

See page 3 for
details on how
to enter a new
CONTEST!

ISSUE #2 FEBRUARY 1989

FOR THE RECORD

by Ed Bittner
Recording Secretary

The first meeting of 1989 for the West Penn 99ers was opened by President Mickey Schmitt at 7:10. The first proclamation of the New Year by the Poo-bette (bet-ya this gets me in trouble) would be the inevitable switch from Coke to ...Scott your on your own. The secretary's report was meet with usual accolade and praise (everyone forgot it was Frank Zics report) and the treasurers report \$\$ looked good. Rob Ekl (librarian) announced that a new MacPictures disk is in the library. Pres. Mickey then appointed John Willforth as editor in chief and Joe Ekl as membership chairperson (Good Choices).

Old business continued with the re-instatement of the goodie fund and the approval to transplant \$100 to the organ fund. Under New business Mickey asked to have a small area in the newsletter to give highlights (Presidential Perspectives) of classes and demonstrations for the upcoming meeting. (I assumed I would not have to yield page one).

In review we now have 74 members and renewals are due. Single or family membership are \$15 and newsletter only is \$10. Other new business included a "library demonstration of the month" with Rob demonstrating Neatlist, a single line listing of x/basic with a variable locator. Raffle prizes of Joy Paint 99 and diskette pens were offered. New classes for the 1989 season include Forth (an ooze ease into assembly) by S. Coleman, Hardware (wiring, chipping and boring) by John Willforth and a non-programming tips class by Frankly Tricky Zic.

Hurridly submitted.
Scoops Bittner

WEST PENN 99'ERS CLUB INFORMATION

NEXT MEETING DATE: FEBRUARY 21 1989
 MEETING LOCATION: UNITED PRESBYTERIAN
 CHURCH OF THE
 COVENANT
 CORNER OF 4TH AND
 OAK STREETS, IRWIN
 TIME OF MEETING: 7:00 P.M.

LIST OF WEST PENN OFFICERS FOR 1989

PRESIDENT: MICKEY 335-0163
 VICE PRESIDENT: SCOTT 523-3754
 TREASURER: JAN 863-1575
 RECORDING SEC: ED 864-4924
 CORRESPONDING SEC: GENE 829-0469
 LIBRARIAN: ROB 864-1233
 NEWSLETTER EDITOR: JOHN 527-6656

GENERAL ITINERARY OF THE CLUB'S MEETING

6:45 P.M. DOORS OPEN
 7:00 P.M. GENERAL MEETING
 7:45 P.M. DEMOS AND NEW INFO
 8:45 P.M. HARDWARE CLASS
 8:45 P.M. INTRO TO FORTH
 8:45 P.M. TIPS FOR BEGINNERS
 8:45 P.M. USING YOUR CASSETTE
 11:00 P.M. DOORS CLOSE

MEETING HIGHLIGHTS FOR THIS MONTH

P.U.G.'S NEW BBS, DEMO BY GENE KELLY
 ASGARD'S TYPEWRITER, DEMO BY MIKE SEALY
 LIBRARY "DEMO OF THE MONTH" BY ROB EKL
 LATEST SOFTWARE DEMOS BY JOHN WILLFORTH
 HELP AND INFORMATION FOR CASSETTE USERS

RENEW YOUR MEMBERSHIP DUES!

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 \$10.00 PER YEAR FOR JUST THE NEWSLETTER

TREASURER'S REPORT FOR JANUARY 1989

FROM JAN TRAYERS

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*****
*
* 1/17 CASH ON HAND $100.00 *
*
* " LIBRARY SALES 48.00 *
*
* " MICROPENDIUMS 28.50 *
*
* DISK CASES 20.00 *
*
* DISK SALES 48.00 *
*
* RAFFLE 41.00 *
*
* DUES 295.00 *
*
* MISC.&TI BASE & HOME 71.90 *
* PUB. ----- *
* TOTAL $652.40 *
* 2/3 DEPOSIT - 552.40 *
* ----- *
* 2/3 CASH ON HAND 100.00 *
*****
*
* 1/17 BANK BALANCE $1274.36 *
*
* 1/17 600 DISKS _ 150.00 *
* ----- *
* 1124.36 *
* 1/30 POSTAGE - 75.00 *
* ----- *
* 1049.36 *
* 1/30 MICROPENDIUM - 30.00 *
* ----- *
* 1019.36 *
* 1/31 CHURCH/DONATION - 100.00 *
* ----- *
* 919.36 *
* 2/3 DEPOSIT +552.40 *
* ----- *
* BALANCE 1471.76 *

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 * TOTAL CASH BALANCE \$1571.76 *

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BY GENE
KELLY

CONTEST!

BY GENE
KELLY

By Official Decree, actually I was tricked into writing this, our Grand Poobette wishes to announce a contest. A search for a logo fitting enough to grace the covers of our newsletter. Something to show the prestige that our club holds in the TI world. Just think, **YOUR** work of art may be forever enshrined in print. So without further ado, here are the rules:

1) ALL submissions must be in TI-ARTIST format, or a format capable of being converted to a TI-ARTIST picture.

2) All submissions must be on disk and accompanied by a printed picture.

3) The printed picture must be printed using a magnification of 1 and density of one. We recommend this because we plan to print them in reduced format and some copiers severely distort them when reduced.

4) All entries must be in Black and White colors. No multi color entries can be allowed because we print our newsletter in one color only.

5) All entries must be a FULL TI-ARTIST picture. NO instances, slides, etc.

6) You may use any font or graphic that is not commercial. We prefer that you create your own graphic.

7) There will be MULTIPLE PRIZES!!!

8) Submit only 1 entry, to be fair to the others. We know that some of you are graphic demons when you draw.

9) ALL entries must be turned in to me, Gene Kelly, by the March meeting. Label your disk with your name and phone number. Do the same to the BACK of your picture.

10) Voting will be at the April meeting. The membership will vote on the winner by secret ballot.

11) MOST IMPORTANT: You must be a paid up member to enter! Since this is for your club, we felt this should be an important point.

Good luck, and may the best bit burner win. If there are any questions you may see me or any of the other officers.

Page 11 has four programs which are varied and interesting. Some will run in CONSOLE BASIC, and ALL will run in EXTENDED BASIC.

The first is one that I wrote to get a PRIME NUMBER list for my youngest daughter, when she was into factoring. It is fast, and slows as it runs, because it divides as many of you would. You could speed up the program by eliminating numbers that are even, (that's half of them).

The second is one that I also put on the TI, but was converted from a FORTRAN program, and is limited to the size of memory available for DIM. It starts slowly, and then after a few numbers are generated, will fly!

The third is an exceptional program that I use to convert numbers of any base to any base! An outstanding program!

The fourth is one that's been in our newsletter before, but is always appropriate for VALENTINES DAY. To run it in basic, remove lines 672-679. It comes on slowly, but will flower into a BEAUTIFUL SUPRISE.

Check each program, and change the following in the first program if no printer is available or desired.

```
150 REM (or delete this line)
160 PRINT : " PRIME NUMBERS": : :
170 PRINT : " 1"
270 IF A=1 THEN PRINT N
```

In the second program, delete the "BE SURE THE PRINTER IS READY" in 110 and :

```
120 REM (or delete this line)
165 PRINT : "PRIME NUMBERS TO 3000"
190 PRINT I
```

If you contribute programs, you will not have put up with me writing any programs, or at least putting them in this newsletter.

For all you that have been wanting to have your TI do your FEDERAL INCOME TAX, you may want to come to the Feb. meeting. We may have a demo of a very exceptional package of Multi-Plan templates and the like. We don't know if the programs will be here in time for the meeting, but it can't hurt to come and enjoy yourself.

There is a rumor that we had over 45 present at the January meeting, and that with a total membership of only 75! About 12 of our members are very out of state, California, Texas, and Florida, Wyoming, Michigan, and many other states.

DATE: Jan. 10, 1989

SUBJECT: NEW "UNOFFICIAL" TI INTERFACE STANDARD

This memo is to invite you to participate in the development of a document very important to the TI computer community, the new "Unofficial" TI Interface Standard. The purpose of this standard is to assemble as much useful information as possible in one document to assist people interested in developing new peripheral products for the 99/4A and its Peripheral Expansion Box (PBox). I am looking for people who can contribute information about the system, or other products developed for the system, from either the hardware or software viewpoint, or can help review the document in its draft form for comments. The purpose of generating such a document is to encourage developers and would-be developers to design and build more new and exciting products for our computer system. I would hope that the Standard could be written and ready for release by the second quarter of 1989 (depending upon the ultimate size of the manual), and sold at a reasonable price to interested parties.

The last page of this memo has a draft outline of what I would anticipate the Standard would cover. Note that it is specifically geared towards the software and hardware design of new cards or add-on products, and not simply another manual on how to write assembly programs, or how the /4A is put together. This outline is not cast in concrete yet, so feel free to suggest items that you would like to see covered. The Standard will be in two parts: hardware will cover development of the electronic circuits commonly used in TI system products, and a discussion of the various 9900 signals and interface requirements; software will cover writing code to access memory, CRU bits, and development of Device Service Routines, or DSRs. (I myself am weak on the software side and would appreciate a helping hand from the 9900 and DSR programmers out there.) This Standard is not intended to be a rehash of existing books, but rather to build and expand upon available information in a format that is readily usable by the peripheral developer. With your help, I believe that we can accomplish this task, and help ourselves and our orphan computer system in the process.

PLEASE take a few moments and review the outline, and send me a card or letter (or EMAIL) to indicate your willingness to help out on the project, what areas of the standard that you think you could contribute to, along with any suggestions you may have for additions or deletions to the outline. Many thanks in advance for your help.

Sincerely,



Tony Lewis, PE

FROM: Tony Lewis
409 Drolmond Dr.
Raleigh, NC 27615
(CompuServe: 73357,1730)
(Delphi: TONYLEWIS)

PS- also pass this along to anyone else that you think may be willing to help. Note that due to time limitations, I will have to reserve the right to limit the number of contributors to a relatively small number; otherwise, we would never finish!

As time goes by I keep learning more about this system and I have recently learned something in the Filer that I would like to share.

In the process of printing out a lot of text files to the printer or backing up a disk with a lot of files, it is very tedious entering every file name one at a time for both the source and the backup. I have recently found a more convenient way to do this. (It was in the instructions but I guess I just failed to read it.)

If you have a disk with a lot of ".Text" files that you want to be printed out (assume the disk is in the #5 drive) you can use a "wildcard". Wildcards are described in the Filer on page 22. The documentation describes two "wildcards" but there are three. They are "=", "?", and "\$". Let's describe their use.

The description of the "=" is done on page 22 and 23 of the Filer. The "=" performs the operation automatically on all designated files. You have no control. For example if you wanted to print out all text files on disk drive #5 you could enter at the T(rans command "#5:=.Text,#6:". All ".Text" files would be printed out. If you want some (or all) of the ".Text" files printed you could use the "?" wildcard. If you enter at the T(rans command "#5:?.Text,#6:", you would be asked on an individual basis if you wanted each file transferred. All you do is enter a "Y" or "N" and the prompt will continue until the end of the disk.

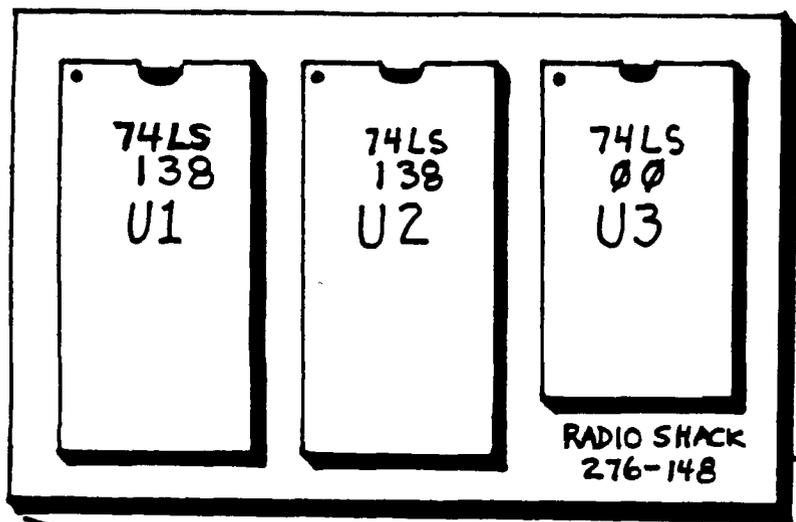
These wildcards can also be used in a disk copy procedure. These wildcards can be used along with the "\$". For example if we have a disk with a large number of files and we enter at the "Transfer ?" "#4:=,#5:\$" all files will be transferred without changing the name of the #5 disk and keeping the file name the same. It will be done automatically. If you want selected files transferred automatically and keep the file name the same enter "#4:System.=#5:?" and only files starting with "System" will be automatically transferred to the #5 disk keeping the original file names and the original disk name. You could also enter "#4:=.Text,#5:\$" and only those files with the suffix ".Text" would be transferred.

If one uses the "?" wildcard you will be asked if you want a particular file transferred. For example if one enters "#4:?.Text,#6" you will be asked if you want each ".Text" file printed out before it is done. This is very nice because it allows you to be selective and also to adjust your printer before the file is printed. If one enters "#4:?,#5:\$" you will be asked before each file is transferred and if you say "Y" the file will be transferred keeping the same file name. I do not think the "\$" is discussed except in the Editor but it works in the Filer also.

Stan has contributed more on the Pascal front. For those of you who followed Stan's series, I'm sure you'll enjoy this article.

WHEN A PAL IS NOT YOUR PAL... (OR WHEN YOU CAN'T REPLACE IT WITH A STANDARD CHIP).

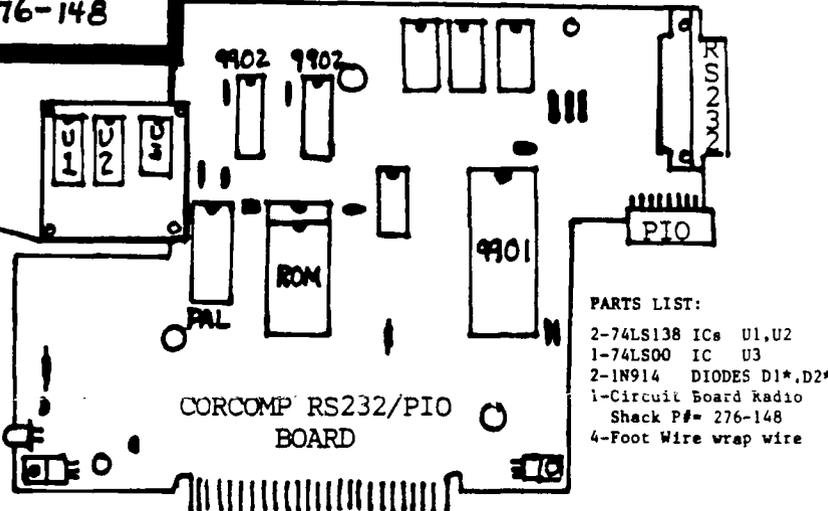
by John F. Willforth



DAUGHTER BOARD

Your PEB has controller cards that drive the printer, modem, disk Pascal, Ram Disk, and for those fortunate enough, IEEE and EPROM programmer cards. Many of these have on them a device called a PAL. The Programmable Array Logic chip comes in a wide variety of capacities and characteristics. When they are used they replace several chips by doing

the same job as the several chips they replace, and can be designed and programmed when and where they are needed. They are also relatively inexpensive. Ron Gries gave me this idea about a year and a half ago when he needed a PAL for a TI RS232 card. I needed one for the CorComp so here



CORCOMP RS232/PIO BOARD

- PARTS LIST:
 2-74LS138 ICs U1,U2
 1-74LS00 IC U3
 2-1N914 DIODES D1*,D2*
 1-Circuit Board Radio Shack P# 276-148
 4-Foot Wire wrap wire

is the replacement circuit for those of you who may have this PAL bad on your CorComp RS232/PIO card. If anyone has done the same for anyother TI card, please contact me so we can provide this information to the rest of the TI community. Point-to-point wiring:

FROM	TO	FROM	TO	FROM	TO	FROM	TO
U2,1	-- PAL,12	U2,2	-- PAL,8	U2,3	-- PAL,11	U2,4	-- PAL,5
U2,14	-- U1,5	U1,1	-- PAL,2	U1,2	-- PAL,3	U1,13	-- PAL,14
U1,14	-- PAL,15	U1,15	-- PAL,16	U1,3	-- PAL,7	U1,6	-- D1*
D1*	-- PAL,4	U1,6	-- D2*	D2*	-- PAL,6	U1,4	-- PAL,9
U3,4	-- PAL,20	U3,5	-- U2,11	U3,6	-- U3,9	U3,10	-- PAL,1
U3,8	-- PAL,13	U2,5&8	-- U1,8	U2,6&16	-- U1,16	U1,8	-- PAL,10
U1,16	-- PAL,20	U3,14	-- U3,4	U3,7	-- U2,8	PAL,17&18	-- Not Conn.

D1* and D2* anodes (not the banded end) are tied together and attached to U1, pin 6, while the cathode end (banded ends) go to the two PAL pins indicated. ALL voltages are taken care of in the point-to-point above. Use wire wrap wire, and attach all wires on the back of the board (non-component side). Be sure that the defective PAL is NOT in the board. Put a couple of drops of Super Glue on the back right side of the new daughter board, and lay it against the component side of the RS232/PIO board as indicated above in the drawing. This works quite well. If a PAL is acquired in the future, just take the 18 wires off the PAL pads on the back of the board.

This is a case where three chips were needed to replace the single PAL involved, but it could be cost effective to just buy the PAL in the first place rather than build this circuit. You may need this if the PAL is: Too costly, not available, to troubleshoot a problem rather than order a PAL which will take a while to get, and may not fix the problem. You decide.

HERE IS A REVIEW BY Tony McGovern of the AVPC as manufactured by DIJIT SYSTEMS, 4345 Hortensia St., San Diego, CA 92103.

THE DIJIT AVPC CARD

Tony McGovern

There is a most interesting new development on the TI-99/4A scene in the form of the Advanced Video Processor Card from DIJIT Systems in San Diego. This uses the same V9938 video processor that is used in the Myarc Geneve. Right now I'm typing this on a full 80 column display using an experimental version of the Funnelweb Editor designed explicitly to work with the AVPC card. The display device is a Commodore 1084S RGB monitor. I hesitate to use the term high resolution to describe this device as it has CRT color dot pitch barely adequate for the AVPC or the Amiga either, but I was able to go out to the nearest K-Mart and buy one, so will could have his Amiga back. To get better would involve a trip to Sydney, or far more money for a Multi-sync. The 1084 has the advantage that it also accepts a composite video input so you can use it as a display monitor for a VCR as well. Since the monitor is a great part of the expense in getting better video resolution, no matter which way you go, this is important. Unless you want to revert to monochrome and just do text editing with a V9938 system of any origin, a RGB monitor is essential.

So what is the AVPC card and what does it do for you. Physically it is a card for the PE box, and just plugs in like any other card. You make direct connection from a 6-pin DIN connector on the rear of the card to the RGB monitor. I made a short 6-pin DIN to DB-25 adapter cable which I then plug with the Amiga cable that comes with the monitor. This has a DB-23 but this causes no problems. The sound still comes from the console connection and you will probably need to make another cable for that also. No other connections are needed. To make the system work you have to modify the console used with the AVPC. The process is easy and well explained in the instructions that come with the card. If you have ever cleaned the GROM port connector, then you have already experienced the hard bits, and no soldering is required. The modifications have two purposes. Firstly the existing VDP is partially disabled, left ticking over for clocking the GROMs. The console also contains circuitry which prevents VDP accesses from appearing on the external bus to

the PE box. Cutting a trace here lets the card in the PE box in on the act. Do that, clean the GROM port connector while it is out, reassemble the console, hook up the PE box and monitor, and fire it all up. If your experience is like ours it will work first time. That is good engineering! In use all you will notice is the occasional flash from the screen when the AVPC corrects bad signals to the VDP chip from Basic, usually under error conditions.

The AVPC uses the same Yamaha/ASCII V9938 chip as used in the Geneve. This started out life as a development of the video chips in the 99/4a, but when TI lost interest in home computers development passed to Japan where it became the basis for MSX-II, something that hasn't appeared out here. Yamaha designed it to be compatible with the 9918 also used in MSX-I, provided programmers respect the reserved video register bits as specified in the 9918 or E/A manual. Most third party software writers have, but unfortunately TI Lubbock were major offenders. Just why isn't clear. Maybe just sloppiness, or maybe sheer bloodymindedness in TI's internal company politics. These problems were built into the infamous GROMs, which has meant that DIJIT has had to be extremely ingenious in working around the traps left by TI. The last and most insidious problem they found was conflicts with RS232 interrupts in interrupt driven terminal emulator programs. Due, it turned out, to a bug built into the TI RS232 card (and copied by Corcomp and Myarc without correction), for which the only solution is a new EPROM which DIJIT will provide for your particular make of card. Imagine the problem they faced, a occasional lockup occurring only with their own new hardware with all three independently sourced RS232 cards. Even sympathetic feelings hurt.

These problems are all handled transparently. A further class of problems comes with the bank switching of VDP RAM when the last byte of the normal VDP RAM is accessed in the new VDP modes. The TI system specs allowed for a way around this, but third party software writers have not always respected it. Funnelweb has been compatible for some time, but some other programs may need updating. Various Horizon RAMdisk ROSSs are offenders but are easily fixed. I'm using my own fix on one right now and DIJIT will have their own. The card comes with a modified version of Barry Boone's fine Archiver program, and a program of Barry's that shows My-Art pictures from the Geneve. Also there are some (Continued on page 8)

(Continued from page 7)

primitive adaptations of TI-Writer to 80 columns. In future a fully adapted 80 column version of the Funnelweb Editor will be available - the one I'm using right now or its future developments, and we have given DIJIT explicit permission to distribute this with their card. I'm already finding it hard to look at the 40 column editor again, and the AVPC machine has become our prime working computer. It already has the Myarc 512K RAMdisk installed and soon will have all the goodies, as it is working so smoothly.

The AVPC design also looks to the future. Unlike the Geneve it supports the full 192K of VRAM (in fairness this isn't so important on the Geneve which has more CPU RAM), but I can see AVPC programs coming that will not be Geneve compatible for that reason. The V9938 supports mouse and light pen and the physical interface is clearly defined. I have found this one of the more irritating features of the Geneve sales effort - the naked attempt to force users to buy Myarc's product by issuing dire warnings about possible damage, while with-holding detailed technical information. The AVPC also has built in an expansion connector, intended for a video digitiser sub-card. This I have no details on so I can't comment.

The card I have here is an evaluation model, but it is very neatly laid out with no obvious afterthoughts. I would agree with the designers when they say that the long gestation period has led to a product that is mature at release. I think it is so good that I'll buy one for the second system. Another V9938 based 80 column device has been in existence for some while, from Mechatronics in Germany. It is not clear whether it is still available, and I have never actually laid eyes on that or any other Mechatronics product. From reports I have had, and judging from a description in Micropendium some time back, it is a very much clumsier device mechanically, electrically and to the programmer. Some correspondents whose judgment I respect had looked at it and decided against it, but have snapped up the DIJIT card.

A question to be asked is how it stacks up against buying a Geneve. From my point of view it allows 80 column operation and access to the power of the V9938 in a familiar system. William came back from his Amiga for long enough to create a whole new set of V9938 interface routines, a video library reminiscent of many of the video functions on the Amiga. I would love to have the extra horsepower of a TMS-9995,

but this may well do me until the time comes to move onto something altogether new and more powerful. Will is of course a confirmed Amiga fan but I'm not fully convinced there, finding it difficult to warm to a machine for which software producers seem to think it necessary to have an exclamation mark in the name of every second software title. I just have a feeling that it would be a mistake to buy a new computer that does not have a large linear CPU address space (and that makes any MS-DOS machine out of bounds). The Geneve may be fun for the small circle of developers who have ready access to Myarc for detailed information, but I feel little inclination to work as a complete outsider on a machine with a small user base from a producer notorious for secrecy, no matter how elegant I find its CPU instruction set. There would be far more return for effort on the Amiga. The longevity of the TI-39 as a orphan system is already remarkable, and an AVPC looks a good way to keep it alive for several years more, until both it and the Geneve seem like 4-function calculators in the march of computer progress.

Our policy here is to develop software for the system we have. We always try to make the Funnelweb system as widely usable as possible and have also tried to accommodate other significant hardware we know of, when we have enough information to do so. There is no substitute for the actual hardware though. GRAM devices are one area we have never pursued, as we were left with no inclination to buy one from the best known supplier, and otherwise have just had higher priorities. The new 80 column editor is the first major development in the Funnelweb package tied to a specific piece of hardware, and is an implicit comment on just how important we think the AVPC is.

ATTENTION

ALL USER GROUPS, NEWSLETTER EDITORS,
AND CASSETTE USERS.




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DISK DRIVES(#6)
by John F. Willforth

Continuing with problems from article #5.

Common problem #6, can't read a diskette that was created quite awhile ago on this same drive. This drive can write and read a new diskette, and the diskette that is now unreadable, is readable on another drive. There are at least two possibilities here. One, the drive is worn out, and with the cost of drives so low, replacement is definitely the most economically feasible option, and two, it is quite probable that the drive needs aligned. Many of the older drives are mechanical nightmares when it comes to wear, but can be rather easily adjusted. I'm not ready to get into alignment just yet. I would recommend that the drive not be used for writing until the problem is analyzed and taken care of, or you may end up with diskettes that have data that will be very difficult to restore when you need it.

Common problem #7, the drive seems to be making a lot of noise and is slower than it should be (compared to a similar drive on the same controller). There is a very common and easy fix for this one if your controller has the capacity to select the STEP RATE for each drive that is connected to it. The TI, however does not, and therefore is set to a very slow STEP RATE in order to accommodate all the slower drives that could be attached. The STEP RATE is the speed that the drive can move from one TRACK (CYLINDER) to another. This is dependant on the electro-mechanical efficiency of the stepping motor and the HEAD mass, as well as the mechanism between the two and the driving circuits in the logic on the drive logic board. If you have a Cor-Comp controller for example, you can set the STEP RATE for each drive connected, getting the most efficient speed in each. Comparative testing of a disk that takes awhile to catalog is a good test media, and using it to get the shortest cataloging time will probably fine tune your controller to the the respective drives. On the Cor-Comp this is a jumper settings on the controller card itself. The lower the number, the faster the drive is being asked to step. i.e.: 3,6,12,20, or 30 are milli-seconds, 3 would be faster than 6, and 20 would be faster than 30.

Common problem #8, is getting a read or write error on a diskette that was a good diskette that you previously had no problems with, or even a new one out of the bag (box), whichever. After proving that a new diskette and your drive are still working and not at fault, throw the old diskette away. The cost is now so low, that unless you need to try some retrieval methods on the offending diskette, you can't waste your time. It would be good to check the media inside the SHELL (plastic cover that protects the actual disk media) for what might have happened so that you might not make the same mistake again if it is something you did. Rotate the media slowly inside the shell looking for any of a host of flaws, dimples, spots on the surface, scratches either radially or circumferentially (might be a good word), as well as a distorted shell itself. Dimples often occur when inserting the newer diskettes into the drive when the mass of the human arm doesn't stop fast enough if the diskette contacts an obstruction as it enters the drive. The shell buckles, and mechanical forces then create the dimple in the media, and most times the shell shows no evidence. The spots on the disk can be manufacturing flaws, but are most commonly caused by, (and I want to say this delicately) you talking, sneezing, eating, or smoking around diskettes, especially when they are not in the envelope or disk drive. The scratches, particularly in a single sided drive, could be caused by the drive itself, and mechanical investigation should be done.

Hint: Since a drive can wear out eventually, and since most of the wear that can happen to a drive is in the area of the CARRIAGE and STEPPING area, you can take steps to setup your diskettes to do a minimum of work everytime you use them. After a diskette has been filled and you no longer expect to make any changes, and are about to put a write protect tab on it, why not make a copy of it using the FILE-COPY utility in your disk manager. This will serve two ends, first you will benefit everytime you catalog the diskette, and it will decrease the amount of head wear. Try a diskette that you have many files on, and just listen to the drive exercise, then do a file-copy of the diskette, and then do a catalog of the new diskette.

Until next month.

100 REM PRIME NUMBERS by 110 REM John F. Willforth 120 CALL CLEAR 130 N=1 140 P%=CHR\$(46)	150 OPEN #1:"PIO" 160 PRINT #1:" IME NUMBERS": : : 170 PRINT #1:" 1" 180 N=N+1	PR 190 FOR TEST=1 TO N 200 A=N/TEST 210 A\$=STR\$(A) 220 F=POS(A\$,P\$,1) 230 IF F=0 THEN 250	240 NEXT TEST 250 IF A=N THEN 240 260 IF A=1 THEN PRINT N 270 IF A=1 THEN PRINT #1:N 280 GOTO 180
90 ! XBASIC W/32K & PRINTER 100 CALL CLEAR 110 DISPLAY AT(12,8):"PRIME NUMBERS TO 3000": : : "BE PAT IENT, THE NUMBERS WILL COME M UCH FASTER!": : : "BE SURE TH	E PRINTER IS READY" 120 OPEN #1:"PIO" 130 DIM X(3000) 140 FOR I=1 TO 3000 150 X(I)=I 160 NEXT I	165 PRINT #1:"PRIME NUMBERS TO 3000": : : 170 FOR I=2 TO 3000 180 IF (X(I)=0) THEN GOTO 240 190 PRINT #1:I 200 KTR=I+I	210 FOR K=KTR TO 3000 STEP I 220 X(K)=0 230 NEXT K 240 NEXT I 250 END
100 CALL CLEAR 110 PRINT : "BEST NUMBER CONV ERTER EVER!" 120 ! CONVERT ANY NUMBER FROM/TO ANY BASE BETWEEN 2 AND 36. 130 A\$="0123456789ABCDEF6HJI KLMNOPQRSTUVWXYZ"	140 INPUT "NUMBER? ":B\$ 150 INPUT "FROM BASE? ":A 160 INPUT "TO BASE? ":B 170 C=0 180 D=LEN(B\$) 190 FOR E=1 TO D 200 C=C+(POS(A\$,SEG\$(B\$,E,1) ,1)-1)*A^(D-E)	210 NEXT E 220 B\$="" 230 F=INT(C/B) 240 B%=SEG\$(A\$,C-B*F+1,1)B\$ 250 IF F=0 THEN 280 260 C=F 270 GOTO 230 280 PRINT "THE ANSWER IS ";B	\$: : 290 INPUT "ANOTHER CONVERSIO N ?":M\$ 300 IF M\$="N" THEN 330 310 CALL CLEAR 320 GOTO 130 330 END
100 REM VALENTINE'S CARD 110 REM FAMILY COMPUTING 120 REM FEBRUARY 1987 130 REM TRANSLATED BY W.BLDD D 140 REM (TO RUN IN CONSOLE B ASIC, REMOVE LINES 672)679) 150 REM TITLE/INPUT SCREEN 160 CALL CLEAR 170 CALL SCREEN(14) 180 GOSUB 1040 190 PRINT : "COMPUTER VALENT INE'S CARD*" 200 GOSUB 1040 210 PRINT : : : : "PRESS":" (ENTER) AFTER EACH REPLY." 220 PRINT : ; TAB(6); "WHO IS THE CARD TO?": ; : 230 INPUT T\$ 240 IF LEN(T\$) < 28 THEN 270 250 GOSUB 1100 260 GOTO 220 270 PRINT : ; TAB(7); "WHO IS THE CARD FROM?": ; : 280 INPUT F\$ 290 IF LEN(F\$) < 23 THEN 320 300 GOSUB 1100 310 GOTO 270 320 CALL CLEAR 330 CALL SCREEN(5) 340 REM 350 REM DRAWING ROUTINE 360 READ NO 370 FOR OB=1 TO NO 380 READ KO,CH,Y,Z 390 CALL CHAR(CH,"") 400 CALL COLOR(INT(CH/8)-3,1	,KO) 410 FOR CO=Y TO Z 420 READ A,B 430 CALL VCHAR(A,CO,CH,B-A+1) 440 NEXT CO 450 NEXT OB 460 REM 470 REM MESSAGE ROUTINE 480 R=22 490 M\$="T\$&","" 500 GOSUB 960 510 R=23 520 M\$="WILL YOU BE MY VALEN TINE?" 530 GOSUB 960 540 R=24 550 M\$="LOVE, "&F\$ 560 GOSUB 960 570 REM 580 REM CHANGE GRAPHICS ROUT INE 590 GOSUB 1140 600 KO=16 610 GOSUB 1190 620 CH\$="3C1881C3C381183C" 630 CALL CHAR(96,CH\$) 640 CALL CHAR(112,CH\$) 650 CALL COLOR(11,1,16) 660 CALL CHAR(120,"44EEFE7C7 C383810") 670 CALL COLOR(12,15,1) 672 RANDOMIZE 673 FOR A=1 TO 28 675 CALL SPRITE(#A,120,INT(A /3)+3,92,124,A*INT(RND*.5)- 2.25+A/2*SGN(RND-.5),A*INT(R	ND*.5)-2.25+A/2*SGN(RND-.5)) 678 NEXT A 679 CALL MAGNIFY(2) 680 REM 690 REM SWITCH SCREEN COLORS 700 CALL SCREEN(2) 710 GOSUB 1140 720 CALL SCREEN(5) 730 GOSUB 1140 740 GOTO 700 750 REM 760 REM --NUMBER OF OBJECTS 770 DATA 4 780 REM 790 REM --OBJECT 1-- 800 DATA 16,96,2,30,6,8,5,9, 4,10,3,11,3,12,2,13,1,14,1,1 5,1,16,2,17,2,18,3,18,3,19,4 ,20,5,21 810 DATA 4,20,3,19,3,18,2,18 ,2,17,1,16,1,15,1,14,2,13,3, 12,3,11,4,10,5,9,6,8 820 REM 830 REM --OBJECT 2-- 840 DATA 7,104,6,26,7,8,6,9, 5,10,4,11,4,12,4,13,5,14,5,1 5,6,17,7,18,8,19 850 DATA 7,18,6,17,5,15,5,14 ,4,13,4,12,4,11,5,10,6,9,7,8 860 REM 870 REM --OBJECT 3-- 880 DATA 2,112,9,23,7,8,6,10 ,6,11,6,12,7,13,8,14,9,16,10 ,17 890 DATA 9,16,8,14,7,13,6,12	,6,11,6,10,7,8 900 REM 910 REM --OBJECT 4-- 920 DATA 7,120,12,20,9,10,9, 11,10,12,11,13,12,15 930 DATA 11,13,10,12,9,11,9, 10 940 REM 950 REM DISPLAY AT 960 C=INT((14-LEN(M\$))/2+2) 970 FOR Y=1 TO LEN(M\$) 980 CH=ASC(SEG\$(M\$,Y,1)) 990 CALL HCHAR(R,C+Y,CH) 1000 NEXT Y 1010 RETURN 1020 REM 1030 REM ASTERISKS 1040 FOR X=1 TO 27 1050 PRINT " *"; 1060 NEXT X 1070 RETURN 1080 REM 1090 REM INPUT ERROR 1100 PRINT : "TOO LONG! TRY A GAIN!" 1110 RETURN 1120 REM 1130 REM DELAY 1140 FOR X=1 TO 1000 1150 NEXT X 1160 RETURN 1170 REM 1180 REM COLOR CHAR SETS 1190 FOR S=1 TO 8 1200 CALL COLOR(S,KO,:) 1210 NEXT S 1220 RETURN

