MIPS

MARS

Have a look at the register panel on the right

MIPS Program

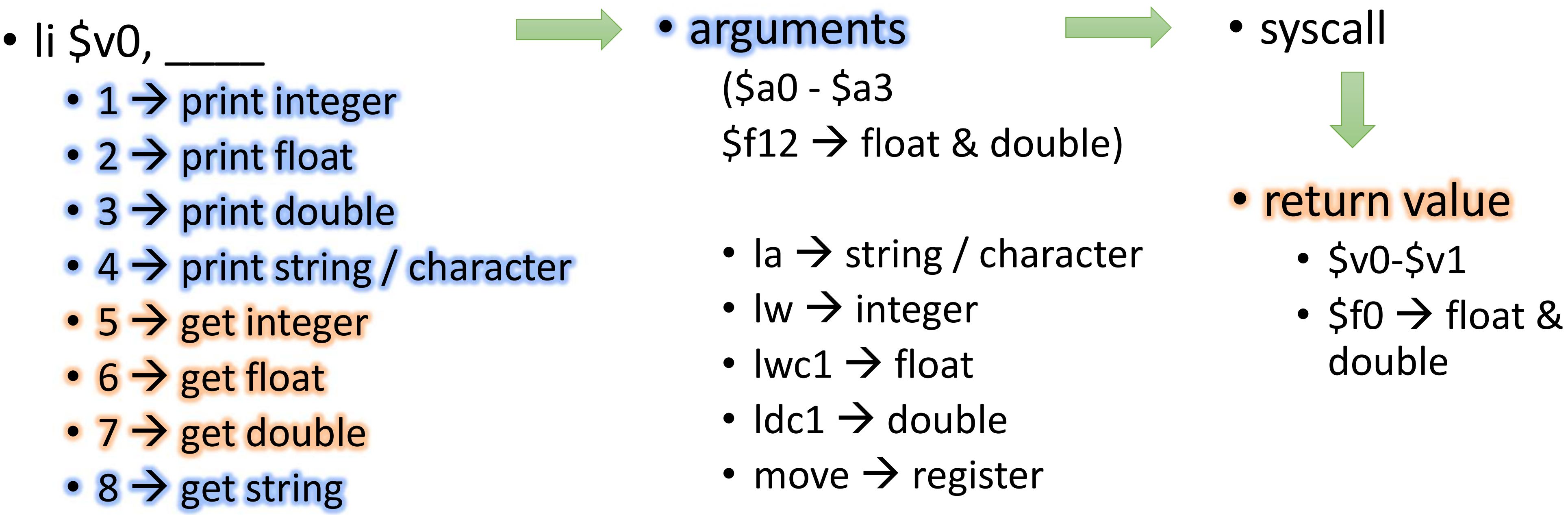
- 2 sections:
  - .data
  - .text

Data

- name: datatype value
- Eg:
    - msg: .asciiz “Hello \n”
    - letter: .byte ‘a’
    - number: .word 97
    - real: .float 2.2
    - real: .double 3.512
    - inStr: .space 20

Get Input & Print Output

Instructions



- li $v0, ____
  - 1 → print integer
  - 2 → print float
  - 3 → print double
  - 4 → print string / character
  - 5 → get integer
  - 6 → get float
  - 7 → get double
  - 8 → get string

- arguments

  ($a0 - $a3
  $f12 → float & double)

  - la → string / character
  - lw → integer
  - lwc1 → float
  - ldc1 → double
  - move → register

- syscall

- return value
  - $v0-$v1
  - $f0 → float & double

Output

String

```
.data
    msg: .asciiz "Hello\n"
.text
    li $v0, 4
    la $a0, msg
    syscall
```

Character

```
.data
    letter: .byte 'm'
.text
    li $v0, 4
    la $a0, letter
    syscall
```

Integer

```
.data
    num: .word 97
.text
    li $v0, 1
    lw $a0, num
    syscall
```

Float

```
.data
    flNum: .float 2.2
.text
    li $v0, 2
    lwc1 $f12, flNum
    syscall
```

Input

Integer

```
.text
    li $v0, 5
    syscall
```

$v0

```
    move $t0, $v0

    li $v0, 1
    move $a0, $t0
    syscall
```

Integer

```
.text
    li $v0, 5
    syscall
```

$v0

```
    add $t0, $zero, $v0

    li $v0, 1
    add $a0, $zero, $t0
    syscall
```

Input (contd.)

Float

```
.data
    zeroFl: .float 0.0
.text
    li $v0, 6
    syscall

    lwc1 $f4, zeroFl

    li $v0, 2
    add.s $f12, $f0, $f4
    syscall
```

$f0

String

```
.data
    in: .space 20
.text
    li $v0, 8
    la $a0, in
    li $a1, 20
    syscall
```

in

Assignment

- Input a character
- Input a double
- Output a double
- Identify the Instruction encoding / format for each instruction
    - Highlight what each field indicates