NOTE: This Club is in Deep Trouble!!
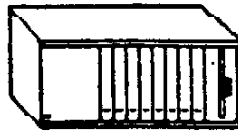
THE BREAD BOARD

OFFICIAL NEWLETTER OF THE
TIDEWATER 99/4 USER GROUP INC.
Post Office Box 1935
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SEPTEMBER/OCTOBER 1986 TI-99/4A
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*A Non-Profit Virginia Corporation
dedicated to educating and
enlightening TI-99/4 users
to the full potential
of home computing.*

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MEETING NOTICE: *The Southside Chapter meets every first and third Tuesday of each month at E.C.P.I. (Electronic Computer Programming Institute) located at 3661 East Virginia Beach Blvd. at Ingleside Ave. Educational classes start at 6:30 pm followed by the regular meeting and discussion groups at 7:30 pm. For September, circle the 2nd and 16th on your calendars for meeting nights. October meetings will be the 7th and 21st.*

The Peninsula Chapter meets every second Tuesay of each month at Warwick High School, 51 Copeland Lane, Room 220-22. Formal meetings begin at 7:30 pm, with informal discussion before and after the meeting. Library is open to members during informal sessions. For September, the regular scheduled meeting is the 7th. The October meeting will be on the 14th.

IN THIS ISSUE:

CORPORATION NOTES

A membership count was taken to determine the number of active members in each chapter for pro-rating the newsletter cost. The count was: 22 for the Peninsula Chapter and 36 for the Southside CHapter...a total of only 58 !! A far cry from the 120+ membership for the Southside chapter just a couple Years ago. What does this mean? Well, at $10 annual dues, our total income is $580/year. Subtract from that $100 annual lawyer fees (they just raised it from $50) and that leaves $480. Unlike many other users groups who charge a "copy fee" for programs from the group library or asses an admission fee at each meeting, we have no other source of income. The newsletter costs $70 per issue (printing mailing) so its obvious that we cannot support a monthly newsletter under the present circumstances. What can be done? There are several alternatives. I, personally, do NOT favor reducing the frequency of the newsletter. . .but that is one possibility. We need your ideas. There will be a BOARD MEETING soon. Why not plan to attend and voice your opinions. At least contact one of the board members and tell him how you feel.

Ken Woodcock

From Operations:
On October 7th:
I will continue on Forth with a talk on tampering with Forth.
On October 21th:
Back to Extended Basic. With a talk by Ken Woodcock on speed Considerations.
On November 4th:
We will continue to tamper with the way Forth works.

Be there and have a close encounter of the TI kind.
Billy, VP/OPERATIONS

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THE LIBRARIANS
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Mac and Cathy MacAllister
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We have received twenty (20) disks full of programs from the Peninsula Group. Cathy and I are going through them now adding the programs that we did not have to our Library. When this task is completed we will recatalog the library. A disk copy of this catalog will be given to the Peninsula Group.

Thank you Mike Mitchell for making all these programs for us.

NEW PROGRAMS
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1. SKEETSHOOT
A two player game. Shoot one of your three guns to hit a randomly positioned target.
2. AMAZNGRACE
An organ rendition of the song "Amazing Grace". w/graphics
3. DOTS A childs game. The player guides an ever growing snake around the screen gobbling up letters. This should be done in ABC order. Uses Joystick #2. There is no scoring or ending. This needs work.
4. SUPERSLOTS
A basic slot machine game. Just enter the amount you have in your bankroll, sit back, and watch the computer take it all.
5. MUSICMAKER
Creat two voice music and save it to cassette.

If you have any programs you wrote or modified, how about adding them to the library.

Cathy is now the custodian of the Groups Newsletter Library. I, "Honey Carry It" to the meetings. They are available for you to check out. If you have any old newsletters from other User Groups please see her about adding a copy to this collection. (Make them skinny ones.)

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IT IS DONE! We have sorted through all twenty disks received from the Peninsula Group, added to our Library those we did not have or were improved in

some manner. A new catalog has been compiled and will be brought to the meeting. There are now 2625 files in the Library. (Cathy counted them, not me.) The nine Library sections are:

= EDUCATION = GAMES
= UTILITY DISKS = MATH
= PROGRAMING AIDS = MUSIC
= UTILITY PROGRAMS = GRAPHICS = WRITING MUSIC

Finally, a 128-WRITER has been designed to allow your TI-WRITER to take advantage of of the extra memory in the FOUNDATION 128K card. This is a FREEWARE program written by Stephen Lawless. He is only asking $10.00 for the program. It is well worth it. It is in our library. I'm using it to write this article.
Another new FREEWARE program is Director 99.
There are updated versions of DISK+AID (V 3.0) and SuperBug II (V 2.0) in the Library. Superbug 2.0 corrects a version 1.0 bug.

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REPORT FROM THE SEC/TREASURER

Meetings of the Southside group have continued throughout the summer and now that the HOT weather will soon be gone we invite those of you who could not join us to do so real soon.

The series on XBASIC continued at the meeting of August 19 with Mark Gerloch demonstrating the designing of Graphics and the use of CALL CHAR etc. With many questions, comments and general participation by the members the session was lively and informative.
Billy Denny showed the group a new program by Mike De Frank called FORTH UTILITIES I. This super program allows one (after they learn how) to disassemble machine code, decompile FORTH definitions and generally improve the use of the FORTH language. I got mine but haven't begun to undestand its use yet.
With the rising interest in the 'c' language Billy is planning on a study of this language. The text to be used is THE C-PRIMER PLUS at a cost of $22.95 !!!! Get your copy and join us. It ought to be fun.
Ken Woodcock's demo of PRBASE became so involved that a special interest group met to dig into the use of this excellent FREEWARE program. Our library has a copy and the program disk contains an excellent set of instructions that can be printed out. Get yur copy from Mac Kathy MacAllister.

Our treasury shows the following:

Balance 7/18/86 $244.66
Dues collected   40.00
Library disks   -11.25
Newsletter   -40.00

Balance 9/2/86 $233.41

Send your Southside Dues to:
RICHARD HANSON Sec/treas, 2473 TULLIBEE DR, NORFOLK, VA 23518.
Better yet, come to the meetings.

Dick Hanson, Sec/treas

PRESIDENTS NOTES

The Peninsula Chapter participated in the Hamfest-Computer Fair at the Virginia Beach Pavillion on Saturday and Sunday, August 23 and 24, when I set up our computer in the Tidewater TI99/4 User Group's booth. The Southside Chapter had two computers there manned by Mark Gerlach and Billy Denny. This was an interesting and informative experience. We were able to help people who came by in various ways. Some had TI's they had never used, so we tried to get them started. Others lacked a piece of equipment or some helpful software, which we tried to find for them. In most cases we were successful. Our chapter's computer was used mostly by kids who came by to play the games. I only wished we could have had some of the great presentations, such as those on TI ARTIST, etc. that we have had at meetings. If I had just thought to demonstrate the speech synthesizer, it would have added some interest to the show. ALthough primarily a ham convention, there were a lot of computer related things there. There were many booths of computer equipment for sale. The predicted bargains were there: packages of ten disks for $4, cassette cables for $1, typewriter ribbons for $2, and I was tempted by a Zenith color monitor with RGB switchable to composite for $200. And now, as the newscasters say, a more serious note. In the light of our chapter's difficulties in its financial position and the anticipated problems in getting officers, chapter leaders are discussing drastic measures, ranging from dissolving the chapter to keeping the chapter but having fewer officers and consolidating our treasury with the Tidewater/Southside Group. In any case present members can remain members of the Tidewater Group simply by paying the dues. Meetings could still be held either formally or informally among Peninsula members. Some of the chapter business could be reduced. And the Newsletter could still be published with articles contributed by Peninsula members and received by every dues-paying member. The question of Chapter identity as with other proposals, to the extent that they are feasible, would be up to the members. I am bringing these thoughts to your attention to get your reaction. If you feel that we should not take such steps, then you must be able to suggest a better course and offer your services to accomplish it. Jim Trant

TREASURER'S REPORT

```
    Reported Last  Month  .  .   $97.61
Correction  .   .   •   .   .   -   .   - .03
(Dues   Gift).   .    •    .    •    $25.00
Expenditures  .   •   •   .   •   •   •   •
Cash on Hand .  .  .  .  .  .  .  $122.58
```

Note: Expenditures ae zero for the chapter this month because we have yet paid for our share of last month's publication expenses.

October's program will be presented by Don Andrews, who will demonstrate the latest releases from Pilgrims' Pride, we saw flyers on a few months' back: MODULE EMULATOR and PROGRAM MANAGER. Don would appreciate your attendance, and submited the following resume of his presentation on these two programs:

At this writing, I am waiting for a replacement disk for the MODULE EMULATOR which arrived finally in September after much anticipation. The original disk I received was defective. MODULE EMULATOR is the package that allows you to backup your modules onto disk. According to the author, it was written to serve two very specific purposes. The prime purpose to save wear and tear on one of TI 99/4A's most vunerable parts, -- the module port. As a consequence of inserting and removing modules (often rather carelessly) the connector into which the modules fit becomes loose and worn. If the condition of the connector becomes too bad, your console is rendered useless. This condition would obviously require you to get your console fixed or replaced. This is expensive and time consuming. By using MODULE EMULATOR and placing most of your modules on disk, you will almost totally eliminate the need to change modules and extending the life of your computer. The second reason for the creation of MODULE EMULATOR was to give the average user a means to "back up" the modules that they have purchased. We have all learned the necessity (sometimes through painful experience) of having back-ups of programs and files that are of value. For disks or tapes, that has been relatively easy to do, but almost impossible to do with module based programs. It is especially important to be able to back up modules now that TI is no longer manufacturing any products related to the TI 99/4A. It is simply a matter of time until TI becomes unable or unwilling to repair and replace modules, consoles, and other equipment.

The second program, PROGRAM MANAGER is described in the documentation as a computerized organizational tool, with the capacity to organize, categorize, access, load and run over 11,000 assembly language programs almost instantly. All menus are totally user designed and all prompts are very user friendly. You may create a separate menu for each disk you have in your collection, or you may include them all in a large comprehensive menu that encompasses your entire collection of assembly language programs. I hope to familiarize myself with both of these programs to be able to answer your questions at the meeting. I will reserve my ratings and recommendations until you have had an opportunity to see what they can do at the presentation. I will give you the benefit of a tip to save on making the purchase: The 6000+ module works for both programs and since they are individually priced at $69.95 for software and module or $25.95 for the software by itself, you only need one 6000+ module. If you attended the workshop we held in January (or have subseqently obtained a homebrew module), you don't need a module at all! It works for me.

PRESIDENTS NOTES FOR OCTOBER

Since this newsletter will serve two months, I will add a few comments for October. We are soon due for a fall board meeting. By referring to Ken Woodcocks article in the Southside page for September and to my past comments, you will see that neither chapter will have the income to continue our monthly newsletter if we don't raise our dues. Consequently, I recommend that both chapters raise our dues to $15/year as was the case for the Peninsula prior to the merger. I will ask for someone to make such a motion at our next meeting and if the vote is affirmative, I will make the same motion at the next board meeting. As far as the clubs continued operation is concerned, I believe this is a do or die situation, so I ask for your support on this issue. Other options, such as a newsletter every two months have been considered, but I think (even though this issue is for two months) that this policy is not in the clubs best interest. See you on the 14th.
        Jim Trant

THE AUGUST MEETING

Vic Vogelsang gave a presentation on the SST compiler. His summary: "I was impressed with the effort that went into generating the compiler, but I feel that it would be better if the user spent the time required to master the compiler, studying a faster language (FORTH PASCAL or   ASSEMBLY).

THE SEPTEMBER MEETING
Barry Ensley gave a oresentation and a demonstration on the capabilities of FORTH. His demo program was HOW TO MAKE CHANGE FOR $1 (did you know that there are 292 ways?). The speed of FORTH was shown as the program completed its task in 90 seconds.

NOTES FROM ANONYMOUS

I just learned why married men are fat, while bachelors are slim: A single guy comes home, looks to see what he has in the refrigerator, and goes to bed. A married man comes home, sees what is in the bed, and goes to the refridgerator.

EXTRA LOW BASS NOTES

The lowest note that can be played using the CALL SOUND statement has a frequency of 110, correct? Wrong. By employing a special technique, notes of a much lower frequency can be played. In fact, two more octaves of reasonably decent sounding bass notes can be produced.

The method of obtaining these notes is quite simple. The first and second notes in the CALL SOUND statement can be either an audible or inaudible frequency and/or volume. If one or both notes are audible, then one or both will be sounded as written. This part of the CALL SOUND statement, as well as the duration, behaves in the normal fashion.

The third and fourth notes are the ones that determine those low bass notes. The third note doesn't contain a true frequency, but a token one. And it must have an inaudible volume, i.e., 30. The fourth note is the noise -4, which is a periodic noise that varies according to the frequency of the third note. With this noise, we use an audible volume. That's it.

Here's an example of how to play an A one octave lower than the lowest built into the computer: CALL SOUND(3000,40000,1,220,30,826,30,-4,1). The frequency of the third note, 826, is the token for that A, which has a true frequency of 55. In this case, all that will be played is that single low A. (Notice that the first note isn't heard because it has an inaudible frequency of 40000 while the second note isn't heard because it has an inaudible volume of 30.)

Let's look at another example where the first two notes will also be played. We'll make an G major chord that begins on the G below the TI's lowest true frequency of 110: CALL SOUND(3000,123,1,147,1,1472,30,-4,1). In this example, the 123 and 147 are the respective frequencies for B and D while 1472 is the token for G, which has an actual frequency of 98. Since the notes G,B and D constitute a G major chord, if this CALL SOUND statement is entered a very low G major chord will be heard.

The problem that must be solved to play the notes from these extra octaves is to devise a chart which indicates the token values to be entered in place of the desired frequencies. The program below will display on the screen, and optionally print out to a printer, the token values with their corresponding frequencies (rounded to the nearest integer) and notes. It also will play the notes as the values are being displayed.

```
100 REM * BASS-NOTES
110 REM * Programmed by
Barry Ensley
120 DISPLAY AT(10,2)ERASE AL
L:"PRINT TO PRINTER (Y/N)" :
: ACCEPT AT(10,26)VALIDATE("
YN")SIZE(1)BEEP:P$ :: IF P$=
"N" THEN 140
```

```
130 DISPLAY AT(12,2):"PRINTE
R DESCRIPTION" :: ACCEPT AT(
13,4)BEEP:P$ :: OPEN #1:P$
140 CALL CLEAR :: CALL CHAR(
98,"404040506848506"):: DIM
T(23),F(23),N$(23):: S=2^(1/
12)
150 FOR X=0 TO 23 :: READ N$
(X):: F(X)=INT(27.5*S^X+.5):
: T(X)=413*S^X :: NEXT X
160 PRINT TAB(6);"FREQUENCY"
;TAB(5);"TOKEN";TAB(11);"ACT
UAL";TAB(19);"NOTE" :: IF P$
="N" THEN 180
170 PRINT #1:TAB(6);"FREQUEN
CY";TAB(5);"TOKEN";TAB(11);"
ACTUAL";TAB(19);"NOTE"
180 FOR X=0 TO 23 :: CALL SO
UND(1000,40000,30,40000,30,T
(X),30,-4,1)
190 PRINT TAB(5);INT(T(X)+.5
);TAB(12);F(X);TAB(18);N$(C)
;TAB(22);N$(C+1):: IF P$="N"
THEN C=C+2 :: GOTO 210
200 PRINT #1:TAB(5);INT(T(X)
+.5);TAB(12);F(X);TAB(18);N$
(C);TAB(22);N$(C+1):: C=C+2
210 IF X=11 THEN RESTORE ::
C=0
220 NEXT X
230 CALL KEY(0,K,S):: IF S=0
THEN 230 ELSE IF P$<>"N" TH
EN CLOSE #1 :: CALL CLEAR EL
SE CALL CLEAR
240 DATA A,,A#,Bb,B,,C,,C#,D
b,D,,D#,Eb,E,,F,,F#,Gb,G,,G#
,Ab
```

You'll obviously be aware that these notes are not of the same quality as the built-in ones. However, used with care they usually don't sound bad at all when used in programming music.

Actually, this technique produces a much greater range of notes than just those two octaves. It's possible to produce nearly two more even lower octaves of notes, all the way down to a LOW G sharp/A flat (7.3 hertz). However, these notes lack much quality, sounding something like a slow firing machine gun.

Similarly, it's possible to extend up the scale into the range of the TI's built-in notes. The lower frequencied ones are O.K. They just sound different than the corresponding built-in ones. But once you start getting up the scale a little ways... Well, key in the one-liner below and hear for yourself. It begins at that lowest acceptable frequency of 7.3 and goes to who knows where. (I just picked the playing of 100 notes at random. You can try going even further - if your ears can stand it.)

```
100 CALL CLEAR :: FOR X=0 TO
99 :: T=109.4*1.059463094^X
:: CALL SOUND(1000,40000,30
,40000,30,T,30,-4,1)::NEXT X
```

Barry Ensley

PEEKs and POKEs

We're going to take a brief look at the area of the computer's memory known as VDP (Video Display Processor) RAM. This is the 16K that comes built into the console. Extended Basic's PEEK and LOAD are not able to access this area. However, from console Basic with either the Editor Assembler or Mini Memory module plugged in, the statements POKEV and PEEKV are available, which allow working in this area.

There are programs around that will allow PEEKVing and POKEVing from XBasic. One of these programs appeared in the latest issue of MICROpendium (July 1986). I haven't had time to try it out, but there is considerable material, and many short demo programs, devoted to VDP RAM in this long article. (Fortunately, the demo program I had already written wasn't duplicated in that article.) Another similar program appeared in the April 1984 issue of The Smart Programmer.

How those 16K are mapped depends on whether you are running out of XBasic or console Basic. Some programs will run in either environment while others won't. However, since many of my PEEKs and POKEs columns have been devoted mainly to XBasic situations where memory expansion cards were necessary (and because MICROpendium "intruded" upon my topic), we'll stick to console Basic's POKEV and PEEKV. Remember, you do need either the Editor Assembler or Mini Memory cartridge in the port.

My demo of POKEVing into the VDP covers only a small region of the VDP RAM, the Screen Image Table. Other areas can certainly be explored, but a map of the VDP will be needed. Both the book that comes with Millers Graphics' program Explorer, and the April and May 1984 issues of The Smart Programmer contain mappings. (The mapping is much more extensive for the XBasic environment, but some of that is applicable to console Basic.) However, as is usually the case with PEEKing and POKEing, playing around is how you'll discover a lot of what does what.

Now on to the Screen Image Table. The screen is broken up into 768 little blocks — 24 rows long by 32 columns wide. The Screen Image Table occupies the first 768 bytes of the VDP RAM, running from decimal 0 to 767. Each of these bytes is an address that corresponds to one of those blocks. 0 is the upper left hand corner, 31 is the upper right hand corner, 32 the first position in row two, etc. — all the way down to 767 being the bottom right hand corner. With this information we can use POKEV to act as a sort of DISPLAY AT.

```
100 CALL CLEAR
110 X=96
120 CALL POKEV(67,66+X,65+X,
82+X,82+X,89+X,32+X,69+X,78+
X,83+X,76+X,69+X,89+X)
130 GOTO 130
```

This program will display my name on the third row starting at the fourth column. The 67 in the CALL POKEV is the address that tells the computer which block to start placing the

message at, and 67 equals row 3, column 4 as explained above.

The rest of the POKEV statement contains the ASCII codes for BARRY ENSLEY. You'll see that I had to add 96 to each code. For reasons I won't go into, there is an offset of 96 between the actual ASCII value and the value you POKEV. Just remember to always add 96 to the ASCII value, and it will work.

Let's look at a program that's a bit fancier, but operates on the same principal.

```
100 REM % VDP-SCROLL
110 REM % Programmed by
Barry Ensley
120 CALL CLEAR
130 REM CALL COLOR(10,14,14)
140 REM CALL HCHAR(1,1,104,7
68)
150 M1$="            IF A MA
N DOES NOT KEEP PACE WITH HI
S COMPANIONS, PERHAPS IT IS
BECAUSE HE HEARS A DIFFEREN"
160 M2$="T DRUMMER.   LET HIM
STEP TO THE MUSIC WHICH HE H
EARS, HOWEVER MEASURED OR FA
R AWAY.              "
170 M$=M1$&M2$
180 L=LEN(M$)
190 DIM P(197)
200 FOR X=1 TO L
210 P(X)=ASC(SEG$(M$,X,1))+96
220 NEXT X
230 FOR X=1 TO L-12
240 CALL POKEV(362,P(X),P(X+
1),P(X+2),P(X+3),P(X+4),P(X+
5),P(X+6),P(X+7),P(X+8),P(X+
9),P(X+10),P(X+11))
250 REM FOR D=1 TO 100
260 REM NEXT D
270 NEXT X
200 CALL CLEAR
```

I'm not going to explain the entire program since I think you can piece it together. I will point out a couple of things though. In line 230, note that we only POKEV to the length of the string minus 12. That's because we're POKEVing 12 characters at once. (I made the display area 12 characters wide. It could be any number up to what you can fit on a program line.) You see those leading and trailing space characters in M$? Well try running the program without them, and you'll find out why they are there.

Also try running the program with the REM statements removed from lines 130 and 140 for a different effect. Likewise, remove the REMs from lines 250 and 260. This is one program that runs quicker in Basic than in its equivalent XBasic version, so you may need that little delay to slow the scrolling down to where it's readable. Of course, the delay can be for any duration you desire.

Hope you enjoy this simple demonstration of the use of POKEV. You can try other things utilizing the Screen Image Table. (Don't forget PEEKV, which just works in "reverse.") Or you can get a hold of a map of the VDP and explore new horizons. You may discover something very useful, and the worst thing that can happen with these experimentations is the locking up of your computer.

Barry Ensley