ECE 242 Exercise #9

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1.

```
        li $s0, 2               # $s0 = cnt
case1:
    addi $t0, $0, 1             # $t0 = 1
    bne $s0, $t0, case2         # If cnt not equal to 1, then jump to case 2
    addi $s0, $s0, 1            # Else cnt++
    j done                      # jump out the end
case2:
    addi $t0, $0, 2             # $t0 = 2
    bne $s0, $t0, case3         # If cnt not equal to 2, then jump to case 3
    addi $s0, $s0, 2    `       # Else cnt +=2
    j done                      # jump out the end
case3:
    addi $t0, $0, 3             # $t0 = 3
    bne $s0, $t0, done          # If cnt not equal to 3, jump to done
    addi $s0, $s0, 4            # Else cnt +=4
    j done                      # jump out the end
done:
```

2.

```
addiu $sp, $sp, -4      #Storing -4 at stack pointer
sw $ra, 0($sp)
move $t0, $a0           #g variable to $t0
move $t1, $a1           #h variable to $t1
move $t2, $a2           #i variable to $t2
move $t3, $a3,          #j variable to $t3
move $t4 $($sp)         # k variable to $t4
sub $t1, $t1, $t2       # $t1 = h - i
sub $t3, $t3, $t4       # $t2 = j - k
add $t3, $t3, $t2       # $t3 = $t2 + i
add $t0, $t0, $t1       # $t0 = g + $t1
sub $t0, $t0, $t3       # $t0 = g + $t1 - $t3
move $v0, $t0           # $v0 = f
lw $r1, 0($sp)
addiu $sp, $sp, 4
jr $ra
```

3.

slt $t0, $s0, $s1 # t0 is set to 1 if s0 < s1, and 0 otherwise

000000 10000 10001 01000 00000 101010

HEX Code: 0x0211402A

beq $t0, $zero, END #Branch to the label END if t0 is zero

000100 01000 00000 00010 10100 100000
HEX Code: 0x11001520

sll $t0, $t0, 2 #t0 = t0*4

000000 00000 01000 01000 00100 000000
HEX Code: 0x00084100

add $t0, $t0, $s2 #t0 = t0 + s2

000000 01000 10010 01000 00000 100000
HEX Code: 0x01124020

lw $t1, 0($t0) # Load the value at address t0 in t1

100011 01000 01001 00000 00000 000000
HEX Code: 0x8D090000

add $s3, $s3, $t1 # add s3 to t1 and store in s3

000000 10011 01001 10011 00000 100000
HEX Code: 0x02699820

addi $s0, $s0, 1 # s0 += 1

001000 10000 10000 00000 00000 000001
HEX Code: 0x22100001

j Loop # jump to the address 0x1500

000010 00000 00000 00010 10100 000000
HEX Code: 0x08001500