ECE154A — Discussion 03

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Keep your eyes open for...

- PSet 2: due Friday, October 22
- Lab 2: due Friday, October 22

Mystery Code!

t0: 111 ... 10 ... 0

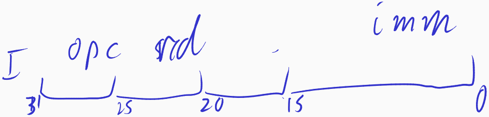
```
0x00000004    main:      li $a0, 1
0x00000008               jal mystery
0x0000000c               addu $a0, $0, $v0
0x00000010               jal mystery
0x00000014               addu $a0, $0, $v0
0x00000018               jal mystery
0x0000001c               addu $a0, $0, $v0
0x00000020               jal mystery
---------------------------------------------------
0x80000004    mystery:   lui $t0, 0xffff
0x80000008               lui $t2, %Hi(mystery)
0x8000000c               ori $t2, %Lo(mystery)
0x80000010               addiu $t1, $0, 0
0x80000014               andi $a0, $a0, 0xffff
0x80000018               add $v0, $a0, $t1
0x8000001c               lw $t3, 12($t2)
0x80000020               and $t3, $t3, $t0
0x80000024               or $t3, $t3, $a0
0x8000002c               sw $t3, 12($t2)
0x80000030               jr $ra
```

la $t2 mystery
=> $t2 = 0x80000004

What does it do? After 1 run? 2? N?

← gets modified

=> t3: addiu $t1 $0 0



```
m_reset:     li    $a0   1
             la    $t2   mystery
             lw    $t1   12($t2)
             lui   $t3   0xffff
           → and   $t1   $t1   $t3
             sw    $t1   12($t2)
             jr    $ra
```

```
fib:   sw   $ra   4($sp)
```

$fib(x) =$

$fib(x-1)$
$+fib(x-2)$

More MIPS decoding: from MT1-FA2016

```
       addi $v0 $zero 0
loop:  addi $t0 $a0 1
       add $v0 $v0 $t0
       srl $a0 $a0 1
       bne $a0 $zero loop
```

Translate this code to C, and explain what it's doing. What's the best-case and worst-case runtime?