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**SASKATOON
COMPUTER
CLUB**

TEXAS

INSTRUMENTS



NEWSLETTER

SEPTEMBER, 1987

**FROM:
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SASKATOON
TEXAS INSTRUMENTS
COMPUTER CLUB



STICC NEWSLETTER

SEPTEMBER, 1987

We discuss and review new products for the TI99/4A while providing technical support for any problems that a member may have. We also support a software library and have regular contacts with other groups in Canada and the United States. Our membership fees are very reasonable: \$10.00/single or \$12.00/family. If you would like to become a member, or require more information, contact any member of the executive.

1987 EXECUTIVE COUNCIL

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STICC DISCLAIMER

We are a small, nonprofit club here in Saskatoon. We never have, or ever will, consider our newsletter a professional medium in its field. Therefore, with this consideration, the views presented in the articles, by various authors, may not be the views of the newsletter committee, the STICC executive, or its members. On this basis, this club cannot be held responsible for errors, omissions, views, or copy infringements, as presented in the articles.

MEETINGS

General meetings are normally held at 7 PM on the first Monday of each month at Kelsey Institute, Idylwyld Drive at 33rd Street, in room 143. There is free parking behind Kelsey in the student parking stalls; if entering from this parking lot, use door #10, otherwise the front door closest to Idylwyld and 33rd should be open.

SCHEDULED MEETINGS: ROOM 143, KELSEY: NOV. 2
ROOM 132, KELSEY DEC. 7
ROOM 132, KELSEY JAN. 4
ROOM 132, KELSEY FEB. 1
ROOM 132, KELSEY MAR. 7

NOTE →

September 3, 1987

Welcome all members both new and previous. I think this is about year number 8 for the club. The club just doesn't expire.. always a few members to carry on. I wonder if there are clubs in town dedicated to the VIC, SINCLAIR, or ATARI 400 ??

By now you are all aware that we were forced to move from the Community Collage, they dont rent rooms anymore, something to do with Gov't cut backs. Kelsey is a far better location, at least for parking and it is about \$3.00 a night cheaper.

I hope to have a room booked for the rest of the year in the near future. The problem is that now we're dealing with the Gov't so everything takes a little longer. Especially decision making. At any rate at the time of this typing I still havn't heard from Kelsey. I will of course try to book the first Monday of each month unless that falls on a Stat. Holiday. We will try for the same room each night-- hopefully closer to an exit.

ON BEHALF OF ALL WHO ATTENDED THE AUG31 MEETING - THANKYOU TO JOHN THOMPSON AND STEVE ZABARYLO!

John's software demo was outstanding!!Very creative, thanks John.

Steve's ramdisk was incredible, and that minor computer modification was awesome! Steve if you need a front bumper from a 52 Dodge for your next project phone me..

Is everyone working on their list (and uses)of software?

Occasionally I sign onto the source to see if anythings changed. I found the following to be interesting. Note the date.

***RANDY'S RUMOR RAG SUBJECT: RANDY'S RUMOR

RAG TEXT: November 1986 SPECIAL EDITION RANdY's RumOR RaG

===== SWAN SONG How well I remember Black Friday. On that particular evening, I was travelling to a concert with a friend (who had owned a TI for about a year) and he mentioned is that it will need a lot of support from the software people and I doubt that will happen considering the small size of the hardware base. During the past month or so I have talked with a lot of TI owners. They always ask what I think of the Geneve and I can't understand it. If that's what you want... """"

So the guy bought an IBM - big deal.Anyway, he went on and on ad nausea. Human nature I guess. The reason I think My Astro is better than the next guy's Aerostar.

See you at the next meeting. CARUK

99-Animator: a review by John Thomson, STICC

99-Animator is a fairware assembly language program written for the TI99/4A by Mike McCann of McCann Software, P.O. Box 34160, Omaha NE 68134. For those who like it, or, more likely, for those whose kids like it, a fairware contribution of \$10 is suggested.

First of all, what do we mean by animation? It is the display of a sequence of pictures in rapid succession, each picture being slightly different from the previous one. Thus the illusion of continuous motion is produced. A familiar example is the motion of sprites. In order to get a smooth illusion of motion, the difference between successive pictures should be small. The smallest possible difference would be one pixel. In 99-Animator the smallest difference, i.e. the resolution of the picture, is a 4 pixel by 4 pixel block. Thus the motion is a bit choppy.

Although this is not a high-resolution graphics program, there are other advantages, such as the ease of use. No programming skills are required, thus the program is readily useable by children, although adults can have fun with it too.

The way it works is that there are up to 22 different frames (displayable pictures) that the program will display in succession. You can vary the speed. The process repeats until stopped.

Pictures can be created in different ways. You could manually draw each one, but this would be tedious and time consuming. You can draw one picture on a "mat" and have the program move the picture in any given direction. The mat picture will then be written to the frames automatically. You can then add more mat pictures and have them move in other directions to create a complex moving display.

In addition to the "moving picture" type of animation, there is the "changing picture" type. In other words, you can change the picture in some way from one frame to the next, with or without moving the picture around at the same time. In order to do this, you may need to edit each frame individually.

Pictures are drawn by moving the cursor around with various keyboard keys. In addition to up, down, left, and right, you have the four diagonals. Erasing is done in a similar fashion. You can also select colors: foreground, background, screen border, and cursor. Only the top two-thirds of the screen is used for pictures; the bottom third is used to display menu prompts and command entry.

Animations you create can be saved to disk. You can do a disk directory from within the program. A sample program is included that demonstrates the operation of a six-cylinder four-cycle internal combustion engine.

Because no programming skills are required, almost anyone can use this program, although an introductory demonstration would be useful since the documentation is minimal. You need extended basic or editor/assembler, a disk drive, and 32K memory.

In conclusion, I think 99-Animator is a good introduction to the basics of animation, and is a program you can have some fun with.

FOR SALE: (1) Centronics Model 739 7x8 Dot Matrix printer.

Parallel (PIO) Interface. Asking \$200.00

(2) Digital Equipment Corp. Decwriter LA36 printer.

Wide carriage, integral keyboard, serial RS232 interface.

Asking \$250.00

Contact Bob Speidel at 374-3531 (or see me at the next meeting. I'll bring the manuals.)

The following article is submitted by Steve Zabarylo, a STICC member.

Here finally are the few words I promised about the "hacking" I did to Darryl's consol. You may recall the 32k that I installed in the CorComp stand alone RS232 box. This is what Darryl was using for his system but with the stand alone controller and a disk drive his limited desk space was all but used up. So, my first objective was to give Darryl as much desk space as possible. Placing the 32K memory in the consol or speech synthesizer would eliminate the box at the end of the daisy chain. Also this would reduce the parts count on the desk and eliminate one connector and its attendant problems. My second objective was to reduce the wear and tear on the grom port. If two of the 3 modules that Darryl uses could be put in the consol, module swapping could be all but eliminated. As this consol has already been modified with a remote keyboard, its desk placement would be made very flexible by not requiring frequent access to the grom port to change modules.

My third objective was to perform the modifications with the least amount of tampering on the mother board. The final plan was to include 32k of 6264 Cmos RAM, one Editor/assembler GROM and 2 disk manager GROMs inside the consol with a switch to select between the internal GROMs and the cartridge port. The switch, a 2 pole, 3 position non shorting type would be supplemented with a momentary contact switch to be used as a reset switch.

Placing the RAM in the consol would take advantage of the address decoding available on the main board. If I had chosen to place the extra ram in the speech synthesizer two more chips would be required.

Since the power and most of the signals required for the 32k additional RAM are available at the grom port, the right angle connector was the obvious place to make the bulk of the connections. Some changes were made to the traces on this connector (described later) to enable installing the grom selector switch.

As the consol groms 0, 1 and 2 are socketted, it was a simple matter to install the EA and DM chips "on board". Two of the groms were piggy-backed and reinstalled. The third grom had the EA chip on its back and that pair placed in the second socket. The third socket was used for the pair of DM chips. With the exception of pin 14 of the added groms all pins of the piggybacked pairs were soldered together. Two lines from the switch provide -5v to pins 14 of the EA and DM chips.

Five signals not available on the grom port would be taken from U504 and U508 on the main board. Having a good soldering station at my disposal, I chose to remove those chips and install sockets. The required connections to these chips were much easier to make. Should it be required, transferring this complete modification to another consol could be accomplished with just a screwdriver.

The completed consol works great. With some joggling of components Darryl now has a bit of elbow room on his desk and I'm already working on an "edge-on" stand to free up even more space.

All the pins of the top chip must evenly grip the pins of the lower chip. With the chip (going on the top) on its side on a flat surface rock the chip towards its bottom bending in the pins until they make a right angle with the bottom of the chip.

The next pair to be mated will be the remaining console grom and the Editor/assembler chip which goes on top. After aligning the E/A groms leads as above, bend pin 14 straight out and cut off the narrow part. The rest of the leads get soldered to the lower chip. About 10 to 12 inches of fine gauge wire is now soldered to pin 14.

The two Disk Manager groms are next. Pin 14 of both these chips must be bent straight out and shortened. Solder these chips together as above with either one on top. Again using 10 to 12 inches of fine wire strip sufficient insulation to allow the pin 14 connection to bridge the upper and lower chips. If you are the fussy type use a different color wire from that used for the E/A chip or some other method of identifying it.

Stacking these groms two deep is the limit to fit inside the RF shield. If you stack them three or more deep, a hole must be cut in the shield to provide clearance. I have no idea how many groms can be stuffed in this way and still work. I have one multiple module with seven groms in it from my first hardware project on the 99/4A. The other limiting factor is finding a two pole switch with sufficient positions.

General Notes on soldering:

- clean surfaces to be soldered then keep your fingers off them.
- very light use of very fine sandpaper is fine for chip pins but don't sand off the tinning.
- use a good liquid flux to aid in quick solder flow.
- no solder guns or woodburners, use a decent soldering tool or forget it. 25 watt wood burners don't have enough heat to allow a quick connection and leave the gun for working on the evestroughing.
- finish every job with a good flux cleaner/remover.
- the little brushes they sell for applying solvent cement to ABS pipe with the bristles cut to about 1/4 inch length gets the best out of your flux remover.

Some considerable time has passed since I started this article and in the intervening months many more changes have been made to my sons system. We won't mention the down time ratio. When the equipment has been in operation the original mod (32k mem and addn'l Groms) has worked with no problems. My continuing quest for total integration of the system into one package has progressed to a homemade expansion box that holds the standalone disk controller, speech synthesizer and one power supply that powers everything including the disk drive. The box also accomodates the power cord, line filtering, and the only power switch. The console is external and connected with a short ribbon cable. Standing the box and the console on end makes a very small footprint on the desk, and allows for good ventilation of the power supply.

Anyone still awake can now proceed to the details of the consol bashing. Here is an outline of the various lumps they are divided into:

- General disassembly notes
- Main board changes
- Grom chip work
- Port connector changes
- RAM Chip assembly
- GROM select switch and RAM wiring
- Reassembly
- General notes on soldering
- Operation

Note: every caution and waver you have ever seen in a construction article applies.

General Disassembly Notes;

With the RF shield removed locate the area on the underside of the top section that is immediately over the consol grom chips. a length of masking or electrical tape placed here now will eliminate the possibility of shorting the connections made to the groms when the shield is reinstalled. Do it now so you won't forget. If you short the -5v to ground on the shield your cool running replacement power supply will be the next addition to your junk parts box.

Main Board Mods;

Five connectins are required to U504 and U508 to obtain address dcoding for the memory chips being added. These may be made directly to the leads of these chips with fine guage wire as described in the wiring section. If you are equipped to remove these chips and install sockets, prepare these chips as follows. Bend out pins 7, 9, 10 and 14 of U504(74LS138) and attach 8 inches of fine guage wire. Attach another 8 inch length of wire to the bent out pin 9 of U508(74LS04) and identify this wire so it will not be mistaken as one of the other 4. A different coloured wire is a nice touch.

Now is a good time to replenish the silicon heat transfer compound on top of the 9918 VDP chip and the 9904 if your board has a heat sink for that one. as an alternative to the TMS9918 a you may wish to substitute a TMS9928 chip to obtain color difference signals to drive a converter for RGB or RGBI monitors. This chip is also an improvement for those using a black and white TV as a monitor providing a sharper picture from the luminance only signal. No other changes to the mother board are required in this instance, just a straight swap of chips. To use the colour difference signals 2 resistors must be added and two jumpers must be changed. Some boards would also require a modification of the DIN connector.

Grom Chips

Remove consol grom chips U500,501 and 502 noting the location of pin 1 as identified by the notches at the end of the chips. Any two of these chips must be piggybacked and all leads soldered together where they overlap(refer to general notes on soldering), being careful about them being oriented correctly. Soldering pin 1 of the upper chip to pin 9 of the lower chip will give you an excuse to practice all your favourite expletives.

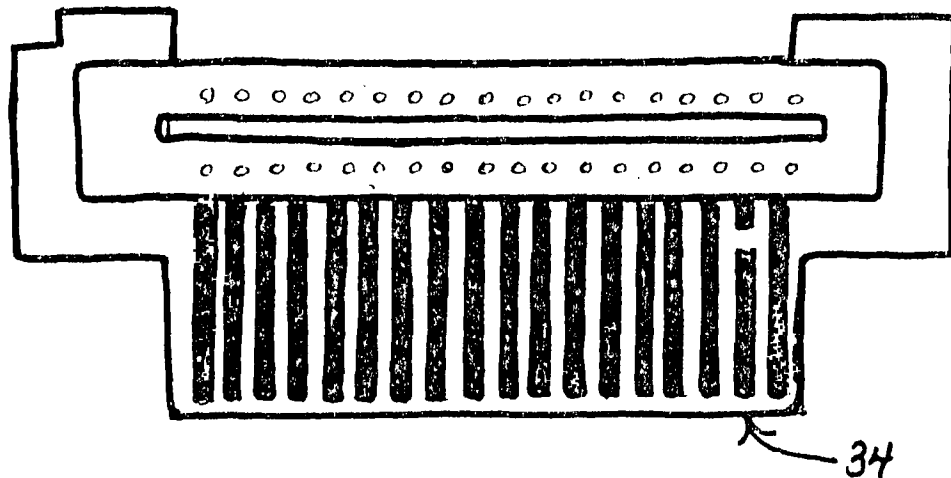
Port connector changes

This part consists of a card edge connector and a small PC board. Refer to the front and back views of the PCB for the location of the traces to be cut (lines 1 and 34). The resistor (51k) is connected between lines 21 and 34 on the back of the connector by wrapping 1 tdurn of the leads around the pins. Trim excess lead length but do not solder yet.

RAM chip assembly

The memory chips are very sensitive to static so exercise great care in their handling. The first step is to check that the pins make good contact when the chips are stacked on on top of another. Next, pin 22 of each of the 4 chips is bent out straight. With the pins clean, carefully stack the chips keeping pins in correct alignment, and solder all pins together where they overlap. Take your time so the assembly isn't overheated. Bend the leads of a 22uf cap. and use a single turn to attach to pins 14 and 26 on the bottom of the stack being careful to observe correct polarity of the capacitor.

FRONT VIEW



REAR VIEW

