

NOTES FOR

THE

BOOK

These notes refer to the booklet entitled
"Programs for the Cosmic Elf Interpreters"
Oct. 20, 2010 PCM

PROGRAMS FOR THE COSMAC ELF INTERPRETERS

Some

NOTES FOR THE VIP

The relocatable interpreter, listed in the Appendix on pages 28 and 29, can easily be modified for use on the VIP. Two changes are required, both on page 01.

- 1) Change the eight bytes at locations 010A through 0111:

Location	Old Code	New Code
010A	3F 0A 37 0C	F8 81 BC F8
010E	22 6C FA 0F	95 AC 22 DC

- 2) Change the 22 bytes at 0196 through 01AB:

Location	Old Code	New Code
0196	22 6C 06 F3	E6 62 26 45
019A	FA 0F 52 45	F6 3B A0 3E
019E	F6 42 3B A7	A3 D4 36 A3
01A2	3F 30 3A 30	D4 15 15 D4
01A6	D4 3F AB 32	00 00 00 00
01AA	30 D4	00 00

The six bytes which follow 01A5 are no longer used.

The resulting interpreter can be located anywhere in memory; it need not be placed in the first 4K field.

A small 'patch', located on page 0, is required to enter the interpreter. Depending on the amount of memory available, the display page, the page for variables and constants, and the address of the first interpreter instruction may have to be altered. One way to accomplish this is to set some registers in the 'patch' before entering the interpreter. The introductory paragraph of the Appendix describes this process.

e.g. for a 2K VIP:

- 1) load the interpreter on pages 03 through 06

- 2) make the display page 07, the page for variables and work space 00, and make the location of the first instruction 0100. Pages 01 and 02 will be available for interpretive code.
- 3) use the 'patch' below to enter the interpreter.

Location	Code	
0000	F8 01 B5	make 0100 the location of the first
0003	F8 00 A5	instruction (or change to suit)
0006	F8 07 BB	establish 07 as display page
0009	F8 00 B6	establish 00 as variable, work page (locations 9B through FF are used by the interpreter)
000C	F8 03 B3	establish 030C as entry point to
000F	F8 0C A3 D3	interpreter and enter

For a 3K VIP put the interpreter on pages 07 through 0A and make the display page 0B. In the case of a 4K machine the interpreter can go on pages 0B through 0E with the display page 0F. These page assignments are, of course, only suggestions; the advantage of a relocatable interpreter is that it can be placed anywhere.

The new '5' and '9' instructions described in the section entitled 'Extending the CHIP-8 Instruction Set' (pages 22-24) can be used on the VIP without modification. You may, however, wish to place these instructions on pages other than the suggested ones. For example the '9' instructions fit neatly on the page below the CHIP-8 variables and stack. When relocating these instructions put the new entry points in the address tables in RCA's interpreter. The high order address table run from memory location 0051 through 005F and the low order address table goes from 0061 through 006F.

A few differences occur in the VIP implementation of the FX94 instruction (pages 24-27). In RCA's interpreter the original '5' and '9' instructions occupy different locations than these instructions do in the Elf version. This means that memory addresses 0194 through 019A do not become available when new '5' and '9' instructions are added, but rather locations 0191 through 0198. The code near the bottom of page 25 (left hand column) when placed in memory starting at location 0191 yields an FX91 instruction instead of an FX94 one.

In the code for the ASCII subroutine (pages 25 and 26) the byte at location D1 (the 0E given is for a 4K VIP) is supposed to correspond to the page used for the CHIP-8 variables and stack and should be changed to 06 for a 2K VIP and 0A for a 3K VIP. The ASCII subroutine can be placed on any page in memory; change the entry point when relocating the code.

