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NOV-2006

A Description and Commentary On The Geneve Computer
Some Implications For Us All

Xby Chris Bobbitt ((c)) 1986

At its introduction, the Myarc Geneve computer will be among the most advanced computers available, and definitely the most advanced "home computer" in history. It is more powerful than many minicomputers, but is available at a price that would have been unheard of 3 years ago.

The following is a description of some of the capabilities of this remarkable device.

MICROPROCESSOR: The TMS9995 CPU is 5 to 6 times faster than a TMS9900, the processor found in the TI99/4A. This processor is only slightly slower than the 68000 CPU, yet is much simpler to use, more accurate mathematically, and contains a smaller instruction set. The advantages of this smaller instruction set is an article in itself. Suffice it to say that this technique, called RISC, is getting a lot of attention in programming circles.

MEMORY: The standard Geneve Computer comes with 640K of RAM. This is expandable to 2 Megabytes using special memory expansion devices. A Myarc 512K card can be made to work with the Geneve with simple modifications. The Myarc 512K card memory may be directly accessed by programs.

GRAPHICS The Geneve uses the Yamaha 9938 graphics processor. The 9938 processor was designed by Texas Instruments and Microsoft Incorporated. The computer world will discover this chip and its capabilities much in the same way that they proudly announced 16 bit computing for microcomputers, years after TI had introduced the TI99/4A. This graphics processor supports a variety of different modes for graphics and text.

TEXT The Geneve supports both 40 AND 80 column modes. The 40 column mode is similar to that of the 99/4A, so none of your current word processing software is obsolete. However, text, foreground and background colors may be any of 512 colors. 256 patterns are available for redefinition. One of the 80 column modes is the same, while another supports blinking text and multi-color text. Some limitations apply, but this permits programmers of the system to use many of the advanced human factors graphics techniques just now being developed. The use of color to impart information, such in the nature of peripheral vision can make word processing tasks as well as the initial learning process easier. Your Geneve computer will be able to keep up with this emerging technology for some time. Indeed the rich resources of the TI programming community may well result in some breakthroughs in graphics presentation. It is reasonably well known that some organizations in the community are working hard in this area. Since each of these various screens, occupies very little memory of the 128K of standard video RAM found on the Geneve, up to 32 screens of text can be stored in memory at once. All of this information is directly addressable by the programmer. This bodes well to provide a rich environment for the system and applications programmer and thus the user.

The Geneve supports every text mode of the 99/4A, as well as many new modes that use much of the available memory. One of the more interesting modes supports a resolution of 256 by 216 pixels. Each pixel can be any of 256 colors. This mode also supports multi-color sprites. Each pixel row of the sprite can be any of two colors. Another interesting graphics mode supports 512 by 424 pixels with each pixel any of 16 colors. The on- screen display of a maximum of 16 different colors can be selected from a pallet of 512 colors. This mode is the same resolution as the Apple Macintosh computer, yet the system still finds the capability to support sprites, which the Macintosh does not. The 9938 chip has built in commands for line drawing, block moves and copies at hardware speeds. Programmers will have a rich, challenging environment for creativity, all at an affordable price for 99/4a owner and convert alike.

INTERFACES The Geneve has a number of ports. For video, there is a port for an analog RGB monitor. The analog RGB monitor is more advanced than the digital ones used by the TI Professional Computer. Texas Instruments used the quality of the TI PRO monitor as a major component in its "Dare to Compare" campaign against the inferior IBM PC display system. An Amiga monitor displays the power of the Geneve quite well, and is readily available. However, an additional port permits the use of your existing TI99/4A video monitor. Therefore, your current equipment is not obsoleted by the new machine, allowing you the luxury of leisurely getting the best price for your existing monitor and cutting the best possible deal for your upgrade. Indeed, some are already at work seeking to separate early dropouts in the Amiga world from their monitors. The Geneve also supports the Amiga mouse. Other monitors of the serial RGB type work, however, so do not pay extra simply because the name on the front.

Your 99/4A console can be used as a stand alone device with the purchase of the Geneve. The Geneve comes equipped with an IBM style keyboard. Other keyboards, costing from \$50 to \$500 will also work just fine. Since the Geneve replicates the functions of the console, you will only need the expansion system or one of the inexpensive expansion kits.

A multifunction port permits even more access to the Geneve. While labeled as being for the Amiga mouse mentioned earlier, also can support sophisticated applications input from equipment both exotic and common. A video digitizer, for instance. Pictures taken from a video camera can be fed into the system. A digitizing tablet, which turns the Geneve into an elaborate data collection system or a component of a computer aided design (CAD) system is fully supportable, given proper software. Light pens are of course appropriate input devices as is information from a video cassette recorder or a video camera. Indeed, with external converter devices available on the market, you can pipe in television signals and enjoy crisp resolution and vibrant colors never seen before from a commercial television set, thus putting your R6B monitor on overtime.

HARDWARE COMPARISONS To put this in perspective, compare the Geneve to other computers. The Geneve comes with 640K of RAM, equivalent to a fully configured IBM PC XT. This memory is expandable to 2 megabytes, twice the standard memory of an Atari 1040 ST. The Atari ST, of course, is one of the more popular "non IBM machines" on the market. The Atari ST is the fastest microcomputer available in its price range. The Geneve is roughly equivalent. The makers of the Geneve have gone to the extra expense of installing special purpose chips to handle, among other things, input from disks, lightpens, and other devices. In a similar vein, these special purpose chips handle output to screen, disk and elsewhere. And what about graphics? Again expensive special purpose redundancy pays off. Therefore, in graphics, input and output, the Geneve runs circles around the Atari ST. The Geneve deploys eight times as many colors as the Commodore Amiga. The Amiga is the superior machine in these respects. The Geneve, unlike the Amiga and the IBM PC AT, supports graphics with a 'true aspect' ratio. This is the superior form, and gives higher resolution through the use of square pixels, the tiny dots used to give your computer screen, even your television its color and appearance of depth.

The Geneve rates highly as a smoothly upgradeable machine. It obviously will be compatible with the newly developed Myarc disk controller card. In disk drives supported, the Geneve with the Myarc disk controller card will defeat the IBM PC AT. Four 20 megabyte hard disks can be supported with this upgraded configuration, not to mention that the same scheme will control four (or less) double sided QUAD density floppy drives of the conventional 5 1/4 inch size. The drives that use the new plastic bound three inch disks are supported as well. Knowing the market, the Geneve makers realised they needed a system that would obsolete gracefully, as has the 99/4A.

Features of the 99/4A which still challenge the marketplace are retained. An example is the 99/4A's well known device independant operating system. Virtually any peripheral can be attached, unlike almost all other computers including those dependence is a feature you (the 99/4A owner) have purchased years ago and one that should not be discarded in the name of progress. Therefore, the Geneve is superior to most every microcomputer in graphics, speed, memory capacity, and in versatility.

A full blown Geneve system would contain a Geneve computer, a WDS model hard and floppy disk controller, a TI RS232 card, plus a 3 slot expansion kit, linked to two full blown 720 kilobyte floppy disk drives and a high resolution serial R6B monitor. If bought all at the same time, using all new components, your system would cost less than \$1,000. One of the finest features of such a system is that it can and probably should be acquired incrementally, particularly if you currently own an expanded 99/4A system. For a machine of this class, this is an incredible price. The Atari 1040 ST is well known as the first computer that cost less than One dollar for each one thousand bytes of memory, new. The Geneve may be the first machine to drive that cost down to fifty cents per thousand.

SOFTWARE The Geneve will come bundled with a new version of Extended BASIC on disk which is fully 6 times faster than Extended BASIC. Also included will be a MS-DOS like operating system. The package is called "DOS like" because the code used will be very close to MS-DOS. However, the internal workings of the system will not resemble nor be compatible with MS-DOS. This will be a boon for those who have had to struggle through learning MS-DOS at work or on another machine. In the package also will be an 80 column version of TI-Writer with a larger memory.

A number of other products specifically designed for the Geneve will be available at or near the release of the Geneve. A number of 'C' compilers will be available by all expectations. C is a very popular language on 32 bit machines and is now beginning to appear in micro computers in the last few years. Some business software will be readily available. UCSD Pascal, actually a language within its own operating system, will also be standard. Software developed on many machines, including the IBM PC, Apollo, and others which use this system will run without modification.

The new Geneve software will allow users to set up directories as an aid to manage multiple files. A software developer

will also be available, where the user can deal with a notional or in-software emulation of a disk. All interaction on this RAMdisk will be in memory, thus will operate at extremely high speed. Print spoolers will be available. People still pay \$200 for print spoolers, which merely are hardware systems, now software, that fool both the computer and the printer. The printer is wired to signal the computer to stop sending data while the printer repositions the print head, or rolls up the platen. Meanwhile the computer is burning up thousands of cycles waiting for printer to get ready to receive data again. A spooler is nothing but an ever ready printer to the computer and a patient computer to the printer. The job is transmitted to the spooler in a second or two and you are ready to go again while the printer chunks away.

TI BUSINESS MACHINES-The Geneve is assembly language compatible to the TI mini computer world, and awaits a member of that community to make that software run.

There is one silver lining in the "Perils of Pauline" development path of the Geneve, so fraught with delays. Time to think about the new arrival has been purchased with the sweat of the developer in a process which would normally have been extremely secret and quickly sprung on the unsuspecting community with little warning.

NEW OFFERINGS One new company has been started specifically to develop Geneve software. A true multi-tasking operating system is among the goals of this firm. Multi-tasking to a user means that several programs can be run at the same time. Multitasking is at the heart of such programs such as Sidekick for the IBM where various panels, or windows are pulled down to allow notes and other activities to take place.

Yet another goal for this new developer is a macro-assembler. Macro-assemblers are small utility programs that can be strung together to achieve a variety of goals. In the mini computer world, programmers adroit in the macros of their particular machine rarely had to write much original code to achieve powerful results. This capability will soon arrive for you with the Geneve.

Soon after shipments of the Geneve begin, BASIC and Pascal compilers will be made available by this startup firm. A compiler may not be a familiar concept to all who read this, though it is simple to pick up. When your 99/4A receives the run command, it wakes up and "interprets" the program you have told it to run; Every single time. You probably are aware that assembly language is faster. The reason for this is that it is closer to machine language and therefore requires minimal "interpretation." BASIC, however, along with a host of other languages is not that close to machine language. Easier to remember and use, but requiring some form of intervention. The interpreter is often used for BASIC. While it gives instant feedback, an interpreter is slower than a compiled program which is a machine or assembly language program. You write the program as usual, then run the program through a compiler. That program compiles a collection of assembly language or machine code commands. That "compilation" is what you then use when you need that program. The compilation is much faster, almost indistinguishable from a program written in assembly language. The 99/4A only recently got an example of a compiled BASIC and a compiled C. If you have yet to experience the utility of compilers, you will certainly enjoy the Geneve. The increased memory will, of course, make these compilers superior in performance to anything currently on the 99/4A.

YET ANOTHER HUGE LIBRARY-Not one but two major resources are in the game plan for this firm. CP/M is an operating system that has its own cult following, and is still supported by a major commercial and cottage industry. Transfer of CP/M (and yes, IBM) disks to the Geneve is in the works. The firm is called Access Engineering, and is located in the Washington D.C. area.

A HOST OF GENEVE SPECIFIC PROGRAMS are to come. Lou Phillips of Myarc has estimated that four to five years of effort will be needed to complete the full sweep of programs needed to truly tax the Geneve system and the chips associated with it. During that period, if a new design comes along, the card, not the entire structure can be modified. Almost immediately however, terminal emulators, word processing programs that support such sophisticated typesetting concepts as proportional spacing will begin to arrive.

Potential new products for the Geneve include databases, spreadsheets, and paint programs.

The Geneve is one of the most remarkable computers ever introduced. A technical marvel, not a ripoff or anyone's clone. We are indeed fortunate that it has been designed to take advantage of the tremendous capability of the the TI99/4A...and its users. It should appeal to everyone, either as a first, a second, or third computer.

MYARC'S GENEVE

Who needs it?
We do!

Scott Flinn
Oct. 18. 1986

I have just finished reading The Orphan Chronicles by Ronald Albright. As advertised, it is a remarkable book which answers virtually all of the seemingly unfathomable questions left behind by Texas Instruments. Although I was never really bothered by being a computer orphan (I certainly don't remember where I was when I heard THE news about TI's departure from the market), I must admit to being extremely relieved upon finding the TI Nova Scotia (TINS) club. The mild but constant worries about blowing another power board (I had already blown one), or wearing out another cartridge port connector (I had already gone through three) were ended. This discovery coincided perfectly with my introduction to TMS. 9900 assembly, and the answers, hints and advice I found at the club were invaluable (needless to say appreciated).

So what does this have to do with The Orphan Chronicles and Myarc's new computer? In his book, Mr. Albright makes it very clear that, although the TI community is currently thriving, we are all going to have to work very hard to ensure its continued existence. The two points he addresses most directly are, firstly, that we must actively pursue the production of hardware and software, either by producing it ourselves, or by buying it from others, thereby encouraging the talented programmers to continue; secondly, we must never become discouraged to the point where we may consider the possibility of getting a "better" machine. Toward the latter end, Mr. Albright strongly suggests that TI'ers forget about the prospects of a new compatible machine and concentrate on getting the most from their TI's. At this point I will be charitable, and will interpret Mr. Albright's remarks in a favorable way. I assume his reasoning is that if we allow ourselves to dream too much about a new and better computer, we may actually succeed in convincing ourselves that we actually need it. Once this happens, if the computer has not yet arrived (and Mr. Albright believes that one never will), then we may conclude that, since a new computer would be better, but a new TI compatible is not available, we must abandon TI and get a real computer like an Atari, or an IBM. This type of thinking could be very detrimental to the continued existence of the TI community, and Mr. Albright makes a noble and selfless attempt to warn people away from it. His most persuasive argument is the simple, almost rhetorical question "WHO NEEDS IT? WHAT CAN'T YOU DO ALREADY?".

This question has already been put to me several times, and I must honestly say that it stopped me dead in my tracks. My immediate response was "Well... um... ah... 80 columns. Yeah, that's the ticket, 80 columns! I need 80 columns." But try as I did, I was unable to think of a single example of an application which, though too demanding for the TI, could be handled by the new machine. Word processing, spreadsheet, data base, telecommunications, computation, sound, even graphics; in spite of the 40 column limitation, all are handled extremely well by the existing machine, with the most exciting software and hardware only now reaching the market. A good friend of mine - an Apple \c owner - just recently phoned me, more excited than I have ever seen him, to tell me about the latest technological miracle from Apple. Apparently, Apple is about to release a new computer which, though not unusually better than their existing machines, will have truly unbelievable sound capabilities; a fifteen voice, fully interfacable synthesizer built right in to the computer. I almost didn't have the heart to tell him that such a beast has existed for the TI for about three years now (namely the FORTI Music System, driven with FORTH based software). Once the

inanity of GPL has been circumvented, it becomes all too clear that the TI-99/4A is actually a very fast, very powerful computer. My own favorite passtime is comparing the raw speed of the TI with other machines (ie. number of integer additions, multiplications, comparisons, branches, block moves, etc. per second). It compares VERY well with all but the newest machines, such as the Atari, the Amiga, the Panasonic Executive Partner, etc.

With a language like FORTH available, Myarc's XBasic II plus 512K card, etc., the question "What do you need a new computer for?" is a very good one. But it can be answered! In fact, there are three good reasons. The first one becomes obvious if, instead of asking what can't be done now, one asks oneself what can be done now. My own applications have included extensive use of TI-Writer, TE-II and Fast-Term, self-written programs for inventory management (23,000 item inventory), yacht club handicap calculations and records, one and two dimensional function graphing, games of all types, and many others. Each and every one of these applications would benefit from the capabilities of the new computer. The 80 column advantage really is quite large, making word processing, telecommunications, and spread sheet software far easier to use. Self written data base applications would certainly profit from the far greater memory. These applications are obviously disk based, and require hours rather than minutes to perform simple tasks. The mathematical and number crunching programs would certainly benefit from increased speed, and better graphics would be a non-essential but much welcomed plus in this area as well.

The second reason can be summed up quite simply: imagine what its potential will be! Who would have guessed when they bought their TI five years ago that today their little machine would still be capable of doing all of the things the "newer, bigger and better machines" are only now achieving? If you had asked someone four years ago "What do you want a computer for? What could you possibly use it for?", you can be certain that the answer would not have been "Oh, I want to use my FORTI board to play 'Chariots of Fire' in twelve synthesized voices", or "Well for starters, I'm going to set up a BBS, and then I'll use it to write The Orphan Chronicles in my spare time". One thing is clear: a new machine will be a better machine. It can only be better, because, while keeping the TI spirit, it will be able to do everything the TI can do now... and much more. Thus, if the TI was capable of so much, and still compares favorably to other machines four or five years newer, it is only reasonable to expect that a new machine, when pushed to its limits, will do things that we can't even imagine now, because nothing else can do it yet. While on the surface, Myarc's claim of a machine "2-3 times faster" is not particularly stunning, once you realize just how fast the TI is now (when GPL is not used and the program is not graphics intensive), it becomes clear that the speed will only be equalled by the best of the modern machines. Its graphics, according to the description of the V9938 video processor given by Rytte Data and others, will be unquestionably better than any computer less than six times the price; and it has more internal memory than any small business is ever likely to need. Definite answers can not be given now as to what will be done with the machine that can't already be done. Only time will tell what will be produced when a machine with such capabilities is pushed to such limits as only TI'ers have had the need to achieve.

Finally, we must all at some time face the hard fact that, although the TI-99/4A is a phenomenally durable creature, it cannot possibly live forever. We are faced with two scenarios. Firstly, we can all be content in the knowledge that what we have now is a small piece of quality that will serve us unerringly for many fruitful years. With the products now available, and those that are undoubtedly waiting in the wings, we can build our systems to a point where the choice to obtain an upgrade would be a matter of taste, not necessity. Further, there are those among us who will always be content with what they have, for whatever reason. If a person uses powerful computers at their place of employment, having something at home that plays reasonable games and calculates square roots accurately may well be all that is ever desired. However, no matter

how powerful the peripheral system becomes, the fact remains that the computers themselves are not being manufactured. Eventually they will wear out, as everything must, and with the heart removed, the system will be useless. All but a determined and clever few will write off their investments as worthwhile, but expended, and will either get the newest computer currently offered, or will leave the computer world entirely.

The second scenario includes the fact of a new computer. It would be nice if, when the heart of powerful system dies, it could be replaced with something equally good; a point which I believe is common to us all. But it makes even more sense to replace that heart now if the replacement brings with it all of the peripherals. It is certainly true that a TI with a 512K expansion card with RAM disk capability, the new eighty column card or the V9938 video processor installed on the mother board, cartridge software that permits direct use of the expansion RAM, and a number of compiler languages such as FORTH and 'Small C' as well as Myarc's "better" Extended Basic would probably be roughly as good as the new machine (note that not ALL of these features exist yet). But does it not make more sense to spend the same amount of money, perhaps even less, to get all of this rolled into one package, particularly when it replaces some of the most easily damaged and uneasily repaired parts of the machine such as the keyboard, cartridge port and power supply? And when we are guaranteed, at least for a little while, that such an upgrade will be supported by a manufacturer who has plans, however questionable, for IBM compatibility, a complete C language, and who knows what else? Perhaps the most reasonable thing of all, however, is that, while the TI community can not possibly be hurt by a better computer with a high degree of compatibility, it will be helped enormously, to the point of its very survival. The TI is now heading toward a dead end. Myarc is offering a chance, however small, for the TI legacy to continue in the face of a competition whose strength grows geometrically.

When Mr. Albright made the remark that we should dismiss the idea of a new computer, he was working under the assumption that such a computer would never be produced, and that thinking about it was an unnecessary temptation. The chance of a new computer appearing is now quite high (reliable rumor has it that the machine is finished and will become available as soon as the documentation is complete), and we must begin thinking about what we will do should it arrive. Naturally not everybody is going to either want or need such an upgrade, and there should be no pressure to make the switch, particularly since the TI is, after all, quite adequate. However, the pioneers among us, new and old, must be willing to do our job as thoroughly and with as much commitment as we possibly can. It is up to us to see that the Myarc computer survives so that in the coming years, as TI systems begin to falter, it will in turn be able to ensure that the TI community survives. With so many disappointments in the past, it is easy to be bitter toward rumors of a promised land, but we must not deal ourselves the final blow by turning our backs on the only opportunity Fate is likely to offer.

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"Texas Instrument Home Computers"

Addendum Regarding The Sept/Oct Newsletter
Brian Bourbonniere

In my article CONNECTING TO ATARI JOYSTICKS, I stated that the strands of wire used in making the cable could be wired directly to the 9 pin D plugs. It has been brought to my attention that the signals of joystick 1 and joystick 2 may interfere with each other. As a solution to this, wire diodes into the cabling. This should prevent stray signals from returning erroneous data. My thanks go to Frank Geitzler for pointing this out and suggesting this fix.

SMART VARIABLES FOR FORTH

by
Dennis Misener

Welcome again to the wonderful world of FORTH. This month's column consists of two parts. The first part is dedicated to those of you who are tired of typing all those "!" and "@". The second part consists of a simple (and I do mean SIMPLE) turtle graphics type demo.

Smart variables can make FORTH code more readable by eliminating those nasty "@" and "!" characters. The following code is presented without a line by line description in order to keep the column length down. It may be used without understanding it but is worth a moment's study to appreciate the power of FORTH's extensibility.

```
0 VARIABLE ->?

: ON -1 SWAP ! ;
: OFF 0 SWAP ! ;

: ->
->? ON ; IMMEDIATE

: VAR
<BUILDS
, IMMEDIATE
DOES>
->? @
IF ( setting contents )
STATE @
IF ( compiling )
  COMPILE LIT , COMPILE !
ELSE
  !
ENDIF
->? OFF
```

```
ELSE ( getting contents )
STATE @
IF ( compiling )
  COMPILE LIT , COMPILE @
ELSE
  @
ENDIF
ENDIF ;
```

To use a smart variable's contents simply use the variable name. To set such variables, use the -> construct. An example of its usage is the creation of a little box whose only purpose in life is to travel in a straight line leaving an imprint of itself as it goes. When it bumps into its own "trail", it turns right and continues on until there is nowhere left to go. Although this is not one of the worlds greatest FORTH applications, it might serve as a simple example of FORTH code for those of you who are trying to pick up the language.

We start off by creating a couple of variables to record the current position and direction of our travelling box. We will use our new smart variables of course.

```
0 VAR ROW 0 VAR +ROW
0 VAR COL 0 VAR +COL
```

We must also record the number of consecutive right turns the box has made to determine when a dead-end has been encountered (i.e. can't travel in any of the four possible directions).

```
0 VAR TURNS ( # consecutive turns )
```

Using WYCOVE forth, the character associated with the ASCII value 31 just happens to be a "box". (How convenient!!)

```
31 CONSTANT BOX
```


The following nasty section of code keeps the box from falling off the end of the screen. When the little critter crawls off he just pops up on the opposite side.

```

: MODULUS ( n\modulus - n )
  >R DUP 0<
  IF
    MINUS R MOD R SWAP -
  ENDIF
  R> MOD ;

```

Now we use the MODULUS routine to keep the ROW and COL values within valid screen limits. (see if you can figure out why we didn't need MODULUS in the ->COL word)

```

: ->ROW ( row - ) 24 MODULUS -> ROW ;
: ->COL ( col - ) 31 AND -> COL ;

```

To actually place the box on the screen compute the offset from the start of the screen and output it directly to the video ram (VDP for those of you who like jargon). Likewise we can determine the current contents of the ROW and COL position by reading VDP at the computed offset. This gives our little box creature eyes, so to speak.

```

: SCR. ( - addr ) ROW 32 * COL + ;
: ->SCR ( char - ) SCR. C!VDP ;
: SCR-> ( - char ) SCR. C@VDP ;

```

While we are at it, why not allow him a reverse gear? We do this by reversing his row and column direction.

```

: REVERSE_DIRECTION
  +ROW MINUS -> +ROW
  +COL MINUS -> +COL ;

```

To turn right, just jiggle the directions a bit and voilà. (Note that we could have defined REVERSE_DIRECTION as two consecutive TURN.RIGHTs. Why didn't I think of that?)

```

: TURN_RIGHT
  +COL >R
  +ROW MINUS -> +COL
  R> -> +ROW ;

```

Here's where we tell the box how to move. Go straight ahead one position unless a non blank position is encountered, in which case, backup and turn right. What could be simpler?

```

: PROCEED
  ADVANCE
  SCR-> BL =
  IF ( not yet filled with a box )
    0 -> TURNS
    BOX ->SCR
  ELSE
    ( backup to previous position )
    ( and turn to the right. )
    REVERSE_DIRECTION ADVANCE
    REVERSE_DIRECTION TURN_RIGHT
    TURNS 1+ -> TURNS
  ENDIF ;

```

Position the box in the top left hand corner facing down. Give him his walking papers and off he goes!

```

: WALK
  CLS
  0 -> ROW 0 -> +ROW
  0 -> COL 1 -> +COL
  BEGIN
    PROCEED
    TURNS 4 =
  UNTIL ( no way to proceed ) ;

```

As a challenge to our BASIC brothers, I'd be interested in seeing the above example coded in BASIC (preferably changing the sex of the box to prevent charges of chauvinism). We could then compare the size and speed of comparable programs. Any takers??.

TIL (as in Threaded Interpreted Language) the next time...

Modem Communications
N.Bosworth/AHG Davey

Programme Exchange Using Only A Resident Subprogramme

It is generally assumed that programmes can only be exchanged using specially developed software such as the TE2 module or Fasterm.

This is not in fact the case. Let us assume that both parties involved have their modems set at 300bps with one modem set in the ANSWER mode and one set in the ORIGINATE mode.

Let us further assume that both parties have their modems wired to port #1 of the RS232, which is generally the case.

The person sending the programme must first load the programme to be transmitted into the computer, then tell the other person to select either BASIC or Extended BASIC, whichever is appropriate.

Then in the IMMEDIATE mode, the sender should type the following statement:

```
SAVE "RS232/1"
```

DO NOT press enter yet, but wait until the person on the receiving end has typed, in the IMMEDIATE mode, the following statement:

```
OLD "RS232/1"
```

Still DO NOT press enter yet. The person who has his modem in the ANSWER mode should then turn his modem ON-LINE to produce a carrier tone.

On hearing this tone the sender, who has his modem set to the ORIGINATE mode, should turn his modem ON-LINE, to enable both modems to lock into one another.

This will result in the modem Carrier Detect (DCD) light coming on, at which point they can both replace their phone handsets (hand up).

The person to whom the programme is being sent should then press ENTER immediately, to ensure that his receive buffer is ready and waiting.

The sender should wait for about ten seconds before pressing ENTER.

This should allow sufficient time for the person to whom he is sending the programme to be ready. After the sender has pressed ENTER, the cursor will disappear, and the number 255 will appear at the top of the screen.

After a few seconds this (maximum) number will be replaced by the actual sector size of the programme being sent, e.g. 15. Then a countdown sequence will occur, showing the progress of the exchange.

When the exchange is complete, the cursor will reappear, and at this point the pointer can be picked up. The modem can then be taken OFF-LINE, and the two parties can then discuss the programme, after the person on the receiving end has checked that it is OK by listing it, and saving it in the normal manner.

The above procedure will carry out the programme exchange at 300bps which is the default speed set by TI, and is usually the only speed on a modem that offers full duplex capabilities.

However, if you have a modem that offers full duplex at a higher speed, or you wish to exchange a programme HARD-Wired (no modem, just a four wire cable) or INTERNALLY (hard wired in the same building), then the command statement would be:

SAVE "RS232(Port#),[Software switch options]"

OLD "RS232(Port#),[Software switch options]"

The software options (Baud rate etc.) must match at both the sending and the receiving end of the programme exchange. For Example:

SAVE "RS232/1.BA=4800.TW"

OLD "RS232/1.BA=4800.TW"

See your RS232 interface manual; for more information on software switch options.

Control	Function
0	40/80 column toggle
1	modem baud rate (use SPACEBAR for fast display, S key for slow display.)
2	print spooler on/off
3	modem parity
4	modem port
5	printer parity
6	printer port
7	printer baud rate
8	home cursor
9	
6	bell
H	backspace
K	move up 1 line
L	move forward 1 space
N	reverse video on
O	reverse video off
Z	clear screen
,-R C	Move cursor to row (R-32) and column (C-32)
FCFN-SHIFT-0	toggle between full/half duplex
FCFN-SHIFT-P	print screen in freeze mode
FCFN-SHIFT-T	TE2 file transfers
FCFN-SHIFT-X	XMODEM file transfers
FCFN-SHIFT-ENTER	carrisge return
FCFN-SHIFT-SHIFT-ENTER	SHIFT-ENTER linefeed
FCFN-SHIFT-0,X,S,E	Cursor Control
FCFN-(K,H,J,I)	CTRL-(K,H,J,I)
Recieve ASCII file	Send ASCII file
FCFN B - name file	FCFN N - name file
FCFN . - start/stop toggle	FCFN , - start sending
FCFN B - close/write/rename file	Select line-by-line
FCFN Y - clear log	Select CRLF (FCFN J - on/off)
	FCFN 4 - stops transfer
Recieve TE2 file	Send TE2 file
FCFN SHIFT T	FCFN N - name file
FCFN N - name file	FCFN N - name file
FCFN , - send file	Tell other system to begin
FCFN 4 - Cancel transfer	cancel transfer
	FCFN SHIFT X
	Select option
	R-Recieve
	S-send

First Report of the Faire Ron Albright

[VIA Timeline/Terry Atkinson] Well, folks, I am here at the TI Fair and I can tell you that I feel this is gonna be the best Fair YET! There has got to be 1000+ cruisin' here and it is packed ABSOLUTELY! The vendors are doing a brisk business and the folks are buying like crazy!

CAN YOU BELIEVE IT?

This lil' orphan is, indeed, ALIVE AND WELL! I hope to be able to be up tonight and get something ONLINE but we will have to see how that goes... ANYWAY, I can say unequivocally, that the TI FAIR #4 is a BIG SUCCESS. Thanks to the Chicago UG for making this a nother beauty! Back with more later!

LOU PHILLIPS JUST finished his presentation and (from what I gaterhed) not much is new...they HOPE that they can begin shipopping prior to the end of the year, but the hang up is Mitsubishi...the "gate array" are wrong the first time and they are being re-done.

Nice presentation by ASGARD software earlier and a TI User Group seminar on problems that face them all, and an EXCELLENT presentation by Clint Pulley on c99...a VERY bright guy for sure.

The Fair is STILL smokin' and the crowds are big.{I mean REALLY big. If I had to estimate, I would say well over 2000 total attendance throughout the day.

Again, it has been another BIG success.

I have seen Art Byers, Terrie Masters, Coe Case, Warren Agee, Gary Cos, Todd Kaplan and MANY more of the CIS friends. Its been a great day and it is still goin... Out here! JUST GOT THE WORD ON ATTENDANCE...

Seems over 900 folks turned the turnstiles here in the Windy City...the fair organizers attributed the lower attendance (compared to last year) to the inclimate weather (a polite way to say the weather was miserable!!)...the sellers on the other hand are VERY pleased...each and everyone have virtually sold out. They have literally sold it all! This has been the most "spend-thrift" TI Fair of all...I mean that!

It has become a seemingly CULT life for the TI...selling everything from adoption certificates to buttons and (one UG representative - Dick Vandenberg - of the Mid-South UG - estimated a \$75/member expenditure for their 11 attendees)...spend, spend, spend!

A Fifth Annual TI Fair for next year! They love it, the vendors love it, and anyway, "a great time was had by all!!"

Comments by Art Byers:

The fourth annual TI Fair hosted by the Chicago TI UG was a fine success from all points of view: Around 900 99/4A owner/users from the middle of the nation (and as far away as Boston, Washington DC and New York) had a chance to see the newest and best in software and hardware and to spend some money on goodies. So- The Vendors obviously did a great deal of business and will be encouraged to attend other TI shows around the nation. The speakers and events were interesting and well run. Those attending learned much that was new. Best of all, however, was the chance to meet and mix with the 99'er community, to exchange Ideas and information, and to renew our enthusiam as we proved once again the motto

originated by Henry Hein: "We may be an Orphan, but we have a great future!". For me, the occasion meant putting faces together with many of the famous names such as Chris Bobbit (Asgard), Jim Horn and Jeff Guide (Disk Only Software, Ron Albright (The Orphan Chronicles), Theresa Masters (president of the LA UG), - plus well known programmers such as Peter Hoddie, Coe Case, Todd Kaplan, and Paul Charlton, - oh yes! and the Tigercub Himself and the most well known of them all, Jim Peterson. Without Jim half of most UG newsletters would be blank space! It was nice to talk to Walt Howe and Bob Demeter in person, instead via Telecom. What was new? Oh Boy! Lots was new! J Peter Hoddie has a new Graphics program "Font Writer" being marketed by Asgard. ("What! another graphics program" you are about to say..- but you have to see it to believe it. That was only a start. There must have been 50 new software items offered by vendors covering everything from games and education to disk utilities and home finance. Continued next message.

DataBiotics long awaited PILOT language with extensive documentation was finished and on sale Plus Super Forth. New Hardware?? Yes and plenty of it! Mini PE Boxes for 3,4 or 5 cards, and prototypes of everything from a sort of super widget that enables you to use the "Review Module Library" hidden software built into the Console to a whole new Computer (MYarc 9604). One of the big hits of the show was the new IBM type keyboard for our 99/4A, made by RAVE Mfg. I have an interview on tape with one of the principals involved and will print it in detail in the CALL SOUNDS newsletter. During the lunch break, there was a fascinating rap session for the visiting UG representatives. Everything was covered from rumors of more software to be released to PD and UG's by Texas Instrument (a diagnostic disk) to fundraising and dues policies, methods of software library distribution, and newsletter exchange. One of the best talk/demonstrations of the day was the hour on Music and the 99/4A, put on by J Peter Hoddie. That included two linked computers playing music together, music that played while you are programming, and two pieces where Peter played the Cello accompanied by the 99/4A!!! All in all the Chicago club is to be highly complimented. Everything ran smoothly. Those of you who could not make this show are advised to make the next one near you be it Seattle, Boston, Dallas or New Jersey. These fairs are FUN!! I think one of the most exciting announcements was the teaming of two REAL geniuses together in future software/hardware projects.. Barry Traver and J. Peter Hoddie...that team is unbeatable for sure.

And these comments from Warren Agee

Well I'm back from the Chicago faire, and I had a fairly nice time. Great to see familiar faces and a few new ones (PaulC, Ron, Clint, Todd K, Walt).

I also finally got to see a face that has eluded this individual from the start...the face of the Geneve.

I guess the best way I can describe how the faire affected by opinion of this machine is to say that going in to the faire I had a rather Boston, Dallas or New Jersey. These fairs are FUN!! I think one of the most exciting announcements was the teaming of two REAL geniuses together in future software/hardware projects.. Barry Traver and J. Peter BELIEVE IT! I was thoroughly impressed in this regard.

The info that encouraged me the most is the fact that Lou is talking to people about having an outside company package and produce and market the final version of Geneve, the standalone computer. I feel this is "vital" to the life of this machine beyond our tiny little forum of friends and

That is IF they ever get the gate arrays from Mistubishi.

Let me just clarify two things: it was originally announced that the Geneve would use a Microsoft mouse; I guess they finally decided on an Amiga mouse. Also, Clint Pulley just this last tuesday managed to, with just a little effort mind you, get c99 up and running on his prototype of the Geneve. Sounds pretty good.

At any rate, I will be content to sit back and wait and watch to see what kind of direction this plan of action will take...I bought one orphan, and I am not about to put out money for something that has NO chance for any kind of survival. I wish Myarc all the best.

Books Revisited From CIS By Terry Atkinson

The following was gleaned from CIS. Feel free to publish it in NL's or put on BBS's. (commercial advertisement from D.O.S.).

The first book, "The Orphan Chronicles", was ABOUT you - the Texas Instruments 99/4A enthusiast. Now, there is a book BY you. The "Orphan's Survival Handbook" is the one-stop information source for the TI user.

Albrights NEW book! CIS/Terry Atkinson

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The "Orphan's Survival Handbook" was both easier and harder to put together than was the "Orphan Chronicles". Easier in that it was already written! It is an anthology of material gleaned from literally hundreds of user group newsletters and hundreds of hours of downloaded files from bulletin board systems. It is the "Best of" you - the TI user group members, hackers, programmers, and newsletter editors. Why, then, was it difficult? There was so much quality material available! The hardest thing was not finding enough material, it was deciding what I could leave out!

The "Orphan's Survival Handbook" is a 200-plus page compendium of TI material. It is filled with schematics, hardware hacks, programs, tips, and tutorials from across the country. Where to call, where and what to buy, and what to read. Moreover, it contains new, "never-before-seen" material from some of the brightest minds in the TI community (too numerous to name them all). Looseleaf, and three-hole punched, the manual can be placed conveniently in a binder for easy access. And updates (which are planned for registered owners) can be easily incorporated into your "Handbook" as new insights and developments become available. While I can't guarantee the "Handbook" will have "everything you ever wanted to know", I can assure you that it has most everything I could think of.

The "Orphan's Survival Handbook" is published and available from Disk Only Software (DOS), P.O. Box 4170, Rockville, MD 20850; (301) 369-1339 or call our toll free number at 800-446-462 plus 897335 at the tone (touch tone required). Projected retail price is \$16.95.

The AVATEX 1200 Modem
a review

by Brian Bourbonniere

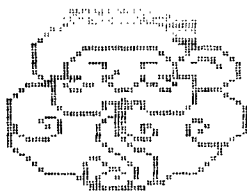
I recently received the AVATEX 1200 modem from the U.S. This is a 0-300, 1200 bps (baud) intelligent modem, and it is semi-Hayes compatible. The unit comes with a modular phone cord, power adapter, a 30 page color users guide, free CompuServe time, a two page addendum of additions and corrections for the user manual, and of course, the modem itself. Also included is a two year warranty on parts and labour.

I ordered this unit from the 99/4a National Assistance Group in Fort Lauderdale, of which I have been a member for almost a year. They require that you be a member to order from them, a \$10. per year cost, but that entitles you to about half a dozen newsletters, several catalogs, and other mailings throughout that year. The total cost for this package (excluding an RS232 cable) was about \$200 CANADIAN after FST and Duty ! That price includes shipping (air mail), handling, and insured delivery.

It took five weeks exactly for my order to be received, which includes the time for my order to be mailed and the modem to be mailed back. In fact, the postmark on the box shows that it took less than two weeks for the package to get here from Florida. There is no computer-to-modem cable included, but the wiring diagrams for just about every home computer around are included in the addendum. I have not tried the diagram provided, as I found a standard cable with the normal II cross-overs (2-3 and 6-20, every thing else one to one) works fine.

The manual is well written and informative. It includes sections on setting up and using the unit, general communications, and a section on modem tests (an eight position DIP switch at the back of the unit is used for testing). The addendum claims the modem is fully compatible with FAST-TERM and 4A/TALK. I was able to test it with FAST-TERM, TE-1200, TE-2, and MASS-XFER. The unit performed flawlessly on all occasions. The modem looks much like a Hayes unit. It is light beige in color (very similar to the 1983 II console cover) and about 9x6x1.5 in size. There are eight LEDs on the front, as well as three two position buttons. One button is for power (on/off), one for 0-300/1200 bps operation, and one for voice/data use of the phone line. The eight LEDs are for: power; terminal ready; send data; receive data; high speed (1200 bps); modem check(idle); test mode; and ring detect. The appropriate LED comes on when a function is being performed. This is an intelligent modem, which means it can be programmed to do a number of things by itself. It uses most of the Hayes AT commands, such as DT (touch tone dial), DP (pulse or rotary line dial) and AA (auto-answer). The pulse dialing option is a must for anyone without touch-tone service, as a rotary line will not usually accept tone signals.

All in all, I think it's a pretty good modem, especially when the price is taken into consideration. Although I've only had it for about a week, I've used it enough to know that I like it. Auto-dialing lets me do everything from the keyboard - no telephone to mess with - the lazy (me) computer user's dream come true. I've had no problems at any point in time, from hooking it up to having it answer the phone. If you can get your hands on one of these, I'm quite sure that you'll be just as pleased as I am.



Ron Albright's New book

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