

MARS

Data Segment									
Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)	
0x10010000	0x12345678	0x44434241	0x48474645	0x34333231	0x38373635	0x756c4600	0x75622078	0x000000e	
0x10010020	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	
0x10010040	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	
0x10010060	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	
0x10010080	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	
0x100100a0	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	
0x100100c0	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	
0x100100e0	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	
0x10010100	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	
0x10010120	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	

← → 0x10010000 (.data) Hexadecimal Addresses Hexadecimal Values ASCII

ADDRESS	VALUE (+0)	VALUE (+4)
0x1001 0000		
0x1001 0020		

ADDRESS	VALUE (+0)				VALUE (+4)			
	+3	+2	+1	+0	+7	+6	+5	+4
0x1001 0000								
0x1001 0020								

ADDRESS	CONTENT
0x1001 0007	
0x1001 0006	
0x1001 0005	
0x1001 0004	
0x1001 0003	
0x1001 0002	
0x1001 0001	
0x1001 0000	

Data Directives

Example

```
.data

.space 5                      # allocates _____ bytes of memory

.ascii "hop"                   # allocates _____ bytes of memory

.asciiz "Flux"                 # allocates _____ bytes of memory

.byte 10 0x00 0x41 48 0x30 0xFF # allocates _____ bytes of memory

.half 0x1234 0x56 0xABCD       # allocates _____ bytes of memory

.word 0xFACE 0xDEADBEEF        # allocates _____ bytes of memory

.float 42 6.75                 # allocates _____ bytes of memory
```

Data Segment									
Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)	
0x10010000	0x00000000	0x706f6800	0x78756c46	0x41000a00	0x00ff3030	0x00561234	0x0000abcd	0x0000face	...
0x10010020	0xdeadbeef	0x42280000	0x40d80000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	
0x10010040	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	

0x10010000 (.data) Hexadecimal Addresses Hexadecimal Values ASCII

Data Segment									
Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)	
0x10010000	0x00000000	0x706f6800	0x78756c46	0x41000a00	0x00ff3030	0x00561234	0x0000abcd	0x0000face	•
0x10010020	0xdeadbeef	0x42280000	0x40d80000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	
0x10010040	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	0x00000000	

 0x10010000 (.data)
 Hexadecimal Addresses
 Hexadecimal Values
 ASCII

ADDRESS	CONTENT (HEX)
0x1001 000F	
0x1001 000E	
0x1001 000D	
0x1001 000C	
0x1001 000B	
0x1001 000A	
0x1001 0009	
0x1001 0008	
0x1001 0007	
0x1001 0006	
0x1001 0005	
0x1001 0004	
0x1001 0003	
0x1001 0002	
0x1001 0001	
0x1001 0000	

ADDRESS	CONTENT (HEX)
0x1001 001F	
0x1001 001E	
0x1001 001D	
0x1001 001C	
0x1001 001B	
0x1001 001A	
0x1001 0019	
0x1001 0018	
0x1001 0017	
0x1001 0016	
0x1001 0015	
0x1001 0014	
0x1001 0013	
0x1001 0012	
0x1001 0011	
0x1001 0010	

ADDRESS	CONTENT (HEX)
0x1001 002F	
0x1001 002E	
0x1001 002D	
0x1001 002C	
0x1001 002B	
0x1001 002A	
0x1001 0029	
0x1001 0028	
0x1001 0027	
0x1001 0026	
0x1001 0025	
0x1001 0024	
0x1001 0023	
0x1001 0022	
0x1001 0021	
0x1001 0020	

Syscall System Services

Syscall 1: _____

Syscall 34: _____

Syscall 35: _____

Syscall 36: _____

Syscall 4: _____

Syscall 11: _____

Example

Code

```
.text

li    $t0 -1
move $a0 $t0
li    $v0 1
syscall

li    $a0 '\n'
li    $v0 11
syscall

li    $v0 34
move $a0 $t0
syscall

li    $a0 '\n'
li    $v0 11
syscall

move $a0 $t0
li    $v0 35
syscall

li    $a0 '\n'
li    $v0 11
syscall

move $a0 $t0
li    $v0 36
syscall
```

Output

```
-1
0xffffffff
111111111111111111111111111111
4294967295
```