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Subject: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Fri, 02 May 2014 11:14:02 GMT

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---

Hi,

most ML monitor programs for the C64 seem to be 8 KB in size. Is there any halfway usable alternative that fits in 4 KB or at most 6 KB? It doesn't need that fancy up/down scrolling as the intended use would be via a serial line. So, normal scrolling is there as newlines are printed but backward scrolling is not available.

Also, it wouldn't have to be specifically for the C64 but that would probably be easiest to port to the target platform for me. Available routines for I/O would be reading and printing a character, nothing more. There is no such thing as disk I/O and other such things. Simple commands like A, D, C, T, I, M and G, \*maybe\* a number conversion command (oct, hex, dec), would be enough, @ and other advanced commands are not needed.

Is there such thing? Or is there a source for a monitor program which I could adapt for my needs?

--

cul8er

Paul

paul.foerster@gmx.net

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Anssi Saari](#) on Fri, 02 May 2014 12:10:34 GMT

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---

Paul Förster <paul.foerster@gmx.net> writes:

> Hi,

>

> most ML monitor programs for the C64 seem to be 8 KB in size. Is there

> any halfway usable alternative that fits in 4 KB or at most 6 KB?

I seem to remember having a monitor called "Zoom 49152" back then which probably was about 4k since I think it loaded to \$C000...

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Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Fri, 02 May 2014 15:22:19 GMT

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Hi,

- > I seem to remember having a monitor called "Zoom 49152" back then which
- > probably was about 4k since I think it loaded to \$C000...

I looked around a while on zimmers.net and found a few examples:  
Supermon, Vicmon and Smon. I'll check them out.

Never heard of Zoom, though and couldn't find it too.

--

cul8er

Paul  
paul.foerster@gmx.net

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [rusure](#) on Fri, 02 May 2014 23:27:47 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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On Friday, May 2, 2014 9:22:19 AM UTC-6, Paul Förster wrote:

>

- > I looked around a while on zimmers.net and found a
- > few examples: Supermon, Vicmon and Smon. I'll check
- > them out.
- > --
- > cul8er
- >
- > Paul
- > handle = paul.foerster    ISP = gmx.net

My copy of the SUPERMON installer takes up 29 CBM sectors. But the SUPERMON object program takes up 13 CBM sectors. My conversion from CBM sectors to KB may be flaky but the object program may meet your program size limitations. The installer is probably too large for your needs. It looks like I have Mr. Butterfield's source code as well.

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [Paul Förster](#) on Sat, 03 May 2014 08:55:00 GMT  
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---

Hi rusure,

- > My copy of the SUPERMON installer takes up 29 CBM sectors. But the
- > SUPERMON object program takes up 13 CBM sectors. My conversion from
- > CBM sectors to KB may be flaky but the object program may meet your

> program size limitations. The installer is probably too large for your  
> needs. It looks like I have Mr. Butterfield's source code as well.

16 sectors (17 on disk) are 4 KB, 32 (33 on disk) are 8 KB. Blocks to  
KB conversion is always multiplication or division by 4. So yes, 13  
blocks meet my restriction.

--

cul8er

Paul  
paul.foerster@gmx.net

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [Hg](#) on Sat, 03 May 2014 09:42:29 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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On 02/05/2014 16:14, Paul Förster wrote:

> Hi,  
>  
> most ML monitor programs for the C64 seem to be 8 KB in size. Is there  
> any halfway usable alternative that fits in 4 KB or at most 6 KB? It  
> doesn't need that fancy up/down scrolling as the intended use would be  
> via a serial line. So, normal scrolling is there as newlines are printed  
> but backward scrolling is not available.  
>  
> Also, it wouldn't have to be specifically for the C64 but that would  
> probably be easiest to port to the target platform for me. Available  
> routines for I/O would be reading and printing a character, nothing  
> more. There is no such thing as disk I/O and other such things. Simple  
> commands like A, D, C, T, I, M and G, \*maybe\* a number conversion  
> command (oct, hex, dec), would be enough, @ and other advanced commands  
> are not needed.  
>  
> Is there such thing? Or is there a source for a monitor program which I  
> could adapt for my needs?

Way back in 85 I typed in a monitor program I found in a magazine.  
Here is the listing as it was presented to me-

[http://archive.org/stream/your-computer-magazine-1985-06/YourComputer\\_1985\\_06#page/n96/mode/1up](http://archive.org/stream/your-computer-magazine-1985-06/YourComputer_1985_06#page/n96/mode/1up)

Weird thing about this is that the author of the monitor is credited  
as John Twiddy. I've always wondered if this was indeed the famous  
programmer before he become known to the world as the coder of the  
64 conversion of Tau Ceti.

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T

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Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Anssi Saari](#) on Sat, 03 May 2014 09:52:59 GMT

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Paul Förster <paul.foerster@gmx.net> writes:

> Hi,  
>  
>> I seem to remember having a monitor called "Zoom 49152" back then which  
>> probably was about 4k since I think it loaded to \$C000...  
>  
> I looked around a while on zimmers.net and found a few examples:  
> Supermon, Vicmon and Smon. I'll check them out.  
>  
> Never heard of Zoom, though and couldn't find it too.

Google found it here on a disk image, actually called zoom in 49152:

<http://ftp.cbm8bit.com/index.php/8bit/commodore/disk-image/bddef7e787f3aea50b9b39051dfbc1af>

At least that one seems to run. Seems to be on other images there too.

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Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [rusure](#) on Sat, 03 May 2014 11:23:03 GMT

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On Saturday, May 3, 2014 2:55:00 AM UTC-6, Paul Förster wrote:

> Hi rusure,  
>  
>  
>  
>> My copy of the SUPERMON installer takes up 29 CBM sectors. But the  
>  
>> SUPERMON object program takes up 13 CBM sectors.

I missinterpreted the entries in my SUPERMON directory. The 29 sector entry is a SUPERMON BASIC program INSTRUCTION manual not an INSTALLer. The 13 sector program is the SUPERMON installer.

---

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Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [dott.Piergiorgio](#) on Sat, 03 May 2014 13:14:24 GMT

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Il 03/05/2014 01:27, rusure ha scritto:

> My copy of the SUPERMON installer takes up 29 CBM sectors. But the  
> SUPERMON object program takes up 13 CBM sectors. My conversion from  
> CBM sectors to KB may be flaky but the object program may meet your  
> program size limitations. The installer is probably too large for  
> your needs. It looks like I have Mr. Butterfield's source code as  
> well.

well, for me the sector/Kbyte conversion is more than flaky, because I  
happen to dabble also with CP/M....

Best regards from Italy,  
dott. Piergiorgio.

---

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Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Sat, 03 May 2014 14:15:46 GMT

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Hi Anssi,

> Google found it here on a disk image, actually called zoom in 49152:  
> <http://ftp.cbm8bit.com/index.php/8bit/commodore/disk-image/bddef7e787f3aea50b9b39051dfbc1af>  
>  
>  
> At least that one seems to run. Seems to be on other images there too.

cool! Thanks for that one. :)

Btw., what I always wanted to know: What is that initial "c\*" for? Some  
monitors also say "b\*" or some other letter when started.

load"zoom\*",8,1

searching for zoom\*  
loading  
ready.  
sys49152

c\*  
pc sr ac xr yr sp  
..; a7e9 39 31 35 32 ff

--  
cul8er

Paul  
paul.foerster@gmx.net

---

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [Anssi Saari](#) on Sun, 04 May 2014 06:42:15 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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Paul Förster <paul.foerster@gmx.net> writes:

> Hi Anssi,  
>  
>> Google found it here on a disk image, actually called zoom in 49152:  
>> <http://ftp.cbm8bit.com/index.php/8bit/commodore/disk-image/bddef7e787f3aea50b9b39051dfbc1af>  
>>  
>>  
>> At least that one seems to run. Seems to be on other images there too.  
>  
> cool! Thanks for that one. :)  
>  
> Btw., what I always wanted to know: What is that initial "c\*" for?  
> Some monitors also say "b\*" or some other letter when started.

No idea. Some monitors don't so uh... Nonessential information?  
Misspelling for C= maybe?

---

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Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [Paul Förster](#) on Sun, 04 May 2014 09:39:49 GMT  
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---

Hi Anssi,

> No idea. Some monitors don't so uh... Nonessential information?  
> Misspelling for C= maybe?

I doubt that it's a misspelling for C= because some monitors also seem to display B\*. IIRC, I think I even have seen an S\* somewhere.

--  
cul8er

Paul  
paul.foerster@gmx.net

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Anssi Saari](#) on Mon, 05 May 2014 09:13:20 GMT

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Paul Förster <paul.foerster@gmx.net> writes:

> Hi Anssi,

>

>> No idea. Some monitors don't so uh... Nonessential information?

>> Misspelling for C= maybe?

>

> I doubt that it's a misspelling for C= because some monitors also seem  
> to display B\*. IIRC, I think I even have seen an S\* somewhere.

I think B\* means you hit a breakpoint, from a quick try it does in Zoom at least. Jim Butterfield's monitors Tinymon and Supermon seem to print the B\* at start too as does Vicmon according to its manual. I guess that just means those monitors use the same code path at initial startup as when actually hitting a breakpoint.

BTW, if you're interested in other small monitors, Tinymon (for VIC) is less than 1 kB and available on zimmers.net in prg format. Although apparently it needs some modification to run on a C64. Too bad the assembly source for Tinymon or (unmodified) Supermon doesn't seem to be available on the net.

I have to admit I have no better ideas about what Zoom tries to say with C\*. I guess S\* could mean startup?

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [lawless.jim](#) on Mon, 05 May 2014 10:56:16 GMT

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---

A source file for Supermon64 can be found on Stephen Judd's Fridge site:

<http://www.ffd2.com/fridge/>

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---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Mon, 05 May 2014 13:02:48 GMT

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Hi Ansii,

> BTW, if you're interested in other small monitors, Tinymon (for VIC) is  
> less than 1 kB and available on zimmers.net in prg format. Although  
> apparently it needs some modification to run on a C64. Too bad the

> assembly source for Tynymon or (unmodified) Supermon doesn't seem to be  
> available on the net.

I'd love to see a source for a monitor program because there would be  
some things I'd be interested in how other people did it, mostly the  
parsing mnemonics and translating them to code and vice versa part.

> I have to admit I have no better ideas about what Zoom tries to say with  
> C\*. I guess S\* could mean startup?

I would guess the same with B\* and S\*. But then, there's still C\*.

--  
cul8er

Paul  
paul.foerster@gmx.net

---

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [Paul Förster](#) on Mon, 05 May 2014 13:07:11 GMT  
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Hi Jim,

> A source file for Supermon64 can be found on Stephen Judd's Fridge site:  
> <http://www.ffd2.com/fridge/>

cool! Thanks for the pointer. :)

--  
cul8er

Paul  
paul.foerster@gmx.net

---

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [rusure](#) on Mon, 05 May 2014 13:17:44 GMT  
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On Monday, May 5, 2014 3:13:20 AM UTC-6, Anssi Saari wrote:

> Paul Fiörster writes:

> Supermon doesn't seem to be available on the net.

I don't remember where I got my copy but my rolodex  
says SUPERMON is in the TRANSACTER disk image here:

<http://www.zimmers.net/anonftp/pub/cbm/magazines/transactor/disks/09.d64.gz>

If the source code isn't on the disk, I could post it on GOOGLE drive.

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [rusure](#) on Mon, 05 May 2014 15:17:11 GMT

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---

On Monday, May 5, 2014 4:56:16 AM UTC-6, lawle...@gmail.com wrote:

> A source file for Supermon64 can be found on Stephen Judd's Fridge site:

>

> <http://www.ffd2.com/fridge/>

Mr. Mr Butterfield dates the FRIDGE source at 1983. This may be adequate for Mr.Forster's needs.

The Transactor disk contains only the SUPERMON 1985 binaries The BASIC program instruction manual, not the SUPERMON source. The source code in my possession is dated 1985. I am almost positive that it contains no SCPU adaptations

The most likely location for the 1985 source code may be on the video cam site run by Rod and Gaelyn Gasson. I was just denied access because I was unable to provide either a user id or password. I was not provided a way to register.

Should anyone need the 1985 source code, I could post it on Google drive.

---

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Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Anssi Saari](#) on Mon, 05 May 2014 16:03:13 GMT

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---

lawless.jim@gmail.com writes:

> A source file for Supermon64 can be found on Stephen Judd's Fridge site:

>

> <http://www.ffd2.com/fridge/>

Well, the link there to the "original" source  
(<http://www.ffd2.com/fridge/programs/supermon.s>) has this comment in it:

\* Merlinized and adapted for the SuperCPU by

\* Stephen L. Judd

That's why I said the unmodified source doesn't seem to be available. I

guess "Merlinized" means it's compatible to Merlin Assembler but what does adapting to the SuperCPU entail?

Anyways, one can see there the apparently unconditional print of the B\* after the break label in this code:

```
ldx #$42
lda #$2a
jsr wrtwo
```

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Tue, 06 May 2014 00:11:46 GMT

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Hi rusure,

- > I don't remember where I got my copy but my rolodex
- > says SUPERMON is in the TRANSACTER disk image here:
- > <http://www.zimmers.net/anonftp/pub/cbm/magazines/transactor/disks/09.d64.gz>
- > If the source code isn't on the disk, I could post it on GOOGLE drive.

yes, Supermon is on the disk. Thanks very much. I'd appreciate the source, though, which unfortunately is not on the disk.

You can also send it to me via email. Thanks very much in advance.

--

cul8er

Paul  
paul.foerster@gmx.net

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Tue, 06 May 2014 00:21:34 GMT

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---

Hi Anssi,

- > Anyways, one can see there the apparently unconditional print of the B\*
- > after the break label in this code:
- >
- >     ldx #\$42
- >     lda #\$2a
- >     jsr wrtwo

which makes it kind of an arbitrary welcome message...

--  
cul8er

Paul  
paul.foerster@gmx.net

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [rusure](#) on Tue, 06 May 2014 17:18:48 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

On Monday, May 5, 2014 6:11:46 PM UTC-6, Paul Förster wrote  
> You can also send it it me via email. Thanks very much in advance.

supermon+64.src has been uploaded to and should be downloadable from

<https://drive.google.com/file/d/0B80L9cEZ8YnvTE5nWFMwWEZQam8/edit?usp=sharing>

It's petsci text so NOTEPAD can almost read it. I don't have the slightest idea what C64 SW can be used to assemble it, but those with any programming skills should be able to adapt the source to their assembler.

I uploaded it as a file available to anybody. That way, I only needed one operation so that all interested parties can acquire the source.

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [dott.Piergiorgio](#) on Tue, 06 May 2014 19:20:20 GMT  
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---

Il 06/05/2014 19:18, rusure ha scritto:

> On Monday, May 5, 2014 6:11:46 PM UTC-6, Paul Förster wrote  
>> You can also send it it me via email. Thanks very much in advance.

>  
> supermon+64.src has been uploaded to and should be downloadable from  
>  
> <https://drive.google.com/file/d/0B80L9cEZ8YnvTE5nWFMwWEZQam8/edit?usp=sharing>  
>

> It's petsci text so NOTEPAD can almost read it. I don't have the slightest idea what C64 SW can be used to assemble it, but those with any programming skills should be able to adapt the source to their assembler.

after the CR/LF conversion, also less(1) read it, perfectly, as I can see.

indeed it is an assembler I can't identify; I noticed the ^Z filler typical of CP/M and also there's some multi-instruction lines, reminiscent of CP/M ASM

Another helpful thing, whose can help, and the labels identified by starting from the first column.

Best regards from Italy,  
dott. Piergiorgio.

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---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [Anssi Saari](#) on Tue, 06 May 2014 22:00:59 GMT  
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---

rusure <r\_u\_sure9@yahoo.com> writes:

> On Monday, May 5, 2014 6:11:46 PM UTC-6, Paul Förster wrote  
>> You can also send it it me via email. Thanks very much in advance.  
>  
> supermon+64.src has been uploaded to and should be downloadable from  
>  
> <https://drive.google.com/file/d/0B80L9cEZ8YnvTE5nWFMwWEZQam8/edit?usp=sharing>  
>  
> It's petsci text so NOTEPAD can almost read it. I don't have the slightest idea what C64 SW  
can be used to assemble it, but those with any programming skills should be able to adapt the  
source to their assembler.  
>  
> I uploaded it as a file available to anybody. That way, I only needed one operation so that all  
interested parties can acquire the source.

Curious. Looks like the man himself said (in this group, way back) that  
his original source was in basic format to be assembled with an  
assembler called PAL. Clearly this isn't in that format. Still,  
interesting file.

---

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [Paul Förster](#) on Tue, 06 May 2014 23:14:07 GMT  
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Hi rusure, hi dott. Piergiorgio., hi Ansii,

On 2014-05-06 22:00:59 +0000, Anssi Saari said:

> rusure <r\_u\_sure9@yahoo.com> writes:  
>  
>> On Monday, May 5, 2014 6:11:46 PM UTC-6, Paul Förster wrote  
>>> You can also send it it me via email. Thanks very much in advance.  
>>  
>> supermon+64.src has been uploaded to and should be downloadable from

>>  
>> <https://drive.google.com/file/d/0B80L9cEZ8YnvTE5nWFMwWEZQam8/edit?usp=sharing>  
>>  
>> It's petsci text so NOTEPAD can almost read it. I don't have the  
>> slightest idea what C64 SW can be used to assemble it, but those with  
>> any programming skills should be able to adapt the source to their  
>> assembler.  
>>  
>> I uploaded it as a file available to anybody. That way, I only needed  
>> one operation so that all interested parties can acquire the source.  
>  
> Curious. Looks like the man himself said (in this group, way back) that  
> his original source was in basic format to be assembled with an  
> assembler called PAL. Clearly this isn't in that format. Still,  
> interesting file.

I downloaded it and found out, it's actually very simple. Do the following:

- convert from DOS to Unix format (line endings)
- replace all ".asc" with ".text" (carefull with regexp "." when doing this on Unix)
- replace all colons with newlines

et voila., you now have a perfect fine version which can be pumped through Style's tmpx. :-) I just did that on a Mac and it worked fine. I'm also doing a little code formatting on my version so that the code becomes a little easier to read. Now, if it only had a little more comments. It's really hard to read. :(

--  
cul8er

Paul  
[paul.foerster@gmx.net](mailto:paul.foerster@gmx.net)

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [lawless.jim](#) on Tue, 06 May 2014 23:38:30 GMT  
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---

Thanks for that source file!

That does look like someone LISTed a PAL file to another file without the line-numbers.

I changed the CR's to CRLF's and did a little reformatting ( indented and changed most of the colons to new lines. )

Here's the result:

<http://www.mailsend-online.com/supermon.zip>

In the above archive you'll find:

supermon.asm - Source with Windows/DOS CRLF's  
smonunix.asm - Source with only Unix LF's  
supermon.p00 - an assembled binary org'ed at \$c000

I used C64ASM to assemble the above and had no issues ( although I had intended to do some more formatting... )

I didn't really put it through its paces ... I would be interested to know if there are any bugs.

Note that I changed the origin to \$c000 so a SYS 49152 should activate the one above. If you'd like it assembled to some other locations, please let me know.

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [rusure](#) on Wed, 07 May 2014 03:38:39 GMT

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On Tuesday, May 6, 2014 11:18:48 AM UTC-6, rusure wrote:

> On Monday, May 5, 2014 6:11:46 PM UTC-6, Paul Förster wrote

>

>> You can also send it it me via email. Thanks very much in advance.

>

>

>

> supermon+64.src has been uploaded to and should be downloadable from

>

>

>

> <https://drive.google.com/file/d/0B80L9cEZ8YnvTE5nWFMwWEZQam8/edit?usp=sharing>

>

>

>

> It's petsci text so NOTEPAD can almost read it. I don't have the slightest idea what C64 SW can be used to assemble it, but those with any programming skills should be able to adapt the source to their assembler.

>

>

>

> I uploaded it as a file available to anybody. That way, I only needed one operation so that all interested parties can acquire the source.

My Macro Assembler Developement System (MADS) expects source containing machine instructions in petscii lower case letters. Simply adding a line feed to a Commodore end of line carriage return will change the petscii lower case letters to ASCII upper case letters. OK for

people reading a NOTEPAD display or printout. MADS chokes on line feeds added to end of line carriage returns. Other Commodore assemblers may also choke on files with petscii end of lines changed to ASCII end of lines.

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [rusure](#) on Wed, 07 May 2014 04:19:52 GMT

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J uploaded my adaptation of Mr. Butterfield's Supermon source to work with the Macro Assembler Devekoepment System (MADS). The adaptation can be found below and may be easier to deal with than Butterfield's original.

<https://drive.google.com/file/d/0B80L9cEZ8YnvUII6UFk5TndtMUk/edit?usp=sharing>

In the unlikely event that some may be interested, MADS can be found here :

<http://www.haddewig.de/nogames64/tools.html>

Click on the Commodore Assembler entry. The MADS files from the WEB site are 1 byte longer than those on my original Commodore system disk, except for the DOS WEDGE booting programs. Both WEDGE booters appear to perform equivalent operations. The MADS docs are here:

<http://project64.c64.org/misc/index.html>

---

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Subject: Re: 4 KB or 6 KB ML monitor? - MLMON64.ZIP

Posted by [George](#) on Wed, 07 May 2014 16:32:56 GMT

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### File Attachments

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1) [MLMON64.ZIP](#), downloaded 70 times

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Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Anssi Saari](#) on Wed, 07 May 2014 18:24:09 GMT

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Paul Förster <paul.foerster@gmx.net> writes:

>> Curious. Looks like the man himself said (in this group, way back) that  
>> his original source was in basic format to be assembled with an  
>> assembler called PAL. Clearly this isn't in that format. Still,  
>> interesting file.

>  
> I downloaded it and found out, it's actually very simple. Do the following:  
>  
> - convert from DOS to Unix format (line endings)  
> - replace all ".asc" with ".text" (carefull with regexp "." when doing  
> this on Unix)  
> - replace all colons with newlines

All but one I think? There's a CMP #":" in there too...

I used xa to assemble this. There were some snags, I converted the original to ASCII with petcat (included with Vice). Looks like xa's fine with the colons and understands .asc but it didn't like "lsr a" type of commands then, it complained there's no label 'a' so I had to change those to plain lsrs, same for and asls and rots too.

Then I also realized everything inside "" was converted by petcat to lower case ASCII which wasn't the greatest idea so had to convert those back. But after that xa built an identical binary compared to what tmpx created when the original was modified as you say.

> et voila., you now have a perfect fine version which can be pumped  
> through Style's tmpx. :-) I just did that on a Mac and it worked  
> fine. I'm also doing a little code formatting on my version so that  
> the code becomes a little easier to read. Now, if it only had a little  
> more comments. It's really hard to read. :(

Yeah. One wonders if there were more comments in the basic-like original.

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Wed, 07 May 2014 19:20:03 GMT

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Hi Anssi,

> All but one I think? There's a CMP #":" in there too...

hmmm, yes. That's the colon command, I guess. :)

> But after that xa built an identical binary compared to what tmpx  
> created when the original was modified as you say.

that's comforting. It always feels good if someone else could verify the things one does.

> Yeah. One wonders if there were more comments in the basic-like

> original.

I strongly doubt that because those are the programs that get written and never get changed or maintained. So developers don't "waste" their time commenting the code. I always do with mine, no matter whether I know I will have to look at it some time in the future or not. Comments are just vitally important.

--

cul8er

Paul  
paul.foerster@gmx.net

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Aaron Daughtry](#) on Thu, 08 May 2014 10:36:45 GMT

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On 2014-05-02 11:14:02 +0000, Paul Förster said:

> most ML monitor programs for the C64 seem to be 8 KB in size. Is there  
> any halfway usable alternative that fits in 4 KB or at most 6 KB?

[...]

> Is there such thing? Or is there a source for a monitor program which I  
> could adapt for my needs?

I recall many of such things, usually placed at \$C000 but some where also available in different versions, run-able at different addresses (\$1000, \$4000, ...) a nice one I recall typing myself in. I took the effort as it was able to work with "illegal" opcodes. Even this one sat fully in the 4KiB at \$C000. I should be able to find it still.

--

SD!

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Martijn van Buul](#) on Thu, 08 May 2014 10:40:19 GMT

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---

\* Paul Förster:

> Hi Anssi,

>

>> Anyways, one can see there the apparently unconditional print of the B\*

>> after the break label in this code:

>>

```
>>     ldx #$42
>>     lda #$2a
>>     jsr wrtwo
>
>  which makes it kind of an arbitrary welcome message...
```

My guess is that it's a relic of the past. On the old PET monitor, the welcome message would be B\* when the monitor was entered because of a BRK instruction, or C\* if it was entered because of a call.

See page 4 of

[http://www.commodore.ca/manuals/pdfs/PET\\_Machine\\_Language\\_Monitor.pdf](http://www.commodore.ca/manuals/pdfs/PET_Machine_Language_Monitor.pdf)

My guess is that Supermon merely tried to offer a familiar welcome message..

--

Martijn van Buul - [pino@dohd.org](mailto:pino@dohd.org)

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Thu, 08 May 2014 12:54:12 GMT

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---

Hi Martijn,

```
> My guess is that it's a relic of the past. On the old PET monitor, the
> welcome message would be B* when the monitor was entered because of a BRK
> instruction, or C* if it was entered because of a call.
> See page 4 of
> http://www.commodore.ca/manuals/pdfs/PET_Machine_Language_Monitor.pdf
> My guess is that Supermon merely tried to offer a familiar welcome message..
```

ah, so that's the reason. And I kept wondering for about 30 years because I never had any monitor instructions. :) Thanks for the pointer.

--

cul8er

Paul  
[paul.foerster@gmx.net](mailto:paul.foerster@gmx.net)

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Thu, 08 May 2014 12:55:04 GMT

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Hi SD!,

On 2014-05-08 10:36:45 +0000, SD! said:

- > I recall many of such things, usually placed at \$C000 but some where
- > also available in different versions, run-able at different addresses
- > (\$1000, \$4000, ...) a nice one I recall typing myself in. I took the
- > effort as it was able to work with "illegal" opcodes. Even this one sat
- > fully in the 4KiB at \$C000. I should be able to find it still.

I have a number of monitors already with Supermon+64 being the smalles  
with only 2.7K :)

--

cul8er

Paul

paul.foerster@gmx.net

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Anssi Saari](#) on Thu, 08 May 2014 12:55:22 GMT

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Martijn van Buul <pino@dohd.org> writes:

- > My guess is that Supermon merely tried to offer a familiar welcome message..

Cool, mystery solved :) In fact, the perhaps older Supermon 1.2 we most  
recently fiddled with greets with its start address, "..SYS 38169" by  
default when called, with brk it prints nothing except the register  
contents.

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [dott.Piergiorgio](#) on Thu, 08 May 2014 18:25:30 GMT

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Il 08/05/2014 14:55, Paul Förster ha scritto:

- > Hi SD!,

>

- > On 2014-05-08 10:36:45 +0000, SD! said:

- >> I recall many of such things, usually placed at \$C000 but some where
- >> also available in different versions, run-able at different addresses
- >> (\$1000, \$4000, ...) a nice one I recall typing myself in. I took the
- >> effort as it was able to work with "illegal" opcodes. Even this one
- >> sat fully in the 4KiB at \$C000. I should be able to find it still.

>

- > I have a number of monitors already with Supermon+64 being the smalles
- > with only 2.7K :)

side question, considering that today there's plenty of emulator, ASM sources and excellent \*ROM programmers, someone has tinkered about a "composite EPROM", having on it not only monitor, but also LM utilities, not necessarily onlyfor asm programming/debugging ?

to me seems an excellent thing to hack around...  
(sadly age and time don't allow me to do serious hacking/tinkering...)

Best regards from Italy,  
dott. Piergiorgio.

---

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [Paul Förster](#) on Thu, 08 May 2014 18:56:07 GMT  
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---

Hi dott. Piergiorgio

> side question, considering that today there's plenty of emulator, ASM  
> sources and excellent \*ROM programmers, someone has tinkered about a  
> "composite EPROM", having on it not only monitor, but also LM  
> utilities, not necessarily onlyfor asm programming/debugging ?  
>  
> to me seems an excellent thing to hack around...  
> (sadly age and time don't allow me to do serious hacking/tinkering...)

well, it should be quite easy to do the standard CBM80 card type EPROM.

See here:

[http://ar.c64.org/rrwiki/images/6/67/The\\_Transactor\\_Vol05\\_01\\_1984\\_Jul\\_How\\_Carts\\_work.pdf](http://ar.c64.org/rrwiki/images/6/67/The_Transactor_Vol05_01_1984_Jul_How_Carts_work.pdf)

All you have to do is exec the proper init sequence for video stuff,  
etc. and then you can put into the EPROM anything you want, with a  
little tinkering, even a BASIC program. :)

If you have a ready (and tested by you) image, then I can burn an 27C64  
(8K) EPROM for you if you don't have access to an EPROM burner. But  
you'd have to have a cart to put it on, though. I only have one and I  
will keep that. :)

If you send me the programs you want in the EPROM, you can drop me a  
mail with them attached and I see what I can do. But beware, this is no  
promise that I actually a) get it done and b) if so, that it's done  
particularly quickly. Burning an EPROM doesn't take much time, but  
putting the stuff properly together requires some time which I'm also  
short of.

--

cul8er

Paul  
paul.foerster@gmx.net

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [dott.Piergiorgio](#) on Thu, 08 May 2014 20:47:41 GMT

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Il 08/05/2014 20:56, Paul Förster ha scritto:

> Hi dott. Piergiorgio

>

>> side question, considering that today there's plenty of emulator, ASM

>> sources and excellent \*ROM programmers, someone has tinkered about a

>> "composite EPROM", having on it not only monitor, but also LM

>> utilities, not necessarily onlyfor asm programming/debugging ?

>>

>> to me seems an excellent thing to hack around...

>> (sadly age and time don't allow me to do serious hacking/tinkering...)

>

> well, it should be quite easy to do the standard CBM80 card type EPROM.

> See here:

> [http://ar.c64.org/rrwiki/images/6/67/The\\_Transactor\\_Vol05\\_01\\_1984\\_Jul\\_How\\_Carts\\_work.pdf](http://ar.c64.org/rrwiki/images/6/67/The_Transactor_Vol05_01_1984_Jul_How_Carts_work.pdf)

>

> All you have to do is exec the proper init sequence for video stuff,

> etc. and then you can put into the EPROM anything you want, with a

> little tinkering, even a BASIC program. :)

>

> If you have a ready (and tested by you) image, then I can burn an 27C64

> (8K) EPROM for you if you don't have access to an EPROM burner. But

> you'd have to have a cart to put it on, though. I only have one and I

> will keep that. :)

well, today I do 8-bit coding/programming activities exclusively with emulators... but if I someday put together a good toolbox (literal !) binary, I'll surely sent to you the binary (and/or the sources/patches) to look on :)

out of curiosity on hardware, the voltage signals (data \*and\* address) to the upper nybbles of C64's color ram are also on the expansion port ? these non-existant upper nybbles of RAM looks to me like the best place for mapping a "write to loc" discrete logic type of external cart bankswitching....

Best regards from Italy,  
dott. Piergiorgio.

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Thu, 08 May 2014 21:21:21 GMT

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Hi dott. Piergiorgio,

> well, today I do 8-bit coding/programming activities exclusively with  
> emulators...

same here. I do the final testing, or testing of special features which  
I cannot really test in an emu, on the real thing.

> but if I someday put together a good toolbox (literal !) binary, I'll  
> surely sent to you the binary (and/or the sources/patches) to look on :)

ok.

> out of curiosity on hardware, the voltage signals (data \*and\* address)  
> to the upper nybbles of C64's color ram are also on the expansion port  
> ? these non-existent upper nybbles of RAM looks to me like the best  
> place for mapping a "write to loc" discrete logic type of external cart  
> bankswitching....

AFAIR, the whole 64K of address lines is available on the expansion  
port. As for the high nybbles of the color RAM. Those are not wired,  
not even INSIDE the C64, so they're surely also not available on the  
expansion port. You should take a look at the schematics on zimmers.net  
for exact schematics.

--

cul8er

Paul

paul.foerster@gmx.net

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Aaron Daughtry](#) on Thu, 08 May 2014 22:30:52 GMT

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On 2014-05-08 18:25:30 +0000, dott.Piergiorgio said:

> (sadly age and time don't allow me to do serious hacking/tinkering...)

Of curiosity - time is always a very rare resource, highly at premium..  
but what age related prevents you from tinkering and hacking?

--

SD!

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [dott.Piergiorgio](#) on Fri, 09 May 2014 17:32:26 GMT

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Il 08/05/2014 23:21, Paul Förster ha scritto:

>> out of curiosity on hardware, the voltage signals (data \*and\* address)  
>> to the upper nybbles of C64's color ram are also on the expansion port  
>> ? these non-existent upper nybbles of RAM looks to me like the best  
>> place for mapping a "write to loc" discrete logic type of external  
>> cart bankswitching....  
>  
> AFAIR, the whole 64K of address lines is available on the expansion  
> port. As for the high nybbles of the color RAM. Those are not wired, not  
> even INSIDE the C64, so they're surely also not available on the  
> expansion port. You should take a look at the schematics on zimmers.net  
> for exact schematics.

surely the signals came out from pins 33-30 of the 6510, but never  
reaches the 1K nybble. and is the lone non-switchable RAM area. But if  
for obvious reasons the signal came out from the 6510, so they also came  
out on the computer's internal address and data buses... my  
understanding is that the 1K upper nybble of the color RAM is undefined  
in reading, but in writing is defined, at least from the 6510's perspective.

(IIRC, the undefined state of the 1k upper nybbles (together with the  
part-analog nature of the SID) give the '64 the unique peculiarity of  
being the lone computer capable of true non-deterministic RNG)

Best regards from Italy,  
dott. Piergiorgio.

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [dott.Piergiorgio](#) on Fri, 09 May 2014 17:38:18 GMT

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Il 09/05/2014 00:30, SD! ha scritto:

> On 2014-05-08 18:25:30 +0000, dott.Piergiorgio said:  
>  
>> (sadly age and time don't allow me to do serious hacking/tinkering...)  
>  
> Of curiosity - time is always a very rare resource, highly at premium..  
> but what age related prevents you from tinkering and hacking?

wearing of brain... you will notice later; experience helps, but I can't  
follow more the too many thing I like to tinker ;)

e.g. a junior engineer can bring quickly ideas, but the senior engineer can only ponder on the ideas and suggest improvements from his experience

Best regards from Italy,  
dott. Piergiorgio.

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Fri, 09 May 2014 19:25:27 GMT

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Hi dott. Piergiorgio,

> surely the signals came out from pins 33-30 of the 6510, but never  
> reaches the 1K nybble. and is the lone non-switchable RAM area. But if  
> for obvious reasons the signal came out from the 6510, so they also  
> came out on the computer's internal address and data buses... my  
> understanding is that the 1K upper nybble of the color RAM is undefined  
> in reading, but in writing is defined, at least from the 6510's  
> perspective.

all address and data lines come out of the expansion port. It's only  
internal that the hi nybbles of the color RAM are not wired.

> (IIRC, the undefined state of the 1k upper nybbles (together with the  
> part-analog nature of the SID) give the '64 the unique peculiarity of  
> being the lone computer capable of true non-deterministic RNG)

well, not really. On the VIC-20, most of the addressable 64K is  
physically not present. IIRC, writing to such locations works without  
visible error (i.e. no CPU status bit set, no IRQ triggered, etc.) but  
reading always returns the page's high byte for even pages and some  
random byte for odd pages or something like that. It's really undefined  
and could actually return anything. Of course, the more you expand it  
with physical RAM, the less the effect will be. :)

--

cul8er

Paul  
paul.foerster@gmx.net

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Aaron Daughtry](#) on Fri, 09 May 2014 21:32:31 GMT

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On 2014-05-09 17:38:18 +0000, dott.Piergiorgio said:

>>> (sadly age and time don't allow me to do serious hacking/tinkering...)  
>>  
>> Of curiosity - time is always a very rare resource, highly at premium..  
>> but what age related prevents you from tinkering and hacking?  
>  
> wearing of brain... you will notice later; experience helps, but I  
> can't follow more the too many thing I like to tinker ;)

Well, I guess there is no need to wait for "later". I recall having the very same problem for about half a century now ;-)

> e.g. a junior engineer can bring quickly ideas, but the senior engineer  
> can only ponder on the ideas and suggest improvements from his  
> experience

Which doesn't hurt either, does it? Or say something like "this is what I tried some three decades ago - it looks like a good idea but doesn't work as expected once you implement it, because .... ;-)

Heh - generally (I think) what should be able to slow down a bit this "brain wear" is to extend the experience all the time by bringing and trying new ideas oneself. Of course I might be wrong but that's how it kind of seems to me so far. Of course appropriate[\*] nutritioning helps a lot too.

There is this saying that "very few people are capable of doing something creative after the age of 35", which most of us would probably agree with. Yet I also like the second part of it: "and the reason for this is that very few people are capable of doing something creative before the age of 35" :-)

\* - no, not what you hear every day (fruits, vegetables, beans and no fat) :-) but that's a very different story.

--  
SD!

---

Subject: Re: 4 KB or 6 KB ML monitor?  
Posted by [Ingo Korb](#) on Fri, 09 May 2014 22:32:13 GMT  
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"dott.Piergiorgio" <chiedetelo@ask.me> writes:

> (IIRC, the undefined state of the 1k upper nybbles (together with the  
> part-analog nature of the SID) give the '64 the unique peculiarity of  
> being the lone computer capable of true non-deterministic RNG)

The value the 6510 sees on the upper four bits when it reads from the color ram is fully predictable as it depends on the value that was there in the previous bus cycle which was a VIC-II read cycle.

As for generating random numbers via the SID, if you're thinking about switching voice 3 to the noise waveform to read back its current output value from \$D41B: This is not a true random number generator either, the SID generates all of its waveforms fully in the digital domain. The noise generator is a linear-feedback shift register which is very much deterministic.

-ik

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [dott.Piergiorgio](#) on Fri, 09 May 2014 22:51:07 GMT

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Il 09/05/2014 21:25, Paul Förster ha scritto:

> all address and data lines come out of the expansion port. It's only  
> internal that the hi nybbles of the color RAM are not wired.  
>  
>> (IIRC, the undefined state of the 1k upper nybbles (together with the  
>> part-analog nature of the SID) give the '64 the unique peculiarity of  
>> being the lone computer capable of true non-deterministic RNG)  
>  
> well, not really. On the VIC-20, most of the addressable 64K is  
> physically not present. IIRC, writing to such locations works without  
> visible error (i.e. no CPU status bit set, no IRQ triggered, etc.) but  
> reading always returns the page's high byte for even pages and some  
> random byte for odd pages or something like that. It's really undefined  
> and could actually return anything. Of course, the more you expand it  
> with physical RAM, the less the effect will be. :)

indeed this is the principle; see here for an example of "blind  
bankswitching" done with only 2 logic chips:

> <http://wiki.nesdev.com/w/index.php/UxROM>

(of course, the handling of the address bus ought to be different..)

using D4-D7 instead of D0-D3 and one should get 16 banks callable with a  
STA... without messing with actual RAM (a STA into Basic/Kernal ROM  
writes to the underlying RAM...)

Best regards from Italy,

dott. Piergiorgio.

---

---

Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Paul Förster](#) on Sat, 10 May 2014 15:26:38 GMT

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Hi dott. Piergiorgio,

- > using D4-D7 instead of D0-D3 and one should get 16 banks callable with
- > a STA... without messing with actual RAM (a STA into Basic/Kernal ROM
- > writes to the underlying RAM...)

you could ask Jens Schönfeld how he did it with the Turbo Chameleon 64.  
As far as I know, once plugged in, the C64 doesn't use its internal RAM anymore because it is completely handled by the TC64. The only exception is the color RAM, where the TC64 still uses the C64's color RAM because the VIC needs it.

--

cul8er

Paul

paul.foerster@gmx.net

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Subject: Re: 4 KB or 6 KB ML monitor?

Posted by [Anonymous](#) on Wed, 18 Jun 2014 16:11:54 GMT

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Originally posted by: Johann Klasek - swap last two domainparts

Don't know where the discussion went so far, but let me add these small pieces ...

Paul Förster <paul.foerster@gmx.net> wrote:

- > most ML monitor programs for the C64 seem to be 8 KB in size. Is there
- > any halfway usable alternative that fits in 4 KB or at most 6 KB? It

I used a couple of monitors, but all took at most 4K.  
Ratmon, SMon, Emon, ...

See table at the end of

<http://www.c64-wiki.de/index.php/Maschinensprachemonitor>

- > doesn't need that fancy up/down scrolling as the intended use would be
- > via a serial line. So, normal scrolling is there as newlines are
- > printed but backward scrolling is not available.

>  
> Also, it wouldn't have to be specifically for the C64 but that would  
> probably be easiest to port to the target platform for me. Available  
> routines for I/O would be reading and printing a character, nothing  
> more. There is no such thing as disk I/O and other such things. Simple  
> commands like A, D, C, T, I, M and G, \*maybe\* a number conversion  
> command (oct, hex, dec), would be enough, @ and other advanced commands  
> are not needed.

Monitors in 4K size range do have A(ssembler) and D(isassembler) commands  
sometimes tracing functions, too.

> Is there such thing? Or is there a source for a monitor program which I  
> could adapt for my needs?

One or other site provides the source also (from above table).

Johann

---