

Fundamentals of Computer Systems

An introduction to SPIM

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SPIM MIPS32 Simulator

Download from <http://spimsimulator.sourceforge.net/>

Available for Linux, Mac, Windows

Graphical and text interfaces available

QtSpim latest and greatest

Hello World

```
# Hello World in MIPS assembly for SPIM
```

```
.data
```

```
hellostr:
```

```
.asciiz "Hello World!\n"
```

```
.text
```

```
.globl main
```

```
main:
```

```
la $a0, hellostr
```

```
li $v0, 4
```

```
syscall # print_string
```

```
li $v0, 10 # exit
```

```
syscall
```

Running from the command-line

```
$ spim -file hello.s
SPIM Version 8.0 of January 8, 2010
Copyright 1990-2010, James R. Larus.
All Rights Reserved.
See the file README for a full copyright notice.
Loaded: /usr/lib/spim/exceptions.s
Hello World!
```

Some Arithmetic

```
.data
plus:  .ascii " plus "
equals: .ascii " equals "
nl:    .ascii "\n"

.text
.globl main
main:
    li $s0, 17
    li $s1, 25
    addu $s2, $s0, $s1

    move $a0, $s0
    li $v0, 1 # print_int
    syscall
    la $a0, plus
    li $v0, 4 # print_string
    syscall

    move $a0, $s1
    li $v0, 1
    syscall
    la $a0, equals
    li $v0, 4
    syscall
    move $a0, $s2
    li $v0, 1
    syscall
    la $a0, nl
    li $v0, 4
    syscall

    li $v0, 10 # break
    syscall
```

Syscall Codes

Function	Code (\$v0)	Arguments	Result
print_int	1	\$a0 = int	
print_float	2	\$f12 = float	
print_double	3	\$f12 = double	
print_string	4	\$a0 = string	
read_int	5		\$v0 = int
read_float	6		\$f0 = float
read_double	7		\$f0 = double
read_string	8	\$a0 = buffer \$a1 = length	
sbrk	9	\$a0 = amount	\$v0 = address
exit	10		