-T.I.-Bings-

from New-JUG/North

MARCH 1988 **Volume 6 Number 3**

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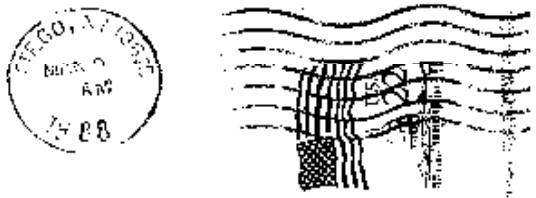
NEXT MEETING: MARCH 22d, Dumont H.S. Faculty Lounge, 7-9:30 P.M.

Motto: We are a family enjoying the unspeakable peace and freedom of being orphans. (Paraphrased from George Bernard Shaw)

TICOFF:MARCH 26:TICOFF:MARCH 26:TICOFF:MARCH 26:TICOFF:MARCH 26

Smile! Spring is just around the corner!
Happy St. Patrick's Day, St. Joseph's Day, & Spring.
Spring is spring, the grass is riz; I wonder where the birdies iz!



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User Groups: Please Reciprocate!

T.I.DIGS FROM NEWJUG/NORTH
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NEXT MEETING: MARCH 22, DUMONT HS FACULTY LOUNGE

M I N U T E S:
By Jim Ott

NOTE: Sorry about not getting the minutes out in time for publication the last two months. Will try to be more prompt!

Thirteen members attended the January meeting. It was very informal and various programs were discussed.

The January meeting lacked the coordination in getting equipment up to demonstrate programs.

February Meeting: Twelve members showed up and Bill Blundell reminded all of the upcoming TICOFF on March 26, and the Trenton Computer Festival on April 23 + 24. (Ed.Note: Tri-State Fairs will have a show on March 27 at the Sheraton Hotel, Rte. 17 in Mahwah near the NY State Thruway, $5 admission).

The meeting held an informal discussion on problems some members had with various programs. (Ed.Note: Why not ask me?) Also, Bill stated that Mike Munchul is selling a disk controller, RS232 and 32K cards all for $100. See Bill.

Our (very pleasant fellow) treasurer, Frank Fillice, reported a balance of $482.81.

The meeting included a demo of JOYPAINT by Jim Lambert. Frank Lees' had difficulty with his own JOYPAINT program and it was demonstrated that it didn't function properly. Ed.Note: send it back Frank for replacement, your request should be easily honored! This program, it was learned, can be backed up by the owner. The owners name is well hidden on the disk and illegal copies will have the original owner's name on it. Great idea! It is a great program, besides!

Respectfully submitted by Jim Ott.

R A M b l i n g s:
by Henry Hein

Sorry about that, Jim, I got your "MINUTES" too late for last month's ML. Maybe the US Mail used the pony express. Come to think of it, even that would have been faster!..and they want more postage next month!?

The grapevine is discouraging this month. The GENEVE isn't making that much of an impact on sustaining UG membership. Besides, there aren't enough being sold to sustain Lou Phillips' enterprising endeavors. Though those who have one rave about it unceasingly. Yep, there are a few clinkers in some but overall the critiques are favorable.

Heard from Aaron Traiger, our member Emeritus in Arizona. He has one and says it's great. The slow cribbage game I sent him a year ago works beautifully and GENEVE's memory size makes it run much faster. He certainly doesn't share my liveness for snow removal techniques in my part of world but enjoys moving the gravel on his lawn instead. Though it does get cold up here, I've got lots to snuggle up to here, namely, my wife, my satellite antenna's output, and this wee slimkit beastie! My little cat and old dog seem to provide much other entertainment. Besides, a little woodcutting warms me twice. I keep in trim, though my wife doesn't think so, with a little shoveling of snow, besides. I guess the best exercise, however, is pushing the table away from me. This cold weather has increased my appetite and I think the latter is the best formula of all.

An interesting UG in my area is called the Leatherstocking CUG. It has its own BBS but caters to IBM's, APPLEs (not MACs), COMMODORES (of all varieties), and ATARIs. No TI users here have joined. The nearest TI UG is too far to travel for a night meeting. Guess I'm in the cold for support up here. To continue using this machine I must ask my fellow members for their help in getting this ML published, but I'm not getting that either, that is NOT enough. I'm tempted to vacate this responsibility soon, without notice! Won't somebody send me what I asked for personally and assured I would get?

I still find this retirement business very busy. Lately I've done some consultation on someone's masters thesis, written a few articles or essays (non-computer stuff), and many letters. About eight months ago I bought Jack Hughrue's disk which name I don't recall (you can look it up) which helps me very well. It contains a lot of .DFFing files of Transliterating commands to do some remarkable things. They enhance writing output to include pseudo graphics in my writing. These files also do the usual thing found in the TIW manual plus.

His are arranged, in some cases, in mnemonic way to enable the user to use the special character commands. Just about all the control characters are used in these files to do some fancy tricks. Boxing in titles, letterheads, *using special control keys*, using superscript for footnoting sequences, and many more. Writing papers with the latter are essential ^{12} e.g. and very useful. Even in Chemistry you have easy access to subscript, "CO_2." Included was the FUNLWARE (TIW) of the time and he may have updated it by now. Go back and read the issue to get the address and send him the $8.

Terrie Masters called me last week to say hello and wish me well. In our conversation she mentioned that there is a new MULTIPRINT out there. The one I'm using now allows for use of special characters, including TLs. This present MP of Tom Freeman's, when it comes upon a special character, it ignores the command used, as does TIW, and gives a couple of blank spaces at the end of a formatted line. But that can be edited out on re-editing the text.

Terrie has been most gracious in the past in sharing some of her library and I'd like to reciprocate. She also mentioned that the PICASSO program is NOT shareware and payment should be made directly to the author, should anyone had gotten a copy someone put up on the wireservices, I think illegally and immorally. It's ONLY $15 written by an (US) Australian Dutchman, who distributed copies to a few trusted friends and betrayed by at least one of them. It's a damned shame! He spent many months making the program.

Doesn't anyone care?

This issue includes two parts of a marvelous essay on graphics for the TI. Written by Anne Dhein, they outline the history of the software producing graphics with this mighty mouse of a computer. Thanks to the LA Times for printing it in a way I can photo copy it for our consumption. Well worth reading!

Also, several other articles of interest from our NL exchange will cover topics of interest for our readers. They were too lengthy for me to type in but credits are included.

I want to thank Frank Filice for his contributions of *MICROPENDIUM GLEANINGS*. Forgot to mention it last month.

Sorry about not having a NEWSBYTES column this month. What you see in this edition may explain why.

Gleanings from Micropendium
by Frank Filice
Vol.4 No.12, January, 1988

Hey Frank, send me a copy of that page on multiple columns, Ed.

Part 2 of Anne Dhein's article will appear in the April issue. It was too long to include here. I will try to get the new issue out before postage rate goes up. Meanwhile, enjoy the TICOFF, the arrival of Spring, Easter, and, of course, our little beastie!

happy St. Patrick's Day.

Remember TICOFF: MARCH 26, 9 TO 5, at Roselle Park High School.

Above fonts and images thanks to MULTISCRIBE, celtic font MINE!, Henry

Hoping to see y'all on the 26th!

THE TIGERCUB GROWLS

by Jim Peterson

GROWL #1. Arto Heino in Australia, being unemployed and in need of income, wrote a great program called Picasso Publisher. He is selling it in Australia through the Sydney User Group, and was hoping to find a U.S. software publisher to handle it in this country.

A user in Australia sent a copy to a user in California, and erroneously stated that it was fairware, although the program bears a copyright notice and no mention of fairware. The California user uploaded it to GENIE, the SYSOP of GENIE accepted it, and it has by now been downloaded and uploaded back to every BBS in the country!

So, another good programmer's livelihood has been ruined, and we will all suffer as a result. I am sure that Arto Heino will not be writing any updates to his program and will not be writing anything more for us.

Now, if you have Picasso Publisher in your files, and if you are one of the honest users among us, you have two choices. Delete it or pay for it. And don't just pay what you want to, because it is not fairware. The price is $29 Australian, which is $14.90 American if our dollar does not become even more worthless by the time this is printed. If you think that is too much, take a look in a computer magazine and see what such a program for any other computer would cost you. I hope that every user group will take up a collection and send it on to Mr. Heino.

GROWL #2. I recently found time to download a diskfull of programs from a BBS, and found that three of them had a Texas Instruments copyright notice staring at me from the screen. Two of them were old TI cassette programs which are still listed in the catalog of a major mail order house, the third was a dumped arcade game module.

Now, passing this stuff around is not hurting Texas Instruments, because they have unloaded all their stocks to retailers. It is hurting those retailers, who are still supporting us - and if they quit, we are really in deep do-do! Texas Instruments has stated that they are definitely defending their copyrights on that material, because they have an obligation to those retailers.

If the person who uploaded those programs obtained them legally - which I greatly doubt - he had a legal right to make one archive copy for his personal use. He did not have a legal right to make a copy to the program disk of a BBS, and he exposed himself to prosecution by doing so, because his user number was recorded as the uploader.

He also exposed the SYSOP of the BBS to possible prosecution. The BBS SYSOPs are giving a great deal of their time and equipment to providing us with a free service for our messages, and a source of free programs, and they should not be endangered by irresponsible individuals. There have have been repeated attempts to to restrict BBS operations by Federal legislation, to to curb the illegal activities of some individuals, so let's not add fuel to that fire! In my opinion, anyone who uploads copyrighted material should be permanently barred from the BBS.

GROWL #3. Programmers, please don't put a copyright notice on a program unless you really want to restrict its distribution! There are folks out there who are trying to avoid being involved in piracy, but you are making it difficult. If you're going to give the program to everyone, and you don't care who they give it to, don't label it as a copyrighted production of Super Fantastic Software Inc. If it is fairware/shareware, say so right on the title screen. If you want to give it away but you don't want somebody else selling it, or taking credit for it, or modifying it, say so on the title screen. After a certain Florida outfit started selling some of my public domain for more than I was charging for copyrighted programs, I started titling my more worthwhile efforts as "copyright Tigercub Software, for free distribution but no price or copying fee may be charged."

GROWL #4. Folks, when you upload something to a BBS, and you are prompted for a file description - won't you please give the complete program name, the author's name if possible, and the hardware required to run it? I'm getting awfully tired of spending an hour or so downloading and unpacking files, and finding nothing that I want because it is something I already have (sometimes something I wrote myself!), or requiring equipment I don't have - or copyrighted. Is "FILSCRL, a great utility" worth downloading? Is "OTHELLO" one of the four versions I already have, or has someone perhaps written a better one? Is "the very latest version of Funlwriter" a later version than the one I have? (Please, at least mention version numbers, that's why the authors use them!) Are you one of the many who spent money downloading 298 sectors of TEXSINGS from GENIE, when you already had Bart Berg's TI-SINGS?

With the proliferation of programs being written for the Tool Shed, the Gram Kracker, the various new versions of Extended Basic, the Super Cart, etc., it is becoming very frustrating to even determine why a downloaded program won't run for you!

HIGH RES GRAPHICS AND THE 99/4A, PART I

by Ann Dhein

Introduction

There was a time when TI-99/4A owners felt abandoned. In place of the praising machine that had been purchased with such high hopes they had been left with an orphan. These users lived with the knowledge that they had a superb graphics system at their finger-tips, but unless they were good programmers, no way to conveniently access the graphics. Commercial graphics software was just not available. Now, a few short years later things have changed drastically. We are left on the other side of the fence wondering in amazement how we are ever going to figure out which of all that great-sounding graphics software is really worth investing in. What, actually, can be expected of a drawing program? Is there one perfect program out there, waiting for us to discover it? Or will I need several programs to meet all my needs? These are the topics that will be explored in this series. Part one takes a look at what graphics programs do, and what's on the market. Then a definition of a good, basic drawing program can be given.

Part two will compare the main programs. Parts three and beyond will examine support and companion packages, including the newer programs which allow text and graphics to be intermingled. Finally, the various drawing packages and companions will be analyzed to see how they can be used together. With this knowledge you should be able to select the packages that best suit your needs, whether you have a particular application in mind or are just looking for a good general drawing program for the personal enrichment of yourself and your family.

Your Own Electronic Billboard

For graphics purposes, the 99/4A screen is simply a grid of blocks. Imagine a piece of graph paper and mentally mark off 32 little squares across the top .... Right underneath mark a second row of 32 blocks; then a third, and a fourth, until you have 24 rows, each with 32 squares marked off. Now you have a nice facimile of your TV or monitor screen as it is partitioned off in the standard graphics mode that we are most used to seeing. If you were to count all those marked-off squares, you would find you had 768 individual blocks (32X24=768). Each block is just the right size to hold one character that can be typed in from the keyboard. These are the normal, everyday letters, numbers and punctuation that you use all the time, but in computer terminology they are given a special name: "ASCII" characters. A programmer can effectively "erase" these ASCII characters and define a new pattern of his own choosing. This is done in Basic and Extended Basic with the Call Character subroutines. The programmer assigns each character block two colors (a foreground and a background) from the 16 colors that the TI computer has available.

In Extended Basic built-in sprites may be used as well. Sprites are character-sized graphics that have the capability of moving around the screen independently of the background. They can be defined to any shape, then colored and magnified. Such things as location, speed and distance can be easily manipulated. (They can also be present in high resolution graphics, but in this case can no longer move.)

An assembly language programmer also has access to the multicolor mode. Here, the display is divided into 48 rows, each containing 64 "boxes", or blocks. The blocks are not able to be defined in the manner of the larger, pattern mode blocks, but each of the 3072 blocks can be a separate color, chosen from any of the 16 colors available. Sprites can also be used in multicolor mode, but not text. The multicolor mode cannot be used in Basic except with assembly language software that uses a special module such as the Editor/Assembler, Mini Memory or Extended Basic.

Text mode is familiar to us through the use of such cartridges as TI Writer and Multiplan. Each of these programs employs a display that is 24 lines long, but the character blocks have been increased to 40 across which gives us 960 screen positions instead of 768. Although sprites cannot be used and only two colors (foreground and background) are allowed at one time, the text mode can be used for graphics. Still, text mode is most suited for just that - text.

In all three of these modes - pattern, text and multicolor - each block is composed of a number of dots. In the multicolor mode each block is 16 dots; 4 dots high and 4 dots wide. In text mode the character blocks are 8 dots high by 6 dots wide - 48 dots in each character. Pattern mode, with only 32 blocks across the screen, consists of 64 dots for each block - 8 across and 8 high. This means that there can be 64 times 768 dots on the screen at one time in pattern mode - 49,152 in all. Text mode has 46,080 of these dots (48 X 960=46,080), and either way you look at it, that's a lot of dots! In computer jargon these dots are called "pixels" (for PICture Element) and are the smallest individual units on the screen. It is the 49,152 pixels from pattern mode that we are going to focus on, because in the high resolution (or "bit map") mode, each of these 49,152 pixels is able to be turned on and off individually. The whole idea of a drawing program is to let you do this quickly and easily.

With the high resolution in the bit map mode, the screen is considered to be a grid 192 pixels high and 256 pixels wide. That's still only 32 character blocks across and 24 blocks high, but now each pixel can be turned on or off (that is, drawn or erased) independently of any other pixel. For color the computer divides each pixel-row into 32 groups of 8 pixels. The computer can assign a background color and a foreground color to each 8-pixel group. This is what our electronic drawing board consists of in all the popular art packages we have today, and it is on these drawing programs that our interest will now focus.

In the Beginning...

When Texas Instruments first unveiled the TI-99/4 computer in June, 1979, there were only a handful of applications of any kind available - and all were in module format. One of these was Video Graphs which was billed as "an easy-to-use Graphics System which lets you draw in 14 colors on the screen with a whole new electronic paintbrush concept". This drawing can be done

in high resolution with a single pixel line width; or in the multicolor mode by placing 16-pixel dots anywhere on the screen. The user could also command the computer to create graphic images by using the Building Blocks section. Here, many graphic characters of various geometric shapes are located along the bottom of the screen. Select one, pick all or part of it up with the keyboard or joystick and place it where you want it in your picture.

Video Graph's demonstrations were impressive when the module was new, and although the bright, mosaic-like patterns may seem archaic by today's standards, the module actually contains the rudiments of the more sophisticated graphics systems we now have. High resolution drawing was there, as was the computer's less familiar multicolor mode. Even the concept of icons which is so popular in today's graphics software made its appearance here, in the Building Block section. This module was intended purely for personal enrichment, not as a tool. There is no way to use the graphics you create in your own programs, and no way to print them out. In fact, the only way drawings can be saved at all is on tape.

If you have Video Graphs you have probably seen for yourself the fascination it holds for children, even small ones. Children love to draw and this module provides a medium for creative expression unhampered by long lists of functions that must be remembered. Indeed, anyone with an unexpanded system will find that it can still provide hours of enjoyment and satisfaction.

No other drawing programs were ever released by Texas Instruments, but users themselves soon began circulating a number of very good programs made available through local user's groups and through the International Users' Group in Bethany, Oklahoma; or Fanfon Helpline in Bakersfield, California. These first user-written programs were in Basic; mainly graphics screens but also a couple of entertaining drawing programs such as Color Crayon which let you draw with colorful character-size blocks using the keyboard or a joystick. There were also utilities for designing graphics characters to be used in Basic (and later Extended Basic) programs. There was even a program or two for printing out banners if you were lucky enough to have a printer. When the Editor/Assembler package was finally released, program quality rose. Like 3rd party software, these user written programs have tended to become more and more sophisticated with time, and today some very good graphics programs are available for only a fraction of their worth.

The first high resolution graphics program to be put out by a 3rd party that I know of was introduced by Norton Software of Ontario, Canada. It was called, appropriately enough, Graphics Package. It was originally written in Basic, but that was soon dropped in favor of the faster, more easily used new Extended Basic version. With it, anything could be drawn anywhere on the screen in 3 levels of resolution, corresponding to the standard (or pattern) mode of 768 character blocks, multicolor mode, and high resolution, which has 49,152 accessible pixels. Circles, parabolas, boxes and lines could be drawn automatically. All the information making up the graphics could be saved on tape or disk to be incorporated into you own program. However, it wasn't easy. This program was not intended as entertainment but as a serious tool for Extended Basic programmers. For a long time, the Graphics Package was about the only way for the average programmer to access high resolution graphics. The package was disappointing to some, who would have liked to use it for drawing pleasure. The program was also excruciatingly slow, even in Extended Basic. But, it did everything it promised and is still the best graphics tool available for anyone with an unexpanded system.

In 1982, with the advent of the Editor/Assembler package, a new kind of program hit the market. Draw-A-Bit by Data Force of Illinois was an assembly language program which booted through Extended Basic. It allowed the user 100% keyboard access to the bit-map graphics mode. Using either the keyboard arrow keys or a joystick the user could draw on the screen in any of the colors with a line that was only one pixel wide. Colorful circles, lines and rays could be drawn automatically. Shapes could be filled with color with the press of a function key. Pictures could be added to by users of "palettes" created by the user and stored on disk. Using the Draw-A-Bit environment, advanced users could create and display complex plots in Extended Basic. Drawings too tedious to be drawn by hand could be coded in Draw-A-Bit format and displayed on the screen. Pictures could be saved on disk and reentered into the program, and they could also be transfered to Extended Basic programs. It is not only an extremely powerful tool for the more advanced programmer, but can provide hours and hours of entertainment to anyone who likes to draw and is willing to learn how to use the program's more than 80 functions. One entertaining and unique characteristic of this program is the ability to redraw a picture right before your eyes. The demo on the disk is positively addictive, as you watch each picture being rapidly built, line by line, color by color. I know of no other program that does this.

The original Draw-A-Bit was strictly for screen graphics but a companion disk, Print-A-Bit, was introduced to provide printer support. Data Force also released a Draw-A-Bit II but I never saw the second version. Print-A-Bit works with both versions.

Draw-A-Bit filled a real need for a graphics application which users could enjoy and yet get some use out of too. It is now recognized as the grandaddy of a new generation of graphics programs. Unfortunately, this excellent program never got the popularity it deserved. Perhaps it was ahead of its time - when it came out the vast majority of users still didn't have disk systems. At first glance the manual looks technical and hard to read; actually, the program is easy enough to begin using for pleasure almost immediately. Just don't try to learn all 80 functions at once!

One of the first commercial screen dump programs was introduced in 1983 by Extended Software. It was available on either tape or disk. The screen dump routine could be added to your Extended Basic program at the point where you wanted the screen to be saved. You would get a modest-sized 4 1/4 inches wide X 2 5/8 inches high duplicate of the screen, except that it wouldn't print sprites. This is still an excellent choice of software for those with unexpanded systems.

Late in 1983 TI made their now-famous announcement that the 99/4A was being discontinued. Nevertheless, 1984 was a good year for 3rd party suppliers, and the graphics void began to fill. Some good, and some not-so-good programs were introduced that year; many of them improvements of older programs like Video Graphs, Draw-A-Bit and Screen Dump. Some were unique. Personal Peripherals came out with Super Sketch which can be likened to a vastly improved Video Graphs. Along with the cartridge came a tablet-like controller pad, complete with stylus. As the stylus is moved across the pad, an image is created on your computer video screen. Four push buttons at the top of the controller pad control the color selection and graphic functions of the stylus. Graphics may be drawn free-hand or traced from drawings clipped to the pad. Drawing with Super Sketch can be so simple that with a little instruction a six year old can use it. On the other hand, using the advanced features provided, an adult can also have hours of creative fun. Graphics are saved on tape, as Super Sketch is made to be used on an unexpanded system.

A companion disk, called Sketchmate, was introduced by Asgrisoft International soon after Super Sketch came out. This software allowed the user to save Graphics to disk as well as tape, and to print them out on an Epson or compatible printer. A unique feature of the printout is that each color is represented by a different shading, which gives the printout a very nice look. Navarone's Cartridge Expander (better known as the Widget) is a requirement of this program. The Super Sketch Cartridge is put into the cartridge expander with Extended Basic right beside it. When Sketchmate is loaded (via Extended Basic or Editor Assembler) you are then asked to switch to the Super Sketch cartridge. When you do, you are instantly ready to go, with never a sign of Sketchmate until you want to save or print a picture! Unfortunately, if you don't already have this fine software your chances of getting it are slim. Neither it nor Super Sketch are readily available any more.

Besides Sketchmate, Asgrisoft International introduced several other graphics packages during 1984, most of which are now hard to find. Graphics Grabber is much like the earlier Screen Dump Utility from Extended Software except that this newer program is in assembly language and much faster. It can dump a screen either horizontally or vertically onto the paper, and the printout is larger. Master Painter 99 is a very useable drawing and painting program, but like Draw A Bit requires the remembering of quite a number of function key strokes in order to use. Like Draw A Bit, it also has a hard-to-read manual. A screen dump is on the disk.

3D World had a new twist. It allowed one to make complex, color-ful, 3 dimensional designs that could be rotated, inverted or made partially invisible. Designs could be saved to disk or printed out. Programming experience is not necessary in order to use the program. Access to the image file for use in a Basic program is explained in the manual. Be prepared for a learning experience when you use this program. It's complicated, but very interesting if you have the time to spend.

Expanded Graphics Basic lets you add 38 new commands to either Basic or Extended Basic. After XGB is loaded into the computer the new commands can be accessed by a series of CALL LINKS right along with the regular programming language. Although not a drawing program per say, it does allow the programmer fairly easy access to the bit map mode and to screen drawing. The commands include graphing and plotting routines, and a screen dump. Like 3D World it is a fascinating educational experience to use this program if you have time to spend. It is an ambitious program, with nearly all available memory used up. If you aren't careful you may run into errors due to memory full, and lose your data.

Quality Software's Draw 'N Plot also lets you add a number of new graphics commands to your Extended Basic programs by means of CALL LINKS. But besides the eleven callable subroutines, Draw 'N Plot includes a drawing editor which allows drawing and erasing a pixel width line. Circles, squares, and lines between two points may be drawn automatically. Shapes may be filled in solid on command. Use of color is limited to two at a time - foreground and background. Pictures may be saved to disk or printed. Although this package does not support some of the nicer frills such as magnification, rotation, etc., it is the best program yet for adding graphics to XB programs. However, like Expanded Basic Graphics, be warned that memory is a problem. You can crash the system if your program is too large!

A companion disk, Chart Maker, originally worked with Draw 'N Plot to create all kinds of charts and graphs. The newer version of Chart Maker only requires Extended Basic. Quality 99 Software has done an excellent job of keeping their programs revised and updated since they began putting them out in 1983. Their graphics programs also include a Banner Maker and a very fast Screen Dump which will even print module screens if an interrupt switch is installed on the computer.

With so much graphics software coming out so fast for awhile, it was hardly suprising that some of it would be obsolete almost before it hit the market. Navarone's Paint 'N Print cartridge was originally meant for the unexpanded system. Apparently not enough users were interested in a software package which only did about half of what competing programs could do. In an effort to save Paint 'N Print from complete obscurity, Navarone released a companion disk which greatly expanded Paint 'N Print's capabilities. But by that time there were many graphics packages on the market competing for the customer dollar. One of them was Graphx. Another was TI Artist, which, along with Graphx, would radically affect the 994/A graphics software market.

Graphx - The Giant of the Industry

Graphx got its start in Australia, and was much a good paint program that before anybody realized what was happening, the era of the TI 99/4A Paint Program was in full swing. With Graphx, freehand drawing and erasing in the bitmap mode are controlled by the joystick. It offers speed control and full color capability. Circles, boxes and lines can be drawn autocatically. Shapes can be filled with built-in patterns as well as color. Portions of the picture can be copied and/or moved to another location in the picture, or even to an entirely different picture by means of the "clipboard" feature. Text may be incorporated into the drawing. A "zoom" mode lets the user view and edit a small portion of the picture that has been magnified to four times its original size. The resident screen dump prints to an Epson or compatible printer in four different formats. A

unique feature of Graphx is the aforementioned clipboard which lets you store and retrieve parts of pictures while you are working on them. Picture parts or special alphabets (fonts) can also be saved to disk to be incorporated into drawings whenever you want them. With the clipboard, you can also try your hand at computer animation. This program's not only easy to use but has an excellent tutorial/reference manual that comes with it. The manual even explains how to display a Graphx picture file in an assembly language program.

TI Artist, like Graphx, was a sleeper at first. But it quietly ran down competition until, today, it is the frontrunner of all graphics programs. Like Graphx, TI Artist can be used almost without ever referring to the manual. Drawing and erasing are done freehand in full color with various brush widths and with most of the frills that Graphx supplies plus some of its own. The screen dump is the best of any program around, and will work with practically any printer. Another thing that makes this program a winner is the ability to take files from other popular paint programs and convert them to be used with TI Artist. But the one feature that makes this program really outstanding is the ability to save any part of a screen as an "instance". This instance is saved in a display/variable 80 file format that can be looked at by TI Writer. When converted, the numbers in this file can be used for Call Character routines in Basic, or even for translitorate codes that will dump graphics into TI Writer files! These features make TI Artist the most versatile program on the graphics market, and have spawned a new type of software: Artist support packages.

As support packages pour out for Graphx and TI Artist, these two have become more and more established as the best paint programs for the 99/4A, and fewer paint programs are being introduced. Bitmac, which made its appearance in 1985 was another good program doomed to obscurity. Authored by David Vaughan, Bitmac was simultaneously introduced by Data Biotics and Vaughan Software, both of which claimed copyrights. Despite its cloudy beginnings it is a nice program with many of the features of Graphx and TI Artist as well as a couple new ones. This program is operated by icons which are pointed at with the joystick. To select, the fire button is pressed. Besides the standard features you would expect a good drawing program to have, this one can reduce or enlarge your drawing for you - something neither Graphx or TI Artist can do at this point. A screen dump to Epson compatible printers and a Slide Show feature are also contained right within the program. Where Graphx has its Clipboard feature and TI Artist has its Instance file, Bitmac has its Boolean input. This option allows the user to overlay current screen graphics with graphics that are stored on a disk. For an advanced or specialized user the program also has an interesting coprocess feature which allows the use of a second computer, not necessarily a TI, to calculate plots for Bitmac. All you need for the second computer is an RS232 and the proper cable to interface it to the 99/4A's RS232/2 port. With this setup, very elaborate and beautiful graphics can be created on the 99/4A while the second computer manipulates data for business graphs, maps, satellites or a host of other things.

Because of their unique differences, Graphx and TI Artist have been able to flourish side by side, complimenting rather than competing with each other. As yet no other program has come close to replacing either of them, but there may be a contender in the newest paint program. Joy Paint, from Great Lakes Software has some impressive new features of its own. Like TI Artist and Graphx, it is a full-fledged paint program, with one exception: it has no color capability other than a choice of screen background color and black or white for the pencil. The lack of color is not necessarily a disadvantage - you may never use color anyway if your main objective is to dump the graphics to a printer. Painting here refers to filling in with patterns, and Joypaint has a large selection of patterns with which to paint. With the companion disk, Joypaint's Pal, you can even create and save you own patterns.

Joypaint is fully Joystick controlled. The drawing board features are accessed by pointing your drawing tool at the function you wish to use and pressing the fire button. Parts of drawings can be moved, copied and even enlarged, but only with 16,833 pixels at a time. Since there are somewhat under 50,000 pixels, that's just over 1/3 of the screen area. Joypaint employs a windowing technique that allows 9X more drawing space than just the normal screen. Joypaint's Pal allows files from other programs such as Graphx and TI Artist to be converted to the Joypaint format, and back again, so compatibility is carried on. This easy-to-use program is truly impressive! Whether or not it will catch up to Graphx and TI Artist in popularity may depend more on what kinds of companion disks become available for it than anything else.

Now a better definition of a drawing package can be given. As seen here, it is a program, or group of programs, that will allow users of the 99/4A to create high resolution graphics on the monitor or TV screen. The graphics should be able to be saved and later reloaded, edited, and, in most cases, printed to a dot-matrix printer. High resolution means that each pixel can be placed anywhere on the screen individually and removed (erased) as desired. We have seen that the programs discussed here can do this and much more besides.

The next thing to consider is, how the program is to be used. The program you buy for your own use should be a program which will best do the things you want and need a paint program to do. There are three distinct ways in which a drawing package can be of value: as a utility for adding graphics to your own programs, as a tool for designing slide presentations and printed material for business and home purposes, and last but not least, as personal enrichment. Using a drawing program in this manner can be rewarding and satisfying as well as simply entertaining. Each of the packages focuses just a little differently on these three aspects, and this is something that will be explored further in the next issue. Part 2 will set up a comparison chart that will let you see at a glance just what each of the 15 main drawing packages for the 99/4A can or cannot do, and how each can best be used. Following the chart, each function will be described in detail. As you go down the list you will see that each program has some features that no other program has, and which may make it the most important program for YOU.

[Part II will be in next month's Topics]

SHAZAM

..IMPACT-99..
T.I. Happenings

by Jack Sughrue
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IFFING TIW

To what state have we arrived, jargonwise, when such a title as IFFING TIW has some meaning?

If you use T.I. WRITER or any of its improved versions (T.K. WRITER, B.A. WRITER, or - by far the most superior - FUNNELWEB), you may have become familiar with the Include File structure. This Include-Filing process (known as IFfing) allows some extraordinary things to happen to your word processor. It automatically brings up a file into your text that will let you access, simply, some very complex things.

Like what?

Well, say you'd like to have a term-paper style format (centered heading, right justification, wide margins, double spacing, along with an active translitération key to underline, double strike, super/sub script and so on at will WITHIN YOUR DOCUMENT AND OPERATED FROM KEY PRESSES!), then IFfing will give it to you. Then lets say that part way through this term paper you need a large indentation and condensed type to offset that piece from the rest of the paper. And then go back to the original structure. IFfing does that by just adding a few characters before the offset piece and a few characters to return it, right in the text as you are typing.

Or say you have a series of sections to a long piece of writing: a novel perhaps. You have six chapter written, you want to load up the disk and print all six chapters saved under different filenames. With the flick of an IFfing switch you can print them ALL while you're off having dinner or taking your dog to the cheese factory. When you return your novel (to this stage) is printed out. That's IFfing.

First, you must build a file to be IFfed. Width easiest thing in the world. We'll discuss the other eight in another column some time, but I will mention that breathing is Number One. So you can see the competition.!

```
> .FI;AD;LM 4;RM 75;IN +3
> .TL 1:27,52
> .TL 2:27,53
> .TL 3:27,83,0
> .TL 4:27,83,1
> .TL 5:27,84
> .TL 6:27.66.3
> .TL 7:18
> .TL 8:27,87,1
> .TL 9:27,87,0
> .TL 19:27,66,2
> .TL 20:18
> .CO 0:27,64
> .TL 12:7
> .TL 21:27,45,1
> .TL 22:27,45,0
> .TL 15:27,71
> .TL 16:27,72
> .TL 17:27,69
> .TL 18:27,70
```

Above, for example, is a code template I use in the FUNLPLUS! companion disk I wrote and edited for the Fairware market. As template codes go it is fairly simple. The first line FILls, ADjusts (for right justification), Left Margins (in 4), Right Margins (in 75), and INdents (3 in from ANY Left Margin I establish during my document). This, I would assume, would be a reasonable standard for most text. I could have added (and DID on other templates) double spacing, automatic page numbering, a pre-designed HEader, or many other things. The template above is primarily to activate the TL key. After this template is SAVEd as a file (Do not type in the > sign. Begin each line with the period.), it is best to keep that tiny file on your main FUNNELWEB (or whatever) disk under a quick title. I refer to it as C3 because it is the third template I created. C2, for example, will automatically let me type out in condensed at 132 columns wide with all the TL keys intact. C4 will give me the term-paper structure I mentioned above. C1 is strict TL. My margins and indents will be my own problem. And so on.

Okay. Let's say you've typed in and SAVEd that exact file under the filename C3 on your FUNNELWEB on DSK1.

Now, whenever you load your wordprocessor and the cursor awaits your initial command, type Y (ENTER). Then put an L on 1, and 1 on 3, and an R on 38. This will set your screen margins within the width of the screen and will automatically create an indentation at the start of each paragraph. You'll be able to read everything ON your screen - no more windowing.

Next, press FCTN/O. This will rid the screen of line numbers and let you view your literary masterpiece unfettered.

Now your cursor is sitting in the upper left corner of your screen rarin' to go. Type the following without the parentheses: (.IF DSK1.C3) and press ENTER.

Type whatever text you want, viewing it perfectly on your screen. Feel free to use the TL keys to underline, enlarge, condense, doublestrike, superscript, italicize, letter quality, elite, whatever, whenever you wish.

The code is sitting there to automatically FORMAT this text into the original FILl/ADjust etc. you wanted. And, even though the template is tiny, you have the most extraordinary other things built in.

The TL chart is mnemonic. I built it that way when I first began to us the TL key in 1981 to help myself

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remember. It has been very easy, very faithful.

With that C3 sitting in DSK1., all you do to automatically call up any of this stuff is type the following: CTRL/U, SHIFT/n, CTRL/U. n is the letter that turns ON the desired printer code. The following ALPHABETICAL letter, using the same CTRL/U, SHIFT/n, CTRL/U will turn off the code.

An example would be if you wanted some words doublestruck for emphasis. You would type along regularly. Then when you came to the word or words you wanted doublestruck you would type CTRL/U, SHIFT/O, CTRL/U. Then type all the things you want in dark type. Then type CTRL/U, SHIFT/P, CTRL/U. That will shut it off, and you can go on typing to your heart's content. If O turns it on, P turns it off. Italics is turned ON by A, so B turns it off. Underlined is turned on by U, so V turns it off. If you wanted some words underlined and doublestuck and in italics with the above template, you would type CTRL/U, SHIFT/UOA, CTRL/U. To turn this batch off type CTRL/U, SHIFT/VPB, CTRL/U.

Neat, eh?

(At the end of this article is the complete mnemonic code Quick Reference Chart for the FUNLPLUS! Template C3 shown above.)

(The T1 key, by the way, can do MUCH, MUCH more than just activate printer codes in this way. But that will have to be another column.)

Now back to our test. You've type all you wanted (let's say a two-page letter) and you're ready to print. Type SF. Type DSK2.WHATEVER. After the file is SAVEd to another disk, go back to the Command line (FCTN/9) and type Q (ENTER) and E (ENTER). If you are using FUNNELWEB you are back to the menu. Type 2 (FORMATTER). When the file comes up it'll say DSK2.WHATEVER. Turn on your printer. Press the keys all the way down and watch your printer PRINT out full-width, right-justified, fully-coded text!

But what if you wanted to print lots of files? There are lots of ways of doing this. Whatever is convenient for you.

I took the C3 template above and added the following for a special project:

```
).HE Poetry Book:THE LINK by Jack Sughrue
).FO Page %
).IF DSK2.THE/LINK1
).IF DSK2.THE/LINK2
).IF DSK2.THE/LINK3
).IF DSK2.THE/LINK4,
```

This printed out each file of my book after first going back to DSK1.C3 to see what was expected of the FORMATTER. But it would go to DSK2 to get each file itself.

I could even add

```
).IF DSK3.THE/LINK5
).IF DSK1.LAST/POEM
).IF DSK.BOOK.CREDITS
```

if I wanted to, because the original IFfer will sort it all out for me. If one file is on DSK3 and another on DSK1 and another in ANY drive as long as the disk name is BOOK, it will find the file and PRINT it out.

Isn't that extraordinary?

With IFfing you can expand the horizons of your FUNNELWEB (or whatever TIW processor you're using) to exciting new dimensions. I have used the IFfing so much over the years, I have even created LF templates that make the LOADing even faster. I have a file called 2, for example, that automatically loads up the C2 code and the first few lines including condensed FORMAT codes which can't be replicated in this article. But you could actually create the following file and call it 3 (because it will draw up C3) is the automatic process:

```
).IF DSK1.C3
).EE 4
FUNLPLUS: v. 4.4
~~~~~~~~~~~~~~~~
```

by Jack Sughrue
~~~~~~~~~~~~~~~

This automatically loads the IF and CEnters the next four lines which act as a quick reading for letters about Version 4.4. From there I can type the notes or comments or letters or article and SAVE it by its new name. When I print it out, it will call up C3 and PRINT out all my text within the C3 structure. This is great because you are automatically at the Command Mode when you enter FUNNELWEB. Just typing DSK1.3 loads up everything shown above AND the Tabs I had previously set. Thus, no more TABbing; no more typing the IF info, no more setting up the text structure. It's all in one number - 3. And all the FORMATting code is in C3. Beautiful.

I don't know of another wordprocessor that allows such wonderful flexibility and speed.

Though this would be even greater with a Horizon RAMdisk or with DSDD drives, all my system has is two SSSD drives, and it sure is easy and fun.

(One final note: Remember that on all the coding above you remove the) marks when you type in the FORMATting files.)

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THE POWER OF RELATIONAL EXPRESSIONS

by Jim Peterson

What the h... are those? You may well ask. The "blue book" that came with your computer says nothing about them, and most of the tutorial programming books on the subject are equally silent. If you waded through the computerese and mathematese text of the User's Reference Guide, you found them discussed on page II-14 under Relational Expressions and on page II-51 under IF-THEN-ELSE, but you probably didn't realize their potential. Then, you graduated to Ext. Basic and found those easy-to-use, in-the-clear logical expressions AND, OR, NOT and XOR, and you looked no further.

So, what can a relational expression do? Nothing that can't be done without. But it can often do the job so much more compactly, so much more efficiently, and therefore so much faster! So, let's learn to use them. And let's learn in plain English, not computerese. The following may not be technically correct, but it is the way it all works out.

First, every expression has a true/false value, which is entirely different and separate from the value of the variables or numbers or strings it contains. On the TI99/4a, a false statement has a value of 0, which is easy to remember - A FALSEHOOD IS WORTH NOTHING. Unfortunately, a true statement has a value of -1, which doesn't fit in too well! On some other computer you may have learned that a true expression has a value of +1, but on the TI it is -1.

So in ...F=7 :: IF F=8 THEN..., F=7 has a value of -1 because obviously F does equal 7 and F=8 has a value of 0 because it is not true.

Second, when an IF refers to a variable without an "=" sign, it means "<>0". For instance, IF X THEN 1000 means "if X is more or less than 0, if it is not 0, if it is anything other than 0, then goto 1000".

Third, the computer will try to use the expression mathematically before it tries to interpret its true/false value. Remember that everything in parenthesis is worked first. For instance...X=1 :: Y=2 :: IF (X=1)+(Y=2) THEN 1000...Since both are true, this works out to IF (-1)+(-1)<>0 THEN 1000, and since -1 plus -1 is not 0, we goto 1000. On the other hand, X=1 :: Y=2 :: IF X=1+Y=2 THEN 1000 will first be calculated as X=1+Y, which comes out as X=3, and then as X=3=2, which has a true/false value of 0 (false), not 1!

Finally, always remember that a variable keeps its previous value until the claculation of an entire equation is completed. X=3 :: X=X+(X+3)*X-X/X X+(X=0) is worked out as X=3+(3+3)*3-3/3 3+(3=0).

Now that you have assimilated this vast knowledge, how can it be used? The most common way is in the expression IF (X=1)+(Y=2) THEN 200. In this case, if it is true that X=1 but Y does not = 2, then 0 + -1 is still <>0, and if X=1 and Y=2 then -1 plus -1 is still <>0, so you still go to 200, but if X is not 1 and Y is not 2 then 0+0 is not <>0 so you do not. Of course, in Extended Basic, you could simply write IF X=1 OR Y=2 THEN 200.

If you want to go to 200 only if X=1 or if Y=2 but not if both are true, then you can write IF (X=1)+(Y=2)=-1 because either -1 plus 0 or 0 plus -1 will equal -1. In Extended Basic, this is the "Exclusive OR", IF X=1 XOR Y=2.

And if you want to go to 200 only if both are true, you can write IF (X=1)+(Y=2)=-2, or more commonly IF (X=1)*(Y=2) because if either or both are not true the multiplication by 0 will give 0. In Extended Basic, this is IF X=1 AND Y=2.

Thanks FRONT RANGER -

And you can write more complicated versions, carefully watching your parenthesis, such as IF (X=1)+((Y=2)*(Z=3)) which translates to IF X=1 OR Y=2 AND Z=3. So, if you are programming in Extended Basic, why bother with all those parenthesis? Why not just use OR and AND? In the above cases that is true. But you have not yet begun to see the power of relational expressions!

Since the true/false value is a numeric value, it can be used in calculations, and it does not have to be used with an IF statement.

For instance, this is a statement that I have used within a loop to alternate control of the two joysticks between two players....X=X+1+(X=2)*2 :: CALL JOYSTICK(X,Y,Z). In this, the first time around, X has not been given a value, so the equation is read X=0+1+(0=2)*2 and, since 0 does not equal 2, 0+1+(0*2)=1 and joystick #1 is activated. Next time around, X=1 and X=1+1+(1=2)*2 gives X a value of 0. The third time around, X now has a value of 2, and X=2-1-(X=2)*2 which is worked out as X=2+1+(-1)*2 and then X=2+1+(-2) which is X=2+1-2 and X=1 again!

If you think that's neat, look at this one from the Airport Area UG newsletter, credited to Robert Cooley - X=X=0 :: CALL JOYST(X+2,Y,Z). Here the first time around, X does equal 0 so the statement X=0 has a true/false value of -1 so X=-1 and X+2 activates joystick #1. Then X=-1 so X=0 has a true/false value of 0 so X=0, so X+2 activates jotstick#2.. and so on! Of course, you could also write IF X=1 THEN X=2 ELSE X=1 if you prefer.

Another example: A=INT(10*RND):: B=INT(10*RND):: FOR J=A TO B...Now, if the random B happens to be smaller than the random A, the loop falls through with nothing happening. You could add a line IF A>B THEN T=1 ELSE T=-1 and FOR J=A TO B STEP T . But why not just FOR A TO B STEP (B<=A)+ABS(A<=B). If B<A then -1+ABS(0) gives a STEP -1 to count backwards, but if A<B then 0+ABS(-1) gives STEP 1, and if A=B then 0+ABS(0) equals STEP 0! Here's another example - 100 INPUT "SCREEN COLORS? ":S :: FOR SET=1 TO 14 :: X=SET+1-(SET>=S):: CALL COLOR(SET,X,X):: NEXT SET. That changes the character sets to colors 2 to 16 in sequence, skipping over whatever color has been selected for the screen.

Strings can also be manipulated. 100 P$(1)="S" 110 INPUT "How many? ":N :: Print "The price is "STR$(N)" DOLLARS"P$(ABS(N>1)):: GOTO 110 . Or, more efficiently 100 INPUT "How many? ":N :: PRINT "The price is "STR$(N)SEG$(" DOLOARS",1,7-(N>1)):: GOTO 100

However, it is also possible to overdo it. The following routine will read the key input to move the cursor around the screen in all 8 directions, stopping at the borders or traveling along them if struck diagonally. However, it requires so many calculations for each key input that it is not the fastest method to accomplish this.

```
100 CALL CLEAR :: R=1 :: C=5
110 CALL KEY(3,KST):: IF ST=0 THEN 110
120 C=C+((K=82)+(K=68)+(K=67))*(C<32)-((K=87)+(K=83)+(K=90))*(C>2)
130 R=R+((K=90)+(K=88)+(K=67))*(R<24)-((K=87)+(K=69)+(K=82))*(R>1)
140 CALL HCHAR(R,C,42) :: GOTO 110
```

So for compact, efficient programming, learn to use the relational expressions! But also learn when not tovuse them!

TIDINGS: FIN!