SHIFT838 Newsletter

This newsletter is dedicated to the ongoing support for the Texas Instruments 99/4A and Myarc Geneve 9640 user community and is published by SHIFT838.

Owen Brand will be a guest newsletter editor for the May edition, as I will be recovering from surgery and will not be able to publish that month. The newsletter will be available for download on the FTP site under my area. I will post the newsletter to the site and send it out to all the subscribers once I am able to. Thanks Owen!

I have been in contact with Gary Smith which has been working on a prototype of the 'Geneve II' computer! Yes, you read correctly. I was able to get Gary to provide me a technical preview of the Geneve II computer. Please remember, this piece of hardware is not out yet and Gary is working on it as time permits. Gary has already put in more than 2500 hours on this project. That's more than a full time job for a year!

Thanks to all that have subscribed!

Hardware

Geneve II v1.0 by Gary Smith

Introduction:

The Geneve II is an evolution of the TI-99/4A and Myarc Geneve home computer. It is based on the 9995 16 bit CPU and retains the features of the TI-99/4A and Geneve. In doing so it will be almost 100% software compatible.

The driving force behind the Geneve II was the challenge. If it can be done then why not do it. It was intended to complete this back in 2008 but with work and family it was not to be. Presently about 2500 hours have been put into this project since it concept. Hopefully it will be complete in the next year or two.

The Geneve II will have the ability to be situated in the PEB but also it can be attached inside a PC case and operated from the disk drive power supply.

The design has been targeted for the Cyclone III FPGA and will take two of these devices – partially due to the VHDL design size and partially due to the number of pins required.

Architecture:

The maintain compatibility there are no significant architectural changes from the top level. However, in the detail there are some extra registers and the 9995 has a 16 bit interface to allow quicker operation.

On the PCB there are two FPGAs.

The one on the left contains the PLL to multiply up the xtal frequency to allow quicker operation, TMS9995 with full 16 bit connection, FPU100 to allow full floating point at hardware speed in parallel to the TMS9995, bespoke Dram controller for the external memory, memory mapper which deals with the memory pages along with the mode register and floating point registers and incorporates a Gramulator for TI-99/4A software. The memory mapper also has the EEPROM and scratch pad ram incorporated. The memory mapper also deals with decoding of RTC, keyboard etc. It deals with wait state control and it also performs the PEB interface no matter what clock speed or wait states have been requested. The final job of this FPGA is to interface with two SD cards to allow data to be read and stored.

The FPGA on the right deals with the 9938 and gives it a VGA output, PS2 mouse interface, PS2 keyboard interface, VRAM interface, IDE connector interface, it talks to the Ethernet chip at the top of the PCB and it will contain the 9901 to allow joysticks.

The PCB has all the voltages level shifting required for direct interface to the PEB.

I will be posting the full PDF file on the FTP site under my area as it has some tables in reference to the 99/4A and Geneve 9640 memory mappings, registers and Instruction set that would be too large to put into the newsletter.

Greg Warner's Hideaway Speech Card

If you're tired of the speech synthesizer hanging off the side of your TI, the "Hideaway Speech Card", model JE9-HASC-1 being developed by Greg Warner allows you to relocate the speech synthesizer into the Peripheral Expansion Box for a tidier desk space. This card is also compatible with both the TI-99/4A and Geneve 9640 systems!

The new adapter card is built upon a CPLD (programmable logic chip) which performs the necessary decoding to interface the speech synth with the PEB bus. While we've seen products like this before with the Rave 99 Speech Card, Greg's new "Speech in PEB" card goes further by fully decoding the additional address lines on the PEB bus, making it truly compatible with the Geneve, including those which have had the Genmod performed on them. TI and Geneve users alike will now be able to enjoy the vocalizations of TI's phenomenal speech chip!

Greg has completed the prototype, and is moving on toward production fairly soon. Due to interest among the online TI community, he hopes to have these cards available for sale in the near future.

Relocating the speech synth into the PEB offers a better experience for the TI user, both by clearing up some of the clutter, as well as eliminating the unreliable connections at the expansion port caused by the daisy-chain of devices. The adapter in its current prototype stage has been shown to work perfectly both with Extended Basic's CALL SAY() function, as well as the Terminal Emulator II "SPEECH" DSR. But of course, the most important test of all shows that it also works with Parsec!

Coding

Using Code to help Troubleshoot & Repairing TI FDC

Content provided by Stuart Conner

A common point of failure on the TI Floppy Disk Controller (FDC) card is the 74LS245 chip that buffers data on and off the card. If this chip fails, the console power-up routine cannot read the FDC card Device Service Routine (DSR) header when it scans for hardware devices, and so considers the FDC card to be 'not there'. (The DSR is stored in the EPROMs on the card.)

If you have a Mini Memory cartridge, you can use the Easy Bug feature (option 2 on the startup screen) to easily test that the DSR can be read by writing a '1' to CRU address >1100 then reading out memory locations >4000 onwards (first 2 bytes should be >AA and >02).

If you haven't got a Mini Memory cartridge but do have an Editor/Assembler cartridge, then the following BASIC program will perform the same test and is short enough to easily type in."

```
10 CALL INIT
20 CALL LOAD(12288,2,12,17,0,29,0,200,32,64,0,48,32,200,32,64,2,48,34,4,91)
30 CALL LOAD(8234,63,48)
40 CALL LOAD(16176,70,68,67,32,32,32,48,0)
50 CALL LINK("FDC")
60 CALL PEEK(12320,A,B)
70 PRINT A
80 PRINT B
```

If the DSR can be read, it should print the values 170 and 2 (>AA, >02 - the first two bytes of the TI FDC DSR).

Breaking down how the program works:

Line 20 pokes into memory the code for the following, starting at address >3000:

LI R12,>1100 'CRU base address for FDC card.
SBO 0 'Switch on card.
MOV @>4000,@>3020 'Copy word from DSR ROM at >4000 and store at >3020
MOV @>4002,@>3022 'Copy word from DSR ROM at >4002 and store at >3022
B *R11 'Return

Line 30 changes the pointer at >202A to >3F30 to add an extra entry to the REF/DEF table. See the bottom half of page 276 of the E/A manual for further details.

Line 40 adds the program name "FDC<space><space><space>" and start address >3000 in the new entry in the REF/DEF table. See page 276 of the E/A manual again.

Line 50 calls the code just poked into memory.

Line 60 gets the values copied from the DSR ROM to memory at >3020 and >3021. (I've just relisted that the code above is copying 4 bytes, whereas only meant to copy 2!) Found (on Classic99 at least) that CALL PEEK can't read from the DSR ROM directly as for some reason the routine is first switching the card off, hence the need for the code above to copy the bytes we need to another location, then the CALL PEEK can read them from there.

Using Arrays by Chris Schneider

Have you ever logged into a BBS that you know was running only on floppy drives and wondered how their pre-login message gets displayed so fast?

When I was originally running a BBS back in the 80's on my TI and of course I was running it on 4 DS/DD floppy drives. I wanted to be able to display the pre-login message to users without having it pause as so many menus did on the BBS' because of disk access. So I decided to put my pre-login message in memory with an array at the beginning of the BBS starting up.

I have used this little bit of code to do this for many programs that I have written that have menus based on text files. Of course I did not have the unlimited amount of RAM on the TI, so I usually kept what I used for arrays limited.

I would first create a text file in TI-Writer (back then), now I use BA-Writer. The text file was created as follows:

- Line 1 would have the total amount of lines you wanted for your message
- The CR/LF was removed from each line
- Your login message would start on line #2
- Instead of saving the file we need to print the file to the filename on disk

So in my example I have a text file called 'ARRAYTEST' as a Display Variable 80 format, as below:

```
4
This is line 1
This is line 2
This is line 3
This is line 4
```

The code I then use to put it in an array with Extended Basic is:

```
100 DIM LG$(4)
110 OPEN #1:"DSK3.ARRAYTEST",INPUT :: LINPUT #1:A$ :: A=VAL(A$)
120 FOR X=1 TO A :: LINPUT #1:LG$(X)
130 NEXT X
140 CLOSE #1
```

Line 100 declares the array of LG$ to have 4 members.
Line 110 opens the ARRAYTEST text file for input and then takes the first line, which is the # of lines it needs to read and places that in string value of A$. It then converts the string value to an integer (A).

Line 120 starts a loop from 1 to 4 since A=4 and then pulls each line of the text file into the specified array as defined by X.
Line 130 simple next and sends back to line 120 until loop is complete (4 times).
Line 140 closes the text file.
We can now execute code to display the text from the array values on the screen.

150 FOR Z=1 TO A :: PRINT LG$(Z)
160 NEXT Z

 Resources

Contact information
To contact me please feel free to visit my website and click on the 'Contact' tab.

http://shift838.wix.com/shift838

Newsletter Topics
If you would like to participate in the writing of this newsletter or provide any topics for this newsletter please contact me via my web site.

Sites

There are a few of sites that I think should get their own list below. These are for the TI Hall of Fame and TI-99ers Unsung website. Please visit these below sites as both have great information.

http://www.ti99hof.org/index.html

http://www.ti99ers.org/unsung/

Also the below site has a list of all the TI-99ers that have passed.

http://ti99ers.org/modules/Inspire/remember.htm

Below resources are just a handful of sites that support the TI-99/4A and/or Geneve 9640 computers. It is in no way a full list. This section will be included in all future newsletters. If there is a site that you think should be mentioned then please contact me.

Web sites / FTP Sites

http://www.99er.net

http://www.ninerpedia.org/

ftp://ftp.whtech.com

http://shift838.wix.com/shift838

http://www.ti99-geek.nl/

http://www.mainbyte.com

http://www.atariage.com

http://www.harmlesslion.com

http://www.ti99iuc.it

http://www.turboforth.net

http://www.ninerpedia.org/

Yahoo List Groups:

https://groups.yahoo.com/neo/groups/TI99-4A/info

https://groups.yahoo.com/neo/groups/TI994A/info

https://groups.yahoo.com/neo/groups/Geneve9640/info

https://groups.yahoo.com/neo/groups/turboforth/info

Active BBS'

HeatWave BBS

Access: Dial-Up and Telnet
System: Geneve 9640
Software: S&T BBS Software
Location: Arizona
Content: TI and Geneve file libraries, message bases, door games and e-mail.
Telnet to: www.heatwavebbs.com port 9640   Dialup : 602-955-4491 @ 8-N-1

The Hidden Reef

Access: Dial-Up
System: TI-99/4a Modified
Software: S&T BBS Software
Location: New York
Content: TI and Geneve file libraries, message bases, door games and e-mail.

The Keep

Access: HTTP and Telnet
System: Pentium 4 running Windows 2000
Software: Worldgroup BBS Software (up to 256 user connections)
Location: Tigard, Oregon
Content: TI and Geneve file libraries, message bases, door games, multi-user and multiplayer games and e-mail.
Telnet : www.thekeep.net port 23   Web browser to http://www.thekeep.net

The Keep has TI File libraries, Message bases, e-mail, door games, multi-user and multiplayer games. The keep also has a modem line connected for anyone that would like to contact The Hidden Reef BBS from the internet through The Keep.

Simply telnet to www.thekeep.net on port 23, login to The KEEP and then type /**GO DIALOUT** at the main menu, then D1 to dial out to The Hidden Reef. It's that simple.

Vendors

SHIFT838 – Provides used TI equipment as acquired. Check with me often. A lot of the items need rehoming from other TI Users.

Arcade Shopper – Provides old and new TI equipment, upgrades and new runs of PCBs at www.arcadeshopper.com

Repair Centers

Richard Bell
Repairs available on limited basis, please contact Richard at swim4home@verizon.net for wait-time before sending any repairs

Tim
Myarc-related hardware repairs on a limited, as-available basis. Contact Tim at insane_m@hotmail.com for wait times or to request service.