

NAME

srec_vmem – vmem file format

DESCRIPTION

This format is the Verilog VMEM format. This is a hex format suitable for loading into Verilog simulations using the `$readmemh` call.

The text file to be read shall contain only the following:

White space (spaces, new lines, tabs, and form-feeds)

Comments (both types of C++ comment are allowed)

Hexadecimal numbers

White space and/or comments shall be used to separate the numbers.

In the following discussion, the term "address" refers to an index into the array that models the memory.

As the file is read, each number encountered is assigned to a successive word element of the memory. Addressing is controlled both by specifying start and/or finish addresses in the system task invocation and by specifying addresses in the data file.

When addresses appear in the data file, the format is an "at" character (@) followed by a hexadecimal number as follows:

```
@hh . . .h
```

Both uppercase and lowercase digits are allowed in the number. No white space is allowed between the @ and the number. As many address specifications as needed within the data file can be used. When the system task encounters an address specification, it loads subsequent data starting at that memory address.

Commentary

There is no checksum in this format, which can generate false positives when guessing file formats on input.

There is no indication of the word size in the file, since it is dependent on the word type of the Verilog memory it is being read into. SRecord will guess the word size based on the number of digits it sees in the numbers, but this is only a guess.

SRecord will also assume that the numbers are to be loaded big-endian; that is, most significant byte (first byte seen) into the lowest address covered by the word.

You can use the **-byte-swap** filter to change the byte order; it takes an optional width of bytes to swap within.

Size Multiplier

In general, binary data will expand in sized by approximately 2.9 times (32-bit), 3.1 times (16-bit) or 3.6 times (8-bit) when represented with this format.

EXAMPLE

Here is an example Verilog VMEM file. It contains the data "Hello, World" to be loaded at address 0x1000.

```
@00000400 48656C6C 6F2C2057 6F726C64 0AFFFFFF
```

REFERENCE

IEEE P1364-2005/D2, Standard for Verilog Hardware Description Language (Draft), section 17.2.8 "Loading memory data from a file", p. 295.

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<http://www.boyd.com/1364/>

<http://www.boyd.com/1364/1364-2005-d2.pdf.gz>

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