



**NEWS
DIGEST**

Focusing on the TI99/4A Home Computer

Volume 9, Number 10

November, 1990

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**Peter Glead
1927? - 1990**

He will be missed

Index

September 1990

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Title	Description	Author	Page No.
Agenda of 4th AGM	Club news		4
Assembler tutorial #1	Software hints	McCormick, Mack	23
Assembly class	General interest	Mudie, Ross	9
Assembly squeezing, part 3	Software hints	McGovern, Tony	6
Co-ordinators report	General news	Warburton, Dick	2
Cutthroats part 3	Adventure hints	Scorpi	26
Disk file formats	Software hints	Mudie, Ross	16
Disk reviews	Software review	Shaw, Stephen	17
Editor's comment	General interest	Relyea, Bob	1
Enhanced BASIC	Software hints	Shaw, Stephen	11
Extended BASIC tips #1-4	Software hints	Swedlow, Jim	12
Greeting cards	Software hints	Ruggeri, Alf	13
Minutes of 3rd AGM	Club news	Phillips, Terry	3
Minutes of special GM	Club news	Phillips, Terry	4
Modular programming	Software hints	Christensen, Garry	15
Peter Gleed, in memorial	General interest	M, W	2
Regional group reports	General interest		27
Secretary's notebook	Club news	Phillips, Terry	5
Secretary's report to 6/90	Club news	Phillips, Terry	5
Techo time	AT card, travels	Amadio, Lou	8
Text on disk	Software hints	Shaw, Stephen	22
TI-Bits #1	Software hints	Swedlow, Jim	12
TiSHUG shop report	Club news	Harrison, Percy	6
TiSHUG software column	Club software	Schreiber, Rolf	7
Treasurer's report	Club news	Trott, Geoff	21
Viatal, what is it?	General interest	Nielsen, R	10
Younger set	Program	Maker, Vincent	27

TiSHUG Fairware Author of the Month

The Fairware Author for this month is R.A. Green for his Macro Assembler and his updates to Multiplan and TI-Writer. The shop has disks of all his software for sale. All Donations collected at the meeting and sent in will be mailed to him.

Membership and Subscriptions

Annual Family Dues \$30.00
Associate membership \$10.00
Overseas Airmail Dues A\$60.00
Overseas Surface Mail Dues A\$45.00

TiSHUG Sydney Meeting

The next meeting will start at 2.00 pm on 3rd of November at Ryde Infant School, Tucker Street, Ryde. At 12 pm, before the meeting, there will be a beginners Editor Assembler class for all those interested.

Printed by
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Printery

See you at the next meeting.

Co-ordinator's Report

by Dick Warburton

Peter Gleed In Memorial

by W.M., Melbourne

Spring is sprung, the grass is riz, I wonder where all the TIs is. Nights are getting warmer, excellent weather to get the old TI99/4A out and do a few things. There always seems to be something to do on the machine, even in day to day use. Imagine my horror last night when having just installed two new drives, I tried them out by attempting to initialize a new disk. Nothing worked. So I started the process of finding out what was wrong. I switched it on and off a dozen times. I tried to read other disks and was surprised to find that the drives could load programs. No matter what I did they would not initialize the disk. I removed the drives and replaced them with the old ones. No better. I took out the drives, removed the drive cables and tested them for continuity. No problem. I tried the drives again, no initialization. I was now convinced that the multifunction card was faulty, so I checked it over, made sure all the chips were seated properly and put it back. No improvement. Each time I put the drive in, it read "No diskette" or "drive error"

By this time I was convinced that I had a serious problem. I was in a hurry to type my report, and I was getting frustrated. To cap it off, my ramdisk started to make strange colourful designs on the screen, and Funlwriter refused to come up. It did not matter, as I knew I could not write to the disk. Suddenly after a whole day and night of computer deprivation, I had an idea. What if that new Xidex disk was faulty. I tried another disk. Well it worked perfectly. All that worry and fuss simply because of a defective disk. I suppose it happens to us all at some time that we overlook the obvious. We seek some difficult explanation and waste a lot of time, money or effort, when a simple solution is staring us in the face. I wonder what happens to computer users who have absolutely no technical knowledge, or do not belong to a computer group. By the way, I discovered what was wrong with the disk. There was no hole in the disk to let the light through. I punched a hole and my disk is formatted too. I feel quite pleased now. Apart from these minor problems it has been a good week on the TI99/4A. I have almost finished another colour monitor interface for the school. We had a great night at Percy's, and I have managed to repair another console board and keyboard. As well I have found a great bargain in new disk drives. Get your disk drive bargain at the next meeting. I wish I had time to learn to program this machine properly. There seems to be so much to learn about this computer, as old as it is, that I have problems trying to keep up with what is happening. It certainly provides a challenge and lots of fun.

One of my projects is to establish some TI99/As at the school I work in. I am looking for any educational software I can find. If you can help me, give me a call at home, or see me at the meeting.

Do not forget that the annual meeting will be held in December. There will be some important issues to resolve, so do not miss it. It is a time when we need other members to share the tasks of running the club. As John Kennedy said, "Think not what TISHUG can do for you, but rather what you can do for TISHUG." Think about what we will need for next year. If you can help in some way give it a go. You may surprise yourself, and others. Well, it is getting late, so I will say "Bye for now", and I will see you at the next meeting.

Dick Warburton.

o

There will be many TI99'ers around the world who either knew or knew of Peter Gleed. He wandered far afield for his TI99/4A. We know that over the years he made trips to Germany and America, in which he combined TI99/4A pleasure with business. In America we know that many TI99'ers called him friend, and he was himself deeply grieved on receiving the news of the passing of the husband and parents of one of those friends.

As far as Melbourne's TI99'ers were concerned, there was not a member who did not, in some way, benefit from the support and dedication that Peter bestowed upon the club.

This is not to say that he was perfect, he was far from that. He smoked like a chimney, he was not afraid of doing his block (frequently), he did not like to be interrupted when he had the floor (which was most of the time), he could be irascible, abrasive, opinionated and liked to lead and take charge. These were some of the down sides of Peter.

The up sides, well now that is something different. He provided good education for his children. Both his sons are in the computer field and their father gave them the best ground work in this endeavour as programmers. His English heritage was a cross he liked to bear. His service to his country during World War 2 was outstanding. His dedication to the TI99/4A Melbourne User Group was unsurpassed, and he took his duties perhaps too far to heart. He took on more than his fair share of those duties, and these, as in the case of the proverbial Camel, were perhaps the last straw.

As all Co-ordinators, Directors, (or what have you) all over the world, have said, no matter what User Group, give me all the work to do for the club, with one or two helpers, and we will have the best Newsletter, the best Projects, the best Shop, the best club meetings, the best everything. All the members of the club need to do is sometimes attend those meetings. Peter as Co-ordinator of the Melbourne Club for the last several years, tried to live up to these ideals.

Many had tried to sway Peter from his love for his TI99/4A, but his dedication was steadfast, although because of business endeavours, an understanding of other systems was paramount. His hobby was used in all his business, and he always said that there was nothing any other computer could do that he could not do on his TI99/4A.

Peter organised the last Faire we held in Australia and I think he organised the first one. As a member, I attended the last Faire, the first was long before I joined the club. Now, as a member of one of the TI99/4A User Groups from all over the world, we hope Peter is enjoying computing in the biggest Faire of all. (If there is not one, he will certainly organise one.)

W.M. TI99/4A Melbourne User Group

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Departed Friend.....

Peter Gleed

Wanted

Unwanted copies of TND, preferably from 1987 to present, to be used to send to overseas user groups to publicise TISHUG. Phone Rolf on (042)842980 or bring to any meeting.

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Minutes of 3rd AGM

February 1990, by Terry Phillips

TISHUG (AUSTRALIA) LIMITED
MINUTES OF 3RD ANNUAL GENERAL MEETING
HELD SATURDAY 3 FEBRUARY, 1990
AT THE WOODSTOCK COMMUNITY CENTRE
CHURCH STREET BURWOOD NSW

1. OPENING:

Chairman Dick Warburton opened the meeting at 2.20pm welcoming those present.

2. MEMBERS PRESENT AND APOLOGIES:

A list of members present is shown on the attached membership list with names highlighted.

Apologues were recorded and accepted from:

Tom Pearson, Stephen Carr, Cyril Bohlsen, John Robinson, Eric Ockenden, Karl Kuit, W Kanitz, Garry Wilson, Hilton Harrison, George Meldrum.

3. READING AND CONFIRMATION OF MINUTES OF 1989 AGM:

These minutes had been included as an item in the January/February edition of the newsdigest. They were confirmed on the motion of Percy Harrison, seconded John Paine.

4. CORRESPONDENCE AND DEALING WITH SAME:

Secretary Terry Phillips advised that there was no correspondence.

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

There were no recommendations nor nominations for life membership.

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

Reports, accounts and auditors report had been included as a supplement in the January/February 1990 edition of the TND. These were confirmed on the motion of Tom Marshall, seconded Don Gould.

Dick Warburton explained to the meeting that 1990 would need to be a year when great care was exercised with finances. Already some avenues were being explored which would result in cost saving measures.

7. UNFINISHED BUSINESS FROM LAST AGM:

Nil.

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

Returning Officer - Ross Mudie on nomination of Gerry Lee, seconded Larry Saunders.

Scrutineers - Gerry Lee on nomination of Robert Peverill, seconded Don Gould and Peter Young on nomination of Derek Wilkinson, seconded Robert Relyea.

9. ELECTION OF DIRECTORS:

At close of nominations only four (4) nominations had been received - these being Messrs. Phillips, Schreiber, Warburton and Welham. Further nominations were invited from the floor.

The following members were nominated and accepted their nomination -

Lou Amadio, Robert Peverill, Geoff Trott.

The full list of nominees was now:

AMADIO Lou	TROTT Geoff
PEVERILL Robert	WARBURTON Richard
PHILLIPS Terry	WELHAM Russell
SCHREIBER Rolf	

Ballot papers were produced and distributed. 36 members were entitled to vote and 35 votes were recorded.

At the conclusion of counting, Returning Officer, Ross Mudie, declared the following elected as Directors for 1990 -

Terry Phillips
Rolf Schreiber
Geoff Trott
Richard Warburton
Russell Welham

Dick Warburton proposed a vote of thanks to retiring Director, Robert Peverill. Tom Marshall proposed a vote of thanks to all Directors for their efforts throughout the preceding year. This was done by acclamation from the floor.

10. ELECTION OF AUDITOR:

F H Spender (Wollongong) was nominated by Rolf Schreiber, seconded by Russell Welham. F H Spender was accepted on a majority show of hands.

Discussion:

(a) Change of accounts year as recommended by the auditor - the auditors recommendation was that the accounts year be changed from 1 January to 31 December to 1 July to 30 June each year to conform with normal accounting periods. After discussion the following motion was put forward by Don Gould, seconded Peter Young:

"That a proposal be put to members to amend Paragraph 49(a) of our Memorandum and Articles of Association to read 'The financial year of the Club shall commence on the first day of July and end on the last day of June in each and every year.'"

The majority of members accepted this motion on a show of hands. The motion to be given due publicity in the next issue of the TND for subsequent vote at an extra-ordinary general meeting.

b) Previous auditor - on the motion of Allen Holmes, seconded Lou Amadio it was agreed that the group write to our previous auditor with a request for the return of \$350 in recompense for the uncompleted 1988 annual corporate affairs return. This motion carried by the majority of members.

11. NEW BUSINESS:

a) Dick Warburton advised members that the Directors had approved a membership fee increase from \$25 to \$30 and the abolition of the current \$5 fee levied on members wishing to use the publications library. Chief reason for the increased fee was the rising costs in production of the monthly newsdigest.

b) Dick Warburton advised members that the Directors had approved a meeting venue move to the Ryde Infants School commencing from the March 1990 meeting. Chief reasons for this were lack of available rooms at Woodstock and the savings in meeting costs by the move.

c) Dick Warburton advised members of the following sub-committees:

Editor - Robert Relyea
Technical - Lou Amadio
Sysop - Ross Mudie
Shop - Percy Harrison

Volunteers were needed for the following positions:

Meetings Co-Ordinator, Games Co-Ordinator,
Publicity Co-ordinator, Social Co-Ordinator, Library
Assistant, Project Co-Ordinator.

Dick gave a brief run-down on what each position would involve. Members interested in performing these duties were asked to see Dick.

12. MEETING CLOSURE:

As there was no further business to discuss, Chairman Dick Warburton closed the meeting at 4.15pm thanking all who had made a contribution to the group throughout the previous year.

Minutes recorded by	Confirmed by
Terry Phillips	Dick Warburton
Honorary Secretary	Chairman

3 February, 1990

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Minutes of Special GM

August 1990, by Terry Phillips

TISHUG (AUSTRALIA) LIMITED
MINUTES OF SPECIAL GENERAL MEETING
HELD ON SATURDAY 4 AUGUST 1990
AT RYDE INFANTS SCHOOL, RYDE NSW

1. OPENING:

Chairman Dick Warburton opened the meeting at 2.10pm explaining to the members that the meeting had been called to consider proposed changes, as outlined in the July issue of TND, to the clubs Articles of Association.

2. APOLOGIES:

The following apologies were recorded - Rolf Schreiber, Larry Saunders, Mark Williams, Michael Ball, Karl Kuit.

3. BUSINESS:

Paragraph 26 - to amend the Club's AGM to be held in December, if practicable, in lieu of February.

Moved Geoff Trott, seconded Lou Amadio that this proposed change be put to the vote.

After discussion on rules of debate and Geoff Trott addressing the meeting on reasons for the proposed change, this motion was postponed on motion of Don Gould, seconded Tom Marshall so that proposed amendment to paragraph 49(a) could be discussed first.

Paragraph 49(a) - to amend the club's financial year to 1 July to 30 June in each and every year in lieu of 1 January to 31 December in each and every year.

Moved Tom Marshall, seconded Don Gould that this proposed change be put to the vote.

On a show of hands the Chairman declared this amendment unanimously carried.

Paragraph 26 - the postponed motion was then put to the vote.

On a show of hands the Chairman declared the amendment to paragraph 26 carried by a majority.

Paragraph 52(a) - to amend to include reference to the club's financial year and to correct to show reference to paragraph 32 in lieu of paragraph 31.

Moved Tom Arnold, seconded Ben Von Takach that this proposed change be put to the vote.

On a show of hands the Chairman declared the amendment to paragraph 52(a) carried unanimously.

Paragraph 62(h) - to amend a quorum to be four-fifths (4/5) in lieu of current two-thirds (2/3).

Moved Percy Harrison, seconded Don Gould that this proposed change be put to the vote. A proposed amendment moved John Robinson, seconded Eric Ockenden that a quorum comprise three fifths (3/5) was discussed but lost when put to the vote.

Chairman Dick Warburton declared the original motion carried on a majority show of hands.

4. CLOSE:

Chairman Dick Warburton declared the Special General Meeting closed at 2.50pm.

Minutes recorded by:	Confirmed by:
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Terry Phillips	Dick Warburton
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Honorary Secretary	Chairman
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4 August, 1990

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Agenda for 4th AGM

December 1990

TISHUG (AUSTRALIA) LIMITED
4TH ANNUAL GENERAL MEETING
RYDE INFANTS SCHOOL, TUCKER STREET RYDE
TO BE HELD ON SATURDAY 1 DECEMBER, 1990
COMMENCING AT 2PM

AGENDA

1. OPENING
2. MEMBERS PRESENT AND APOLOGIES
3. READING AND CONFIRMATION OF MINUTES OF 3RD ANNUAL GENERAL MEETING HELD ON SATURDAY 3 FEBRUARY 1990 AND READING AND CONFIRMATION OF MINUTES OF SPECIAL GENERAL MEETING HELD ON SATURDAY 4 AUGUST 1990
4. CORRESPONDENCE AND DEALING WITH SAME
5. READING AND DEALING WITH RECOMMENDATIONS FROM THE BOARD OF DIRECTORS - LIFE MEMBERS AND OTHER MATTERS
6. DIRECTORS REPORTS, PRESENTATION OF ACCOUNTS AND AUDITORS 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. MEETING CLOSURE

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Secretary's Report

January to June 1990, by Terry Phillips

This report covers the period 1 January to 30 June 1990, in line with the clubs new accounting period which was adopted by members at the August Special General Meeting.

MEMBERSHIP: =====

The following table sets out our current membership as at the end of the reporting period:

Members at 31/12/89 - 209

Plus New Members - 5

Less Non Renewers - 39

Current Membership - 175

Membership Comprises:

Full Members - 168

Life Members - 5

Associate Members - 2 *

* Associate members may avail of club facilities, including BBS access, but do not receive a copy of the monthly TND.

63 members have paid the \$5 fee for bulletin board access.

Frankly, I did not expect such a high attrition rate among members this year, however despite contacting all who failed to renew, they were not persuaded to come back to the fold.

DIRECTORS MEETINGS: =====

Directors met on 6/1/90, 3/3/90, 5/5/90 and 2/6/90 and a full attendance of Directors was at each meeting. No meeting could be held in April due to the hectic nature of the members meeting on that day, when, after everything was packed away, it was just too late to convene.

MONTHLY MEETINGS: =====

These have continued to be well attended throughout the year with sometimes up to 70 members and visitors present. Most who come along seem to enjoy the opportunity to watch the demonstrations, patronise the shop, get items repaired or just generally have a chat to fellow members. No doubt the main strength of a club such as ours is the fact that it is the feeling of belonging to a group of people with common computing interests.

THE FUTURE: =====

As mentioned earlier, 39 members did not renew during the 6 month period I am reporting upon, and indeed, some more have not renewed since the end of June. I would hazard a guess, that most who have not renewed, still have an interest in computing, but either through work related or hobby reasons have acquired another brand of computer and see no valid reasons to part with a \$30 membership fee and receive in return TI related information. Some, I am sure, even still have their TI's, but have packed them away to gather dust and not see the light of day again.

What can this club do for people who "cut their teeth" on a TI but now for a variety of reasons no

longer use it? Consider yourself; if you, as a current member acquire another brand of computer, would you stick with the club?

These questions need earnest, serious discussion and resolution if we are to be in a position to seriously determine the future of our club.

NOTICE TO MEMBERS: =====

All members are advised that the 4th Annual General Meeting of TISHUG (Australia) Limited will be held on Saturday 1 December 1990 at Ryde Infants School, Tucker Street Ryde NSW, commencing at 2pm. Members attending are requested to be in attendance by 1.30pm to enable them to sign in and thus ensure a prompt 2pm start.

The following relevant paragraphs from the clubs Articles of Association are brought to your attention:

16(i) - Nominations for the office of Director shall be delivered to the Secretary by 8.00pm on the twenty first (21) day prior to the day fixed by the Board for the Annual Election of Directors.

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, 10 November, 1990, while in accordance with Paragraph 17(b) a suitable nomination form is enclosed.

Terry Phillips
Honorary Secretary

Secretary's Notebook

by Terry Phillips

The October full day meeting was not particularly well attended, however those that did attend seemed to be enjoying themselves and taking advantage of the activities on offer. I have two lines of thought as to why the attendance was not up to expectations and these are:

1. The uncertainty of the weather. It was a fairly miserable day after the warm days of the preceding week.
2. The last weekend of the school holidays with a number of families being still away. (It was mentioned that perhaps for the October meeting we should look at the second Saturday for the meeting - if any member has any thoughts on this please make them known to one of the Directors).

There is good news to report on membership, with 4 new members being signed up in the past week. The new members, whom a very big welcome is extended to are:

Darren Bellia of Mays Hill
Kaveri Chakrabarty of Cook (ACT)
Arto Heino of Minto
John Meldrum of Russell Vale

New member, Kaveri Chakrabarty, is looking for an Editor Assembler package. If any member has a spare for sale could they get in touch with me please.

continued on page 22

TiSHUG Shop with Percy Harrison

At the time of writing this article, 5th October, I have received verbal orders for 30 monitors but payment for only 16. As I indicated in the October issue of TND the monitors, when received, will be allocated in the same order as the receipt of payment.

In order to try and satisfy the requirements of all members I will ask Wang if they will increase our order to 35 but at this stage I cannot say whether the additional 5 monitors will be made available so I suggest that those members who have indicated that they want a monitor get their payment to me as quickly as possible so as to avoid any disappointment. Also I now need to know exactly what each member requires in the way of Interface Cards, Interface Kits, Power Transformers, Jiffy Boxes, Power Leads, Monitor to I/F Leads and Console to I/F Leads so that kit and lead components etc can be sourced in time to include them with the monitors when they are received.

The prices for these items are included in the list below. Please post your payment, together with a list of your component requirements, direct to me at:

3 Storey Street
Ryde NSW 2112

Items available from the shop:

New release software disks -----	\$2.00
(See "Software Column" for details)	
Asgard News Vol. 2 No.3 -----	\$3.25
5.25 in. DSDD Disks-Box of 10 -----	\$6.50
5.25 in. HD Disks-Box of 10 -----	\$16.00
3.5 in. DSDD Disks-Box of 10 -----	\$15.00
Horizon Ramdisk EProms -----	\$20.00
Multifunction PC Board -----	\$30.00
Multifunction Dsk Controller Kit ----	\$102.50
Multifunction RS232/PIO Kit-----	\$42.50
Multifunction 32k Kit -----	\$26.50
Multifunction RS232/PIO/32k Kit-----	\$60.00
Two-way Interface PC Board -----	\$23.00
Monitor -----	\$110.00
Monitor Interface PC Board -----	\$12.00
Monitor Interface Kit (no jiffy box)---	\$21.00
Monitor Transformer - 12V ac -----	\$3.50
Jiffy Box (for Monitor I/F Kit) -----	\$7.00
Mon. Power lead (needs sdt 3 pin plug)	\$1.00
Monitor to I/F Board lead -----	\$2.00
Console to I/F Board lead -----	\$2.00
Music Kit (including PC Board) -----	\$65.00
Lithium Battery 3.6V -----	\$4.00
Mini Speaker - 8 Ohm -----	\$1.50
Transformer - 13V Arlec -----	\$12.00
Transformer - 60VA -----	\$20.00
32K Printed Circuit Board only -----	\$7.00
Module PC Boards (Single chip vers.) --	\$9.00
32K Memory Chips -----	\$17.00
TI Technical Data Manual -----	\$15.00
TI Sort -----	\$15.00
Display Master -----	\$15.00
TI Artist Plus -----	\$25.00
TI Base upgrade (see above) -----	\$15.00
TI Base Version 3.00 -----	\$25.00
Adventure Hints Booklet -----	\$2.00
Pro-Mod Booklet -----	\$1.00
TI Writer for Novices Booklet -----	\$1.00
Extended Business Graphs Booklet -----	\$1.00

Packaging and Postage Charges:

Up to 2 Disks -----	\$1.70
Over 2 up to 5 Disks ----	\$2.20
Over 5 up to 10 Disks ---	\$3.20
3.5 in. Drives -----	\$10.50
Other Items at P/P Costs.	

Those members who have already paid me for Monitors and I/F PC Boards and require any of the other components should also let me know otherwise I will assume that you only require what you have already paid for.

We are also trying to obtain a source for Half Height Double Sided Double Density 5.25 inch Disk Drives and believe that we have a good chance of getting these at a price not exceeding \$80.00 each with a 12 month warranty. Anyone interested in these should let me know so that we can decide whether there is sufficient interest in pursuing this further. With Christmas coming up someone in your family may see these as an ideal gift.

Assembly Squeezing part 3

by Tony McGovern
Courtesy Hunter Valley 99ers

Blocks to be moved are not always of known length. A data type found in the many languages is the string, a collection of characters together with a length indicator. The most familiar form is that in TI Basic where a length byte precedes the number of bytes indicated by the length, up to a maximum of 255. Other string conventions are also used in various computer languages, but let us look at this one for the moment.

Your assembly program has to move a string from one known address STR1 to another STR2. Two things are clear from the start. Firstly the number of bytes to be moved has to be read from the first string (if it were already known the a simple block move would do) and secondly byte move instructions must be used as the byte is the unit that makes up strings.

A straightforward pass at the code with this in mind is

```

LI   RO,STR1
LI   R1,STR1
MOVB *RO,R2
SRL  R1,8
INC  R8
LOOP MOVB *RO+,*R1+
DEC  R2
JGT  LOOP

```

The length byte is read into a register, converted to a count word, and incremented to cover the length byte itself. This code takes 10 words and uses 3 registers. That is pretty expensive so let us make it shorter.

```

MOV B @STR1,R1
SRL  R1,8
INC  R1
LOOP MOV B @STR1-1(R1),@STR2-1(R1)
DEC  R1
JGT  LOOP

```

This uses the same indexed addressing in the loop as we did for the block move last time. It now takes 9 words and uses only 1 register. It is possible to shorten it by 1 word more by using a special property of the DEC instruction. DEC always sets the Carry status bit except when changing from zero to minus one (see the E/A Manual p100).

```

MOV B @STR1,R1
SRL  R1,8
LOOP MOV B @STR1(R1),@STR2(R1)
DEC  R1
JOC  LOOP

```

The loop now executes one more time when R1 is zero, so the INC instruction is no longer necessary and the indexed addressing offset is also adjusted. So the job can be done with 8 words of code and one register.

TISHUG Software

Column by Rolf Schreiber

Please note that any software released in SSDD, DSSD or DSDD format will also be made available in SSSD format for a charge of 65c for each extra disk required.

DISK A157 is the second exchange disk from the Channel 99 UG. It is DSSD in format (as is DISK A156, released last month) and contains some excellent games and utilities.

DISK A394 contains a great educational game from Don Shorrock called Inventions. It allows from 1 to 6 players to pick the earliest invention from up to 6 choices. It features some great programming techniques, especially in compressing data.

DISK A430 Configuring Funnelweb (covering V4.10 to V4.30) by Jim Swedlow.

Picasso Applications Disk #1: This SSDD disk contains all the material used by Alf Ruggeri in his talk (at last month's all day tutorial) on producing commercial quality greeting cards using Picasso V2.0. See his article in this month's TND for more details.

Tiger Cub Software Release: Nuts & Bolts #1, containing 100 utility subprograms in merge format. Please note that this software is neither public domain nor freeware, but the commercial property of Jim Peterson. TISHUG will be sending Jim a royalty payment for every copy that we sell! This programming package will be invaluable to anyone interested in learning how to program in Extended BASIC and comes with very extensive disk based documentation. N&B #1 comes on a DSSD disk and originally sold for \$US15.00. However, owing to Jim Peterson's generosity, we will be making it available for only \$6.00.

Commercial Release for November.

For the first time ever, TISHUG will be making available the GENIAL TRAVELER diskazine series. The author is Barry Traver, and his idea of a magazine-on-a-disk has proven to be very popular in the US. A whole range of topics are covered in each issue, with the emphasis being on programming and utilities. The price in America is \$US36.00 for the series of 6 "flippy" disks, each one packed with 720 sectors of information. TISHUG will be making Volume 1 Number 1 available on two SSDD disks for an introductory price of only \$6.00. The remaining disks in Volume 1 will then be available on subscription only, for \$30.00 for the remaining 10 disks. I have run out of space, but never out of software.... O

continued from page 27

```
310 DISPLAY AT(8,7):"A)LITTLE RIVER BAND"
320 DISPLAY AT(9,7):"B)BELINDA CARLISLE"
330 DISPLAY AT(10,7):"C)WILSON PHILLIPS"
340 DISPLAY AT(11,7):"D)THE D-GENERATION"
350 PRINT "PRESS THE RIGHT KEY."
360 CALL KEY(0,K,L)
370 IF L=0 THEN 360
380 IF K=66 THEN RIGHT=RIGHT+1 ELSE WRONG=WRONG+1
390 DISPLAY AT(3,7)ERASE ALL:"3.WHO SANG,""FIVE IN A
    ROW""?"
400 DISPLAY AT(5,7):"A)THE D-GENERATION"
410 DISPLAY AT(6,7):"B)JASON DONOVAN"
420 DISPLAY AT(7,7):"C)KYLIE MINOGUE"
430 DISPLAY AT(8,7):"D)WET WET WET"
440 PRINT "PRESS YOUR ANSWER."
450 CALL KEY(0,J,I)
460 IF I=0 THEN 450
470 IF J=65 THEN RIGHT=RIGHT+1 ELSE WRONG=WRONG+1
480 DISPLAY AT(3,7)ERASE ALL:"4.WHO SANG,""HOLD ON""?"
490 DISPLAY AT(5,1):"A)THE BEACH BOYS"
500 DISPLAY AT(6,1):"B)WILSON PHILLIPS"
510 DISPLAY AT(7,1):"C)THE NOTTING HILLBILLIES"
520 DISPLAY AT(8,1):"D)THE CHANTOOZIES"
530 PRINT "PRESS THE ANSWER."
```

continued on page 8

continued from page 14

The print program for the fanfold page consists of ten PRINT #1: steps and 14 are required for the A4 sheet as its height is slightly greater. For the sake of convenience this print program should be saved under the name of 'ADVANCE'.

Trial Printout

- 1) Load the CARDIN file.
- 2) Press the 'P' key and type in 1 to the number of overstrikes prompt. Type in PIO.CR to the printer device prompt.
- 3) When the file has been printed, exit the PICASSO program but do not turn the printer off.
- 4) Go to BASIC and load ADVANCE.
- 5) Run the program, exit BASIC and reboot PICASSO.
- 6) Load in the CARDOUT file and repeat step 2.

Remove the sheet from the printer and fold it over twice as described previously to check that the location of graphics is where you had planned them to be. If you prefer to relocate them slightly, mark on the folded sheet, their new location. The reason why the template indicator graphics were left intact earlier should now be evident, and that is, for printout to screen orientation.

Final Printout

- 1) Load PICASSO.
- 2) Load the CARDIN file.
- 3) Relocate the graphics if required and remove all template indicator graphics.
- 4) Press the 'P' key and type in the number of overstrikes you require. This is for the finished product so you will want the graphics printed as crisp as possible. The number of overstrikes range is 1 to 7, the number you select will depend on the condition of your printer ribbon.
- 5) Type in PIO.CR for the printer device prompt.
- 6) As per the TRIAL PRINTOUT, after the CARDIN file has been printed:
 - (i) Exit to BASIC.
 - (ii) Run the ADVANCE program.
 - (iii) Reboot PICASSO.
- 7) Load the CARDOUT file and repeat steps 3 to 5.

Concluding Comment

There is really no comparison in card production ease, between my technique using PICASSO and Larry using PAGE PRO 99. However Larry's copy of PAGE PRO and its utilities are to my knowledge the only one purchased by a member of our TISHUG community at the present time. There may be other members that have the programs on order of which I am naturally not aware. Until such time as we can order more, my method, although a little cumbersome, should bridge the gap, at least for the coming festive season.

It is very easy to be biased about card making programs considering that fairly sophisticated ones have existed for some time for the IBM. I have seen some cards produced with the IBM PRINT SHOP and quite objectively the cards that I produce using PICASSO and those produced with PAGE PRO 99 are comparable in quality, but ours for that over used cliché, a fraction of the cost. I will not pretend to compare our programs with the VENTURA PUBLISHER or ARTS AND LETTERS, they are for professional use and are simply not in the same league, but once again we are not paying over \$2000 to produce very presentable artwork. O

continued from page 12

More IF THEN

Suppose that C\$ can be only "Y" or "N" and that you want to write a routine to change C\$ without knowing its current value.

You might do this:

```
100 IF C$="Y" THEN C$="N" ELSE C$="Y"
```

You do not need to use IF THEN:

```
100 C$=CHR$(167-ASC(C$))
```


Techo Time

by Lou Amadio

I missed the October club meeting but I had a good excuse as I was holidaying in the USA with my family. We visited San Francisco, Las Vegas, The Grand Canyon, Anaheim, Beverly Hills LA, Tijuana and Honolulu. My favourite spot was San Fransisco and I hope to return there again one day.

Whilst I was in Los Angeles I took the opportunity to contact three TI99ers. The first was Earl Raguse, Vice President of the Users Group Of Orange County. Earl is in fact a member of several user groups in the LA region. Despite the fact that I rang Earl quite late one night from Anaheim (Disneyland), he drove some distance to our hotel for an informal chat. I found out that he is of Italian extract which explains why he was such a gentleman.

Earl explained that TI99/4A clubs in the USA are experiencing a drop in membership in much the same way as TISHUG. The remaining members are, however still very active and it appears that there is still a lot of life left in the TI99/4A and its supporters. Earl promised to send his Forth articles on disk as soon as possible. These will be published in the TND as soon as they arrive.

I also contacted Jim Swedlow (past president of the Orange County group). We only had time for a brief conversation over the phone. Jim dropped off a number of disks to my hotel while we were enjoying ourselves at Disneyland. Thanks Jim. Once again Jim's articles (BASIC Tips) will be published in the TND as soon as possible. Jim is also interested in swapping information and software on disk giving us an opportunity to maintain a valuable contact for our mutual benefit.

The third contact was made only fifteen minutes prior to departing for Honolulu from LA International Airport. That was with Fred Moore of the LA 99ers. Fred is the software/commercial co-ordinator for the user group. Rolf Schreiber had previously written to Fred requesting software and information on Assembly, Forth, Logo, Gram Kracker as well as a copy of the book "Orphan Chronicles". Fred came good with all of Rolf's requests, and just in time too!

If Earl, Jim or Fred ever get to read this, my thanks for your friendly help and willingness to communicate with TI99/4A users from another country.

Correspondence

While I was away on holidays, I received a letter from a Mr F.J. Hall of Old Bar (NSW) requesting help and information:

Dear Mr Hall,

Sorry it has taken so long to respond to your letter of the 24/9/90 but I have only just returned from holidays. I understand that you are interested in connecting an Osborn keyboard to a TI99/4A console. From your letter, the keyboard that you have, uses capacitive action switches and cannot be used without an electronic interface. It is easier to modify a mechanical action keyboard for direct connection to the console. Alternatively, as Geoff mentioned in his initial reply to yourself, a keyboard interface may be available from Colin Cartwright of Adelaide.

You mention an error with Derek Wilkinson's circuit tester (Sept 89, p5) indicating that the LED in line 11 is reversed and should be connected to 1 to 5, 7, and 10. I will draw this to Derek's attention at the next club meeting.

With regard to the I/O Interface method of expansion, PCBs are available through the club shop (contact Percy Harrison). If you only want to add 32K

memory expansion, then the internal version (TND Dec 89, May 90) is probably simpler and cheaper. If, as you indicate, you want to fully expand with disk drives, the I/O Interface will allow you to do this, but make sure that you can purchase the necessary hardware (including a disk controller and 32K cards) before committing yourself. Why not try to advertise for a complete system in the TND, it may save you a lot of work in the long run? If you decide to build the I/O Interface system, make sure that you read all of the original articles as well as any published errata on the subject.

Poor sound from your modulator can sometimes be cured by a slight adjustment of one of the inductors on the modulator PCB. Mark the position of the pot cores prior to any adjustment and use a non metallic tool.

I will talk to Percy Harrison to see if he can include postage and packaging prices for the items in the shop.

Sincerely Yours
Lou Amadio

Mr Hall also expressed an interest in contacting Bev Fraser of Port Macquarie. Can anyone help?

AT Multifunction card errata:

The list of errors continues to increase. The first one this time, was pointed out by Tony Bell who was expanding the card to include PIO and RS232 as well as disk controller and 32K memory. The RS232 part needs +12 volts and -12 volts which are obtained using 12 volt zener diodes, one at each end of the edge connector. Unfortunately these diodes are listed as 1N914 diodes which will not do the job at all. One of the diodes is shown in the original sketch on page 8 of the March TND on the right of the edge connector and marked as not required (for the disk controller). Both are shown on the diagram on page 16 of the April TND but are incorrectly marked as 1N914. The one on the left is just above a 4.7k resistor, while the one on the right is to the right of a 100 ohm resistor. While I am talking about that diagram, it would be a good idea to put a 10k resistor from the bottom of the 33 ohm resistor at the bottom right of the 16 way PIO connector to the top pin shown on the top of the board of the RS232 - DB25 connector (pin 20).

The second problem concerns mounting the PIO only on the board. Once again the problem is a diode which was left off the parts list and drawing in the October TND. Referring to the diagram on page 16 of the April TND, there are two diodes below U28 above the right half of the edge connector. The one that is needed is the one closest to U28. This is not on the diagram on page 4 of the October TND. The diode is needed if you are going to use the card in a PEbox, but not if you are using the 2 way I/O connector. ○

continued from page 7

```
540 CALL KEY(0,H,G)
550 IF G=0 THEN 540
560 IF H=66 THEN RIGHT=RIGHT+1 ELSE WRONG=WRONG+1
570 PR=RIGHT/4*100/1
580 PW=WRONG/4*100/1
590 IF RIGHT=0 THEN RESULT$="YOU DID PRETTY BAD.0 OUT
OF 4"
600 IF RIGHT=1 THEN RESULT$="YOU DIDN'T DO VERY WELL.1
OUT OF 4"
610 IF RIGHT=2 THEN RESULT$="YOU DID FAIRLY WELL."
620 IF RIGHT=3 THEN RESULT$="YOU DID GOOD.3 OUT OF 4"
630 IF RIGHT=4 THEN RESULT$="YOU DID VERY WELL.4 OUT OF 4"
635 PRINT RESULT$
636 PRINT
640 PRINT "YOU GOT ";PR;"% RIGHT AND ";PW;"% WRONG."
650 PRINT
660 IF RIGHT>4 THEN 680
670 STOP
680 PRINT "DO YOU WANT ANOTHER GO(Y/N)?"
690 CALL KEY(0,H,J)
700 IF J=0 THEN 690
710 IF H=89 THEN 100 ELSE END
```

Assembly Class

by Ross Mudie

The next regular Assembly Class will be held from 12noon to 2pm, preceding the TISHUG meeting on 3rd November 1990 at the Ryde Infants School.

The subject material will be the file TS2 which is currently on the NEWS menu of the BBS. The class session using TS2 will be a revision of material covered at the October class and the new material which is flagged by the groups of asterisk. TS2 is repeated below for your convenience.

It would be good revision for class members to convert the file TS1, which was used at the October class, over to being suitable for linking from Extended BASIC.

Class members are reminded to bring their Editor Assembler manuals for reference purposes.

* Source file=TS2 Object file=TO

```
DEF START
REF VSBW,VMBW,KSCAN
```

```
SAVRTN BSS 2          Storage place for return
*                    address, 2 bytes
WS BSS >20           Register work space for CPU
*                    32 bytes
BUFFER BSS 256       Buffer space allocation of
*                    256 bytes
ZERO BYTE 0          Assignment of zero at the
*                    label ZERO, equivalent of
*                    ZERO=0
FIVE BYTE 5          Assignment of the value 5 at
*                    the label FIVE
FF BYTE >FF          Assignment of decimal 255 at
*                    the label FF
*
LENGTH BYTE 10       Length of text string to
*                    follow
NAME TEXT 'ROSS MUDIE' Text string
EVEN

STTEXT TEXT 'Program start, version TS2'
EVEN

ROW DATA 4          Start row
NOROW DATA 8        Number of rows to print
BLANK DATA >2020

START MOV R11,@SAVRTN Save the return address
LWPI WS              Tell the CPU where the
*                    register Work Space is.
MOV B @FIVE,@>8374  Tell the Key SCAN routine
*                    what scan is required
LOOP5A BLWP @KSCAN   Wait for key release
CB @>B375,@FF
JNE LOOP5A

* Read the data (text)
MOV B @LENGTH,R3    Get the length byte
SRL R3,8            Make the byte size value
*                    into a word sized value
INC R3              Add 1 to make the number of
*                    bytes include the length byte
LI R1,LENGTH        Place to start reading from
LI R2,BUFFER         Where to put the bytes read
LOOP1 MOV B *R1+,*R2+ Move the length and text a
*                    byte at a time
DEC R3              Finished yet?
JNE LOOP1           No, go and do the next byte

* Start text
LI R0,130           Place on screen to display
LI R3,STTEXT        Location of text to write
LI R2,26            How many bytes to write
LOOP6 MOV B *R3+,R1 Put a byte in register 1
```

```
BLWP @VSBW          Write the byte
INC R0              Next screen address
DEC R2              Finished yet?
JNE LOOP6           No, do the next
```

```
LI R0,194           Next print spot on the
*                    screen
```

```
LOOP3 BLWP @KSCAN   Scan keyboard
MOV B @>8375,R1     Put the result of the Key
*                    SCAN in left byte of R1
BLWP @VSBW          Write the byte on the screen
CB @>8375,@FF       Compare the result of the
*                    Key SCAN against >FF
JEQ LOOP3           If nothing found then loop to
*                    the label LOOP3
*
* When a key is pressed, the program progresses from
* LOOP3 to LOOP3A where it waits for the pressed key to
* be released before continuing further. The pressed
* key will be displayed on the screen.
*
LOOP3A BLWP @KSCAN   Scan keyboard
CB @>8375,@FF       Compare result of the scan
*                    against >FF
JNE LOOP3A          While any key is pressed
*                    loop back to LOOP3A
* Clear the screen
LI R0,0             Address of start of screen
LI R1,BLANK         Address of text to write
LI R2,2             Number of bytes to write
LOOP2 BLWP @VMBW     Write bytes on screen
INCT R0             Address 2 to address
CI R0,768           Compare the value in
*                    register 0 against 768 which
*                    is just after the screen in
*                    VDP.
JLT LOOP2           If the value in R0 is less
*                    than 768 Jump to LOOP2
*****
*****
LI R0,36            Address to write on screen
MOV R0,R4           Save the screen start
*                    address in R4
LI R5,22            Number of times that program
*                    will loop around
LOOP7 LI R1,BUFFER+1 Address for start of text in
*                    BUFFER
MOV B @BUFFER,R2    Put the length byte in
*                    register 2
SRL R2,B            Make it a word
BLWP @VMBW          Write the text from the
*                    BUFFER on the screen
BL @DELAY           Delay execution of program
A R2,R0             Add the length of the print
*                    string to the screen location
INCT R0             Add another 2 for 2 spaces
MOV R5,R1           Put the loop value in R1
SLA R1,8            Make MSB, (left byte) the
*                    value
AI R1,>3000         Add >30 to make numeric
*                    value into an ASCII value
BLWP @VSBW          Print the single byte value
BL @DELAY           Delay execution
AI R4,32           Next line position
MOV R4,R0           Put the screen location in
*                    R0
DEC R5             Finished yet?
JNE LOOP7          No, loop around and do it
*                    again
*****
*****
LOOP4 BLWP @KSCAN   Wait for a key press
CB @>8375,@FF
JEQ LOOP4

LOOP4A BLWP @KSCAN  Wait for key release
CB @>B375,@FF
JNE LOOP4A
```

continued on page 10

What is Viatel?

by R. Nielsen, TIBUG Brisbane

VIATEL is Telecom Australia's national videotex service combining two-way (interactive) communications, with visual display of text and graphics. The technology includes terminals for user access, Telecom's telephone network, the VIATEL computer database and remotely connected external databases. By pressing the appropriate Keyboard a large store of information can be displayed on screen.

The majority of information on VIATEL is supplied by Service Providers (SPs) who are responsible for deciding what they put on VIATEL, how they present it and how often the information is updated. Service Providers range from private sector organisations through to Statutory Authorities and Government Departments.

HOW TO JOIN VIATEL

If you have not applied to become a registered VIATEL customer you can do so by obtaining an application form from your nearest Telecom Business Office. Read the "Terms and Conditions" carefully and complete the details required. Return the Application to the TBO or post it to the address shown on the form. In order to be able to access the VIATEL database the user requires either a VIATEL Keyboard-Adaptor for television sets or a personal computer with a communications modem and suitable software plus a telephone line.

In most instances the existing telephone line will suffice. However, in a very small number of cases VIATEL reception may be unsatisfactory and upgrading of your telephone service to ensure quality data reception may incur additional charges.

IMPORTANT NUMBERS

If you are a registered VIATEL customer you will have received a sealed envelope containing your Customer Identity, Personal Password and VIATEL Number. It is important that you distinguish between these numbers.

CUSTOMER IDENTITY

Every VIATEL customer has a unique 10 digit Customer Identity you will need to access VIATEL. It also identifies you to VIATEL for charging purposes, so keep it safe and confidential.

Remember: IF YOU LET ANYONE ELSE USE YOUR CUSTOMER IDENTITY, YOU WILL BE CHARGED FOR THEIR USE OF VIATEL.

PERSONAL PASSWORD

AS AN EXTRA SECURITY MEASURE EVERY VIATEL customer has a unique 4 character Personal Password. Your Password can be a combination of numeric or alphabetic characters. (Remember that the system is lower case and upper case sensitive for alpha passwords).

It is essential that you change your Personal Password regularly. To change your password Key 0# and follow the ON screen instructions. If you should lose your Customer Identity number and/or Personal Password you should report this in writing to VIATEL immediately. The address is --

FREEPOST 20
VIATEL
G.P.O. BOX 188C
MELBOURNE VIC 3001.

NEVER DIVULGE EITHER YOUR CUSTOMER IDENTITY OR PERSONAL PASSWORD TO A THIRD PARTY.

VIATEL NUMBER

This is your 9 digit "Public Address". It is used for mailbox and billing identification. You should quote your VIATEL number in all correspondence to Telecom.

NOTE:

You must ensure that your terminal has a Telecom Authorisation number prior to connecting to VIATEL via the National Telephone Network.

VIATEL USER CHARGES

There are four basic elements to the charges for VIATEL.

1. A VIATEL service subscription fee Business \$12.50 per month Non Bus. \$ 3.50 " "

2. The cost of a local call to the VIATEL database from any location in Australia (this charge will be displayed in the top right-hand corner of the Welcome to VIATEL Page, and will appear on your account as part of the frame access charges).

3. A charge for time spent connected to the VIATEL Computer Monday-Friday 8 A.M. - 6 P.M. 9 cents per minute (Eastern Standard Time). At all other times 6 cents per minute.

4. A frame access charge where applicable. This charge is set by the the provider of the information and is collected by Telecom on behalf of the Service Provider. Frame charges can range from 0 cents to \$4.99. All indices are free. You may check your user charges whilst on line, Key #. The screen will indicate your current call and monthly charges.

SPECIAL VIATEL FEATURES

RESPONSE FRAME

A response frame is a pre-formatted page set up by a Service Provider to enable VIATEL customers to forward messages, order goods and services etc.

MAILBOX

The mailbox is a facility which allows VIATEL customers to send messages to each other.

VIATEX

VIATEL Users can receive and send Telexes nationally.

GATEWAY

Gateway gives you access to information which is held on an external computer belonging to a Service Provider via the VIATEL network.

TI/USERS wishing to access VIATEL. The club has software available to Members. ○

continued from page 9

END	CLR	RO	Standard method of returning to the calling program.
*	MOV	B	Clear register 0 to prevent false indication of errors.
*	MOV	B	Set the STATUS byte to zero, re-load the GPL workspace, re-load the return address into register 11, then branch to the address in register 11
*	MOV	B	
*	RT		
*	RT		
DELAY	LI	R6, >FFFF	Loop count value
DYLOOP	DEC	R6	Count down by one
	JNE	DYLOOP	Finished yet?
	B	*R11	Return to memory location following the BL address
*			
	END		

Enhanced BASIC

by Stephen Shaw, England

The original console design concept was that there would be a peripheral device into which you could insert several modules. These would ALL appear on your opening menu screen for selection - that is, you could select modules by SOFTWARE instead of having to use a mechanical switch. FURTHER, subroutines in each module would be available to you either in machine code OR BASIC. The peripheral was never built, but you can still sometimes see its shadow with the error message "Review Module Library". And two modules have routines which you CAN use in TI Basic.

If you insert either the Personal Record Keeping or Statistics modules into the port, and select TI Basic, you have access to additional CALLS which we shall describe here and in forthcoming articles. If you have a disk system, and run the PRK/Stats modules from DISK (using any suitable loading module or peripheral), after loading the module code, you will find yourself looking at a menu- offering say:

1. TI BASIC
2. EXTENDED BASIC
3. PERSONAL RECORD KEEPING.

If you select 1. TI BASIC, the extra calls ARE still available, just as though the actual module was inserted.

The details of the CALLs seem to have appeared in HOLLAND, via Paul Karis, who wrote an article on CALL A and CALL D for 99er Magazine. We have a printed booklet which seems to be a dump of the TI hard disk archive file "ARCHIVE.PRK.DOC.SUBRLST" and this has been used in putting together this (and preceding) articles.

The archive document indicates also an intention to allow CALL FILES(0), but that was also not implemented. The extra calls are CALL A (Accept); CALL D (Display); CALL G (Getput); CALL H (Header); CALL L (Load); CALL P (Prep); and CALL S (Save). These allow you to set aside an area of VDP ram for data storage, move data to and from this area, and to and from the screen, and save and load data stored in the area to an external device IN MEMORY IMAGE FORMAT. This is a very fast way of storing data, especially for cassette users.

We shall look first at the ACCEPT and DISPLAY subroutines as they relate to the SCREEN input and output. Next time round we shall get into the juicy bit of reserving VDP ram and doing something with it.

CALL A...ACCEPT SUBPROGRAM

There are four formats. The fourth which we shall look at next time, verifies input based on a predefined header.

FORMAT 1 AND 2

```
CALL A(ROW,COLUMN,WIDTH,NUMRETVAR,NUMERIC,{LOW,HIGH±})
```

ROW AND COLUMN are screen positions- 1 to 24 for row, and 1 to 28 for column. WIDTH is how many screen characters are to be entered. If this takes you past the screen edge, WIDTH is effectively reduced to the room available. You can of course actually enter a shorter input, as trailing spaces will be dropped.

NUMRETVAR must be a numeric variable. Its value is changed according to which key you use to trigger the input: NUMRETVAR will be 1 if you use ENTER and the input is valid and non-nul. 2 if you use ENTER but the field is blank. 3 if you press AID (Fctn 7) 4 if you press REDO (Fctn 8) 5 if you press PROC'D (Fctn 6) 6 if you press BEGIN (Fctn 5) 7 if you press BACK (Fctn 9). - think about how you can use this function!!

NUMERIC is a numeric variable, into which your input is placed. LOW and HIGH are optional, and can be used to specify a range of acceptable inputs- perhaps you want the user to enter a number between 56 and 121? Not quite the same as the VALIDATE command we are used to in ExBas eh!

FORMAT 3

```
CALL A(ROW,COLUMN,WIDTH,NUMRETVAR,STRINGVAR)
```

is as above except that it is used to input a string variable. There is no range checking available.

Notes: Additional checking is possible using a fourth format which refers to a predefined Header, which we shall cover next time. Row and Column numbers are MOD(24) and MOD(28) respectively- it will not crash if you use a number over 24 or 28. If you try to use a negative or zero number, the default of 1 is used. Play around with this a while. Its not too difficult!

Even easier is:

```
CALL D- DISPLAY SUBPROGRAM.  
CALL D(ROW, COLUMN, WIDTH, VALUE,,,,,,,,)
```

Where ROW and COLUMN are screen positions, MOD(24) and MOD(28) respectively, with zero or negative values read as 1.

WIDTH is interesting...

If WIDTH is POSITIVE, then that number of characters will be replaced with spaces before the display is inserted. If the display is wider than the specified width, the display is truncated. If WIDTH is NEGATIVE, the display will be inserted up to the specified length, but any excess length is not cleared. WIDTH is reduced to the distance to the edge of the screen if you use too high a number. VALUE may be a number, string, or numeric or string variable. You may use CALL D to display as many items as you can fit into your BASIC program line, specifying the parameters for EACH display.

Try it!

SAMPLES:

```
100 CALL CLEAR  
110 CALL D(1,1,28,"Using CALL D and CALL A")  
120 CALL D(3,1,28,"PRK/STATS sub programs")  
130 FOR T=1 TO 30  
140 CALL D(5,1,3,T,5,5,2,-T,5,10,1,T,5,15,4,T/7)  
150 NEXT T  
160 CALL HCHAR(5,1,32,32)  
170 CALL D(6,1,28,"Input a number from 6 to 9:")  
180 CALL A(7,20,4,RIN,NBR,6,9)  
190 CALL HCHAR(12,1,42,160)  
200 CALL D(13,1,28,"DIVIDED BY 12 IS:")  
210 CALL D(14,12,-5,NBR/12)  
220 CALL D(9,1,28,"PROC'D for next section")  
230 IF RIN=5 THEN 240 ELSE 180  
240 CALL HCHAR(6,1,1,32,320)  
250 CALL D(12,1,28,"PRESS:",13,2,28,"REDO or PROC'D")  
260 CALL A(14,12,2,RIN,NUL$)  
270 IF RIN=4 THEN 100  
280 IF RIN=5 THEN 290 ELSE 260  
290 CALL CLEAR  
300 CALL D(12,1,28,"End of Demo")  
310 END
```

Kits now available

The shop has kits of parts for the following:
AT multifunction card disk controller - \$102.50
RGB colour monitor interface - \$25
MiniPE Forti music card, including PCB - \$65

TI Bits part 1

by Jim Swedlow, UGOC, CA USA

[This article originally appeared in the User Group of Orange County, California ROM]

Welcome to TI Bits

Each month TI Bits will bring you product reviews, programming notes, TI99/4A tidbits, comments, quotes and miscellanea. Your questions, suggestions, reactions and comments are always welcome.

Quotes of the Month

The computer is no better than its program.

--Eiting Elmore Morison, 1966

And for the support of this Declaration, with a firm reliance on the protection of Divine Providence, we mutually pledge to each other our Lives, our Fortunes and our sacred Honor.

--Last Sentence of the Declaration of Independence

Shareware Review: FAS-TRAN

FAS-TRAN is a shareware item offered by Bill Harms. This program is a checkbook recapper/planner. You enter your checks by category and FAS-TRAN helps you keep records for taxes and budgeting. Requirements are Extended BASIC, 32K and at one disk drive. A printer makes the program more useful.

The program comes with 70 pre-selected categories but you can change them or add new ones. It will accept a total of 99 categories. It will print out reports on your transactions including a very useful year to date recap. You can sort your file by date, transaction number (check number) or category as needed. You can save your files in a special format that can be read by MULTIPLAN!

It contains a spread sheet option as well as a calculator you can call into a window when working on the spreadsheet.

FAS-TRAN takes up two SS/SD disks and comes complete with sample files and documentation. There are simply too many features to discuss here. If the program has a weakness, it is the documentation. It takes a bit of reading to get thru. Otherwise, this is a fine program. If you need a home budget tool, give FAS-TRAN serious consideration.

To get FAS-TRAN send \$5 or 2 initialized disks and a postage paid return mailer to Bill Harms, 6527 Hayes Court, Chino CA 91710. It may be in our library by the time you read this.

Did You Know?

When Disk Manager 2 formats a disk it verifies each sector (you knew that). What was new to me was that if it finds a bad sector, DM2 locks it off. This allows you to use the disk, with slightly less storage space. (Source: a letter in MICROpendium - personally verified)

The Best Freeware

COMPUTE did a survey on CompuServe of the best free programs. The five TI99/4A winners were:

FAST-TERM (terminal emulator)
DISK MANAGER 1000
FUNL-WRITER
NEATLIST
MASS-COPY

All of these are available from our UG library.

GENie

General Electric has entered the computer network service field with GENie. This service costs a bit less than CompuServe or the Source -- \$5 an hour at 300 or 1200 baud (during off hours). It has a TI99/4A section. The sign up cost is \$18 which includes a manual.

For more information and an on line demo, set your equipment to half duplex and call 1/800/638/8369. Once you are connected, enter HHH. At the <U#> prompt, enter <5JM11999,GENIE>. Using your modem and terminal emulator software, you can find out more about GENie and, if you wish, sign up.

PS: If you do not have it, an excellent shareware terminal emulator program is FAST-TERM. Available from our library.

When Your Computer Doesn't

TI no longer provides local product exchange for TI99/4A's but they will do it by mail. You send your computer to Lubbock, Texas. As of this writing (June 10) the cost is about \$35 (including tax and handling). Call 1-800-TI-CARES for current costs and instructions.

Mine has been giving me fits so I am sending it off to Lubbock. I will let you know what happened next month.

Meanwhile, I am stopping here while it is still running!

XB Tips parts 1 to 4

by Jim Swedlow, UGOC, CA USA

[This article is a summary of four XB columns that originally appeared in the User Group of Orange County, California ROM]

IF THEN

The incompatibility between FOR NEXT and IF THEN statements can cause your program to be awkward. The MAX and MIN statements will often work. For example, instead of this:

```
IF A<6 THEN A=6
```

Try:

```
A=MAX(A,6)
```

Too Many GOTO's

I was looking at a text only adventure game and found the following code:

```
370 FOR B=1 TO 58 ::  
    IF A(B)=L THEN C=C+1 ::  
    GOTO 372  
371 NEXT B ::  
    GOTO 374  
372 IF C=1 then PRINT "You See:"  
373 PRINT A$(B) ::  
    GOTO 371  
374 ! Program Continues
```

Note that in line 370 the program leaves the loop to print the message and then returns. Then it skips over the print instructions to continue.

This is simpler:

```
370 FOR B=1 TO 58 ::  
    IF A(B)=L THEN C=C+1 ::  
    IF C=1 THEN PRINT "You See:";A$(B)  
    ELSE PRINT A$(B)  
371 NEXT B ! Program Continues
```

This saves 25 bytes of memory.

continued on page 7

Greeting Cards

by Alf Ruggeri

The subject of this presentation is to show to you how to use the TI99/4A for producing greeting cards. By this demonstration Larry and I hope to stimulate those who have a little creative inclination and certainly young people. In this way you or your children, if you have any, will begin to explore a new facet of our computer through the use of the latest text graphics programs such as PAGE PRO 99.

If you have read recent newsletters you will be aware of some of the excellent features of PAGE PRO 99 as a desk top page publisher, but it is only in the most recent material that Larry has received from ASGARD that greeting cards production has been featured. After you see this demonstration we hope you will convey your sentiments to Rolf Schreiber so that he can import PAGE PRO 99, its supporting utilities and pictures for our user group in general. I certainly will encourage Rolf to import PAGE PRO as having seen Larry's copy in action, the word 'brilliant' does not do it sufficient justice.

My involvement in this presentation was in part prompted by a query from Rolf. When I last requested some MAX RLE files from Rolf about four months ago, he was curious as to what use they were being put. On my reply as graphic illustrations for greeting cards, he suggested that I bring a few sample cards to the next monthly meeting to show the rest of the members a novel use for our computer. I decided that more information on card production could be passed on through a demonstration, so with Larry's agreement to put his PAGE PRO 99 programs through their paces this presentation came about.

For my part of this presentation I will use PICASSO VN.2. This program was purchased by me in support of what was considered to be the work of a fellow TISHUG member, it is not the current version marketed by ASGARD but once again having seen Larry's imported one in action it has been vastly improved and I certainly recommend that you suggest to Rolf that it be imported also. I chose to use PICASSO for my part of the demonstration mainly because most of you will have bought a copy in the past. After I relate some background information as to what was my motivation to producing greeting cards, and what I think are important considerations I will fully demonstrate my method of card production.

Prelude to Card Production

At the beginning of this year I bought a printer that was readily capable of reproducing graphics. The printer that it replaced could produce graphics but with a lot of user effort. The new printer, an EPSON LX850, was basically bought for two reasons:

- 1) A bit more creativity in the program user instructions that I write for myself and my children.
- 2) Motivation for my year 10 son to prolong his stay at school.

At this point I do not think either of the reasons have had much realisation. My son is still in year 10 but there is no clear indication that he will be there for year 11 or 12.

In the process of wading through the printer handbook, I experimented with the concept of greeting cards mainly for the purpose of determining that the machine was able to reliably download graphics from programs available for the TI99/4A. The results were gratifying I had not bought a lemon after all. These early attempts at card production were only meant to be printer tests and nothing more, but several members of my family saw fit to suggest that cards could be made for friends' and relatives' birthdays. There was very little attempt on my family's part to disguise their

suggestion as nothing more than a prompt for me to produce something useful with the computer, for all the time I spent in front of it. Being basically a frustrated artist, that is, a draftsman, I found the artistic challenge very provocative.

It was at a regional meeting at Larry's place, that I happened to mention one of the card problems that I was currently trying to solve. Ashley Lynn came up with a simple solution borrowed in concept from similar software for IBM machines. Yes! a dynamic example of healthy cross fertilization of ideas. With this problem behind me it remained only to standardize on card formats and choice of what pictures and character fonts to use.

Some Considerations

The card is printed on one side of a single A4 sheet. It is then carefully folded over once, narrow end to narrow end with the printed material appearing on the exposed surfaces. The sheet is now carefully folded again, the new narrow end to the new narrow end with the graphics that are intended for the front and back of the card appearing on the two exposed surfaces. This folding gives the card rigidity and of course makes it suitable for postage in readily available envelopes. I prefer single sheets to fanfold paper because my printer has a very effective single sheet feeder mechanism and at the time I developed the card technique, the only coloured paper suitable for printers, that I could locate, were A4 single sheets. Larry has since sourced coloured fanfold paper. The method that I will describe deals with single A4 sheets but with a little modification fanfold paper can also be used.

At this point I should explain my choice of coloured rather than plain paper, though the reason should be fairly obvious. A card produced on coloured paper provides a more artistic flair and is far more presentable for festive and personal occasions. It is certainly more likely to receive a favourable comment than the same product on ordinary white paper which would definitely have the appearance of my early printer tests, that is, a computer hacker's output from his latest toy! Of course suitably colour matched envelopes, if available, would definitely add that aesthetic finishing touch.

A few more important points if you will bear with me, are:

- A) Those of you who have used PICASSO know that it will require a disk based system with 32K memory and the use of the Extended BASIC module. It is also recommended although not absolutely essential that you have TI-ARTIST VN.2 or TI-ARTIST PLUS mainly for the character fonts. There are some large character fonts on the PICASSO companion disks identified by a /CH suffix, they are quite good and although generating the font character string can be a bit tedious, the results are quite rewarding. There is certainly a wealth of graphics available from our RLE library disks that can be used as pictures or clip-parts not to mention the 2000 odd pictures from Ron Woolcot's TIPS program that Rolf is presently trying to source from the USA. Although not a topic of this presentation a comment on the TIPS program seems timely, it is most encouraging to note that more and more of the newer software being written is geared to further expanding the graphics creative use of our humble orphaned computer.
- B) A few considerations when choosing pictures for the cards are:
 - (i) The horizontal picture size and font character string should be limited to 30 screen columns, the reason for this is that the width of the card when folded to final size will only accommodate 30 character spaces. Wider graphics and fonts can be used but only where it is unavoidable. Pictures can be trimmed to size more effectively with PICASSO in the ZOOM mode, rather than with TI-ARTIST as the former readily displays the picture elements in terms of character width.

(ii) Try to avoid pictures that have excessive areas of unbroken black. There are few dot matrix printers that can faithfully translate on screen graphics to paper printout. The offending effect is a series of regularly occurring thin horizontal stripes devoid of print. The result can be rather disappointing with a well chosen picture originally derived from a digitized photograph. The occurrence of this effect is brought about by the printer not responding effectively to the printer drive file. With some graphics programs there are separate drive files for different types of printers. Unfortunately this choice does not exist with PICASSO.

Method

The graphics on the sheet are printed in two operations, the graphics that are intended for the inside of the card are printed in an inverted form at the top of the page. This was Ashley's suggestion and certainly made production a lot easier. In retrospect, Ashley's solution was extremely simple, and I should have thought of it myself, but in the process of trying to solve many small unrelated problems simultaneously, lateral thinking took a holiday.

Using PICASSO the two sets of graphics are stored in two separate 85 sector DV80 files. This method does not utilise the text importation properties of the program but rather uses the file as a paste-up area or graphic spreadsheet where the chosen pictures and fonts can be manipulated to various locations on to what eventually will print out to an area the width and just under half the height of an A4 sheet.

You can choose for yourself which of the files is to contain the inverted graphics. I prefer to invert the graphics for the inside of the card.

Before you start locating graphics on the file, it is most important that you plan out on a sheet of paper, the same size that you will use for the card, the approximate location of your chosen graphics.

Placement of Graphics

For those of you not familiar with the PICASSO 85 sector file it represents an area of 60 screen character spaces in width by 42 screen character spaces in height. Access to this area is through a window or port 32 characters wide and 24 characters high, the normal screen size. This window accepts TI-ARTIST format graphics as a picture or as a transparent overlay. The window can be positioned over any part of the 60x42 character space by the use of joysticks. Identifying the location of the window, except on initial booting, can be a bit tricky as there are no horizontal or vertical reference coordinates that will serve to identify the horizontal or vertical boundaries. This problem is overcome by first creating a marked up template file with suitable corner and vertical mid page reference indicators. For corner markers turn on pixels in a diagonal arrow shape starting from each corner and extending one character width towards the centre of the area. The vertical middle reference, representing the the vertical folding line of the card, is produced by turning on all the pixels of the two middlemost pixel columns for the full height of the area. Once this marked up template is created it should be saved away as a utility file and used repeatedly for graphic placement. It should be saved under the name of 'TEMPLATE' so it's not confused with the card files that are going to be created. The 85 sector files are saved by pressing 'S' followed by the path and filename, they are retrieved by pressing 'G' followed by the path and filename.

We are now ready to place our graphics on the two 85 sector files. We will first deal with the inside part of the card.

Inside Part of the Card

- 1) Load the TEMPLATE file. On initial loading the access port exposes the top LHS of the 60x42 screen character area.
- 2) Using option 3 (OVERLAY GRAPHIC) from the FILE UTILITY MENU, load the graphics planned for the bottom of the inside back cover of the card.
- 3) Invert and mirror reverse the graphics.
- 4) Position the access port so that the top RHS corner symbol is visible at the top RHS corner of the screen.
- 5) Use option 3 to load the graphics planned for the bottom of the inside front cover.
- 6) Invert and mirror reverse the graphics.
- 7) Position the access port so that the bottom RHS corner symbol is visible at the bottom RHS corner of the screen.
- 8) Load the graphics planned for the top of the inside front cover with option 3.
- 9) Invert and mirror reverse the graphics.
- 10) Position the access port so that the bottom LHS corner symbol is visible at the bottom LHS corner of the screen.
- 11) Use option 3 to load the graphics planned for the top of the inside back cover.
- 12) Invert and mirror reverse the graphics.
- 13) Save this file under the name of 'CARDIN' for card inside.

Outside Part of the Card

- 1) Load the TEMPLATE file.
- 2) Position the access port so that the top RHS corner symbol is visible at the top RHS corner of the screen.
- 3) Using option 3, load the graphics planned for the top of the front cover. Remember this is the front of the card so it is not to be inverted. (a sigh of relief!)
- 4) Position the access port so that the bottom RHS corner symbol is visible at the bottom RHS corner of the screen.
- 5) Load the card's graphic font message with option 3.
- 6) Position the access port so that the bottom LHS corner symbol is visible at the bottom LHS corner of the screen, and load in, if you are inclined to a little self indulgence, a signature graphic, in this case my logo.
- 7) Save this file under the name of 'CARDOUT' for card outside.

The use of option 3 (OVERLAY GRAPHICS) rather than option 2 (LOAD GRAPHIC FILE) was necessary to avoid overprint, and therefore corruption of any existing picture or font graphics, visible within the access port window, but also to preserve the corner and vertical reference indicators, during the graphics loading procedure.

Printout Consideration

As mentioned previously, the height of the 85 sector TEMPLATE area when printed is less than half the length of either the fanfold page or the A4 sheet, so to ensure that both template printed areas are symmetrical about the middle height of the sheet, that is, its first fold, it is necessary to advance the sheet in the printer through a short distance, between printing of the first and second 85 sector files. The advancement is carried out via a simple print program in BASIC. No attempt has been made to incorporate specific line advance control characters as these vary between different brands of printers. The program is simply as follows:

```
10 OPEN #1:"PIO"  
20 PRINT #1:  
30 PRINT #1:  
   etc  
160 CLOSE #1
```

continued on page 7

Modular Programming

by Garry Christensen, TIBUG Brisbane

What is modular programming? Modular programming is an approach to algorithm design (is there anyone out there who does not write an algorithm before programming?) in which the problem is broken down into several smaller programmes. Some problems lend themselves easily to the modular approach while others are not as simple to implement fully.

Modular programming implies that the majority of the programme is in modules (or subroutines) with the main programme being a short list of subroutine calls. Each module may consist of more subroutine calls which in turn may call further subroutines and so on. Take for example the problem of accepting a number from the keyboard, finding its square and displaying the answer. A trivial task! In BASIC it certainly is however in lower level languages such as assembly, the coding involved can be quite extensive.

Our first and most basic look at the problem produces the following approach:

```
GET THE NUMBER
SQUARE IT
DISPLAY ANSWER
```

Thus the main part of the programme (written in Pseudo-BASIC) is

```
CALL GETNUM(X)
CALL SQUARE(X)
CALL RESULT(Y)
```

with GETNUM, SQUARE and RESULT being the names of the three modules that we shall write and X and Y are the names of variables.

Further refinement of the modules produces the following results:

```
GETNUM:
CALL PROMPT(A$)
CALL ACCEPT(X)

SQUARE:
Y=X*X

RESULT:
CALL PROMPT(B$)
CALL PROMPT(Y)
```

Again, refinement produces another module called ACCEPT which accepts an input of a number from the keyboard and a module called PROMPT which displays the message on the screen. It is in these lower modules that a lot of the language dependant programming occurs. Up to this stage, with minor changes in syntax, the programme can be implemented in almost any language. In BASIC they can be subprogrammes. In Pascal or Logo they can be routines. In Assembly they can be each accessed with one of the branch instructions.

In modular programming, care must be taken that a module changes only the parameters passed to it. The module must change nothing else in its calling programme. Careful selection of modules can greatly reduce programming time and effort when approaching larger, more complex problems and improve readability of the programme. I am sure everyone can recall attempting to follow a maze of GOTOs in a BASIC programme. No better example of modular programming applied to an extreme is in the Seirpinski curve that is shown on the Forth graphics demonstration. As an example of the code needed to produce this design, I have chosen Assembly language. The reasons for this are:

1. The BLWP instruction provides an excellent method of accessing modules and assuring that the module cannot alter its calling programme.
2. The display must be in bit-mapped mode.

3. Routines provided on the Assembly Language Utilities (plug) provide simple manipulation of pixels.
4. I like Assembly.

You will notice from the programme listed below that the curve consists of four identical patterns. Each pattern is made up of an end, a centre and another end, identical to the first. The end section is made up of a gull shape followed by a clover shape followed by another gull shape. The refinement continues until three basic modules are left - line, right turn and left turn. Not till this stage is the coding dependant upon the the programming language used.

Firstly however, several items require further explanation.

The BLWP instruction is a subroutine call and functions similarly to a GOSUB in BASIC. The address specified in the BLWP instruction is the address of the branch vectors. While I have placed the vectors within each module, it is not necessary. The first word in the vector gives the new workspace pointer and the second word is the address of the subroutine. In the programme you will see the symbol \$+2 for the address of the start of the subroutine. This symbol means 'this memory location plus two bytes' or in other words 'the next instruction'. By using a new set of registers, the module cannot alter anything in the calling programme. Within the new set of registers is stored the data necessary to return to the calling programme. Nesting of modules to any depth is only restricted by the number of workspaces provided.

The other item in need of an explanation is the use of the Utilities. The subroutine is included in the programme by the Copy directive at the beginning of the programme. The Utilities used set up the display for bit-mapped mode (BLWP @BMMODE) and switch pixels on (BLWP @PIXON). The second of these routines requires that the Y and X co-ordinates and the colour of the pixel be placed immediately after the subroutine call. The REF utility includes all the references that may be needed by the assembler.

```
DEF START
COPY "DSK1.REF" ; insert utility subroutines
COPY "DSK1.PIXEL"
COPY "DSK1.MODE"

WS1 BSS >20 ; areas reserved for workspaces
WS2 BSS >20
WS3 BSS >20
WS4 BSS >20
WS5 BSS >20
WS6 BSS >20
WS7 BSS >20
WS8 BSS >20
WS9 BSS >20
WS10 BSS >20
*****
START LWPI WS1 ; use WS1 as workspace
BLWP @BMMODE ; set VDP for bit-mapped mode
CLR R10 ; clear pointer used to draw
* ; lines
LWPI WS10 ; use WS10 as workspace
BLWP @QUATR ; call modules
BLWP @QUATR
BLWP @QUATR
BLWP @QUATR
STOP JMP STOP ; halt
*****
QUATR DATA WS9,$+2 ; use WS9 as workspace and
BLWP @END ; begin execution at next
BLWP @JOIN ; memory location
BLWP @CENTRE
BLWP @JOIN
BLWP @END
BLWP @JOIN
RTWP
*****
CENTRE DATA WS8,$+2 ; new workspace
BLWP @GULL
BLWP @CLOVER
BLWP @CLOVER
```



```

BLWP @CLOVER
BLWP @JOIN
BLWP @GULL
RTWP
*****
END DATA WS7,$+2
BLWP @GULL
BLWP @CLOVER
BLWP @JOIN
BLWP @GULL
RTWP
*****
CLOVER DATA WS6,$+2
BLWP @JOIN
BLWP @YOU
BLWP @CIRCLE
BLWP @CIRCLE
BLWP @CIRCLE
BLWP @JOIN
BLWP @YOU
RTWP
*****
GULL DATA WS5,$+2
BLWP @YOU
BLWP @CIRCLE
BLWP @JOIN
BLWP @YOU
RTWP
*****
CIRCLE DATA WS4,$+2
BLWP @JOIN
BLWP @YOU
BLWP @LTURN
BLWP @LINE
BLWP @LTURN
BLWP @YOU
RTWP
*****
JOIN DATA WS3,$+2
BLWP @RTURN
BLWP @RTURN
BLWP @LINE
BLWP @RTURN
BLWP @RTURN
RTWP
*****
YOU DATA WS2,$+2
BLWP @LINE
BLWP @LTURN
BLWP @LINE
BLWP @LTURN
BLWP @LINE
RTWP
*****
* Common workspace pointer for following modules
* R10 points to a word in the list of DATA (list)
*****
LTURN DATA WS1,$+2
DECT R10 ; point to word before the
JLT TOP ; current word
RTWP
TOP LI R10,>000E ; if at beginning of list
RTWP ; then point to end
*****
RTURN DATA WS1,$+2
INCT R10 ; point to next word in list
CI R10,>0010
JEQ BOTTOM
RTWP
BOTTOM CLR R10 ; if end then point to start
RTWP ; of list
*****
LINE DATA WS1,$+2
LI R7,>4 ; loop 4 times
LOOP AB @LIST(R10),@YCOORD ; adjust co-ordinates
; for next pixel by
AB @LIST+1(R10),@XCOORD ; adding value pointed
; to in list
BLWP @PIXON ; write pixel
YCOORD BYTE >00 ; y co-ordinate
XCOORD BYTE >20 ; x co-ordinate
BYTE >F0 ; colour of pixel -
EVEN ; - white on transparent
DEC R7 ; do again?

```

```

JGT LOOP
RTWP
*****
LIST DATA >0101,>0100,>01FF,>00FF ; values to be added
DATA >FFFF,>FF00,>FF01,>0001 ; to co-ordinates
*****
END START

```

The Assembly Language Utilities are available on double or single-sided disks as freeware. 0

Disk File Formats

by Ross Mudie

* DISPLAY FIXED 80 (UNCOMPRESSED) tagged object code may be loaded by option 3 using E/A, option 1 using Mini Memory or using CALL LOAD in TI BASIC with either the E/A or MM modules. It can be ABSOLUTE or RELOCATABLE. The Absolute code must always be loaded at the same place in memory while Relocatable code can be loaded anywhere. If the Tagged Object has references to other files or subroutines they will be resolved by the loader, except in the case of the XB loader. If source code does not contain an AORG directive then the code will be, by default, relocatable.

* COMPRESSED TAGGED OBJECT code is like Tagged except that the program data is saved in bytes allowing it to load faster. It contains characters outside the printable ASCII range and cannot be modified by the E/A editor. Compressed object files are created by using the C option with the assembler. They are NOT loadable by the X/B loader, however they are loadable by basic under E/A and E/A option 3 etc.

* MEMORY IMAGE format is the most compact and the fastest loading of Assembly programs and can be stored on disk or cassette. It is identified as a PROGRAM file in a disk catalog and can be loaded with option 5 using E/A, or option 3 using TI-Writer. Please note that the screen will go blank and must be turned back on by the program itself after loading is complete. Memory Image files are produced using the SAVE utility on the E/A disk "B". Memory Image files like BASIC programs can be accessed from/to any I/O device with a single I/O call. That is why they load so fast.

There is a size restriction for MEMORY IMAGE FILES OF 8192 BYTES, (hex 2000), although the E/A the TI/WRITER Modules will load multiple Memory Image files to make a larger program. The loader does this by looking for files after the initial file is loaded whose filename is similar except for the last character which is incremented by one. EXAMPLE: The file GAME is loaded. The loader then looks for GAMF, GAMG etc., if such files are required due to program size.

MEMORY IMAGE assembly files have a 3 word header followed by the data to be placed in memory as follows:

1) The first word is a 'FLAG'. If it is not 0 (zero) i.e. >FFFF then this file is not the last in a multi-file program. For example, if the flag for GAME is >FFFF then there HAS to be at least a file named GAMF, etc.

2) This word is the length of the Memory Image file in bytes, including the six byte header. The largest value here is >2000.

3) This word is the CPU RAM address where the file is to be loaded. Execution always begins at the first byte of the first segment loaded. 0

For Sale

A Daisy Wheel printer including tractor feed and 15 inch carriage with superb quality print. Will accept best offer above \$250.00. Phone (042)284906 after 6.30pm.

Reviews of Software

by Stephen Shaw, England

REVIEW: DISK SOFTWARE: WAR ZONE: ASSEMBLY GAME :
Written by Quinton Tommanen (Age 14)
Published by COMPRODINE. US\$10. Postage \$3.50
Pay by money order only:
COMPRODINE
1949 Evergreen Ave, FULLERTON, Ca, USA, 92635

A good old fashioned shoot 'em up game this one, with a gradually increasing level of difficulty. High scores are kept on disk and there is a demo mode. In short, you operate a ship at the bottom of the screen, which has a limited degree of vertical movement, and also moves left and right, through joystick control.

Scrolling down the screen at various rates are tanks and other -bad- planes which you must shoot before they shoot you. Watch out for the tanks, they can shoot backwards too! To shoot a tank you move your plane until the tank is centred in a cross hair which is located a fixed distance in front of your plane - to shoot enemy planes you merely line up below them. Fire button covers both instances.

Very simple really! Every five levels there is a fast and furious bonus screen which is not unlike space invaders/galaxian, with alien tanks and planes en masse. By no means a sophisticated game, this is for maybe younger owners or older ones with frustrations to take out on something!

=====

REVIEW: DISK SOFTWARE: ARTIST PRINT SHOP by Paul Coleman
Distributor: Comprodine US\$25 plus \$3.50 postage
(Money order only)

This is a three disk package for use with TI Artist Instances and Fonts, also using special Border files which have _B suffixes. This package covers three areas of usage, and allows you to print out letter headings (or footings!), A4 posters, or Banners.

The letterheads have optional use of instances, to the left, to the right, or on both sides of text. Instances may have a row x column total up to 300. The text, which is centred, may have one line in any size font, plus up to three lines in one of the many TI Artist fonts which are "one character high" - the manual lists 26 possibilities, and one is included. Then you have the option of a line between the letterheading and your letter. The programme then prints as many copies as you wish, and you may then photocopy if required, and refeed the paper into your printer to add your letter.

The Banners may have an instance on the left, the right, or both sides, and as with the letter heading, the instances may be normal or mirror image - and if two are used you may use two different instances or one normal and the other mirrored. The total printing width of an 80 column printer is 60 characters, and this limits the amount of magnification- an instance 12 characters high (eg 96 pixels high) can be printed with 5X magnification to fill the paper width, but if the instance is 7 characters high, maximum magnification will be $\text{INT}(60/7) = 8X$, with a little white space.

BANNERS may be centred or be placed as you wish. They may be "solid" or made up of black squares surrounded by white frames (eg blocks). NOTE that TI Artist fonts are usually defined as being in the upper portion of a number of characters, and a font which is 33 pixels high, is going to be treated as 5 characters (40 pixels) high, with white space at the bottom.

Signs are A4 - you can do smaller ones of course, but if you opt for a border, the border will always be A4! Inside the border the sign is made up of mixed text and instances, with pretty much the same layout as for banners, BUT if you want instances on the left and right of text, they must be identical! Signs can use two fonts- one any size, the other one character high. Each

line may be single or double size. This also applies to instances. If you wish a line to have a single graphic and no text, you can repeat it (and centre it). There are also four utilities which are useful to have-

i. Font Reader-Short: This reads all font files on a specified drive, and for each one prints out its name, the total number of characters in the font file, the number of characters high the font is (NOT letter height! see ii) and the computer memory required for storage - this package can handle larger font files than TIA but not as large as TIAP! - Sigmaker=max 4800 bytes, Banner Maker max=5500 bytes, and Stationery Maker=5060 bytes.

ii. Font Reader-Long: For each font file on the disk you specify this will print the font name, and for each character in the file, its height and width in characters, and its width in pixels including any proportional spacing added to the definition- eg the distance between the start of that letter and the start of the next, not necessarily the printed character width.

This program does not reset your printer before printing out, so if you have printed graphics using other elements of the package, you need to reset line spacing- by for instance turning your printer off and on- before using this utility!

A note on "character" height and width- TIA fonts are defined on disk in terms of character definitions, including a height and width in characters, which are the usual 8x8 size. The proportional spacing is given by a number for the number of pixels to skip between the character start and the next character start. This is the information that this utility reads and prints out. Thus a character listed as being "4" high may in fact be anything from 25 to 32 pixels high. The TIA font file does NOT contain pixel height information.

You need to know the height of a font in characters to make good use of the Banner program, as you can quickly determine the range of magnifications available- though the Banner segment will tell you this anyway when you load the font in that segment.

iii) Font Printer- this prints out the first six characters in the font in graphics mode- eg as they look!- with the file name underneath. Only a single file is printed as specified by you. Handy to quickly check the look of a font.

iv) Instance Printer- this will print an instance specified by you, and below that will print the instance name, and then its size in character rows x columns.

The programs are in c99, and operate pretty quickly. They are fairly easy to use and you will be able to obtain acceptable results first time round, and you may possibly even be able to get results without reading the 20 page manual, but of course you are recommended to read it.

ONLY EPSON PRINTERS ARE SUPPORTED, so if you do not have Epson emulation, do not bother! OUTPUT IS TO PIO.CR.

There are similarities between the Sigmaker portion of this program and PagePro from Asgard, which sells at the same price. Here are the major differences:

PagePro is limited to two fixed sizes of fonts (8 x 12 pixels and 16 x 24 pixels) - Sigmaker uses two fonts per page of which one must be eight pixels high, but the other may be any size. Sigmaker further allows each of the two fonts to be in either of two magnifications, giving you in effect maybe four sizes of font on the same page.

PagePro uses 8 pixels width for each small character, whereas Sigmaker uses the proportional spacing normal with TI Artist fonts.

PagePro presents you with a "what you see is what you get" screen display, whereas with Signmaker, you have to plan ahead and visualise the page in your head- or in a trial run.

PagePro allows up to 28 different instances per page whereas Signmaker is limited to just 5 instances, although there is limited scope for repeating them.

PagePro allows instances to be placed anywhere on the page whereas Signmaker limits you to placing instances to the left of text, to the right of text, or on both sides of text. Signmaker allows instances to be double or single size whereas with PagePro you have only the original size.

Signmaker uses TI Artist fonts and instances without conversion, whereas PagePro requires you to first use a conversion utility.

PagePro has a set of line characters to draw boxes, while Signmaker has a fixed size border- available in a range of patterns.

PagePro within limits allows DV80 files to be imported whereas Signmaker insists on each line being typed in!

I think that just about covers the more significant differences- other uses will probably want to add more! The two programs are NOT alternates, merely similar, but if your needs are not too defined just yet, perhaps consideration of these differences may help you to define your needs!

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REVIEW: DISK SOFTWARE: TETRIS- by Alexander Hulpke.
From User Group Disk Library.
Written in assembly language.

This is one library program I have to review. It is absolutely brilliant. With UK sales topping five million for versions of Tetris on other machines, and at least four versions for the TI, this classic program from the Soviet Union is now available in a smooth machine code version which VERY closely matches the original Mirror-soft release.

Tetromino shapes fall from above, and you can rotate them and move them left and right. You must pack them tightly, and when a line is full of tetromino bits, it is wiped off the screen and all rows above move down one. Naturally you must try to keep the lines moving and prevent them reaching the top of the screen, 'cos that spells GAME OVER. The next shape to fall is previewed on screen, and as an extra touch, this version allows you to change the next shape to fall- during the same time you are moving and rotating the shape then falling. If you do not wish to use this extra facility, ignore it and play the original game!

TETRIS is also available as a coin-op arcade game, and anything that has people putting in their 20p's must be worth looking at! Music plays continuously (turn the sound off!) and the screen also displays the number of lines moved off screen, the level of play, and stats on the number of each colour square to be moved off. In this version the level of play is fixed at the start. Level one is quite hard. I think most of you will find level 9 distinctly impossible! Control is by means of the original keys- 7,8,9 move left, rotate, move right. Space causes the shape to fall quickly once you have the right orientation and position (as does key 4). Key 6 is pause, while key 1 changes the next shape.

A classic game, written in 9900 code for the Geneve, and converted down to the TI99/4a (!!!!!), it plays superbly, is very inexpensive, and is an absolute must, even if you do not usually play computer games. UPDATE: Version 2.0 allows joystick control- left and right move block left and right, fire rotates it, down drops it and up changes next item. Much kinder to the fingers and keyboard but higher levels of play (for which read faster) could make for heavy joystick action!

NOTE: This is a FREWARE game, which does not mean it is free- it means if you play it, you should send funds on to Alexander (or to me for forwarding). The requested sum is US\$10/15, DM20-30, UK7 to UK10 - just look how much disks of this game are on sale for the ST and Amiga. Send funds to S Shaw if you wish, for forwarding.

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REVIEW- DISK SOFTWARE- THE GEOMETERS APPRENTICE by Mike McCann 1989. US\$39.95
Published by McCann Software,
P O Box 34160, Omaha, NE, USA, 68134.
Also available from COMPRODINE.

This program has been available for some little time, but so far seems to have escaped review. It comes from the same stable as The Printers Apprentice, and in common with that, is written in forth, and is a fairly difficult program to get into. The advertisement does not really say what the program does- and the sample illustrations are not easy to do - indeed I cannot think how to do them with the program! TGA does several things:

i. CAD- computer aided drawing. You can define a shape to be rotated around its left edge to produce a sort of sphere, which can then be drawn in wire frame (see through or visible wires only), and can be shaded with or without segment boundaries- you choose the shading effects. The object can be moved around the screen, including rotation in three planes, and also the single light source which defines shading effects can be moved in three planes. Objects are drawn singly, but merely by not clearing the bit map screen you can create a multi-object picture. Variables available include aspect ratio, so a drawn circle can be easily made to look like a true circle instead of an oval!

ii. TI Artist pictures can be loaded and drawn over, and the final result can be saved in TI Artist Picture format, or TPA Extern file format. In addition to spherical objects (SPIN objects) it is also possible to draw a shape and have it "extruded"- which merely means it is given a third dimension of thickness. This can then be manipulated as with spheres, and can be mixed with spheres and TIA pictures. So if your 3d pictures can be created using spheres (no matter how distorted!) and shapes with thickness, you can create 3d pics. Each individual shape can be stored as individual "object" files for reuse later. And if you think you might have difficulty drawing a semicircle using the arrow keys, to create a perfect circle there is fortunately an "auto" mode! Actually using the program is quite difficult at first but you will soon get the hang of it if you persevere- rather like TPA really!

iii. There is an interesting HARDCOPY or PRINT feature which allows you to print out the image you have just drawn, or to load a TIA picture and print that- this section is interesting, as it allows you to load TIA pics directly, without conversion, unlike TPA. You may then "clip out" a section you want to print- you do not need to print all of it! Print densities of single, double and quad are available, also with a double pass for extra darkness if you wish. Like TPA you may define the pixel size and shape to print with- at its simplest this will print one dark dot for every pixel in your picture. You may print 64 dark dots instead (8x magnification) or by filling in an 8x8 grid print your picture with many variations in distortion, degrees of darkness, or using a smiley face for each on screen pixel.... and so on! Pics may be printed upright or lengthways, so there is a good banner capability here.

iv. There is also a command language, using DV80 files, this allows you - having done your experimentation! - to automatically create a series of pictures, and save them in TIA format for animation. The language can also be used to load and display TIA pictures as a slide show. Access is given to VDP Register 7 for "pro" users.

This program is NOT inexpensive as TI programs go - it IS inexpensive compared to programs for other machines. Despite having waited what seems like ages for a review which never came before making my purchase, I still received only Version 1.0 - and all current McCann software seems to be for the Geneve only, so there may not be any revisions, and supply may by now be limited! It is a fascinating program if you are into graphics, especially shaded spheres! but is otherwise slightly impractical. You do have the ability of creating quite different demo routines, but need to spend lots of time on them!

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REVIEW- HOME PUBLISHING ON THE 99/4A SUPPLEMENT #3

- 32page booklet plus two disks
- Harry T Brashear, 2753 Main Street, NEWFANE, NY, USA, 14108
- US\$15 including post and packing.

Another good title would be "TI Artist Plus! manual, part two" or "What was missed out!".

This booklet had me reaching for my TIA+ manual, then loading TIA+ to check Harry's booklet... wow! I do not have 32 pages to spare, but if you have TI Artist plus! you really do need this booklet, it will tell you LOTS you need to know, as well as better illustrating and demonstrating some of the more awkward features so briefly touched on in TIA+ manual. Articles are by Harry himself and by Paul E Scheidemantle (see the Tiger article in TI*MES issue 24, page 45).

Articles cover Vectors, with much better coverage for instance of spin, tilt, and ranging. Harry - who is also not 100% in favour of the printout section- gives good examples of its usage. Other aspects of the package are covered also!

Also in this package is a review of Guidelines (see my review later!) and also an article on PagePro Vn 1.5. Harry thinks paperbacks have 55 characters per line. Mine do not! Harry also mentions PixPro (old discontinued version) and PagePro Utilities. The disks? Yes you get disks too... one disk contains a large font in the form of instances- to be used as you see in magazines and old manuscript, where the first letter of a chapter or even paragraph is so much larger than the rest. And six sets of borders in Font format. And a nice new Shadow font. And four utilities:

Artist Photographic Vn 2 prints out TIA pics in good proportion and good density, in four different sizes, with a total of sixteen different page positions- 7 for the smallest pic and one for the largest! For the two smaller sizes pics can be printed in one pass side by side. Very good output, tightly controlled (ditch that TIA+ print routine!).!!! Compatible with 24 pin printers as it allows line spacing in 144ths, 216ths, as well as 180ths of an inch.

Page Pro Hi Res Printer- to print Page Pro saved pages including clipped pages, using a higher resolution than Page Pro by moving the paper up 1/216th of an inch before overstriking. Some fine detail may be lost in the process.

Picture Reference Sheets- This goes through a disk and prints out all the TI Artist or Graphx pics in one go, with either 20 pictures to the page or six- your choice. Filename is printed as well for a handy reference. The prints are also of pretty high quality!

Font Spacer... unhappy with the spacing between TIA fonts - or the lack of it on fonts converted from CSGD format? This program will go through the entire font and insert a standard spacing chosen by you. You may also merge font files, to take advantage of TIA+ ability to handle the larger files!

This package represents a heck of a good value for money. All TI Artist users need it!

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Review- Guidelines (Disk)

- from Texaments, 53 Center St, Patchogue, NY, USA, 11772.
- US\$9.95 plus p&p US\$8

A two disk set especially for users of TI Artist plus. A big selling point is the TEMPLATES which is as much a condemnation of TIA+ print routines as anything else! The Banner Template marks out the part of the screen that TIA+ Banner option chooses to print, so you know where to put your banner material. Pagetemp marks off the outer columns which TIA+ chooses not to print. Label and disk jacket templates would be more useful if we were told what print options to use, and if all printers produced the same sizes for these options... The calendar template may find favour.

There are twelve banner borders, all of which are of a fixed size and design, and assume your banner is going to be the FIXED banner size of around two and a half pages (there are better banner utilities around! and you can of course use these frames with them also).

There are 15 fonts, all SMALL one char high apart from one two char high. Very basic simple fonts. There are two sets of slides (anyone ever use these???) and 17 incredibly tiny instances.

What I found the most interesting content is just listed on page one, unillustrated and not further mentioned, a font file called SHAPES. Anyone remember Peter Brooks "Designs for Fun" program? SHAPES is similar- every keyboard key (except ; for some reason) will produce a single character design. These can produce a myriad of patterns for borders, rules, fills, what have you. Using one shape, you can vary the result by positioning subsequent shapes one or two pixels higher or lower, or moving alternate rows left or right, and so on. If you use two shapes together in a pattern, you have even more possibilities. Then add rotate and other vector effects... you have the ability to fairly rapidly create unique patterns. This little file made the package worth having for me!!!

Postage apart, 9.95 for two disks is not bad, and TIA+ users may well find this a useful package. I do hope we do not see a flood of pictures with the first and last columns blank though!

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REVIEW- THE MISSING LINK. (DISK).

- from TEXAMENTS (see above).
- US\$25 plus post and packing US\$8.

This one disk is a really useful extension to XB for those of us who still program in XB. What it does is place the screen into bit map mode while a program is running, allowing you to do all sorts of clever things with bit map graphics. Naturally the old screen commands are useless in bit map mode, but in providing bit map equivalents, we find very much more powerful versions. And new items like windows, which allow for instance a VERTICAL input field! And a whole range of different sized fonts can be used, on screen together, in different colours... you name it! The smallest font supplied allows for 60 columns per screen line, and is remarkably readable on a black and white tv. The results on a colour tv will be variable.

The disk library has a free demo of this program available which shows off its talents, so no excuses for not having a look, if you have a disk drive. The actual program is much easier to load than the demo disk which has been deliberately crippled.

Drawbacks? The utility is interrupt driven - this allows you to drop out of the bit map screen when the program is not running, and allows a screen to be printed at any time (press CTRL and FCIN). This means it will not function in Myarc XB (which has a bit map screen available anyway). You can use Triton Super XB provided you do not use the clock.

Bit map screens occupy 12k of vdp ram. This only allows 4k of vdp ram for handling disk loading and saving, and for storage of variables. The limitation on variables will not affect many programs, and effective program writing will almost always solve any problems you meet - eg using shorter variable and subprogram names, not using new variables when you do not have to and so on.

The VDP of course now cannot load Extended Basic programs other than really tiny ones if they are in PROGRAM disk format, using the form RUN "DSK1.PROG", and such programs must be converted to IV254 form, using a utility provided. Loading and saving in command format are not affected, as you are then in standard graphics mode with only 4k used for the screen display. TML is now my favoured graphics language. Send for the demo disk- just a blank disk and return post and packing to the Disk Library! And even if graphics is not your scene, the more powerful functions of TML - regarding input fields, sprites, and so on- may still make it a very useful package for you. Take a look at the demo disk!

REVIEW: DISK SOFTWARE: BEYOND VIDEO CHESS. Utility.

Written by Harry Wilhelm.
Published by ASGARD. US\$10. Postage \$5.00
Pay by money order only.
Also available from:
COMPRODINE. 1949 Evergreen Ave, FULLERTON, Ca
USA, 92635.

This disk based assembly utility is ONLY of use to you if you have the VIDEO CHESS MODULE. It is not compatible with the disk based version of that module.

BVC is an interrupt driven auto-start utility, and requires certain special hardware OR a very very easy modification to your chess module, details of which are supplied.

In essence, you load BVC- supplied in both DF80 "Load and Run" format as well as PROGRAM memory image format, and it automatically installs itself. It then waits while you insert or select the Chess module - this is where the various hardware mods are required - as you insert the module you must not reset the system, which is what usually happens when you insert a module! On my system the reset line to the module port has an extra switch to select it out. If you do not have a modified console, you can open up the module and cut on wire as indicated, which has the same effect. Or you can use a Navarone Widget or equivalent. There are other ways to do it too.

WHAT DOES IT DO?

1. It allows you to use a joystick to move the pieces. This is actually the weakest part of the program. The docs warn you about dirty fire button contacts instead of telling you there is no software debounce! It works sort of...
2. It allows you to print the screen to printer (you select the control codes so it should work with most printers with graphics modes).
3. It allows you to list the game moves to printer- and you can interrupt at any stage to print the board as illustration then carry on.
4. It allows you to save and load games TO DISK.

Note that it is a case of either or here- if you have games on cassette and now wish to transfer them to disk, you must first list the moves MANUALLY after loading into the ordinary module, then using BVC enter them as a TWO PLAYER GAME and then save them to disk. With BVC installed you cannot load from tape!

Is it worth it? If you have or can obtain a VIDEO CHESS module (not too easy to find but check out our module librarian!) then you will find this an essential program. And the Chess Module is the best Chess program for our computer.

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REVIEW: DISK SOFTWARE: GIANT ARTIST POSTERS.

Graphics Utility.
Written by Paul Coleman in c99.
Published by COMPRODINE. US\$15. Postage \$3.50
Pay by money order only.
Available from:
COMPRODINE. 1949 Evergreen Ave, FULLERTON, Ca
USA, 92635.

THE POSTER PROGRAM. Forget Banners, go for posters! and make a real BIG impact. This utility works with full screen TI ARTIST Instances ONLY (they occupy about 70 odd disk sectors). It then prints them in your choice of 9 sizes, and can "glue" two full screen instances together, side by side (making 18 sizes I suppose!), especially useful for text. Each instance takes around 75 seconds to load, then printing takes a little longer, depending on the size of your poster. The smallest poster, 10" x 14", uses four sheets of paper, and takes around 8 minutes to print. The largest, with two instances glued together, at 64" by 200" (no, not a printing mistake- nearly seventeen feet long!) uses up 152 sheets and will take you maybe a little over 6 hours, excluding glue and stick time!

This program prints continuously and is NOT suitable for using with cut-sheets. It is OK with fan fold, and will ignore the perfs. Roll paper will give the best results. It only takes account of 80 column paper, so using a wider printer will not help. And it is up to YOU to stick the bits together. The longest edge of the picture is printed sideways, so if you go for the 64x200" poster, you will have 8 strips of paper 200 inches long to stick together, somehow. You could always go into the custom wallpaper business... Xcidentally you have a choice when printing of using solid blocks (8x8 per character position) or unsolid blocks, which are 6x6 blocks in an 8x8 area- this does give a SLIGHTLY spotty effect, but allows the eye to better "round" otherwise unduly obvious corners better.

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REVIEW: DISK SOFTWARE: PIX PRO. Graphics Utility.

Written by Jim Reiss.
Published by ASGARD. US\$15. Postage \$5.00
Pay by money order only.
Also available from:
COMPRODINE. 1949 Evergreen Ave, FULLERTON, Ca
USA, 92635.

Pix Pro is a multi-conversion utility in machine code, with two new formats for intermediate (and fast) use, and the ability to print MacFlix pictures with rather better aspect ratio's (eg proportion) than MacFlix itself.

Pix Pro can read a MacFlix picture OF ANY SIZE from disk and either PRINT it, or convert it to an intermediate format, called Pix. Printing a MacFlix digitisation of the Mona Lisa with PixPro I found that Pix Pro Bit Image format gave a picture proportion mid way between MacFlix "Low Density" print and "Mid-Density" print. The PixPro picture was the closest to the correct proportions. MacFlix pictures are not displayed on screen, only a converted file (or files) can be displayed.

For conversions it can READ and DISPLAY graphics in GRAPHX, TI Artist PICTURE, TI Artist INSTANCE, Picasso, Page Pro, RLE, or Pix formats. It cannot read pictures from Joypaint or MyArt. Having loaded the picture, you can then save a part of the picture- essential if you wish to save a picture larger than 192x256 to TI Artist, and useful if you want to clip an instance. If the picture is larger than screen size you can move around the picture by moving the window.

SAVE formats are: TI Artist pictures, TI Artist instances, Graphx, PagePro, Picasso, and two Pix formats (IF32 and DF128). Why save and load a new Pix format? 'Cos PixPro will load that format faster than any other as Pix format was designed PURELY for speed of loading; also Pix format files may only be half the size of original files! And no, the documentation does not indicate WHY there should be two different Pix formats!

PixPro can only handle pictures up to 480 pixels wide, so very wide MacPaint pics, which can be 576x720 but usually are not, are right truncated. By comparison, PagePro pics are limited to 480x792 pixels. The program is supplied with some nice artistic MacPaint pics, including the Mona Lisa.

I have found that Pix Pro will happily print pictures from MacPaint which MacFlix is unable to display or print- if MacFlix gives you problems, switch to Pix Pro! Read MacFlix docs on how to force-load pics, but note full width pics are moved one third left while PixPro handles everything nicely. An essential purchase to mix with the "right" proportions!

UPDATE: MACFLIX: MacFlix has now been updated to MacFlix Pro, which can now handle any size picture regardless of memory configuration, as pictures are loaded from disk as required (eg as PixPro). Unlike PixPro, MacFlix can display pictures ON SCREEN, if required loading extra data from disk as you window around. Invert picture is now available, as is the ability to save parts of the picture as TI Artist Instances (as available-indirectly through Pix format-with PixPro) in addition to TI Artist Pictures.

MacFlix will not handle files which PixPro is happy with (you can force them to load but if they are full width, they will be scroll-wrapped by about one third, giving the left-most third at extreme right, the rest of the picture shifted left. Not too good!)- while PixPro can manage all MacPaint files I can get my hands on. MacFlix can display on screen those pictures it can load. PixPro has a better printed aspect ratio (proportion). PixPro can convert MacPaint pictures to PagePro format directly.

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REVIEW: DISK SOFTWARE: THE LIVING TOMB.
Graphic maze adventure.

Written by Quinton Tormanen. (Age 14!).
Published by COMPRODINE. US\$15. Postage \$3.50
Pay by money order only.
Available from:
COMPRODINE. 1949 Evergreen Ave, FULLERTON, Ca
USA, 92635.

An assembly speed graphic maze adventure, with lots of creatures to attack you and lots of treasure to collect. Lots of traps which are easy to avoid if you pay attention to where you are going. Joystick operation. In something like 1300 moves I remained totally lost (I gather you are supposed to map these places!) but was still alive and looking for a trap door down, with the meagre rank of Peon.

Fighting the monsters is fairly simple- first check to see if they are friendly, once in sight, by calling a greeting, then if that fails, approach and click like mad on the fire button! At level one I do not think I took any hit points when attacking unfriendly monsters!

The report system makes use of a multi-window overlay display, quite a professional job here. You like wandering mazes or you do not suppose.

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REVIEW: DISK SOFTWARE: MUSIC PRO. Music Utility.
Written by David Caron. (Ottawa UG).
Published by ASGARD. US\$18. Postage \$5.00
Pay by money order only.
Also available from:
COMPRODINE. 1949 Evergreen Ave, FULLERTON, Ca
USA, 92635.

Music Pro allows you to enter up to three voices of music by placing notes on a music staff, using the computer keyboard as an alternate to a piano keyboard, with the note duration based on how long you hold the key down. Not the fastest way to enter music but not so bad once you get used to the idea. A separate data file is created for each voice, and a separate program (compiler) then adds them together and plays them together. There is also a stand-alone XB program you

can use to load and play your files, but it uses a rather slow CALL LOAD method of inserting machine code rather than using embedded code as we are now getting so used to elsewhere. You CAN print "music" one voice at a time and it looks very interesting, but I defy anyone to play from it, with no time signature, and no bars!

The program has one very interesting feature- "phrasing" - when two notes of the same frequency occur together, on OTHER music programs you are stuck with EITHER the notes added together for a single long one OR two notes sounding when you wanted one. MUSIC PRO gives you both options, very nice. You may define a "block" of music to transpose, copy, or play. There are just 8 volume settings available -still better than many other Music programs but giving rather large jumps in volume for more delicate emphasis. THERE IS NO TEMPO CONTROL. The music plays at a set rate- your only control is to use longer notes, and you can use the transpose facility to do this. As usual notes may not go below 110Hz, which limits use of the base clef a little.

With MUSIC PRO you can, with a minimum of practice and no musical knowledge, transform a fairly simple music score to a tune. Sticking to one voice MAY give better results than trying for harmony due to the way our sound chip works and sounds!

An interesting program, you will find this useful if you have some sheet music you would like to hear played and no handy musician. Try also the music programs in the group library which operate in rather different ways.

* NOT GENEVE COMPATIBLE *
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REVIEW: DISK SOFTWARE: HARDCOPY Graphics Utility.
Written by Alexander Hulpke
Available from Group Disk Library.

This is a special utility which allows ordinary TI99/4A owners to print MYART pictures- Geneve owners can already use MyArt! And as Geneve owners are porting over GIF pictures (Graphics Interchange Format) into MyArt format, that means even more large pics for us to use. HARDCOPY differs considerably from all other graphics printing programs in that it does a very good job of transferring colour information into monochrome texture information. HARDCOPY can deal with both 16 and 256 colour MyArt pics.

Flexibility is provided in that the user may amend the texture of any colour, and colour/texture data files can be saved for reuse perhaps with other pictures. It is also possible to print just one colour at a time (more suitable for 16 colour pictures!) by defining all except one colour as blank texture- the ultimate in colour separation work! What is more, you may define parts of a picture to print, and also the degree of magnification, with horizontal and vertical magnification specified separately. I have printed one picture out at 2 feet by 3 feet, and the result is astoundingly good, a lovely poster!

The group disk library has nine disks of MyArt pictures at the time of writing, and there are two included on this disk. Very highly recommended to any graphics freak.

Treasurer's Report

by Geoff Trot

We have started to take money for the next lot of monitors which has inflated our income over what it will eventually be. Apart from that we have a healthy financial position which will enable us to keep operating at the current level for the foreseeable future.

Income for September	\$3462.00
Payments in September	<u>\$2021.58</u>
Excess of income over expenses for September	\$1440.42

Text on Disk

by Stephen Shaw, England

>GETTING STARTED WITH THE TI99/4A by Stephen Shaw. The text of the book! on THREE disks.

>BULLETIN BOARD DOWNLOADS: Files in DV80 format downloaded from various US boards, mainly in 1984. A good selection of material which well illustrates the sort of things to be found on boards. Some very educational material and some good old plain gossip.

Files are downloaded 'live' and subject to the glitches common to telecommunications: a few articles are cut short rather drastically. Nothing too unreadable though.

>BBS1...from Atlanta, Caltex, Chicago, Knoxville.
>BBS2...some FORTH material and files from SUBFILE99
>BBS3...from New Jersey, Delaware, Delaney and others.

>BBS4...from Milwaukee, Palm Beach, Philadelphia others.

>BBS5...ASSORTED. 357 sectors of text!
>BBS6...From SUBFILE99. This is the sample disk offered earlier, but now with a longer /5 file. Total 358 sectors are used!
>BBS7...FROM SUBFILE99 November 1984. 330 sectors of text.

Because Bulletin Boards tend to keep material on for some time, there may be some duplication of material between disks, especially of material from SUBFILE99. There remains however a huge amount of text here, ideal for the curious and the nosey!

>BBS8...Reports, tips and tutor on GRAM KRACKER, Myarc 128k, and new CorComp products. XB Tutor. Randys Rumour Rag, Dec 85, and a list of 111 TI Bulletin Boards active in the USA on 21.12.85

>BBS9...69 sectors of technical data and machine code source, on the DISK system plus source for a machine code TRACE (displays registers) and DSR and GPL links for Extended Basic. Source code for an TE2 utility to be called from XB by Chariton and Hodie. Explicit directions to finish adventures: Enchanter, Infidel, Zork 1, Pirate.

>BBS/FORTH SPECIAL. TWO disks of downloads especially for FORTH users, including a four part tutorial for the novice, some Forth programs (in DV80 format!), and the transcripts of three electronic teleconferences on Compuserve, featuring such names as Howie Rosenberg, Barry Traver, Curt Purdy, Scott Vincent and others! TWO DISKS PLEASE!

>EX BAS TUTORIALS 1, 2, 3 4 by Tony McGovern.

>EX BAS TUTORIALS 5,6, 7 by Tony McGovern, plus an American XB tutorial PLUS an article by Ron Albright on SPEECH- very useful for using speech with XB.

>FORTH TUTORIAL by Geoger L Smyth. 576 sectors of text, from absolute novice onwards, with something for everyone! Two single sided disks required to fit all this on.

>FORTH MANUAL ON DISK. __5_DISKS. Dis Var 80 files.

>HORIZON RAM DISK MANUAL. Although this is (c) I cannot see how it can harm anyone- you still need the circuit board and parts! To be safe, the final chapters of the manual are omitted! But there are 328 sectors of text here for you to read if you need more information on the Horizon RAM Disk before you buy it. IMPORTANT: Refers to NHRD- the version sold by Bud Mills these days differs somewhat but lacks in depth docs so this may still be of use.

> ASSEMBLY LANGUAGE TUTORIAL by Mack McCormick, regular MICROpendium author. TWO DISKS with examples. From novice up.

> DIJIT... almost a full disk of text which should answer most if not all your questions on the DIJIT AVPC 9938 80 COLUMN CARD. (dated Early 89).

>GPL MANUAL. Original TI info on GPL, edited down a little by Art Green. FOUR DISKS. There are some GPL devices around, but you may find it interesting anyway!

>TE2 PROTOCOL MANUAL: Contains information which should have been in the Editor Assembler Manual! TWO DISKS.

>TI MANUAL 1. Text from TI, 1980/Vn 2 1983: Functional specs for the Basic user of the disk system, GPL interface specs for the disk system and most interesting notes on hardware debugging the speech synth. A must for hardware hackers and, as official documents, an interesting and readable read.

>TI MANUAL 2. More text from TI, this is for machine code programmers, being an official software specification for the disk peripheral.

>Timeline by Bill Gaskill- a specialist database listing the events important to the TI99/4A from 1979 to 1989 with UK additions by S Shaw. A sort of potted history, month by month.

> TI WRITER - EDITOR SOURCE CODE

This is mainly the original archived source code, but as two files are dated 1986, they at least are NOT original. Interesting comments and the NAMES of the programmers at last. See how TI did it! Modify to suit yourself! TWO DISKS.

>TI WRITER TUTORIAL. Articles by S Shaw, Dick Altman and Tom Kennedy! Largely replaces the TI Writer manual - and even if you have the manual you may find the restatement useful.

>99/4A ROM SOURCE CODE (TWO DISKS)

>CURRENT LIBRARY LISTING: RECORDED FREE, JUST SEND 3 BLANK DISKS AND RETURN POST AND PACKING.

>TONY MCG/2. Variety of articles on alpha lock mod for easy joystick use, diagnosing sick consoles, review of Dijit AVPC 80 column card, Review of Fortran99, and modified ED file for Funlweb 4.13 (gives TAB on CTRL Z), and a modified ROS for the HRD.

>TONY MCG3. Short article on DSR links and a long 119 sector article on fitting machine code programs out to properly interface with the Funlweb environment. o

continued from page 5

Most members will recognise the name Arto Heino. Arto is a former member and very accomplished programmer who disappeared from the scene a couple of years back. Welcome back Arto, this group needs programmers of your calibre.

Next meeting, to be held on Saturday 3 November should see an interesting demonstration of the Eprom ramcards. Be there to see this as it looks like it will be the way of the future. Regular facilities, shop and repairs, will also be there.

The December meeting will be devoted to our AGM including election of Directors for the next 12 months. Elsewhere in this issue you will find a notice to this effect together with a nomination form that can be used to nominate who you would like to fill one of the Directors positions. Make sure you give this important issue some thought and if you can be in attendance at the AGM. Remember the date, Saturday 1 December, 1990.

See you at the next meeting.

o

Assembly Tutorial part 1

by Mack McCormick, USA

Here are the objectives of this first tutorial:

1. To introduce you to the Hexadecimal and Binary Numbering systems.
2. To introduce you to the assembler instruction format.
3. To introduce you to addressing modes.
4. First program - Adding two numbers and displaying them on the screen.
5. How to assemble.

Just a few words on Assembly language before we begin. It is not as difficult as you may believe. You will be communicating with the microprocessor at the first level above machine language, assembler. As you know, the machine actually communicates in binary 0's and 1's, on or off. Assembler allows us to talk to the machine in a language we can understand (Although I am sure the uninformed would disagree). With these tutorials I will assume no prior knowledge of assembler or other number systems. Please bear with me, I will not insult your intelligence and things will become more complex soon. Stick with the tutorials. Read every book about assembler you can get your hands on. I will publish a bibliography of books soon. Do not get discouraged! Compuserve is a difficult medium thru which to provide assistance. I promise to answer your questions and if I do not know the answer, I will find someone else that can. Please make this an interactive process, as we grow and learn with each other.

Numbering Systems

Hexadecimal (HEX) and binary are merely different base numbering systems for counting. It is important we understand both of these systems in addition to base 10 or the decimal system because assembler uses all three. I will tell you up front that I use a calculator designed for these numbering systems usually but we need to understand the principles also. If you want to get a calculator, and I recommend that you do, there are several inexpensive models on the market. I use the Casio solar powered fx-451 scientific calculator for \$35. It supports HEX, OCT, BIN, LOGICAL OPERATORS, and all scientific functions. Works great! Craig Miller and others have also published programs which will allow you to use your computer but this has the disadvantage of requiring you to load another program every time you need to make a calculation, a real pain.

Binary Number System

As already mentioned, binary is the native language for your computer. Everything eventually gets converted to binary. Let us look at a decimal number first. As you know decimal means powers of 10. Each number represents a power of ten. For example 4175:

$$\begin{array}{r}
 10A3=1000, \quad 4 \times 1000=4000 \\
 10A2= 100, \quad 1 \times 100 = 100 \\
 10A1= 10, \quad 7 \times 10 = 70 \\
 10A0= 1, \quad 5 \times 1 = 5 \\
 \hline
 4175
 \end{array}$$

Binary numbers can be 1 or 0 only, hence base 2. The individual number is called a bit. A group of eight of these is called a byte. To convert the binary number 00001011 to decimal follow the same procedures you used with the decimal number:

Ignore any leading zeros.

$$\begin{array}{r}
 2A3=8, \quad 1 \times 8=8 \\
 2A2=4, \quad 0 \times 4=0 \\
 2A1=2, \quad 1 \times 2=2 \\
 2A0=1, \quad 1 \times 1=1
 \end{array}$$

To make it easier to communicate with the computer we most often use HEX. From now on I will use a > to indicate a number is in hex. Hex is base 16. That is a number may be 0 thru 15. To represent numbers greater than 9 we use letters of the alphabet. 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F. Just remember to use >A for 10 and count to 15 ending with >F.

Let us convert >394F to decimal:

$$\begin{array}{r}
 16A3=4096, \quad 3 \times 4096=12,288 \\
 16A2= 256, \quad 9 \times 256 = 2,304 \\
 16A1= 16, \quad 4 \times 16 = 64 \\
 16A0= 1, \quad F \times 1 = 15 \\
 \hline
 14,671
 \end{array}$$

The largest number you may represent in one byte is >FF or decimal 255. The largest value in a word (two bytes) is >FFFF or 65,535. Enough on numbering systems for now, we will cover minus numbers (twos compliment) and additional points as we encounter them in programs.

Assembler Instruction Syntax.

Like every computer language there are certain rules we must follow for inputting instructions. Unlike BASIC, assembler will not give you a warning or error until you assemble the program. Here is the general syntax:

LABEL OPCODE OPERAND COMMENT

Labels must begin in the 1st column and may be up to 6 characters long. One or more spaces follow. Next is the OPCODE. This is the actual instruction to be performed followed by one or more spaces. Next are one or more operands or data for the instruction to operate on followed by one or more spaces. Finally is an optional comment which may extend to column 80. Each time we use a new instruction I will fully explain it.

Addressing Modes.

There are five general addressing modes and one special addressing mode used for assembler instructions. We will examine each one in detail as we encounter them in a program. There is one type of addressing we need to look at now. We are going to be operating on individual bits, bytes, and words of memory. Think of the computers memory as a series of consecutive small pieces of memory laid out end to end. We can address any single byte of memory by hanging a label on it but frequently we must address a byte of memory some distance from that label. Think of it like an array. To get to the 5th byte from the label we could say LABEL+4. We used 4 instead of 5 because we must start counting from 0. Think of it like OPTION BASE 0 in BASIC. Lots more on this later.

First Program. I strongly recommend you enter the program manually by typing it in instead of just cleaning it up using TI-Writer or Editor/Assembler. The only way to gain experience programming is to practice.

```

*****
*
* THIS IS THE FIRST PROGRAM FOR THE
* BEGINNER ASSEMBLER TUTORIAL.
* IT CLEARS THE SCREEN, ADDS TWO NUMBERS
* TOGETHER AND DISPLAYS THE SUM IN THE
* CENTER OF THE SCREEN.
*
* HERE IS WHAT IT WOULD LOOK LIKE IN
* EXTENDED BASIC:
* 10 CALL CLEAR
* 20 X=10
* 30 Y=27
* 40 X=X+Y
* 50 DISPLAY AT(12,15):X
* 60 END
* BY MACK MCCORMICK 74206,1522
*****

```


* THIS PART OF THE PROGRAM IS THE INITIALIZATION *

```

DEF START THE PROGRAM NAME IS START
REF VSBW,VMEW CONSOLE ROUTINES WE ARE GOING TO
USE
WSREG BSS >20 SETS ASIDE A BLOCK OF 32 BYTES FOR
USE AS WORKSPACE REGISTERS

X DATA 10 COULD HAVE USED >A INSTEAD OF 10
(LIKE X=10)
Y DATA 27 (Y=27) COULD HAVE ALSO SAID Y EQU
0027

TEN DATA 10
ANS DATA 0 WORD TO PUT ANSWER IN. INIT TO 0.

```

* PROGRAM BEGINS HERE

```

*-----*
START LWPI WSREG LOAD WORKSPACE POINTER IMMEDIATE.
POINT TO OUR WORKSPACE.

```

* CLEAR THE SCREEN

```

CLR R0 CLEARS R0 TO ZERO (BEGINNING OF
SCREEN IMAGE TABLE)
LI R1,>2000 LOAD IMMEDIATE R1 WITH >2000.
VSBW ROUTINE WRITES THE LEFT
LOOP BLWP @VSBW BYTE IN R1 ALWAYS. IN THIS CASE
>20 OR 32 OR SPACE CHR
INC R0 ADD 1 TO R0
CI R0,767 COMPARE IMMEDIATE R0 TO 767
JLE LOOP IF ITS LESS THAN OR EQUAL JMP
(GOTO) LOOP

```

* ADD THE NUMBERS TOGETHER AND CONVERT TO ASCII

```

*-----*
A @Y,@X ADDS X TO Y AND PLACES RESULT
IN X
MOV @X,R6 MOVE WHAT IS AT X TO R6
CLR R5 CLEAR R5
DIV @TEN,R5 DIVIDES 10 INTO 37. QUOTIENT IN
R5. REMAINDER R6.
AI R6,>30 ADD IMMEDIATE ASCII OFFSET TO R6
MOV R6,@ANS MOVE CONTENTS OF R6 TO THE WORD
ANS
MOV R5,R6 MOVE CONTENTS OF R5 TO R6
CLR R5 CLEAR R5
DIV @TEN,R5 DIVIDE 10 INTO R5, R6
AI R6,>30 ADD IMMEDIATE ASCII OFFSET >30 TO
R6
SLA R6,8 SHIFT LEFT ARITHMETIC R6 8 BITS.
MOVB R6,@ANS MOVE MSBYTE R6 TO R1
*-----*

```

* DISPLAY ON THE SCREEN AT ROW 12 COLUMN 15

```

LI R0,366 POSITION ON THE SCREEN IS 366
LI R1,ANS LOAD R1 WITH THE ADDRESS OF ANS
LI R2,2 TWO BYTES TO WRITE
BLWP @VMEW

JMP $ PREVENTS THE PROGRAM FROM ENDING SO
YOU MAY SEE THE RESULT

```

* RETURN TO THE CALLING PROGRAM

```

CLR @>837C CLEAR THE STATUS BYTE
LWPI >83E0 LOAD GPL WORKSPACE REGISTERS
B @>0070 BRANCH TO THE CALLING PROGRAM

END

```

Program notation. These comments supplement the comments in the program itself. Any statement with an * in column 1 is a comment and you may enter anything else on that line. One fairly unique thing about the 9900 microprocessor in the TI-99 is the ability to designate your own workspace registers anyplace in memory or more than one set at a time. Think of registers as 32 consecutive bytes of memory that are used as your scratch paper for calculations. Thirty-two bytes is of course 16 words of memory. Because this is a 16 bit (1 word) machine (something many of your friends cannot brag about) that gives us 16 registers to use for our computations. We place an R in

front of the number to designate that we are referring to a register. For example, R0 is register zero and R15 is register fifteen (really the 16th word of memory because we started counting with zero.) Here is the detailed explanation of the program:

DEF START

DEFines the entry point of the program so the computer may find it. Places the name START in the Reference/Definition table. More on this next time.

REF VSBW,VMBW

REFERENCE refers to console routine the program will use. In the advanced tutorials we will create our own utilities.

WSREG BSS >20

WSREG is the label we decided on for our workspace registers. It could have been any label 1 to 6 characters long. Block Starting Symbol (BSS) sets aside a block of memory, uninitialised for use as our workspace. >20 means set aside >20 or 32 bytes (16 words) for R0 to R15.

X DATA 10

Initializes one word of memory to 10 (0010). Hangs the label X on that word.

START LWPI WSREG

Load Workspace Register Immediate (LWPI). Tells the computer to use the 32 bytes of memory for our workspace which begin at WSREG. START is the entry point (beginning) of our program.

Logic for clear routine. Writes the space character >20 or 32 to the screen 768 times to the screen to clear it. R0 is the counter. R1 contains the space character. We increment R0 to point to the next screen location and check it against 767 to insure we have not gone too far.

CLR R0

CLEARs the contents of R0 to zero.

LI R1,>2000

Load Immediate R1 with >2000.

LOOP BLWP @VSBW

Branch and Link Workspace Pointer to the Video Single Byte Write Routine. Branches to the console routine for writing single bytes of information to the screen. R0 always contains the address on the screen to write to. Briefly, there are 768 screen positions 24 rows X 32 Columns=768. This routine writes to VDP RAM in the screen image table (SIT) which is 768 bytes long. Any ASCII value you write to the SIT is displayed on the screen. For example to display the number 3 at row one column one, R0 would have 0 in it (because we begin counting at 0) and R1 would contain >3300 or 5100 in it. Note the number to be written is in the left byte of the word. The VSBW routine always writes on the Most Significant Byte and disregards the LSB. Here is the easy way to remember it. R0 always contains the address in VDP RAM. R1 always contains the address or data in CPU RAM.

INC R0

INCREMENT R0 by one. Add one to the contents of R0.

CI R0,767

Compare Immediate whats in R0 to 767.

JLE LOOP

Jump Less than or EQUAL to the label LOOP. IF R0<=767 THEN GOTO LOOP.

Logic for the addition routine. We add the two numbers together. Because only ASCII numbers may be displayed on the screen we must add >30 to each byte before we display it. In this case our number is 37. We must place a 3 and 7 on the screen. To do this we divide 37 by 10 resulting in a quotient of 3 and remainder of 7. We add >30 to the 7 to make ASCII >37. We move this value to the right most byte of our ANS word. We then divide 3 (old quotient) by 10 resulting in 0 quotient and 3 remainder. We again mask up by >30 and shift it left 8 bits (1 byte) in the register. We then move this byte to the left (MSB) of ANS. ANS looks like >3337 when we are finished.

```
A @Y,@X
```

Adds two words of memory. Places the sum in the second operand. May also use registers (eg. A R0,R1). Adds whats at the word of memory with label Y to whats at the word of memory label X.

```
DIV @TEN,R5
```

DIVides uses two registers. In this case R5 and R6. Divides whats in R6 by whats at TEN or 10. The quotient is placed in R5 and the remainder at R6. That is why we clear R5 before we divide.

```
MOV R6,@ANS
```

MOVE the contents of R6 to whats at the label ANS.

```
SLA R6,8
```

Shift Left Arithmetic. Shift the contents of R6 left 8 bits (1 byte) to the MSB. Fills the shifted out positions with 0.

```
MOVB R6,@ANS
```

MOVE Byte moves the Most Significant Byte (MSB) or leftmost to the word at ANS without disturbing the LSB of ANS.

Logic for display on the screen routine. R0 contains the position on the screen to display the answer. Found by SCREEN ADDRESS=((ROW-1)+(COLUMN-1)). In this case 366. R1 contains the address of the beginning of the data to write to the screen. In this case R1 contains the address of ANS. R2 contains the number of bytes to write beginning at the VDP address in R0 and the CPU address in R1.

```
JMP $
```

Instructs the computer to JuMP to the current location of the program counter. Same as 100 GOTO 100. This locks up the computer so you may see the result. If you want to see how quickly the computer executes place an * in column 1 in front of this instruction and reassemble.

Logic for the Return to the Calling Routine. Clears the GPL status byte at >837C. Much more on this important byte later. Loads the workspace pointer back to the GPL workspace and branches to the routine at >0070. END is a directive to inform the assembler there are no more instructions.

If you have the Molesworth book refer to page 42 or page 30-36 in the Editor/Assembler manual.

Here is a brief step by step.

1. Select EDITOR/ASSEMBLER from the main menu. Place your editor assembler disk A in drive 1.
2. Select 1-EDIT from the E/A menu.
3. Select 2-EDIT from the EDIT menu.

4. Enter your program just as shown. You may omit any comments if you desire.

5. Press FCIN ESCAPE twice to return to the EDIT title screen.

6. Select 3-SAVE. Answer Y to the VAR/80 prompt. Enter your source file name such as DSK2.SOURCE. If you only have one drive place another disk in drive one first and use DSK1 instead of DSK2.

7. Press FCIN ESCAPE to return to E/A title screen.

8. Select 2-ASSEMBLE. Answer Y to the load assembler question. Insure the E/A disk A is in drive 1.

9. At the SOURCE FILE NAME enter the same file name you used in 6 above. ie. DSK2.SOURCE, press enter.

10. At the OBJECT FILE NAME enter DSK2.OBJECT and press enter.

11. Press enter at the LIST FILE NAME. More on this feature next time.

12. At the OPTIONS prompt enter R. Press enter. R means you used R in front of your register numbers in the source code. You may also enter CLST. C is compressed object code (will not load from X/B loader). L is a source listing if you entered a LIST FILE NAME at the prompt. S prints the symbols and registers used in the program on your source list. T prints the full text string in your source listing. More on these features later. Assembler executing will appear followed by 0000 errors (you hope). Press enter.

13. Press 3-LOAD AND RUN.

14. At the FILE NAME prompt enter your OBJECT file name ie. DSK2.OBJECT. Press enter. Press enter again to get to the PROGRAM NAME prompt.

15. This is the name we DEF in our program in this case START.

16 Your program will execute.

SUMMARY.

I realize this has been long but there has been much to cover to get started. Do not get discouraged. We will go at this together. I strongly recommend you study these references in your Editor-Assembler manual and experiment on your own. Until next time, "ASSEMBLER EXECUTING".

Page 20-36	Using the Editor-Assembler Cartridge
Page 39	Sec 3.1 Registers
Page 46-48	Source Statement Format
Page 53	Predefined Symbols (\$)
Page 57-62	Sec 4.1.1, 4.1.4, 4.2, 4.4 Addressing
Page 80	Add Instruction
Page 85	Add Immediate
Page 88	Divide
Page 90	Increment
Page 107	Branch
Page 115	Jump Less Than or Equal
Page 143	Compare Immediate
Page 163	Load Immediate
Page 165	Load Workspace Pointer Immediate
Page 166	Move Word
Page 168	Move Byte
Page 200	Shift Left Arithmetic
Page 212	Block Starting Symbol
Page 225	Data
Page 227	DEF
Page 228	REF
Page 248	VSBW,VMBW
Page 329-330	Graphics Mode Tables
Page 394-396	Numbering Systems
Page 428-429	ASCII character set
Page 442	Other Returns

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Cutthroats part 3

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So, it is off to the Sao Vera. This one has a few more obstacles than the Leviathan did, but none of them are particularly difficult. The first thing is to get off the bed, and head North to the Storage Locker. Here you will find the flashlight and repellent, as well as a deep-sea diving outfit. There is also a small machine here, that you will not be needing (it is a locator box. If you really want to fiddle with it, you have to buy a dry cell to make it work).

Get everything but the box, then go back South. Get the envelope from under your bed, stop off in the Galley to eat and drink, then continue on to Johnny's cabin. Show him the envelope, which will put an end to Weasel's double-cross. Now go up on deck.

Johnny will be there, and will tell you about the orange line. Keep in mind what he says. If you look around, you will see a large air compressor, with an air hose. Attach that to your suit, and then turn on the compressor. You are all set, so dive in! Once underwater, turn on your flashlight. There is that pesky shark again! Open your canister to get rid of it, then keep on going down. It will be a long way down, but you will get there.

Now you are on the top deck of the Sao Vera, with a hole at your feet. Go down the hole. Crash! Looks like the ladder broke. You may have a problem getting back up again! Then again, maybe not. Leave that for now, and make your way South, into the room with the iron bars. Get one, because it will come in handy soon.

Then keep going South, until you come to the room with the bunks barring the way. Move the bunks with the bar, then wedge the bar under the bunks to keep them from moving back. Now you can go South again, to another room, with a ladder leading down. Climb down that one.

Oops! Crash again! This time, though, the whole ladder did not crumble. Still, it is going to be hard to reach it on your way back. No matter, you still have to find that treasure, so go North.

Uh Oh!! There is a giant squid here! Good thing for you it is asleep. And if you are smart, you will not wake it up! So, just go right on by, do not try doing anything to the squid at all. In the next room is an oak chest, along with a hole in the side of the ship. Leave that for now, and keep going North.

In the next room are some skeletons, remains of the crew. Examine them, and you will see one wears a scabbard. In the scabbard is a sword. Get that, and go North again, to the last room. Here you will find a maple chest. The chest is too heavy to carry, so push it back South until you come to the oak chest (note: you must say "Push Maple Chest South").

Hmmmm, now, which chest to take? Let us try the oak chest. Push that out West through the hole (carefully! You do not want to cut your air supply!). Wait awhile, and the orange line will appear. Get that, tie it to the oak chest, and tug on the line. The chest will slowly make its way upward, while you return to the ship.

Now, push the maple chest south, past the sleeping squid, and south again into the room with the ladder. Climb on the chest, and you will be able to reach the ladder and climb back up to the middle deck.

From there, go North until you reach the room with the cask in it. Now, push the cask north with you, until you come back to the room with the mast and the rope tied around it. Climb on the cask, then cut the rope with the sword. Drop the sword (you cannot leave with it), and then make your way up and out.

Once on the top deck, just keep going up until you are back on the boat. The chest will be opened to display hundreds of gold coins. Congratulations, you are now a very rich diver!

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Report

What is everyone else doing with their computers? Recently I was involved with a week long endurance horse ride, complete with computer and a few weeks later displaying the computerised model train set at a computer show.

The endurance horse ride is the "Shahzada Endurance Test" which was held late in August. This was my second year of this five day event, which actually involves my living at St Albans in my communications caravan for 10 days. I set up and operated radio communications, Public Address and Computer Facilities with the trusty TI99/4A of course. (I wrote an article on last year's event which appeared in the November 1989 TND).

There were 123 entrants this time. The only major problem was caused by the fact that the program was written for 100 entrants in a sort routine and there were 108 entrants still in the event at the end of the first day, whoops! At this year's event a photocopier was organised which reduced the work load on the printer and reduced the number of printer ribbons consumed. A major problem with computers at this type of event is getting the information in fast enough then checking in time to do the required position placing, sorting and then the printout. This all works to a very tight deadline. A 40 page results book was pasted up in the wee small hours after the last day of the event and after photocopying, which took absolutely hours to do, the required 100+ copies were ready for collating. (That was the longest day, 6.30am Friday to 4.30am Saturday).

Late September I went to the Newcastle Micro Computer Exhibition at the invitation of the Hunter Valley 99ers with the train set controlled by a TI99/4A. I was quite unprepared for the enthusiastic response from the public at the Computer Exhibition. Absolutely hundreds of children were captivated by the train set which has its trains, signals, points and mimic display controlled by a 32K TI99/4A console. An important feature of this particular implementation is that whilst the computer is the heart of the layout, preventing collisions along with general control of safety and monitoring, it still allows the human operator to control the trains and points. The special appeal to the little kids who looked in at the height of the trains was very obvious and it was very difficult to restrain quite a few from reaching in and grabbing a locomotive or carriage. There were a few derailments but no serious damage. A few lucky children were able to have a drive of the system. One little girl, of I guess 10 years of age, was so captivated that she drove the system very competently for about an hour after just a few minutes of instruction. She left dad to do the rest of the show, as far as she was concerned the computer train set was a great hit. As the day went on I spoke to people with many different computers including some students from the Newcastle Uni (where the display was held) and the IBM club.

A lot of interest was shown by the IBM club as they have a number of their members interested in model trains. (It is of note that the I/O technique used is applicable to any computer which allows access to the address and data bus for the Wire I/O interface. (This was described in the July 1988 and February 1989 TISHUG News Digests). I must admit I did not see much of the rest of the Exhibition or the HV 99ers stand because I was kept so busy with the train set. My thanks to the HV99ers for their kind hospitality.

Regional Group Reports

Meeting Summary For NOVEMBER

Banana Coast	11/11/90	Sawtell
Carlingford	21/11/90	Carlingford
Central Coast	10/11/90	Saratoga
Glebe	08/11/90	Glebe
Illawarra	12/11/90	Keiraville
Liverpool	09/11/90	
Northern Suburbs	22/11/90	
Sutherland	16/11/90	Jannali

BANANA COAST Regional Group (Coffs Harbour area)

Regular meetings are held in the Sawtell Tennis Club on the second Sunday of the month at 2 pm sharp. For information on meetings of the Banana Coast group, contact Kevin Cox at 7 Dewing Close, Bayldon, telephone (066)53 2649, or John Ryan of Mullaway via the BBS, user name SARA, or telephone (066)54 1451.

CARLINGFORD Regional Group

Regular meetings are normally on the third Wednesday of each month at 7.30pm. Contact Chris Buttner, 79 Jenkins Rd, Carlingford, (02)871 7753, for more information.

CENTRAL COAST Regional Group

Regular meetings are now 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 St, Glebe. Contact Mike Slattery, (02)692 0559.

ILLAWARRA Regional Group

Regular meetings are normally on the second Monday of each month, except January, at 7.30pm, Keiraville Public School, Gipps Rd, Keiraville, opposite the Keiraville shopping centre. A variety of activities accompany our meetings. Contact Lou Amadio on (042)28 4906 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) 6447377 (home) or (02) 7598441 (work) for more information.

*** ALL WELCOME ***

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 format of each meeting is quite informal, with topics ranging from software reviews to hardware modifications with a fair sprinkling of purely social chatter in between.

BBS Contact is Gary Wilson, user name VK2YGW on this BBS. All meetings are held on the third Friday of each month at 51 Jannali Avenue, 7:30 pm, Jannali unless otherwise advised.

Peter Young Regional Co-ordinator

TTSHUG 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 RYDE INFANTS SCHOOL, Tucker Street (Post Office end), Ryde. Regular items include news from the directors, the publications library, the shop, and demonstrations of monthly software.

NOVEMBER MEETING - 3RD NOVEMBER

Demonstration of the Epron Ramcards.

DECEMBER 1:

The last meeting of the year will be on Saturday, the 1st of December which will be an AGM followed by a Christmas party. Please read the information contained in this TND before the meeting and look closely at the nomination forms regarding club positions. Please note that the nominations close the 10th of November.

The cut-off dates for submitting articles to the Editor for the TND are:

December	11 November
February	6 January

Russell Welham (Meeting coordinator).

Jenny's Younger Set

It is a good thing for Vincent Maker or we would not have much for the younger set this month. How about some of the rest of you kids finding something that I can put in for everybody. It does not have to be too complicated and you can do it by using a cassette. Anyway, here is a letter and a program that Vincent has for us this month. He has already whispered in my ear about a couple of good programs that he has up his sleeve for Christmas. One of them involves a Christmas melody. Let's see what the rest of you can come up with.

DEAR JENNY,

I HAVE WRITTEN THIS PROGRAM FOR THE YOUNGER SET. I HOPE IT'S OK.

VINCENT MAKER

MUSIC QUIZ
by Vincent Maker

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100 RIGHT=0
110 WRONG=0
120 REM
130 REM BY VINCENT MAKER
140 REM FOR MELANIE.
150 CALL CLEAR
160 DISPLAY AT(3,7):"MUSIC QUIZ."
170 DISPLAY AT(5,7):"BY VINCENT MAKER."
180 DISPLAY AT(7,7):"NOVEMBER 1990."
190 FOR T=0 TO 500
200 NEXT T
210 DISPLAY AT(3,7):"1.WHO SANG,""IT MUST HAVE BEEN LOVE""?"
220 DISPLAY AT(6,7):"A)ROXETTE"
230 DISPLAY AT(7,7):"B)JASON DONOVAN"
240 DISPLAY AT(8,7):"C)WILSON PHILLIPS"
250 DISPLAY AT(9,7):"D)THE BEACH BOYS."
260 PRINT "PRESS THE APPROPRIATE KEY."
270 CALL KEY(0,J,K)
280 IF K=0 THEN 270
290 IF J=65 THEN RIGHT=RIGHT+1 ELSE WRONG=WRONG+1
300 DISPLAY AT(5,7)ERASE ALL:"2.WHO SANG,""RUNAWAY HORSES""?"
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continued on page 7