W3

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1 Exercise 1

1.1 a

Translate $gcd(x+y, y+1)*2$ into intermediate code. Given information: result in $t0$, $vtable = [x \to v, y \to w]$, $ftable = [gcd \to \_GCD\_]$.

```
$t1 := v # $t1 = x
$t2 := w # $t2 = y
  $t3 := $t2 + $t3 # $t3 x + y
  $t4 := $t2 + 1
 $t5 := CALL _GCD_ ($t3, $t4)
$t0 := $t5 * 2 # or shift right $t5, 1
```

1.2 b

Mips Code:

```
Else-clase:
  sub $t2, $t2, $t1

Loop:
  bgt $t1, $t2, Else-clause # Branch if $t1 > $t2
  sub $t1, $t1, $t2 # Action on if condition
  beq $t1, $zero, Exit # Branch if a = 0
  div $t3, $t1, $t2
  beq $t3, $zero, Exit # Branch if a/b = 0
  j Loop
```

With some `Exit` label, terminating the program.