THE OFFICIAL NEWSLETTER OF THE TI-99/4A

AUGUST 1986 ISSUE NO. 11

FOR THE RECORD

by Ed Bittner
Recording Secretary

The July meeting of the West Penn Users Group started off with a bang as we almost lost Scott Coleman's computer again. Had he brought a case of pop as asked in the June Newsletter we could rule out sabotage. Scott opened the meeting with a good news / bad news report that J. Willforth was out of town. (You decide.) The meeting went smoothly without any interruptions.

Hot news items from the president included a computer show in Horsehead, N.Y. featuring the new Myarc system, the consecutive issues of the Smart Programmer, that Games and Gadgets (Cent III Mall) was selling cartridges (from $2-20), and that our membership continues to grow. Several avenues for a new meeting place are still being explored with the Penns Woods Community Center being voted down. Monday night meeting dates were still a favorite. Some members questioned the reliability of some hardware/software firms. Without mentioning them here the best advise is to talk to other members in the group prior to making major purchases.

Scott asked and received a favorable vote (unanimous) for the club to purchase 500 diskettes and a dozen data cases to be sold to club members at $.50 each (lots of ten) and $8.00 ,respectively. Support your club !

After much confusion, dismay, and enlightenment (I think in that order), about drives, controllers, jumpers, splicer cards, and termination packs, I still would like to see someone from our group write an article on some of the above. Meanwhile we're in need of raffle prizes (suggestions, donations or ?) would suffice. Norm X. showed a neat inclusion of graphics from TI artist with a TI- writer output. Impressive !

Preview of coming attractions. In the August newsletter and at the August meeting look for : Articles on TI-writer by Stan X ,a report on the new Myarc computer by X X , and don't miss the return of yes , J. Willforth, our editor in chief, with a demo using a homemade expansion box ($ 35.00 ,kit form). Be There !!!

Submitted late apologetically,

Scoops Bittner

P.S. Following a suggestion by the president, I will bring one case of cold pop (soda) to be sold for $.50/can. Proceeds will, of course, go to the club. I must get to know peoples last names, using X's shows 0 class.

Fron Stan Katzman

T. I. WRITER
(Part 1)

John Willforth asked me if I would write a column on T. I. Writer for the Newsletter. I told him that I did not feel like an expert on the program but I would try. If anyone has any comments please feel free to make them because I can learn from you also.

The best place to start is at the beginning. When I first unpacked T. I. Writer it was quite intimidating, a cartridge, a disk and that BIG manuel. It is not as bad as it seems and it really is an easy program to learn to use. One must have the following 1) Consol, 2) 32K memory expansion, 3) RS232 card, 4) disk drive (2 disk drives are best but you can do very nicely with one) and a printer. (The printer should be Epson compatible).

First make a copy of the program and use the original as a backup. (Very important.)

Place the cartridge in the port and the program disk in the drive. (I am assuming one disk drive.) Power up the system and get T. I. Writer from the menue using the English version. Next you will see 1. EDITOR 2. FORMATTER 3. UTILITY. We will discuss the Editor first because all writing is done here. Press (1) and the disk will now run putting the editor program in memory. A line will show across the top with a cursor (you are in Command Mode). The line says Edit, Tabs, Files, Lines, Search, RecoverEdit, ShowDirectory, Quit. We will now just discuss Tabs and Edit.

The line starting with "Edit" is called the Command Mode. Let us now set our tabs (and margins). Press T and the cursor will move to a numbered line. First hit the space bar and remove the L then with the "Fctn D" move the cursor to the 10 space and type L then move the cursor with "Fctn D" to 70 and type an R, press enter and you are in the editing mode and you can type anything you want with the margins set at 10 and 70. (If you want different margins just enter them as described). You do not have to press the enter key at the end of the line unless you want to start an new paragrph. You are in Word-wrap mode.

If you want to print out your document at this stage just press Fctn 9 and you are back in Command Mode. Now press F (files) and you will see more selections such as LoadF, SaveF, PrintF, DeleteF, Purge or ShowDirectory. At this point type PF and you will now see "PRINT FILE, enter devicename:", at this point if you have a parallel printer enter PIO and your document will be printed out as you typed it.

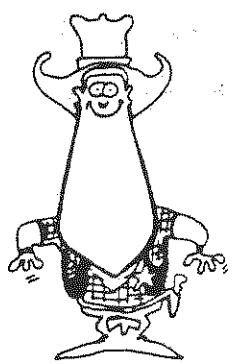
Try using the word processor and reading the instructions. You will find it easy to use. More next time.

THE INCOMPLETE AND ABRIDGED COMPUTER TERM LEXICON

From the Washington, DC 'Gazette' of July 13, 1983.

ANALOG - An hors d'oeuvre, usually made frome cheese and covered with crushed nuts.
APPLE - Typically a device used to seduce men, usually equipped with display screens and/or worms.
BAR CHART - A list of places to go when it is Miller time. BASIC - A form of motion sickness that occurs only after waiting for two hours to cross the bridge and continue on to Ocean City.
BINARY - Posessing the ability to have friends of both sexes.
BIPOLAR - A descriptive term referring to someone who has homes in Gnome, Alaska and Buffalo, New York.
BIT - Similar to a nibble. Commonly eight nibbles in a mouthfull. See byte.
BUBBLE MEMORY - A derogatory term, usually referring to a person's intelligence. See also "vacuum tube."
BUFFER - A process through which computers are treated to prevent stomach upset.
BUG - Small living things that small living boys throw on small living girls.
BYTE - A mouthfull, as in "How many bytes in a Big Mac?"
CARRIAGE RETURN - The act of returning a vehicle to the rental counter.
CASSETTE - A very small petite cass...usually achieved through exercise.
CHARACTER DENSITY - The number of very weird people in your computer club.
CHIP - Any number of small crunchy objects often served with onion dip.
CLOSED LOOP - A method of execution no longer in vogue except in Iran.
CODE - Usually lasts about three to five days, accompanied by sore throat, runny nose and fever.
COMMAND - Statement presented by a human and accepted by a computer in such a manner as to make the human feel as if he is in control.
COMPILE - A heap of decomposing vegetable matter.
CONVERSATIONAL MODE - Describes the typical office on a Monday after a Steelers game.
COUPLING - An activity usually preceeded by marriage, but not necessarily.
CPU - A juvenile way of telling your dog he missed the paper.
CRT - A movie about a little alien who forgets his telephone number and must write home.
CURSOR - An expert in the use of four letter words.
DEBUG - The act of placing shoe leather against a small creeping creature.
DISC DRIVE - Propulsion method developed by a well known foreign car manufacturer.
DOWNTIME - Title of a movie song popularized by Petula Clark.
DUMP - The EPA's answer to health.
EPROM - Movie actor Eprom Zimbalist, Jr.
ERROR - Something only humans can commit.
FIFO - A cute name for a dog.
FLOPPY DISCS - A defect occurring in all 1982 disc drives, necessitating a factory recall.
GIGO - A movie industry acronym referring to the numerous Gidget Goes **** movies, i.e., GIGO Hawaiian, GIGO Crazy, GIGO Surfing, etc., etc.
GLITCH - Scientific name for the little balls of fuzz that collect in navels.
HARDWARE - Typically boots, leather and chains. Contrast with software.
INTEGRATED CIRCUIT - The end result of busing.
INTERFACE - The opposite of "Getouttamyface."
K - A term used in employment ads to disguise how much they are really willing to pay.
KEYPUNCHING - An activity similar in most aspects to cowpoking.
MEGAHERTZ - A very large car rental company.
MODEM - A contraction. Commonly used as in "Give me some modem cookies."
NETWORK - The occupation of a fisherman.
ON LINE - A statement shouted at tennis judges in response to serves being called out.
OUTPUT - What people who talk backwards do to their cat.
PROGRAM - What commercials try to do to us.
RAM - A male sheep with horns.
REAL TIME - Here and now, as opposed to fake time which only occurs there and then.
RECURSIVE - See "recursive." ROM - A RAM after a delicate operation.
SEMICONDUCTOR - A person hired to lead an orchestra before he has graduated from the famous director's school.
SERIAL PROCESSING - The procedure through which corn flakes are arrived at.
SNOBOL - A small white round object thrown in the winter.
SOFTWARE - Typically silk nighties, nylons, garter belts. Contrast with hardware.
STRING - A object a kitten will play with but if given to a cat will cause him to leave home.
TERMINAL - What most people have to be before consenting to see a doctor.
TRANSISTOR - A sibling, i.e., a transbrother.
TYPEWRITER - A contradiction in terms.
VACUUM TUBE - A derogatory term. See "bubble memory."

DRAW



NIBBLES BYTES

CASSETTES---You can't beat the quality and price of a 2-pack of C-60, normal bias, Type D tapes made by TDK Corp. The 2-pack runs $3.00 regular price and $2.00 on sale at most discount stores. These tapes are much better than Radio Shack's Realistic Low Noise cassettes. If you switch to a disk system, the tapes can be reused to make high quality stereo recordings; they're that good.

MODEMS---According to an article in July 1986 "LOTUS" Magazine, the price of auto-answer, auto-diel, 1200 baud modems should drop to about $100 because of new chip technology that reduce the number of chips needed to make a modem. Two chips now replace the 5 to 9 chips used in modems in the past.

TI PARTS---Radio Shack is still selling TI 99/4A keyboards for $3.95, Stk. No. 277-1023, advertised in the Shack's August flyer.

R. P. Sadusky, West Penn 99ers

GETTING THE MOST FROM YOUR CASSETTE SYSTEM
BY MICKEY SCHMITT
NUMBER 4
KEEPING YOUR CASSETTE TAPES AND PROGRAMS ORGANIZED
PART II

THIS MONTH I AM CONTINUING WITH THE TOPIC OF KEEPING YOUR CASSETTE TAPES AND PROGRAMS ORGANIZED - USING THE INFORMATION GENERATED BY LAST MONTH'S 3 X 5 INDEX CARDS - AS THE FOUNDATION FOR THE FOLLOWING PROGRAM.

ALTHOUGH THIS PROGRAM WILL WORK AS WRITTEN - YOU ARE ENCOURAGED TO MAKE ANY CHANGES THAT YOU MAY WANT IN ORDER TO MEET YOUR OWN PERSONAL NEEDS. DON'T BE AFRAID TO DO A LITTLE EXPERIMENTING. IT CAN'T HURT AND YOU JUST MAY LEARN A THING OR TWO IN THE PROCESS.

THIS PARTICULAR PROGRAM WAS CREATED WITH THE INTENT OF GIVING YOU THE FOLLOWING OPTIONS: YOU MAY EITHER TYPE IN THE FOLLOWING PROGRAM AS LISTED - FILLING IN THE BLANKS AS THEY APPEAR OR YOU COULD JUST TYPE IN THE INFORMATION THAT WOULD APPEAR IN THE BLANK AREA AND FORGET ABOUT TYPING IN ALL THE "FORMAL TITLES". PERSONALLY I LIKE THE LATTER CHOICE MYSELF AS IT SAVES ALOT OF UNNECESSARY REPETITIVE TYPING AND IT KEEPS MY SCREEN INFORMATION DOWN TO A BARE MINIMUM WHEN I RUN THE PROGRAM.

NEXT MONTH'S TOPIC WILL BE CASSETTE TIPS - TRICKS - AND TIDBITS. IT SHOULD PROVE TO BE QUITE INTERESTING - AS I PASS ALONG WHAT I'VE FOUND OUT THE HARD WAY - AND WHAT I'VE LEARNED FROM MY FELLOW T.I. FRIENDS. I GUARANTEE THAT YOU'LL ENJOY A FEW GOOD LAUGHS - AT MY OWN EXPENSE!

IN THE MEAN TIME - IF YOU NEED ANY HELP WITH THIS PROGRAM JUST GIVE ME A CALL (412-335-0163) AND I'LL TRY TO HELP.

MICKEY SCHMITT

```
100 REM  ************************************************************
110 REM  *     PROGRAM LISTING FOR A CASSETTE TAPE CATALOG IN  T.I. BASIC     *
120 REM  ************************************************************
130 CALL CLEAR
140 PRINT "CASSETTE TITLE:_____________________________________________"::
150 PRINT "CASSETTE NUMBER:_____________"::
160 PRINT "CASSETTE SIDE:_____________":::
170 PRINT "COUNTER READING:_____________"::
180 PRINT "LANGUAGE USED:_____________"::
190 PRINT "PERIPHERALS NEEDED:_____________________________________________"::
200 PRINT "PROGRAM NAME:_____________________________________________"::
210 PRINT "PROGRAM DESCRIPTION:_____________________________________________":::
220 GOSUB 10000
230 CALL CLEAR
240 REM  TO CATALOG MORE THAN ONE PROGRAM - FOLLOW THE SAME FORMAT AS USED IN
250 REM  LINE NUMBERS 170 - 230.  CONTINUE USING THIS SAME FORMAT TILL ALL OF
260 REM  YOUR PROGRAMS HAVE BEEN CATALOGED.
270 REM  CAUTION:  AFTER YOUR FINAL ENTRY - REMEMBER TO USE AN "END" STATEMENT
280 REM  RIGHT AFTER YOUR FINAL "CALL CLEAR" STATEMENT.
290 REM  FOLLOWING THIS FORMAT WILL HELP KEEP ALL OF YOUR PROGRAMMING
300 REM  INFORMATION UNIFORM AND EASIER TO FOLLOW ON YOUR MONITOR OR TV SCREEN.
310 END
10000 PRINT "PRESS: ANY KEY TO CONTINUE"
10010 CALL KEY(0,K,S)
10020 IF S=0 THEN 10010
10030 RETURN
```

PROTECTING YOUR COMPUTER SYSTEM AGAINST VOLTAGE TRANSIENTS

Computer systems and other a.c. powered solid-state electronic equipment are susceptible to voltage transients coming through your a.c. wall outlets. These transients are also called "spikes" or "surges" and are caused by electrical storms, turning switches on and off, and by starting appliance motors. A voltage spike can be as high as 6000 volts and lasts less than 100 microseconds. According to West Penn Power Company, these transients are responsible for 50 percent of personal computer malfunctions. It is also possible for a voltage spike to cause permanent damage to your computer system. Your local power company can't supply you computer grade power so you must protect your system yourself.

How can you protect your computer equipment from these transients? By using a simple, inexpensive device called a MOV (metal oxide varistor). A MOV is a bi-directional voltage surge suppressor: it reacts to voltage spikes by absorbing their energy and dissipating the energy as heat. MOV's range in values from 4 to 2800 volts a.c. For normal line voltage of 115-120 VAC, the 130 volt MOV is used.

How does a MOV operate? For line voltages less than 130 VAC, the 130 volt MOV is inactive; it behaves as if it isn't in the circuit. If the voltage climbs above 130 VAC, then the MOV starts to conduct current, clamping the voltage to safe levels in both the positive and negative directions. MOV's react to transients in only in few nanoseconds, making them very fast and very effective for spike protection, whereas fuses and circuit breakers don't react to transients at all.

MOV's are made by General Electric and Panasonic. They can be obtained from most mail order electronic companies and local Radio Shack stores. Radio Shack has two sizes of 130 volt MOV's that are made by Panasonic:

Cat. No. 276-570, 0.6 watt, 35 joules, 2500 amps, $1.59 each and
Cat. No. 276-568, 1.0 watt, 70 joules, 4000 amps, $1.69 each.

I would recommend using the 1.0 watt MOV because of its higher energy absorbing characteristics.

The easiest way to connect MOV's to your computer's power source is to wire them into a 3-prong a.c. plug and then insert the plug into the computer system's power strip if you are using one (use the outlet closest to the switch or line cord) or insert the MOV plug into the wall outlet that your computer is connected to. The other method is to wire the MOV's inside the power strip if there is room and the power strip is able to be disassembled. You can't wire them into the TI 99/4A console because the a.c. voltages coming in are low (18 and 8.5 VAC), having been stepped down by the external transformer. You could wire lower value MOV's into the console to match the low a.c. voltages, but then only the console would be protected and not your whole computer system.

Commercial surge protected power strips with 4-8 outlets are available at costs of $30 to $100. Radio Shack has a 6 outlet, 15 amp power strip with a lighted on-off switch, circuit breaker, EMI-RFI noise filter, and two MOV's for surge protection for $29.95, Cat. No. 61-2780. Also, Radio Shack has a 3-prong plug device with MOV surge protection that can be plugged into an existing power strip or wall outlet for $7.95, Cat. No. 61-2791. Some commercial devices may only have one MOV installed, in the differential mode (the MOV is wired from the hot wire to the neutral wire). For full protection you need three MOV's: one in the differential mode and two in the common mode (one wired from the hot wire to the ground wire and the other wired from the neutral wire to the ground wire).

Whether you buy a commercial product or make your own surge protector, you should protect your computer system from the problems of electrical transients. For the price of a few dollars you can protect yourself from lost data, glitches and permanent damage.

R. P. Sadusky, West Penn 99'ers

THE ABOVE PROGRAM IS AN EVEN MORE IMPROVED DISK CAT PROGRAM, BUT WAS DESIGNED TO RUN A GEMINI 10X OR THE LIKE. THANKS TO MARK HARMS OF THE KANKAKEE IL. U.G. FOR THIS VERSION THAT HE WROTE IN RESPONSE TO THE ONE I PRINTED IN LAST MONTHS ISSUE OF WPUG NEWSLETTER. LET'S SEE HOW GOOD AND VERSATILE THIS PROGRAM CAN GET!

```
100 ! #####CAT PRINT########
110 ! by Warren Agee
120 !      (Nawa)
130 ! CIS# 72437,2550
140 !
150 ! This is a very simple      program which will         print a catalog of
 any      disk in teeny-tiny          print which will fit
160 ! on a mailing label          (4"x1 7/16" is best).
170 CALL CLEAR :: CALL SCREEN(15):: DISPLAY AT(10,1):"###ITSY-BITSY CAT-PRINT###
" :: DISPLAY AT(15,1):"INSERT DISK IN DRIVE 1, THENPRESS ENTER OR 'E' TO END.."
180 ACCEPT AT(16,28):AA$ :: IF AA$="E" THEN CALL CLEAR :: END
190 DIM B$(127),A$(127),A(127),J(127),J$(127),K(127),TY$(5),P$(127)
200 TY$(1)="D/F" :: TY$(2)="D/V" :: TY$(3)="I/F"
210 TY$(4)="I/V" :: TY$(5)="PRG" :: G=1
220 OPEN #2:"DSK1.",INPUT ,RELATIVE,INTERNAL
230 INPUT #2:X$,Y,Y,Z
240 FOR L=1 TO 127
250 INPUT #2:A$(L),A(L),J(L),K(L):: J$(L)=STR$(J(L)):: IF J(L)=0 THEN J$(L)=""
260 IF LEN(A$(L))=0 THEN 320
270 IF ABS(A(L))=5 THEN 290
280 B$(L)=" "&STR$(K(L))
290 IF A(L)>0 THEN 310
300 P$(L)="Y"
310 NEXT L
320 CLOSE #2 :: ADJ=INT(L/3):: CORR=L-(3*ADJ):: ADD=ADJ+CORR
330 ! ITSY-BITSY PRINTER ROUTINE
340 OPEN #1:"PIO.CR"
350 PRINT #1:CHR$(27)&"S"&CHR$(0)! superscript
360 PRINT #1:CHR$(27)&"A"&CHR$(8)!linefeed=7/72
370 PRINT #1:CHR$(15)!condensed
380 CLOSE #1
390 LABEL=1
400 OPEN #1:"PIO"
410 PRINT #1:"DSK1 - DISKNAME: ";X$;" AVAILABLE= ";Z;"USED=";Y-Z
420 FOR F=1 TO ADD
430 PRINT #1:A$(F);TAB(11);J(F);TAB(16);TY$(ABS(A(F)));TAB(21);P$(F);
440 PRINT #1:TAB(23);A$(F+ADD);TAB(34);J$(F+ADD);TAB(38);TY$(ABS(A(F+ADD)));TAB(
43);P$(F+ADD);
450 PRINT #1:TAB(45);A$(F+ADD+ADD);TAB(56);J$(F+ADD+ADD);TAB(60);TY$(ABS(A(F+ADD
+ADD)));TAB(65);P$(F+ADD+ADD)
460 LABEL=LABEL+1
470 IF LABEL=8 THEN PRINT #1:"" ELSE 490
480 LABEL=0
490 NEXT F
500 TOPFRM=9-LABEL :: FOR LNFD=1 TO TOPFRM :: PRINT #1: : :: NEXT LNFD
510 CLOSE #1 :: RUN 170
```

WOULD YOU LIKE TO FIX THE "SCORE" IN **P I N B A L L** ?

by JOHN WILLFORTH WPUG

HAVE YOU EVER WANTED TO FIX THE SCORE IN THE PINBALL . I'M NOT GOING TO LIST ALL THE REASONS THAT YOU MIGHT WANT TO DO THIS, BUT THERE **WILL** PROBABLY COME A TIME WHEN YOU WOULD LIKE TO DO SO. WELL I THOUGHT THAT I WOULD MAKE IT EASY FOR YOU. ALL YOU NEED IS A DISK EDITOR. YOU MAY USE "DISK SURGEON", "DISK FIXER", "DISCO", OR EVEN THE FORTH EDITOR. THE LATTER WILL REQUIRE MORE INFORMATION THAN I'M GOING TO PROVIDE HERE.

FIRST LOAD YOUR DISK EDITOR, AND THEN REMOVE THE DISK FROM THE DRIVE. BEFOR YOU CONTINUE, I THINK THAT YOU SHOULD REALIZE THAT IF YOU ARE NOT WORKING WITH A "**BACK-UP**" DISK, YOU MAY NEVER PLAY **PINBALL** , OR **ANYTHING** THAT IS ON THAT DISK AGAIN! SO FOR YOUR OWN SAKE, PLEASE **BACKUP** FIRST!

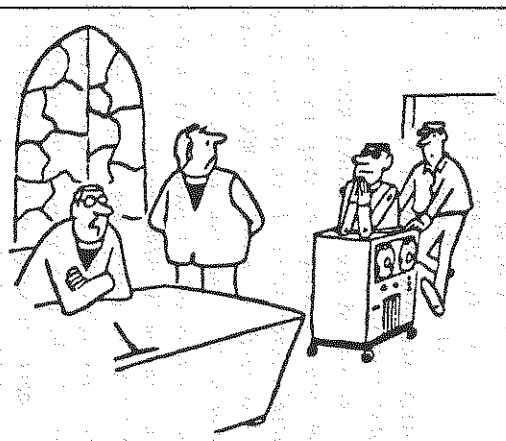
AFTER THE EDITOR IS LOADED, AND THE DISK CONTAINING **PINBALL** (WITH THE FILE **PBSCORE** ALSO PRESENT ON THE SAME DISK) IS INSERTED IN THE SELECTED DRIVE, BEGIN TO VIEW THE SECTORS, STARTING AT <1, AND CONTINUING UNTIL YOU SEE THE FILE " **PBSCORE** " DISPLAYED OR PRINTED IN THE INTERPRETED FIELD. NOW LOOK AT THIS SECTOR, PAYING PARTICULAR ATTENTION TO BYTE-PAIR <1C. THE CONTENTS OF THIS ADDRESS IS THE ADDRESS (SECTOR NUMBER) OF THE FIRST SECTOR IN THE FILE CALLED " **PBSCORE** ".

```
DISK SURGEON 99------AMERISOFT INTERNATIONAL------SECTOR=>0008
     >0  >2  >4  >6  >8  >A  >C  >E    INTERPRETATION
-+---+---+---+---+---+---+---+---+-+----------------
>00! 5042 5343 4F52 4520 2020 0000 0100 0001  PBSCORE   ******
>10! 6400 0000 0000 0000 0000 0000 7500 0000  d***********u***
>20! 0000 0000 0000 0000 0000 0000 0000 0000  ****************
>30! 0000 0000 0000 0000 0000 0000 0000 0000  ****************
>40! 0000 0000 0000 0000 0000 0000 0000 0000  ****************
>50! 0000 0000 0000 0000 0000 0000 0000 0000  ****************

DISK SURGEON 99------AMERISOFT INTERNATIONAL------SECTOR=>0075
     >0  >2  >4  >6  >8  >A  >C  >E    INTERPRETATION
-+---+---+---+---+---+---+---+---+-+----------------
>00! 3030 3036 3733 4A46 5720 3030 3030 3030  000673JFW 000000
>10! 2020 2020 3030 3030 3030 2020 2020 3030      000000    00
>20! 3030 3030 2020 2020 3030 3030 3030 2020  0000    000000
>30! 2020 3030 3030 3030 2020 2020 3030 3030    000000    0000
>40! 3030 2020 2020 3030 3030 3030 2020 2020  00    000000
>50! 3030 3030 3030 2020 2020 3030 3030 3030  000000    000000
```

```
NAVARONE IND. ### DISK FIXER V1.0 ## SECTOR DUMP    SECTOR ADDRESS  0008
ADDR = 0 1 2 3 4 5 6 7 8 9 A B C D E F  INTERPRETED

0000 = 5042 5343 4F52 4520 2020 0000 0100 0001  PBSCORE   ######
0010 = 6400 0000 0000 0000 0000 0000 7500 0000  d##########u###
0020 = 0000 0000 0000 0000 0000 0000 0000 0000  ################
0030 = 0000 0000 0000 0000 0000 0000 0000 0000  ################
0040 = 0000 0000 0000 0000 0000 0000 0000 0000  ################
0050 = 0000 0000 0000 0000 0000 0000 0000 0000  ################

NAVARONE IND. ### DISK FIXER V1.0 ## SECTOR DUMP    SECTOR ADDRESS  0075
ADDR = 0 1 2 3 4 5 6 7 8 9 A B C D E F  INTERPRETED

0000 = 3030 3036 3733 4A46 5720 3030 3030 3030  000673JFW 000000
0010 = 2020 2020 3030 3030 3030 2020 2020 3030      000000    00
0020 = 3030 3030 2020 2020 3030 3030 3030 2020  0000    000000
0030 = 2020 3030 3030 3030 2020 2020 3030 3030    000000    0000
0040 = 3030 2020 2020 3030 3030 3030 2020 2020  00    000000
0050 = 3030 3030 3030 2020 2020 3030 3030 3030  000000    000000
```

USING THE EDITOR, LOOK AT THE ADDRESS (SECTOR NUMBER) CALLED OUT FOR IN <1C. THE EXAMPLE ABOVE, SHOWS FIRST THAT ON MY DISK, **PBSCORE** IS FOUND TO START AT SECTOR NUMBER < 75. IF YOU ARE LOOKING AT THE INTERPRETED SECTOR, YOU WILL SEE THE DATA THAT WILL REPRESENT THE SCORE AND THE NAME (INITIALS) OF THE PLAYER, AND THIS WILL BE SEEN TO REPEAT FOR A TOTAL OF TEN REPETITIONS. IF YOU HAD WRITTEN DOWN THE SCORES AND THE INITIALS BEFORE THIS EDITING, YOU WOULD EASILY SEE THE FORMAT HERE. THE SCORE IN THE ABOVE EXAMPLE, SHOWS A SCORE OF 67,300 FOR JFW. THE LEAST SIGNIFICANT TWO ZEROS ARE INSERTED BY THE PROGRAM, AND THERE WERE NO MORE PLAYERS.

USING THE PROCEEDURES THAT APPLY TO YOUR PARTICULAR DISK EDITOR, YOU CAN NOW CHANGE THE DATA IN THESE LOCATIONS TO MATCH WHATEVER YOU DESIRE. I HOPE THAT THIS SHORT ARTICLE WILL HELP SOME OF YOU TO ENJOY THE **PINBALL** GAME EVEN MORE. IMAGINE, YOU WITH A SCORE OF 93,673,428, AND NOT EVEN BREAKING A SWEAT!!



"Computers doing this, computers doing that! What'll they be replacing next?"

THE NEXT WPUG MEETING

The next WPUG meeting will be held on MONDAY, AUGUST the 18th, at **7:00** P.M. ..... The location will be the **NORWIN YMCA**, located in the OLD NIKE SITE, near NORTH IRWIN. If you need directions please call anyone of the officers, or members. my number is (412) 527-6656, Scott Coleman's number is (412) 271-6283. If you can't make it to this one, we have our meetings on the third Monday of every month, at 7:00 . Membership is $15.00 per year for a full family membership, and $10.00 per year, for an associate membership (newsletter only). The term of both memberships is from Jan. 1 of a year to Jan. 1 of the next year. If you join after July 1, the dues are half.

IF YOU HAVE THE 32K MEMORY EXPANSION, YOU CAN WRITE AN XB PROGRAM WHICH IS TOO LARGE TO STORE IN THE USUAL FORMAT. XB WILL STORE THESE LARGE PROGRAMS IN AN "INTERNAL VARIABLE 254" FILE. THE USUAL "SAVE" AND "OLD" COMMANDS ARE USED TO STORE AND LOAD THESE PROGRAMS.

THE THIRD FORM USED BY XB IS THE "MERGE FORMAT" STORED IN A "DISPLAY VARIABLE 163" FILE. THIS FORM IS CREATED WHEN THE "MERGE" OPTION IS SPECIFIED ON THE "SAVE" COMMAND, AND IS LOADED BY THE XB "MERGE" COMMAND. THE BEAUTY OF MERGE FORMAT IS THAT WHEN IT IS LOADED IT DOES NOT NECESSARILY OVERWRITE THE PROGRAM IN MEMORY. THE "MERGE" COMMAND DOES JUST THAT - IT MERGES THE NEW PROGRAM (OR PROGRAM SEGMENT) WITH THE PROGRAM IN MEMORY ACCORDING TO THE LINE NUMBERS.

NOW, WE GET TO THE GOOD STUFF, ASSEMBLER LANGUAGE PROGRAMS. THERE ARE THREE FORMS FOR AN ASSEMBLER PROGRAM: TAGGED OBJECT, COMPRESSED TAGGED OBJECT AND MEMORY IMAGE.

TAGGED OBJECT IS STORED IN A "DISPLAY FIXED 80" FILE ON DISK ONLY. ALL PROGRAM DATA IS IN HEXADECIMAL SO THAT IT CAN BE EDITTED BY THE E/A EDITOR. TAGGED OBJECT CAN BE LOADED VIA "CALL LOAD" IN XB, OPTION 3 ON THE E/A MENU, OPTION 1 ON THE MM MENU OR BY "CALL LOAD" IN TI BASIC WHEN EITHER THE E/A OR MM MODULE IS USED. THE PROGRAM CAN BE "ABSOLUTE" OR "RELOCATABLE". AN ABSOLUTE PROGRAM MUST ALWAYS BE LOADED AT THE SAME PLACE IN MEMORY. A RELOCATABLE PROGRAM CAN BE LOADED ANY PLACE IN MEMORY. A TAGGED OBJECT PROGRAM MAY HAVE REFERENCES TO OTHER PROGRAMS OR SUBROUTINES. THE LOADER WILL RESOLVE THESE EXTERNAL REFERENCES, EXCEPT FOR THE XB LOADER.

COMPRESSED TAGGED OBJECT IS VERY NEARLY THE SAME AS TAGGED OBJECT EXCEPT THAT THE PROGRAM DATA IS STORED AS BYTES RATHER THAN AS HEXADECIMAL DIGITS. COMPRESSED TAGGED OBJECT LOADS FASTER THAN REGULAR TAGGED OBJECT AS YOU WOULD EXPECT. THE XB LOADER CANNOT LOAD COMPRESSED OBJECT.

TAGGED OBJECT, IN EITHER FORM, IS PRODUCED BY THE ASSEMBLER WHEN IT ASSEMBLES A SOURCE PROGRAM.

THE "MEMORY IMAGE" FORM OF ASSEMBLER PROGRAMS IS THE MOST COMPACT AND THE FASTEST LOADING. IT CAN BE STORED ON CASSETTE OR DISK. IT IS IDENTIFIED AS "PROGRAM" IN THE DISK CATALOG (JUST LIKE A BASIC PROGRAM). MEMORY IMAGE PROGRAMS CAN BE LOADED BY OPTION 5 ON THE E/A MENU OR OPTION 3 ON THE TI/WRITER MENU (AND I ASSUME, BY MULTIPLAN, ALTHOUGH I HAVE NEVER TRIED SINCE I DON'T HAVE MULTIPLAN). IT SHOULD BE NOTED THAT THERE IS ONE SLIGHT BUT IMPORTANT DIFFERENCE BETWEEN HOW THE E/A CALLS A MEMORY IMAGE PROGRAM AND HOW TI-WRITER DOES. TI WRITER BLANKS THE SCREEN JUST BEFORE CALLING THE PROGRAM AND THE E/A DOES NOT. THIS MEANS THE PROGRAM MUST TURN THE SCREEN BACK ON OR NOTHING WILL SHOW. MEMORY IMAGE PROGRAMS ARE CREATED BY A UTILITY PROGRAM (ONE IS PROVIDED ON THE E/A DISK).

A PROGRAM FILE, CONTAINING AN ASSEMBLER MEMORY IMAGE OR A BASIC PROGRAM, CAN BE READ OR WRITTEN TO ANY INPUT/OUTPUT DEVICE WITH A SINGLE I/O OPERATION. THIS IS ONE OF THE REASONS THEY LOAD SO QUICKLY.

THERE IS A RESTRICTION ON THE SIZE OF AN ASSEMBLER MEMORY IMAGE PROGRAM OF 2400 BYTES (9216). HOWEVER, THE E/A AND TI WRITER MODULES WILL LOAD MULTIPLE MEMORY IMAGE FILES TO MAKE A PROGRAM OF ANY SIZE. THEY USE THE CONVENTION THAT THE FILE NAME OF THE SECOND AND THE FOLLOWING FILES IS OBTAINED BY INCREMENTING THE LAST DIGIT OR LETTER OF THE PREVIOUS FILE NAME. FOR EXAMPLE, THE TI-WRITER EDITOR CONSISTS OF TWO MEMORY IMAGE FILES: EDITA1 AND EDITA2. AS A MATTER OF INTEREST, THE ADVENTURE, TUNNELS OF DOOM, PERSONAL RECORD KEEPING, STATISTICS AND PERSONAL REPORT GENERATOR MODULES USE A MEMORY IMAGE OR "PROGRAM" FILE FOR THEIR DATA BASES. THE FACT THAT MEMORY IMAGES CAN BE SAVED OR LOADED WITH A SINGLE I/O OPERATION MAKES THEM ATTRACTIVE FOR SUCH USES.

A LOT OF THE ASSEMBLER LANGUAGE GAMES THAT ARE CIRCULATING AROUND ARE IN MEMORY IMAGE FORMAT SO LET'S LOOK CLOSER AT THEM. ASSEMBLER MEMORY IMAGE FILES HAVE A THREE WORD HEADER FOLLOWED BY THE DATA TO BE PLACED IN MEMORY. THE THREE HEADER WORDS ARE:

(1) THIS WORD IS A "FLAG". IF IT IS NOT ZERO (i.e. FFFF) THEN THIS FILE IS NOT THE LAST IN A MULTI-FILE PROGRAM. FOR EXAMPLE, THE FLAG WORD FOR EDITA1 IS FFFF INDICATING THAT THERE IS ANOTHER FILE CALLED EDITA2; THE FLAG WORD IN THE EDITA2 FILE IS 0000 INDICATING IT IS THE LAST FILE AND THERE IS NO EDITA3.

(2) THIS WORD IS THE LENGTH OF THE MEMORY IMAGE IN BYTES, INCLUDING THE SIX BYTE HEADER.

(3) THIS WORD IS THE CPU MEMORY ADDRESS WHERE THE MEMORY IMAGE IS TO BE LOADED.

EXECUTION OF A MEMORY IMAGE PROGRAM ALWAYS BEGINS AT THE FIRST BYTE OF THE FIRST SEGMENT LOADED.

FINALLY, THE SEVENTH FORM FOR PROGRAMS. THIS FORM IS CREATED AND LOADED BY "EASY BUG" OF THE MINI MEMORY MODULE. IT CAN BE WRITTEN ONLY TO CASSETTE AND IS A MEMORY IMAGE, BUT IS SLIGHTLY DIFFERENT FROM THE E/A MEMORY IMAGE FILE. THE EASY BUG MEMORY IMAGE PROGRAM CAN CONSIST OF ONLY ONE SEGMENT. THE HEADER ON THE EASY BUG FORMAT IS TWO WORDS, AS FOLLOWS:

(1) THIS WORD IS THE CPU MEMORY ADDRESS AT WHICH THE MEMORY IMAGE IS TO BE LOADED.

(2) THIS WORD IS THE LENGTH OF THE MEMORY DATA, NOT INCLUDING THE FOUR HEADER BYTES.

FILE TYPE	CONTENTS	MODULE	DSK	CS
PROGRAM	BASIC PROGRAM	CONSOLE	YES	YES
PROGRAM	BASIC PROGRAM	XB	YES	YES
INTERNAL V 254	BASIC PROGRAM	XB	YES	NO
DISPLAY V 163	MERGE PROGRAM	XB	YES	NO
DISPLAY F 80	TAGGED OBJECT	XB	YES	NO
DISPLAY F 80	TAGGED OBJECT	E/A	YES	NO
DISPLAY F 80	TAGGED OBJECT	MM	YES	NO
DISPLAY F 80	COMPRESSED OBJECT	E/A	YES	NO
DISPLAY F 80	COMPRESSED OBJECT	MM	YES	NO
PROGRAM	E/A MEMORY IMAGE	E/A	YES	YES
PROGRAM	E/A MEMORY IMAGE	TIW	YES	YES
PROGRAM	MM MEMORY IMAGE	MM	NO	YES

Excerpted from News Net 99er -- June 1986

THE MUSIC CORNER

by Jeff Gatlin

One of the things I have always thought was missing from the 4A's music cabability was the lower range. The 4A gives us an almost infinite upper range, as far as we can hear, but its lower range stops at the frequency if 110. After listening to dozens of music programs, I noticed that some of them seemed to defy reason and belt out bass notes below what I call low "A" (the lowest note played by the 4A without magic). Curiousity and a greedy desire to hold this magic secret let me to examine these programs. I found that to create these magic tones, one must make use of a mysterious fourth voice which our beloved Extended BASIC manual describes as "noise". The "noise" is created by using a negative value between 1 and 8 in place of the note's frequency.

```
10 CALL SOUND(1000,-4,0)
```

This statement creates a mildly interesting noise if you have never heard it before. After hearing it once, no secrets were revealed. So what is the secret? Once again, our Extended BASIC manual sheds light upon us. It says, "-4 Periodic Noise that varies with the frequency of the third tone specified...." Ah ha! The secret is revealed! To create magic bass notes, one must use ALL THREE voices PLUS a -4 noise.

```
10 CALL SOUND(1000,330,0,392,0,523,0,-4,0)
```

Wala! But wait, something is amiss. The bass note created does not match the three voice chord. Experimentation revealed that if you use the note C (523) in the third voice, the bass note played is C# (sharp). Why? It doesn't really matter, at least to me. Below is a chart I made up of the frequencies to use in the third voice, to create the desired bass note.

PLENTY LOW: REALLY LOW:

PLENTY LOW:	REALLY LOW:
1661 -- A (same as A110)	831 -- A (one octave below 110)
1568 -- G#,Ab	784 -- G#,Ab
1480 -- G	740 -- G
1397 -- F#,Gb	698 -- F#,Gb
1319 -- F	659 -- F
1245 -- E	622 -- E
1175 -- D#,Eb	587 -- D#,Eb
1109 -- D	554 -- D
1047 -- C#,Db	523 -- C#,Db
988 -- C	494 -- C
932 -- B	466 -- B
880 -- A#,Bb	440 -- A#,Bb
831 -- A (one octave below A110)	415 -- A (two octaves below A110)

The bad news is this does not give you full control of FOUR voices, although if you're tricky enough, you can make use of four note chords. The reason is that the third tone and the noise work together as one tone. In almost every example I have come across, the third tone has a volume of 30, which makes it inaudible. However, this does not affect the volume of the bass note. It's volume is controlled by the value after -4.

With this basic information, you should be able to experiment using bass notes on your own. I hope it is helpful.

SHADED VELVET

```
THIS PROGRAM USES THE
MYSTERIOUS FOURTH VOICE OF
THE 4A.  REMEMBER!  THERE IS
ALWAYS AN INTERVAL OF THREE
OCTAVES AND A MAJOR SEVENTH
BETWEEN THE BASS AND THE
THIRD VOICE.  ENJOY!
```

```
10 ! "Shaded Velvet"
```

```
15 !An Original Composition
```

```
20 ! By Jeff Gatlin
```

```
25 !Copyright June 1986
```

```
30 CALL CLEAR :: CALL SCREEN
(2):: FOR T=1 TO 14 :: CALL
COLOR(T,15,2):: NEXT T
```

```
32 PRINT "This program demon
strates  the ability to pla
y Four   voices instead of
three."
```

```
35 DISPLAY AT(5,5):"SHADED V
ELVET" :: DISPLAY AT(8,5):"A
n Original Composition"
```

```
40 DISPLAY AT(10,5):"By Jeff
 Gatlin" :: DISPLAY AT(12,5)
:"Copyright June 1986"
```

```
50 DIM A(60),B(60),C(60):: P
=1 :: V=8
```

```
60 FOR R=1 TO 60 :: READ A(R
):: NEXT R
```

```
70 FOR R=1 TO 60 :: READ B(R
):: NEXT R
```

```
80 FOR R=1 TO 60 :: READ C(R
):: NEXT R
```

```
100 FOR R=1 TO 3 :: CALL SOU
ND(-999,A(R),V,B(R),V,C(R),V
,-4,V-2):: P=P^1000000 :: P=
P^1000000 :: V=V-2 :: NEXT R
```

```
110 FOR R=4 TO 8 :: CALL SOU
ND(-999,A(R),V,B(R),V,C(R),V
,-4,V-2):: P=P^1000000 :: P=
P^1000000 :: V=V+2 :: NEXT R
```

```
119 V=8
```

```
120 FOR R=9 TO 11 :: CALL SO
UND(-999,A(R),V,B(R),V,C(R),
V,-4,V-2):: P=P^1000000 :: P
=P^1000000 :: V=V-2 :: NEXT
R
```

```
130 FOR R=12 TO 16 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V+2 :: NEXT
 R
```

```
139 V=8
```

```
140 FOR R=17 TO 19 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V-2 :: NEXT
 R
```

```
150 FOR R=20 TO 24 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V+2 :: NEXT
 R
```

```
159 V=8
```

```
160 FOR R=25 TO 27 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V-2 :: NEXT
 R
```

```
170 FOR R=28 TO 32 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V+2 :: NEXT
 R
```

```
179 V=8
```

```
180 FOR R=33 TO 35 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V-2 :: NEXT
 R
```

```
190 FOR R=36 TO 40 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V+2 :: NEXT
 R
```

```
199 V=8
```

```
200 FOR R=41 TO 43 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V-2 :: NEXT
 R
```

```
210 FOR R=44 TO 48 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V+2 :: NEXT
 R
```

```
219 V=8
```

```
220 FOR R=49 TO 51 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V-2 :: NEXT
 R
```

```
230 FOR R=52 TO 56 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V+2 :: NEXT
 R
```

```
239 V=8
```

```
240 FOR R=57 TO 59 :: CALL S
OUND(-999,A(R),V,B(R),V,C(R)
,V,-4,V-2):: P=P^1000000 ::
P=P^1000000 :: V=V-2 :: NEXT
 R
```

```
245 R=60 :: FOR RP=1 TO 2 ::
 CALL SOUND(-999,A(R),V,B(R)
,V,C(R),V,-4,V-2):: NEXT RP
```

```
247 FOR RP=1 TO 8 :: CALL SO
UND(-999,A(R),V,B(R),V,C(R),
V,-4,V-2):: P=P^1000000 :: P
=P^1000000 :: V=V+2 :: NEXT
RP
```

```
250 CALL KEY(0,K,S):: IF S=0
 THEN 250
```

```
998 END
```

```
999 ! FIRST VOICE
```

```
1000 DATA 40000,40000,40000,
40000,40000,1568,1480,1760,1
568,1976,1760,1480
```

```
1010 DATA 1480,1480,1568,156
8,1760,1397,1319,1568,1568,1
568,1661,1661
```

```
1020 DATA 1864,2094,1661,186
4,1864,1864,1661,1661,1568,1
661,1864,1661
```

```
1030 DATA 1661,1661,1864,166
1,1568,1568,1568,1568,1568,1
568,1760,1480
```

```
1040 DATA 1568,1568,1568,156
8,1568,1568,1760,1480,1568,1
568,1568,1568
```

```
1099 ! SECOND VOICE
```

```
1100 DATA 330,330,330,311,31
1,311,311,311,330,330,330,31
1,311,311,311,311
```

```
1110 DATA 440,440,440,415,41
5,415,415,415,523,523,523,34
9,349,349,349,349
```

```
1120 DATA 523,523,523,349,34
9,349,349,349,330,330,330,31
1,311,311,311,311
```

```
1130 DATA 330,330,330,311,31
1,311,311,311,330,330,330,33
0
```

```
1199 ! THIRD/BASS VOICE
```

```
1200 DATA 988,988,988,988,98
8,988,988,988,988,988,988,98
8,988,988,988,988
```

```
1210 DATA 1319,1319,1319,131
9,1319,1319,1319,1319
```

```
1220 DATA 1568,1568,1568,104
7,1047,1047,1047,1047
```

```
1230 DATA 1568,1568,1568,104
7,1047,1047,1047,1047
```

```
1240 DATA 988,988,988,988,98
8,988,988,988,988,988,988,98
8,988,988,988,988,988,988,98
8,988
```

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