shop, and demonstrations of monthly software.

NOVEMBER MEETING - 6th NOVEMBER

This will be a FULL DAY TUTORIAL starting at 10 am. One of the features of the day will be a tutorial on printer codes. Come along and join in on the fun.

The cut-off dates for submitting articles to the Editor for the TND via the BBS or otherwise are:

December - 14th November
January/February - 9th January

These dates are all Sundays and there is no guarantee that they will make the magazine unless they are uploaded by 6:00pm, at the latest. Longer articles should be to hand well before the above dates to ensure there is time to edit them.

**DON'T CLOWN
AROUND MORE
TND ARTICLES
WANTED**

