

Cincinnati Commodore Computer Club

Phone: 513-248-0025 Email: thunderbird@iglou.com
c/o 31 Potowatomie Trail Milford, OH 45150

August, 2006 President's Page

Howdy Fellow Commodore Users!

When our newsletter editor saw my comment in July that there might not be an August issue of the 4 C'er, he wondered why not? Usually our picnic month doesn't require much added publicity, but since it was requested we have an August issue, here we are!

If you haven't planned your covered dish, yet, what are you waiting for? I'm keeping my fingers crossed that it will be a nice, (but not overly hot) sunny, summer day. I plan to bring a main course and a surprise dessert. I'll give one hint about the surprise. If you were at our inventory party, you have your clue. Hopefully that will be enough suspense for those who were not there, to come visit to find out what all the hub-bub is about. Lord Ronin of Q-Link is the fellow to thank for the recipe of the intriguing dessert. So, we will have to make sure he gets an honorary bite, in spirit of course. (I don't think he will be in our neighborhood during our picnic.)

For those interested in the Chicago Expo, this fall, Jason Compton released detailed information last month. Hopefully you will see the full details here in the newsletter. I am trying to make an appearance at this show, but I'm not 100% sure I can get the time off from work. This expo promises to be different from the usual Chicago Expos, so why not check it out? Maybe I'll see you there!

For those of you who might have misplaced last month's newsletter, our picnic will be held at the same place as previous years in Caldwell Playground. It is located at the intersection of Dillward and North Bend Road in Carthage. The time is our usual meeting time at 2PM.

This park is between Mill Creek and the railroad, so if you crossed both, you went too far. Don't forget your covered dish filled with yummy food. The club will be bringing soft drinks, ice, paper plates, cutlery, cups, and an assortment of chips. Oh, one other thing, bring your appetite, too! If you have a preference of a particular drink, let me know (as long as it is non-alcoholic).

See you at the picnic, and Keep Commodoring!

David Witmer,
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Newsletter Articles Wanted!

I am formally inviting all CCCC members to submit articles for the newsletter. Preferred topics would be reports from events relating to retro-computing, reviews of new commercially-produced hardware, hacking guides for enhancing existing hardware, articles about new or unique hardware (Maybe for the VIC20?), and anything Commodore-related.

Also, if you have any fun puzzles, quizzes, funny pictures, weird news stories, or interesting web sites that relate to Commodore or retro-computing in general, please forward them to me at: six@thedarkside.ath.cx so that I may compile them for upcoming issues. THANKS! - Editor

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The World's Smallest "DIGI"! - By Leif Bloomquist

About Digis on the Commodore 64

As a Commodore owner, you're aware of how innovative the SID chip was for its time, with its three voices and different waveforms. But the SID has another way to produce sound - a "fourth voice", if you will, in the form of digitized sound samples. These are usually referred to as "digis".

Digis work by manipulating the volume register (54296 or \$D418 hex) at high speed. You can hear this effect yourself. Turn on your C64, turn the volume on your monitor or speakers up a bit, and then type:

```
POKE 54296,15
```

You will hear a slight "pop" from the speaker. The effect is even more pronounced on older C64s, due to a slight design flaw in the SID circuit. But this flaw was used by programmers to great effect for digitized speech or drums in game music.

By changing this register very quickly, you can play back digitized samples on the C64. With 4 bits dedicated to the volume register, you even get 16 levels of sampling resolution which makes them sound even better.

The TinySID Contest

The TinySID contest, organized by Stefano Tognon in Italy, is an "online C64 music-programming competition made in love of SID music." It challenges people to write songs for the C64 and SID chip, that are either 256 bytes (yes, *bytes*), 512 bytes, or 1,024 bytes (1KB) in length.

The website for the contest is here. This is the second year it has been held.

<http://digilander.libero.it/ice00/tsid/tinysid2/index.html>

I decided to enter the contest this year. I had been playing around with digis on the C64 and thought - what is the smallest digi possible?

With some experimentation, I found that 256 bytes was about the smallest digi that still sounded good. Any less than that and the sample became too rough and crackly.

However, I still needed room for the code to play back the digi, and to store the notes for a short "song". So I would not be able to enter the 256 byte category, I had to move up to the 512 byte category.

Creating the Mini Digi

To start, I needed samples to work with. Note that a digi has 4-bit resolution, but a byte has 8 bits. So I was actually able to cram *two* digis together, one in the upper four bits, and one in the lower four bits.

Also, it is possible to change the pitch or frequency of a digi, by playing it back faster or slower. So I decided to make my entry a drum solo, with two different instruments. By changing the pitch, I could simulate more instruments.

To create the drum sound digis, I used a Windows program called 'FruityLoops'. Fruityloops (www.fruityloops.com) is a PC-based music and "looping" software for creating electronic music. I created a bass drum sample, and a snare drum sample.

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The World's Smallest "DIGI"! (Continued)

From there, I manipulated the sample in another Windows program called GoldWave (www.goldwave.com) to be only four bits per sample. Finally, I wrote my own software in Microsoft Visual Basic (the modern version of BASIC on the C64!) to change the samples so they contained only positive numbers.

Now that I had my samples, I needed to write software in Machine Language on the C64 to play them back. Machine Language is necessary to get the playback speeds, BASIC is too slow!

Each note in the "song" has three elements:

- Which sample to play (1 or 2)
- Playback frequency
- Duration (time before the next note)

I came up with a scheme where I could pack all this information into a single byte. The highest bit determined the sample. Three bits were used for the playback frequency. Four bits were used for the duration. This way, I had 16 choices for the duration, which could be evenly divided into whole, quarter, half, and sixteenth notes. I used the C64's Jiffy clock to determine the elapsed time.

By changing the frequency, I could simulate other instruments: When sped up, a bass drum sounds like a tom-tom drum. A snare when played faster sounds like a hi-hat.

Pulling it all Together

The last thing to do was to actually write the drum solo. Using Excel on the PC, I generated a spreadsheet that would allow me to easily write the song as a series of notes. Excel would then "pack" the song into the bytes using the format described above.

I assembled the song, software, and digis together using the DASM Assembler (<http://www.atari2600.org/DASM/>) on my PC and transferred it to my C64. From there, I tweaked the solo a little bit and went through a few iterations until I was happy with how it sounded.

Here's the breakdown of the final program:

Samples:	256 bytes
Playback code:	143 bytes
The song:	109 bytes
TOTAL:	508 bytes

Then two bytes are needed for the load address (\$0801) and I was done, with two bytes to spare!

The Results

While I received many technical compliments, I still came in last place in the 512-byte category. The judges' commentary is given below:

- * But were sample tiny music impossible..? Good engine!
- * Clicke-di-clak. :)
- * Whooa! Impressive
- * Good concept, I suppose, but didn't really work for me.
Perhaps some sort of soft synth or sample generator or something would have worked better.
- * Bah.. "cool", not.

I was still very pleased that I managed to make the digis work in such a small space! Next year I will try again.

If you want to learn more, the source code to the program is available at the contest website (given above), along with all the other entries.

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Upcoming ECCC Expo Information

The Organizing Committee, Executive Board, Youth Reserve and Women's Auxiliary(*) of the Emergency Chicagoland Commodore Convention are pleased to announce the first-ever ECCC event:

Saturday, September 30
Fairfield Inn and Suites (Marriott)
645 West North Ave
Lombard, Illinois 60148 USA
1-630-629-1500

<http://marriott.com/property/propertypage/CHIFS>

8 AM - 6 PM

Here's the program, folks:

- The event itself is being held in the Heron Point building next to the Fairfield Inn. (Long-time retro event-goers in the Chicagoland area will recognize this facility, it was used by SWRAP in the past and is also used for a summertime classic console event.) Meeting room C is our place. Doors will open at 8 AM, event closes at 6 PM. Meeting room C is at basement level, below what Heron Point fans know affectionately as the "level of discharge."
- There is an "after-party" room reserved in the hotel as well. Last year's after-party event infamously gave life to the Commodore-controlled animatronic cat. Who knows what will happen this year?
- Come to the show, bring your stuff, walk in. Dealer tables are free. User tables are free. Admission is free. Such a deal.
- Yes, this is on short notice. Unfortunately, your "regularly scheduled" fall Chicago event isn't being held this year, so there was comparatively little time to get something brewing.
- A small number of rooms has been reserved for attendees Friday and Saturday nights at \$79 plus whatever hotel taxes various municipal bodies have sneakily applied to soak out-of-town guests. Keep mentioning things like "Fall Commodore Expo" or "ECCC" or "Compton" or something until you get the price you want.
- See you there.



There is a website, but contain your expectations:
<http://starbase.globalpc.net/eccc>

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Jason Compton

(*) - Note: may actually all be one person.

Editor's Note: If anyone wants to carpool, I'll have room and will be going up on Friday night.

Found on the Weird Wide Web:



COMMOCOFFEE 64: colleghiamo la caffettiera al nostro 64

In the July newsletter, you may recall, we had some pictures of a wooden C64. In all honesty, I thought that was the weirdest C64-related thing I was ever going to see. After my 20-something years of tinkering with these machines, I really thought I'd seen it all.

I was wrong.

The above-pictured ad is from a 1985 issue of the Italian computer magazine "Microcomputer". (Sample covers at right).

Yes, it really is a C64-powered espresso maker, complete with milk-steamer. I wonder if our local Starbucks knows about this...

-Editor





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Next Meeting:

Sunday, August 20, 2006
 2:00 PM

Location:

Caldwell Park (Picnic)

