Simple runtime environnement

Version 0.1

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1 Overview

The Simple runtime environnement (or SRE) is a machine with a bare Spiderchip64 CPU, 640 Kibibytes of RAM, 320 Kibibytes of ROM and an ASCII or ANSI terminal. The user and the supervisor have almost the same rights except that only the supervisor can access the terminal. The ROM is in the high memory and the RAM is in the low memory. This computer is only intended for CPU testing purpose.

2 Memory map

The address bus is 20 bits wide, so there is only 1 mebiobyte of address space.

Table 1: Address map

Address range	Memory type	Description
`$00000 - $00014`	RAM	Interrupt vectors
`$00010 - $08000`	RAM	Memory area available for customised interrupt handler
`$08000 - $a0000`	RAM	Free space
`$a0000 - $a0008`	Output	Terminal output (character at the byte `$a0000`)
`$a0008 - $a0010`	Input	Terminal input (character at the byte `$a0008`)
`$a0010 - $b0000`	Unpopulated	Crash area
`$b0000 - $f8000`	ROM	Program and initial data
`$f8000 - $fffff`	ROM	Memory area available for the reset routine and for the default interrupt handlers
`$fffc - $fffff`	ROM	Reset vector

3 Terminal

A character is written on the terminal when a byte is written to the address `$A0000`.
A character is read from the terminal when a byte is read from the address `$A0008`.
When a character is available an IRQ happen. The IRQ is released when the character is read from the terminal.

4 Interrupts

4.1 Reset

This computer does a reset only on power up.

4.2 Memory error

Any write operation on the ROM leads a memory error. Any access between address `$A0010` and `$AFFFF` will do also a memory error. If the user tries to access addresses between `$A0000` and `$A000F`, a memory error will occure as well.

4.3 Address error

An address error happen when a non-aligned address is accessed.

4.4 IRQ

An IRQ happen when a character arrived from the terminal. The IRQ is cleared when a read operation happen on the terminal input address.