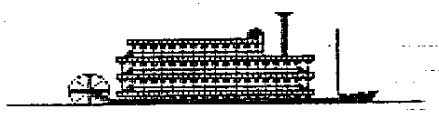
MID SOUTH 99/4A
USERS GROUP

MEMPHIS TENNESSEE



NEWSLETTER

P.O. BOX 38522, GERMANTOWN, TN 38183-0522

MEMPHIS, TN 38
1987

STRIKE BACK AT CANCER
GIVE
AMERICAN CANCER SOCIETY

TIDBITS

APRIL INDEX

N 2/87$$$
FLOYD PEMBERTON
481 SPRUCE
LEWISVILLE, TX 75067

Last One

Newsletter for the MID-SOUTH 99 USERS GROUP Vol 5, #4 April 87

T I D B I T S

PRESIDENTS BIT

LAST MONTH'S MEETING: Meka's "SORRY ATARI" and "CRUMMIE COMMIE" certainly highlighted last month's meeting, They are comical segments of XB software that I'm sure will find their way into TI users group meetings all over the country. Thanks Meka! Ralph's fuzzy decision maker demo had a confused sector, but we appreciate the prelude and hope he can continue with the demo sometime soon. SPAD XIII, as demonstrated by Gary, was enlightening despite the warnings "for folks not to raise their expectations too high." It seems Gary has fight-training time on a different processor.

UPCOMING MEETING: GENEVE 9640 presentation!!!Gary Cox does it again! (read his article) BE THERE!!!

FUTURE MEETINGS: Your Name and demo here. Contact any of the officers and let's hear what you want to see.
NEWSLETTER: Al Doss, our editor, gathers articles and churns out yet another edition! Remarkably without the use of extortion or even a cattle prod... Thanks again.

LIBRARY: Rick Glisson & David Ferguson, our dynamic duo, ha placed themselves at our service to make copies of library software Library listings will soon be available at minimal cost.

FREEWARE: Passing the hat for freeware authors, when we do raise money. I would like to have some input from the floor as to where it goes, not always an officer. Remember, buying programs is an investment in tomorrows software.

TIBBS: Pierre Lamontagne is moving, but is not giving up on being SYSOP. So the TIBBS must move with him. Thus the new PHONE NUMBER 386-1760. Voice 386-1513.
Storyline: The pearls of Gary Cox! Call the board, read it, and add to it

Beery Miller's Risky Biz: Now has Weather information available. Both BOARDS have plenty of programs and features. If you are in the memphis area and don't have a modem, you are missing quite a free privilege.

MG from TRITON: Well my IBM sidecar still hesn't arrived from TRITON yet. On the last Monday of March, I received a form lett stating delivery will be within 25 days. Tactlessly, this was very same form letter that I received 2 months ago stating a 30 day delivery time... but as a MG fan, I am willing to wait a while longer. Some people in the group have expressed concern about the keyboard limitations for programs such a LOTUS...GramKracker owners should keep in mind that they can redefine keys in their operating system and create their own

convenient stroke keys....

GENERAL TI AFFAIRS : (For sale equipment) It's not the job of the treasurer or anyone tending the register to promote your items. Please put your name with your merchandise so that buyers can find you!

News from others:
Ed DuVall came a long way to attend our meeting and we appreciate all of the chit chat and TI news! Jonathan Leslie has been on the TIBBS and seems to be getting settled. Ask Rick Glisson for details.

C-base "class" is coming along nicely.
Dicko Vandenberg
Richard Miller
Lynn Crow
Ed Walton
your name?

El Presidente.....Mac Swope

LIBRARY UPDATE

The group library is undergoing massive reorganization. When the reorganization is completed we hope to have more than 200 disks of programs available along with a list of our programs with a description of each.

We have also had out of town members request access to the library VIA mail and we have decided to start a mail order library available to all full ($15) members. We will have something like a 5 per month limit on access VIA mail so as not to over load the librarian although the access to the library at meetings will remain as usual. Details on the new library have not been worked out as of the writing of this article but we should have full details on mail access to the library in the May newsletter. Listings of the library will probably be provided to everyone available for pickup by local members at the meeting and out of town members may request a list by mail. The list may be quite large so we will have to figure up the postage and printing cost on the list and also the cost on disks etc... Do NOT send any money or requests in yet for the library but wait for full details next month. We are trying to make our library as easily accessible as possible at the lowest cost with the cost just being our expenses...

By the way at the last meeting someone asked if our library was the same as what was on our BBS's. Some of the programs are the same but much more is available from our main library. Besides some programs are too large to put on the BBS. At present there are approximately 100 downloads on TIBBS...Gary Cox

IN THE NEWS

The BIG news this month is our demonstration of the Geneve at our meeting by Jack Riley. This should be very interesting!

Looking elsewhere to the news not a lot going on since last month...

Many have been waiting for news of someone taking of production Gram Krackers since they were discontinued by MG. At this time no one has picked up the production of the very popular device. According the MG the price is just too high on obtaining parts to make the GK's which was the reason they stopped production and the reason no one has taken up production on them. Since the GK's were first sold chip prices have steadily increased and are continuing to increase causing prices too high to make it practical and profitable to make them. If someone does take up production on GK's MG has promised to let us know...

Triton is marketing a new Extended BASIC they call "Super Extended BASIC". It adds 13 new commands to the regular TI XB. It is 100% compatible with all programs that run with the TI XB cartridge and is exactly the same except for the 13 additional commands. They are basically the same commands that Gram Kracker owners enjoy with their enhanced XB using the GK utility disk from MG. The new commands include a new type of LIST, a better RES, a trace that sends output to the printer, COPY to copy program lines, DEL which deletes blocks of program lines, MOVE to move blocks of program lines, CALL LOAD, PEEKG, POKEG, PEEKV, POKEV, QUITON, QUITOFF and new cursor controls on editing program lines... Their price is $59.95. By the way they also have a new catalog out that lists several new products. Call 1-800-227-6900 if you are not on their mailing list.

By the way if you are looking for the original TI Extended BASIC Texcomp at (818) 366-6631 has them for $29.95 which is not a bad price. Their address is, P.O. BOX 33064, GRANADA HILLS, CA 91344. (ADD 3% shipping with $3 minimum.)

Take a look at the latest Micropendium for the latest new products and deals.

That's all the news I have had time to collect this month, will try to have more next month...Gary Cox

OOPS

An error was in last months Modem TIP article in regards to disabling call waiting. The information should have read to disable call waiting on a rotary dial line dial 1170, wait for dial tone and dial the number. For touch tone lines dial * 70, wait for the dial tone and dial your number. For an autodial modem on a touch tone line you would type ATDT * 70,3575425 which would both disable call waiting and dial the number. The comma gives a short pause to give the dial tone a chance to come back.

TI Writers formatter thought the * was a control code and therefore did not print the * 70 in the article. Sorry for any inconvenience... By the way this works for everyone wheather you have a modem or not...Gary Cox

PROGRAM BIT

PLEASE READ! IMPORTANT INFORMATION! PLEASE READ!

This months meeting will be very special! Jack Riley, Vice-President of Marketing for Myarc Inc., will be here to demonstrate the new Geneve 9640 computer system as well as answer any questions you may have about Myarc equipment. Furthermore, he will be bringing along the new Myarc Hard Disk controller and hard disk drive that we have all been hearing so much news about. This will be a rare opportunity to see up close and in person new products just recently released and ask a company representative in person about their equipment... Even though you may not be interested in purchasing a Geneve, I think you will find his demonstration very interesting and the new computer amazing with capabilities that best the IBM PC...
In case you are not familiar with the Geneve in short it is a new product marketed by Myarc Inc for the TI99/4A. It comes in the form of a card that goes in the Expansion Box and runs to an IBM style keyboard (much better than the TI keyboard) replacing your TI console. According to my information (we will find out for sure at the meeting) it has composite output for a TV or monitor with 512 x 212 accessible pixels on the screen and with RGB it has 512 x 424 pixels and up to 256 colors displayed on the screen at one time. It has a built in real time clock with battery backup, 640K RAM expandable to 2 MEG RAM, 12Mhz clock speed, 40/80 column display, speech included and compatible with most TI99/4A software. It comes with a GK utility to save cartridges to disk for use with the new keyboard, Advanced BASIC, 4.21 Pascal; Enhanced TI Writer with 80 columns, increased speed, resident Editor and Formatter...; instructions on upgrading Multiplan to 80 columns, Myarc Disk Operating System (simular to MS-DOS), Mouse or Joystick port and more... This is a system that even IBM compatible owners will be amazed at and envy! According to Jack, the Geneve is much more operational now than the one at the Chicago TI Faire which was still impressive.

If you are not familiar with Hard Disks they are a permanently enclosed disk in a drive with very high speed access (as fast as recalling something from memory) and massive storage capabilities in the 5 to 10 Megabyte range with even 20 Megabytes being a commonly found storage capability for hard disks. They are quite and usually fit in the same space as a half height or full height drive. You could store your entire library of disks on this one hard drive and still have room left over (except for me as I would probably need two hard drives)... Although I do not know much about this card (we will find out at the meeting) it will not only control a standard hard drive but your floppie drives as well giving you double sided double density capability on your floppie drives...

The meeting starts at 7:00pm sharp (doors open at 6pm) at the Red Cross building at 1400 Central in Memphis, Tenessee. Meeting is open to the General Public with no admission charge.

Jack is driving all the way from Birmingham Alabama to give us this demonstration so everyone please come and bring your friends...

FREE - A drawing will be held this month to receive a f... subscription to the Ryte Data Computing Newsletter ($14 doll... value) provided by Ryte Data...Gary Cox

SHOPPERS CORNER

Books Unlimited at East Gate Shopping Center has some books on the TI99/4A for $2 a piece. Titles include, The Last Word on the TI99/4A, TI GAMES, Using and Programming the TI99/4A, Fundamentals of TI99/4A Assembly Language and The Best of TI Software.

Gerald Miller has the following items for sale: Black and Silver console, TI Joysticks, Speech Synthesizer, Cassette cables, PRK, Early Learning Fun, Munch Man, TI Invaders, Alpiner and Parsec. Will sell separately. Call 754-2483.

Berry Miller at 726-5551 has the following items for sale:

TI Console Silver model for $50 TI Disk Controller Card $65.00
TI Multiplan $30.00
TI Sound/Video Splitter to enhance the quality of Simulated Ste... sound from the TI 99/4A for $15.00, Adventure module $10.00

Entire system being sold by Dean Eckhardt
Work: 901-761-2050, Home: 901-363-7713
TI console, TI Writer, 32K memory, P.E. Box, Disk Drive and Controller, Disk Manager Cartridge, Star Trek, Personal Record Keeping, Extended Basic, Teach yourself Extended Basic, Music Maker and all manuals included. Asking Price: $350.00

L.L. Conner Enterprise Computer and Electronics of 1521 Ferry Street, Lafayette, IN 47904 has a couple of hard to find cartridges, Popeye and QBERT for $10 a piece along with many other products. Their voice phone number is (317) 742-8146 or BBS # at (317) 423-4879.

Come to the meetings for other good bargins as the For Sale Table is usually full of items people brought in to sell...

Non-commercial notes may be placed into the Shoppers Corner FREE of charge to members of the group. Advertising rates for the newsletter for businesses are $10 for a full page ad (5" by ... and $6 for a half page ad (5" by 4"). The center page (8 1/2" ... 11" actually two pages) is available for $16. Ads must be photo ready in the above sizes only and will be placed into the newsletter as soon as possible depending on our limitations...Gary Cox

SPAD XIII REVIEW

Spad XIII is a new flight simulator progras for the TI99/4A recently released by Not-Polyoptics and available from Tenex for $24. The program is written in 100% assembly language and requires XB, 32K and a disk system. The program comes on a copy protected disk taking up 359 sectors.

...e advertisement from Not-Polyoptics describes SPAD as mimicing all the physics of flight with scenery including the Eiffel Tower, Seine River, trenches, French Villages, clouds and more. You can engage enemy planes in dogfights, down enemy observation balloons, bomb enemy hangers while watching out from flak from down below...

In case you are not familiar with flight simulators they are programs that attempt to realistically reproduce the actual physics of flight using your computer. One of the most well known flight simulators is Microsoft Flight Simulator on the IBM PC which I have flown many times and found it to be very realistic in both flight and with the instruments and it was not easy to fly (especially when I have never flown a plane in my life!).

Until the release of SPAD the only flight simulators on the TI99/4A were Dow 4 Gazelle which is an instrument only flight simulator (no window views) written in TI BASIC. It's problem was that it was written in BASIC and showed no window views, very slow and not very realistic. The next flight simulator that came along was 4A/Flyer written in assembly language and available in a cartridge. Taking up only 8K of memory it obvously could not be very sofisticated and it wasn't. It had very little scenery and ...t much to do but to fly around shooting planes. It did not come close to realistically mimicing the actual physics of flight as you could fly straight up and not stall... Although some liked it, many that was expecting a real simulator found it to be flop. (I did not like it either.)

With SPAD XIII flight simulator you are the pilot of a SPAD XIII small one engine plane built in 1917 which included two machine guns and was the best plane of that day. Instrumentation back then on planes were very primitive with only a compass, air speed indicator, altimeter and a fuel guage (these are all the instruments included with the program as well). SPAD XIII Flight Simulator can by controled either by keyboard or by joystick or a combination of both. Keys 1-5 when pressed gives different views from the seat of plane with front, left, right, back and up. The front view shows the instruments and the front part of the plane along with with what is ahead as well as does the side views and back view which shows the plane and the outside scenery. Keys 7-9 control the throttle while the arrow keys (or joystick) and sourrounding keys control the stick of the plane (the thing that controls the planes direction or rather the flaps). The comma and period keys control the rudder which can be used to fine adjust ...our course. Then the "u" key gives an unobstructed view outside ...he front of the plane (a view withough the wings, instruments etc... in the way). The pitch of the plane is controlled with the stick and throttle. Increasing the throttle will cause the plane to climb but by pushing the stick forward you can cause the plane to decend...

Response by the stick and throttle is adaquate although changing views takes about 2-3 seconds. Screen updates are fairly fast though.

Scenery in the sky includes other planes, clouds and the sun. The clouds and many other objects are make up of lines (called Stylized graphics which means that objects are rendered with lines.). Planes and air fields are drawn the best. In general the graphics are quite satisfactory. About 12 minutes flight t the west is the Eiffle Tower and about 10 to the east is a German airport. Surounding the two airports is a combat area and between the two airports is trenches. Before getting to the Eiffle Tower you must cross the Seine River and other scenery includes mountains and villages. Always displayed on the ground is trees but only about 5 maximum at one time. As you get closer to something, it gets larger until it fills up the entire screen.

SPAD is the best attempt so far at a true flight simulator on the TI99/4A but SPAD still falls somewhat short of my expectations and in short I was not impressed but nevertheless happy. I will start off by pointing out it's good points. Although I am not a pilot SPAD does seem to portray some of the physics of flight. For example, by climing too rapidly air speed will drop and the plane goes into a stall when the air speed drops below 40. With some practice and being at an adequate altitude to ficilitate enough time to recover I was in many cases able to recover from stalls. Fancy maneuvers I found to be difficult, not being a pilot, such as loops, half loop and turn (a quick way to about face and maneuver for dogfights) although a barrel roll was not too bad as it was obtained by just pressing the stick to the left or right and then the opposite direction to stop the roll. Other things seemed to work well as pressing the stick down the nose of the plane went down and air speed increased etc...

The program comes with a 27 page manual which describes the program and it's operation quite well. It also gives a limited introduction to flight and recommends another book for reference.

One of the most callenging aspects of SPAD I found to be in shooting down other planes. The other plane starts evasive maneuvers as soon as I sees you which makes it very difficult to line it up in your sights. What makes it even more difficult is having to watch your air speed as it is very easy to stall while trying to line the plane up in your sights. I might also add that the German airport is not a great place to fly as after only one pass over the airport, (which I tried to bomb) I was shot down. I guess they thought I was Rick Glisson? Finding the location of some of the places are not too easy either. The plane seems to drift off course and therefore I found myself having to watch the compass more closely to stay on course. Your location is determined just by looking out the windows and then looking at your map and see if you recognize a river or something...

Although you can fly anywhere you want too, five missions are suggested. Flying by the Eiffel Tower, do a reconnaissance of trench positions, try fancy maneuvers, fly to a French Village and land to rescue a person with urgent information and return him to your home airfield and lastly destroy gun emplacements in the

hills, bomb the German airfield and shoot down some observation balloons... You only have a certain amount of fuel, 1000 rounds of ammunition and limited bombs. Then of course there are some variations of the missions as you can just fly around and shoot down planes if you want. It is very difficult by the way to shoot down a plane! My favorite mission was flying to the German air field as it is busy with planes everywhere. I was only able to make one pass over the airport and I missed bombing the hangers and while turning around to make another pass I was shot down.

Response time on the screen changes are good though as the scenery moved fairly fast (fast update). I have to admit my expectations were high having used Micrsoft Flight Simulator and of course we just may not have the memory capabilities and processor capabilities and I am sure the author of this program spend a lot of time writing this program but I was just not overly impressed. In particular I disliked the way the game ends. The game ends if I am captured, shot down, if I crash etc... Instead of a crash on the screen or an explosion I get an instant white screen which shows the score with the number of planes I shot down or places I bombed. It is kinda of a shock to just be flying and then suddenly get a white screen and I must speculate to whether I was shot down or crashed etc... Another thing I did not like was that the program did not let me destroy the Eiffle Tower. I first tried shooting at it with no effect so then I bombed it and still no effect. So I thought I would just crash into it and instead I just fly right through it. I even landed underneath it and stalled in the middle of it and still nothing. Sound in the program is almost non-existant. There are only two sounds, the sound of the engine and machine guns. You do not even hear the shots from ground forces or other planes. The engine noise kinda bothered me so I just turned down the sound.

Like I said it is the best flight simulator available on the TI99/4A and if you liked 4A Flyer you will love this one. However, I was really hoping for a modern high-performance plane but I still found SPAD entertaining and a good program. If I had to give SPAD a grade I would give it a B while when Micropendium revieved it they gave it an A. Would I still buy it knowing what I know now about SPAD? The answer is yes. However, just do not expect it to measure up to the Microsoft Flight simulator as they have available much more computing and memory capabilities than we have here. I showed it at the last meeting but if you would like to take a look at it just let me know...Gary Cox

SURVIVAL HANDBOOK REVIEW

The Orphan Survival Handbook by Ron Albright (Writer of TI Forum in CS) has just been published and and I have received one of the first copies of the publication last month. Described as "the one stop information source for the TI user" it contains information compiled completely from hundreds of user group newsletters and bulletin boards. It has schematics, hardware hacks, programs, tips and tutorials. The manual is looseleaf and three-hold punched so that it can be placed in a binder and updates (which

are planned for registered owners) can be easily be added into the binder.

Section 1 contains several small programs, programming tips, error trapping techniques, MS/Lables program, tutorial on adding a hard copy to programs...

Section 2 is about assembly language. This section gives the 99/4A memory architecture, a screen pager utility, article on Cal Peeks and the convertion E/A option #3 files to option #5 for faster loading...

Section 3 is all on c99 with three beginners tutorials and 6 advanced tutorials along with a pretty good c reference sheet...

Section 4 is all on Forth with articles on Forth in general, Introduction to Forth, How to Boot the Forth system, Forth and XB similarities, and several tutorials on Forth with some programs...

Section 5 contains articles on Pascal (P-System) and Pilot with an index of Pilot commands.

Section 6 is the Hardware section. This section contains all kinds of small hardware projects such as constructing a Load Interupt, Hold and Reset switches, adding pretty lights that flash and tell what the computer is doing, wiring diagrams and pinouts for the 99/4A, hardware hints on this and that, two schematics for building a disk drive power supply, installing a cooling fan on the console, getting rid of the fire hose connector, adding ram chips and modifying your disk drives to do weird things and an article on connecting modems.

Section 7 is Telecommunications with a look at Compuserve, Genie, Delphi and The Source.

Section 8 is about TI Writer with all kinds of tips, creating printer graphics with TI-Writer, reference sheets and an explination of Bit-Image graphics on dot matrix printers.

The Appendix section contains TI Product Sources, user group listings, peeks, pokes and call loads as well as specifications on disk drives such as power requirments or weather they run on a direct or belt drive..., error code listings, a disk map, format for a disk directory, article on fixing blown disks and miscellaneous other stuff with an end commentary on the Geneva computer.

The editor of the book is Ron Albright who has surely put in a lot of time reviewing newsletters putting into this 200+ page book a collection of material from many different people such as Warren Agee, Jerry Coffey, Scott Darling, Jeff Guide, Howid Rosenberg, Barry Traver, Jonathan Zittrain, Danny Michael, Tom Freeman, Dick Altman, George Stefan, Chris Bobbitt and many many others with the help of Terrie Masters and many user groups far and wide all compiled from newsletters and BBS's to create this one terriffic book.

I found it to be very interesting and highly informative and I

have already refered to it several times when someone has called me asking for information on this and that and for reference for myself. It is truely a one stop source to information. While the novice or beginning user may not understand some of the technical and the in depth aspects in the book I think everyone will find it to be very informative and I don't think you can beat it for the price of only $16.95. It is available from Disk Only Software of P.O. Box 4170, Rockville, Maryland 20850 or call 1-800-446-4462 and at the tone enter 897335 for a recorded order message (touch tone required) or call (301) 340-7179. I will have it at the meeting if you would like to take a look at it...Gary Cox

XB TUTORIAL 7

By Funnelweb Farm
Of Australia

(continued from last month)

It's time once again to get back to the regular Tutorial material, continuing with the ways and means of scrunching program length. As I remarked before, it's a subject I'm not completely comfortable talking about because, while this series has been devoted to better XBasic programming, most things you can do to scrunch Basic programs make them less readable by ordinary mortals, given reasonable programming skill in the first place. The other reason for my reluctance is that this kind of discussion tends to degenerate into a collection of unrelated items, yet another set of "Tips", when I really want this series to be a gentle but systematic look at the workings of the machine and its language(s).

Anyway let's start at the small end of things and work up to the larger scale. Last time we looked at the space taken by simple variables. The most obvious thing is to keep variable names short. I don't recommend this until late in the piece because it is such a cheap and obvious way of gaining bytes that you might as well have the help of descriptive variable names until you are absolutely desperate for bytes. Absolute desperation has not occurred until you have had several rounds of byte saving already. The shortest variable name has only one letter character, but TI Basics also officially allow "@" (shift-2) and "_" (fctn-U) as variable names. It has to be a fairly long SUBprogram before you need more than 26 simple numeric variables but it can happen. On this console there are 3 other single characters which can be used as variable names. Experiment to find if they exist on your machine. The nagging problem is that they are not documented.

There is another way to use variable names to shorten a program. Remember from last time that a one digit numeric constant is treated as a string and takes 3 bytes, while a single letter variable takes only 1 byte. If a particular numeric value occurs frequently in a SUBprogram, 0 or 1 being common examples, then it may be worth the overhead, 14 bytes plus the defining statement, for a new variable of that value if you can then save 2 bytes on

NEW FROM MONTY SCHMIDT: **GPL LINKER V1.1 Run Time Version**

now $49.95
w/Linker $59.95
plus Intern $69.95
add $3 shipping

GPL Linker is an ingenious program that places the power of Graphics Language Programming (GPL) at your command. No extra hardware is required beyond standard 32k and disk system. In short, Linker creates runnable program files from compressed (or uncompressed) GPL Assembler object files. You can then run these programs with "Option 5 Run Program Files" of the Editor Assembler Module.

Up to 24k GPL programs can be developed and run on standard 32k systems. Included in the run time version are two demonstration programs and "CONVERT," a public domain conversion program that converts MS BASIC statements to TI BASIC statements.

Price: $21.00 CDN funds $15.00 US funds.

ENHANCED GPL Assembler V2.1

NØW with high memory loader package

UNLOCK ALL THE SECRETS! New GPL Assembler Version 2.1 available exclusively through Ryte Data.

This program provides the power to write, edit and assemble true GPL programs for the TI 99/4A. Create code that accesses console operating system routines directly. Develop programs that use the GPL interpreter and all the features of the TI 99/4A.

GPL price Reduction

This package includes the GPL Assembler disk, printed documentation, GPL tips and hints, update support service and commented GROM/ROM listings (with the book "INTERN"). An example for a command module type GPL program is included with source, object and list files on disk.

Requires: 32k memory, disk drive(s), TI Editor Assembler package. Printer/RS-232 recommended.

R/D COMPUTING

Technical Newsletter

with Bill Gronos on assembly!

We have a vision. Our vision is one of continued TI 99/4A support. We're dedicated to the power of the machine. From the novice to the experienced computer user; for management, home, education, entertainment or advanced applications our publication "R/D COMPUTING" is for you. TI never revealed all the important inner workings of the 99/4A. We bring you this vital information every month.

A major feature of R/D COMPUTING is the regular "upgrade projects." These electronic construction projects are designed to give the 99/4A owners more features and improvements. For example, it is possible to increase the speed of your computer with a very simple part and switch. Each month we present new circuits, diagrams and projects for your computer.

From the moment your new subscription arrives at your home, you will have access to critical technical information that makes your computer more valuable, powerful and versatile.

We believe that the TI 99/4A deserves new products, innovative hardware, software, information and a dedicated technical publication. This is what makes a computer "viable" in the fast paced microcomputer industry. Now that the 99/4A has been 'opened up,' all the secret information is available. You can have all these benefits and more each month. SUBSCRIBE NOW!

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$14/year - back issues 3-15 available

THANK YOU! Our business has grown 300% this year. To show our appreciation we are **giving away** hundreds of dollars in TI products to 99/4A owners or users groups. To enter drawing, (no purchase necessary) send your name and address on a postcard to Ryte Data. For **subscribers** to R/D Computing we are giving away XBII plus, 32k memories, GPL Assembler package, etc. **Enter your subscription today!**

Prices listed in U.S. funds.

New catalogue available.

Super Clock Support

Designed for the CorComp Clock Peripheral—Triple Tech Card or Stand-alone models. This utility package provides more functions for use in your Extended Basic programs. Direct access to the clock ROM at assembly speed gives you these features: three independent timers to set and read; alarm function; two interrupt routines to display time and date on screen with CTRL T—continuously or on your command; all time and date displays are in 12 or 24 hour format using TEXT. This program also allows the week, date and time to be set independently rather than all together.

Program disk is not copy protected to allow you full use in your Extended Basic programs. Package includes disk and instructions. $17.95 plus $2

XBII plus

As reviewed in Micropendium October 1985. This command module gives you all the features of Extended Basic PLUS 40 new commands. Totally compatible with TI's XB, this enhanced version gives your programs more power to access your 99/4A. Commands such as MLOAD, MSAVE, VPEEK, VPOKE, GPEEK are superior to most other Basic environments. Various demo programs and new applications using high resolution graphics make this module a "must" for Extended Basic users. Comes complete with a 95 page manual. Requires console and 32k. $75.00 (US) plus $2 shipping.

BASIC Compiler V1.1

New Basic Compiler that is finally easy to use! Supports virtually all Basic and Extended Basic commands in existing programs. Simply load and compile programs from a menu driven directory on your screen. No extensive re-writing, variable declarations or conversions are required. Compiler produces code-list in one pass containing all variable addresses and jump list. Package includes Extended Basic Loader, Floating Point Loader, Integer Loader, Disk Menu program and DSR program for the Compiler support. This Compiler cannot unravel DEF statements and stops on the END statement—no SUB's allowed. TRACE, BREAK, ON ERROR, CALL LOAD and CALL LINK may produce execution errors. Requires 32k, disk. Price: $20.00 plus $2 shipping (US funds).

Ryte Data

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HALIBURTON, ONTARIO K0M 1S0
TELEX 06-986766 TOR. ATTN: RYTE DA

numerous occasions. A frequently used longer numeric constant, as might occur in CHAR or SPRITE manipulations, yields more bytes each time. It is a matter of doing careful book-keeping and byte counting in each SUBprogram. Once you start down this track be alert for further gains -- if you have defined S=7 and F=5 then it saves a byte to write S*F instead of 35. If you can reuse an already defined variable name then the investment is paid back faster, but this requires keeping very careful track of program flow. Go back to the example of a Key/Joystick routine in a earlier Tutorial and see if you can shorten it by reducing the number of variables used.

Replacement of numbers by variables has precedents in other languages. In TI-Forth the numbers 0,1,2,3 are not treated directly as numbers but are defined words in the language.

There is another little way that cunning entry of characters can shorten programs. This is in the entry of graphics characters with ASCII values above 127 in the upper color groups of XB by writing strings with DISPLAY AT instead of H VCHAR CALLs. Characters in this range can be entered in strings in program statements by use of the CRTL key, rather than by using the CHR$ function. It does tend to make the program incomprehensible as these echo as blanks to the screen. They will appear with their defined shapes if the line is called up for editing after RUNning the program. These codes are also used as XB tokens and can only be used within strings. I should add in passing that I am in total agreement with the TI designers' choice not to allow abbreviated (direct token) entry of Basic keywords. If you want that sort of thing you should be back on your Sinclair or Commodore, and you probably don't believe in relocatable object files either,

The use of arrays (dimensions) to represent small collections of numbers needs detailed working out. The gains from less variable table overhead and simplified parameter passing to SUBprograss have to be balanced against the extra bytes needed for each program reference. Let the program logic be your initial guide.

This idea of using fewer bytes to represent quantities leads on to the larger subject of data compaction. One byte can carry 256 different values, and one third to one half of those can be conveniently entered from the keyboard. It's sheer overkill to use an 8 byte floating point number to represent just a few values, or even just a logical (Boolean) variable which really needs only one bit. Some languages compact Boolean variables as bits in a word or words. The CRU single bit bus of the TMS-9900 provides an ideal mechanism for bit storage and testing, but as in so many other areas the 99/4a hardware does not do justice to its CPU. The later TMS-9995 in fact has a little on-board CRU memory for just this purpose.

Opportunities for data compaction are limited in XB both because of the structure of the language (it has only character strings, floating point numerics and arrays of these as data types) and the convoluted, slow way it is implemented via GROMs and VDP memory. Any scheme for coding or compacting needs computation to pack and unpack the data. At the machine code level the tradeoffs between

memory use and speed are different from those in Basic, especially TI-99 Basics, because Basic is so much slower. In my experience the use of string variables to compact data in active parts of a program is almost always doomed to failure because of slow string handling by XB and pauses for garbage collection. Data compaction can be useful though in setting up initial graphics designs or for music data. There are only so many different notes, in pitch length and volume used in any given short musical piece, and since each note takes time to play and is handled by the machine on an interrupt driven basis, this time can be used to do the computations needed to unravel the data for the next note.

Let's have a look at the graphics screen example. Suppose that in setting up a game screen, either one of two characters, maybe the same pattern in two different color groups, has to be written to 20 locations in various parts of the screen. The simplest way is a whole succession of CALL HCHARs - assuming the display is not suited to generation with DISPLAY ATs - and that's the way you will find it done in many programs (just like long lists of CALL SOUNDs). What is totally unforgivable is to find incompetent magazine or commercial programs with inefficient coding that force inconveniences like CALL FILES(1) on the user.

```
1000 CALL HCHAR(23,12,105)
1010 CALL HCHAR etc etc
```

This takes over 600 bytes. How can it be shortened ? One way, a bit of a dead end in this example, is to use multi-statement lines. This would be shorter by 30 bytes or so, and marginally faster. The real improvement is to eliminate the repetition of CALL HCHAR - remember CALL is cheap but HCHAR is expensive - by using a loop and DATA statements.

```
1000 FOR I=1 TO 20 :: READ A ,B,C :: CALL HCHAR(A,B,C):: NEXT I
1010 DATA 23,12,105, etc etc
```

Now all but one of those HCHARs have gone. The price paid is loop and DATA execution overhead and the increased possibilities for clerical errors since the DATA items have been divorced from their proper context. At this stage you may be feeling very pleased with yourself, but then you find that to add another feature to your program you need more space. Now is the time to reflect seriously on data compression. A column index for HCHAR can only have the values 1 to 32 and rows 1 to 24. One of these values can be expressed by 1 byte with possibilities to burn. Say you use 1 byte for each row or column value then. Expressing the bytes efficiently as DATA is the next problem - there are a few bytes of overhead for each item in a DATA list, and DATA lists of a lot of short items are notorious for causing a "line too long" error. So let's pack them in a single string and use SEG$ to unpack them, with ASC to turn a ASCII character back to a value for HCHAR. A minor problem is that characters 1 to 32 can't be entered directly in XB, so just use characters starting with "A" and subtract 64. The opposite problem may occur with the string for the character values if upper graphics sets are being used. Then just use lower values and add a correction. So now the code might look like

```
1000 READ A$,B$,C$ :: FOR I= 1 TO 20 ::
```

```
CALL HCHAR(ASC(SEG$(A$,I,1))-64,ASC(SEG$(B$,I
1))-64,ASC(SEG$(C$,I,1)+32) :: NEXT I
1010 DATA "W...  ","L...  ","I...  "
```

You could further pack the data into a single string and modify the SEG$ statements accordingly, but it might not be worth it. Remember now that the problem posed involved writing only two different characters and work out how you could compact things still further for this limited case. This example is based on one of methods that was used to squeeze TXB into console memory. An extreme example of data compression comes when the data is regular enough that it can be generated by a formula or procedure. This is something that has to be worked out in each case.

The use of loops as in the examples above applies in other situations, particularly in CHAR definitions. XB allows the use of multiple arguments in CHAR, COLOR, SPRITE and suchlike SUBprograms. This is better and faster than using individual SUBprogram CALLs for each item in the list. The real dilemma comes when you try to use a loop to compact the program further. Critical parts of the program may be slowed down unacceptably so that you may find yourself using compact slow code in some parts of a program and longer but faster forms elsewhere. Just in passing I should remind you to null out on exit from a SUBprogram, any string variables not required to keep their value till the next CALL. This particularly applies to string variables used for READ, INPUT, PRINT etc operations involving long strings. Remember that it is the length of a program while RUNning that really counts...(End of Series)

LOADING CASSETTE

The following was taken from a flyer by Tenex (1-800-348-2778) on tips to loading cassette software. If you are not on their mailing list call for a FREE catalog.

Review the instructions provided with the software. Be sure you have the required peripherals and accessories (eg XB, 32K etc...) installed and turned on. If you are using the PEB, turn it on BEFORE the console. Turn the PEB off if you have a disk system installed and are loading cassette based software since the disk system takes up a small amount of memory, some cassette based programs which use almost all of the TI's 16K will bomb when run with the disk system on. (However, CALL FILES(1) and NEW might free up enough memory with a disk system on.) Be sure you select the right language (BASIC or Extended BASIC) if you have the Extended BASIC module installed. Running a program in other than the intended language will usually cause an error.

If your tape recorder has a tone control, it should be set to th highest level (most treble). Your volume control should b initially set at an intermediate level and adjusted as described below. You will probably eventually find a volume setting that works for almost all tapes; you may want to tape the control in that position or mark it with paint or nail polish. From time to

time you may encounter a tape that will not load at your normal setting; if this occurs, try changing the level as described below.

When you type in "OLD CS1" the computer will prompt you to first rewind and then to play the tape. When you press play, you will normally hear (through your TV's speakers) a period of silence, a tone and then a rhythmic static-like sound that is the data being read in. If all is normal, the computer will read te data for up to several minutes and, when done prompt you to stop your recorder.

WHAT IF THE COMPUTER SAYS "NO DATA FOUND"? This usually means one of two things:

1. Your volume control was too low.
2. The computer did not locate the tone that tells it to start accepting data.

If you heard the start tone and the sound of data being read, your cassette recoder volume control is probably set too low; turn it up a little, rewind the tape and try again. Repeat this process increasing the volume a little each time as long as you get the "NO DATA FOUND" error. (Note: A NO DATA FOUND could be experienced if the volume is too high distorting the sounds.) If you did not hear the tone or data, check to see if you have the correct side of the tape playing and that the tape was properly rewound. Try advancing the tape a little and reading it again in case the data is not located at the very begining of the tape. Check to be sure your TV volume is not turned off. Try loading a tape you know works to be sure your cassette recorder and TV volume controls are set at approximately the correct level. If you can hear your test tape but can not find any data on the tape you are trying to load, it may be blank. (As a last resort turn over the tape and rewind the other side as some maufacturers put a backup on the other side.)

WHAT IF THE COMPUTER SAYS "ERROR DETECTED IN DATA"? This usually means your volume is too loud. Reduce your volume setting and try again. Repeat this process, reducing the volume slightly each time, as long as you encounter the "ERROR DETECTED IN DATA" message.

WHAT IF I GET AN ERROR AFTER I TYPE "RUN"? Occasionall, after typing "RUN" the user will receive an error message, such as "MEMORY FULL IN XXXX", "INCORRECT STATEMENT", etc... Most commonly this is caused by either the wrong language or wrong peripherals. If you experience this type of error, perform the following checks:

1. Is the Correct language (BASIC or EXTENDED BASIC) in use?
2. If required, is the Memory Expansion installed and the Expansion Box turned on?
3. Is the disk system turned off for loading and running cassette based software? (Might try CALL FILES(1) and NEW and see if you have memory problems with the disk drive on.)
4. When your peripherals are configured correctly, turn off the console, turn it back on, select the correct language and re-load

the program.

WHEN DO I KNOW I HAVE A DEFECTIVE TAPE? Normally, each tape has a "sweet spot", or a range of volume settings, that allow reading the data without generating a "NO DATA FOUND" (volume too low) or "ERROR DETECTED IN DATA" (volume too high) message. Occasionally, you may encounter a tape that moves directly from one condition to the other, i.e. when a "NO DATA FOUND" error occurs, increasing the volume very slightly and replaying yields an "ERROR DETECTED IN DATA" and reducing the volume very slightly causes a return to the "NO DATA FOUND" error. This tape is probably defective; as a final check, it's not a bad idea to try a friend's recorder as your recorder may have a poor tone range or a playing speed slightly off.

CONNECTING DRIVES

So many people have asked how to connect up drives, what kind of drives to get etc... I thought it was time I wrote an article on it.

To begin with I should define some terms. The term "half height" drives refers to disk drives which are half the height of your TI SS/SD drive. The term "double sided" refers to drives which are capable of writing to both sides of the disk. Double sided drives have two heads one on each side of the disk unlike a single side drive (like the drive that came with the TI) which just has one head. You have probably heard of "flippies" where you can punch out the opposite side of the disk so that you can turn it over and write on the other side even though you do not have a double sided drive. With a double sided drive you do not have to punch out the disk or you do not have to turn it over to write to the other side. In fact, the only difference you will see is that instead of 360 sectors available like is it on a single sided disk you will have 720 sectors available with a double sided disk. The TI disk controler card will operate double sided drives but will not write in double density. Double density refers to writing more data in the same storage space. A new type of controler card (Myarc or Corcomp) is needed to write in double density which will also double your storage space. Of course you will still be able to read all your disks back when you just had single sided, single density... You will have to reformat your old disks if you wish to have the additional storage capabilities on it as when the directory is setup when a disk is initialized it tells the computer how to write to disk disk. So if you upgrade to double sided you may want to convert two of your single sided disks onto one double sided disk by using a disk manager to copy the programs over... By the way almost all drives will operate in double density but the TI controler card can not access double density capabilities. One more note, it is not necessary to purchase disks that say double sided. Disks that say single sided will work. The words on the jacket that say double sided just mean that the manufacturer certifies that the opposite side of the disk is good and in most cases it is. In other words double sided disks are just a little better quality.

Now that some terms are defined let's figure out what route you would like to go. One route is to add an external drive leaving your TI drive in the PEB. Any external drives requires a box and a power supply as the PEB can only supply power to one full height drive (like the TI drive). Texcomp (ad in Micropendium) sells a second drive with case and power supply for $129 but that is for a single sided drive. For $20 more they offer it as a double sided drive and I would suggest getting a double sided drive as many programs in our library are now double sided...

What I did was buy one full height double sided drive and replaced my TI drive with it inside the PEB. Then I purchased a power supply and put my single sided drive in it and used it as drive two. Then later I purchased another double sided drive and put it in the external power supply box and ran power from the power supply out to my TI single sided drive so I could still have it on line making a total of 3 drives. The TI disk controller card can only control 3 drives maximum but the Myarc and Corcomp can control more.

However, in my opinion the best setup is to buy two half height, low power, double sided drives and put them in the PEB. Two half height drives take up the space as one full high drive. If the drives are low power then you will not need an additional power supply. (Only one full height or full power drive can be ran off of the PEB power supply without overloading it!) If you want to stick you TI drive outside the box to have 3 drives then you will have to have an additional power supply.

The best place to purchase disk drives is the Computer Shopper. You will need low power half height drives. One such drive that I know of is the Teac FD-55B which requires .4 amps on the 5 volt line and .3 amps on the 12 volt line. According to the Chicago Times Newsletter the Teac FD-55BV and Shugart SA-455-21 are also low power and there are others. By the way the Teac drives is the best drive money can buy. Two of them have been running 24hrs a day on TIBBS now for more than 2 years with no trouble whatsoever. They are also very quiet. These drives will cost you about $100 a piece. However, check with Yvonne Morgan at the meeting as I think she has a bunch of extra drives on order which she will be selling.

STEP 1. Now that you have your drives you need the cables to connect them. First you will need a power splitter cable (Y cable) to split the power comming from your PEB. You can usually order one of these for about $5 from the place you purchase your drives which I highly recoamend going. It would cost you more to buy the parts and make it yourself than to get one already made. Besides if you make one and if it is not perfect you are going to blow something sky high! However, sometimes the Computer Center at Poplar and I-240 has these splitter cables in the back but you must ask for them as they are not on display. They cost about twice as much as they do out of the CS.

STEP 2. Now that you have a cable to connect the power to the 2 drives you need to connect the controller card to the 2 disk drives. Since you are putting both of them inside the PEB you just need to purchase a 34 pin card edge connector (CAT# 276-156A)

from Radio Shack for about $4.

STEP 3. Remove your original drive from the PEB. It is held in place by 4 screws. Two on top and two on bottom. You will have to remove the PEB cover to get to the two top screws.

STEP 4. You must now designate your drives as one and two. The way to do this depends on the drives you have. If you have Teac's you will move a jumper from two pins sticking up to th corresponding drive number marked on the circuit board. Pay particular attention to how the drive has the drive numbers marked on it's circuit board. It probably says DSK0, DSK1, DSK2, DSK3, DSK4... If it starts with 0 then 0 actually means drive 1, DSK1 actually means drive 2 and so on. Take the jumper and move one to the DSK0 position and the other one to the DSK1 positon for drive 1 and drive 2. This is how the computer knows which drive is one and two. The jumpers just make an electrical connection across the pins. If you do not have a Teac the drive settings method may be different. You may have a shunt pack that determines the drive number. It is similar in it's function to the jumpers. To find the shunt pack look on the circuit board of the drive and find where there are two IC's that are plugged into sockets so that they are removable. One of them is a resistor pack and has flat top like the rest of the IC's. The other one you can see metal on the top and you can see some markings on the circuit board that say something like HL, 0, 1, 2, 3. This is again the drive number settings. You must jump the contacts across HL and the drive number that you want. So for drive one you would have HL and 0 if it starts counting at 0 on the circuit board. Drive two would have HL and 1 if 0 is counted as the starting number. You can either jump a wire across the connections or purchase some minature dip switches (best choice) at Radio Shack to plug into the socket and use the switches to connect HL and the drive number you want. Note some drives already have dip switches instead of shunt packs. In which case just flip the appropriate ones. There should be markings to show the drive numbers. Also note there may not be an HL in which case don't worry about it. The Teac's do not have an HL connection in determining the drive number. More on the resistor pack later.

STEP 5. Remove the ribbon cable comming from your controller card to your original drive. Place the connector connected to your original cable onto one of the half height drives and measure where you will need to place the edge connector for the other drive with both drives setting beside each other tight. Leave a little slack between the drives for easy removal but not too much or you will have trouble with having a too of a short cable which is already short to begin with.

MAKE SURE YOU DO THIS NEXT STEP RIGHT!

STEP 6. Remove the cable and crimp the new connector to the cable using slip-joint pliers although I have been able to do it wit needle nose pliars. The edge connector has a top on it which will snap off by using your fingers to pry up the sides and under the top is where the ribbon cable connects to. Be extra sure to line the little 34 U shaped connectors up with the 34 wires in the ribbon cable and make sure the connector is facing the same way as

the other one already on there. Then place the top onto the connector and use the pliars to squeeze the top onto the top of the ribbon cable as the U shaped connectors will then penetrate the insulators surrounding the wires making contact. The top will snap into place when you have it on good. Check and make sure you have it pushed down good on all sides making contact with the insides of the wires. You might want to take a meter or a light bulb and battery and check to make sure all the connections were made by checking each contact by putting one wire of the meter or light bulb on the one connector and one on the other one on the other end of the cable to see if it makes contact...

STEP 7. Now that you have the connectors on reconnect one end to the disk controller card and the other two connections to your disk drives. The original connector may be keyed and may not fit the keyed portion of your new drive in which case take some needle nose pliars and remove the keyway but be careful! Then connect the power line to the drives. If you happen to mess up your connector taking out the keyway just buy another 34pin edge connector and remove the messed up one. Make sure your spacing is all still right...

STEP 8. Now place the drives into the PEB and try them out before putting the screws back in. However, note the screws may no longer fit the new drives or line up with the holes in which case just do not worry with it as the screws are not needed for proper operation of the drives. To tell which side of the drive is right side up the light on the drive should be on the top right or left portion of the drive like your TI drive and most other drives. However, I have seen on the Fujitsu 5002 (possibly others) where the write protect switch was on the opposite end from the light in which case you would mount the drive in the PEB with the light on the bottom portion instead of the top portion of the drive. The write protect switch on the drive should always be at the top of the drive when you place the drive into the PEB or other container and usually as I mentioned the write protect switch is on the same end as the light. The write protect switch is a little switch right in the crack of the door. It is what determines if you have a write protect tap on your disk.

STEP 9. Test out the drives using some disks you can afford to loose the data on. Try accessing drive one and drive two. If they do not work you may need to remove the resistor pack in drive one. With the Teac's you probably will not have to do this. With other brands you might. The resistor pack supposed to be in the highest numbered drive. The resistor pack is the only other IC besides the shunt pack (Teac's have jumpers instead of shunt packs) that can be removed as they are in removable sockets. Take care in removing them and store it in a safe place when you get it out as you may need it again sometime. An IC puller or a screw driver slowly prying up each end can remove the resistor pack from the socket. Be careful! (see also step 4 to identify resistor pack).

You should now have your drives working. Note only remove the resistor packs if you have to. It does not hurt anything to leave them in or take them out just which ever way works.

To connect up a third drive or an external drive you would buy a

disk drive power supply (see Computer Shopper) which cost between $30 and $60 depending on if you want a box or where you get them. Buy two 34 pin edge connectors like the one you bought before and buy a 2 or 3 feet of ribbon cable. Connect the connectors onto both ends and place one end on the back of the disk controler card and one onto the end of the disk drive keeping the bottom portion of the cable comming from the controller connected to the bottom portion of the disk drive with the drive standing in a upright position. An upright position is with the drive light up in the top left or right hand corner of the drive. In other words the connections should go straight over. Do not connect it backwards. If you had two external drives you would just put another connector onto the ribbon cable coming from the back of the disk controller card. Keep in mind though the TI controller will only recognize 3 drives total.

In summary, resember your drive numbers must be set on the drives. Resistor packs are only taken out if you have to and when you do take them out take them out of all drives but the highest number. The drives can be conrected to the internal cable in the PEB or through the external connection. It does not matter if they are all connected from the cable in the PEB or outside with the external connection. The computer just looks for a drive number whereever it may find it. Be sure when making the cables you line the pins up correctly and keep the bottom portion of the connection with the bottom of the drive when connecting it. In other words, keep the connections parallel, I guess would be a way to say it. When buying drives I would stick to well-known names like Teac, Shugart, Tandon, MPI etc... I have heard unconfirmed reports of problems with some off brand drives although there should be no problem if they are standard IBM compatible 5 1/4 inch single or double sided / single or double density disk drives. Do NOT get quad density as they will not work. If in doubt call me. Then lastly think about what you are doing as you do it and good luck... If you have problems just give me (Gary Cox) or Al Doss a call...

P.S. Keep in mind the above information is correct to the best of my knowledge and experience as I have not had any formal training on the above and I express no expertize thereof. Depending on the circumstances the prodecures may be different but are usually close to the above. The above is not intended to represent any person living or dead, any resemblance between them is purely coincidental. The names have been changed to protect the innocent... I think I have been watching too much TV!...Gary Cox

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Visitors and potential members may receive 3 free issues of TIDbits while they decide if they wish to join (no obligation). A Dollar sign ($) indicate that your dues are due. Please pay your dues to be able to continue to receive the newsletter and other benefits of the group. You will note a letter and date on the top of your address lable. The letter Y indicates if you are a member and the date indicates the last time you paid your dues. One year from the date your dues are due!

CALENDAR

MEETINGS: April 16th, May 21st, June 18th (3rd Thursday!)
WORKSHOPS: April 25th, May 23rd, June 27th (4th Saturday!)

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