Wyatt Tack

CPE333

Quiz 1

1) .

```
        lw x12,40(x11) #must be 40, since words are 4 bytes
        addi x12,x12,10
        sw x12,40(x10)
```

2) .

```
.data
        a: .word 1,6,6,7,7,8,8,9,10, ...
        .text
  Main: la x8,a         #adress a in x8
        add x10,x0,x0   #x = 0
        add x11,x0,x0   #sum=0
        addi x12,x0,10  #x12 = 10 for comp
  loop: bge x10, x12, return
        slli x13, x10,2         #mult x by 4 for address words
        add x14, x13,x8         #x14 is address a[x]
        lw x15,0(x14)           #x15 is data a[x]
        add x11,x11,x15         #sum+=a[x]
        addi x10,x10,1          #loop x++
        j loop
        return:
```

3) .

```
.data
        arr: .word 1,6,6,7,7,8,8,9,10, ...
        .text
        li sp, 0x10000 #load stack pointer addr
        addi a1, x0, 10#load arguments a1=n, a2=&a
        la a2, arr
        call func:      #call function
return: j return        #program terminator
func:   addi sp,sp,-16  #input a1 as n, a2 as address for a, get a0 as sum
        sw t1, 12(sp)   #push used temporaries to stack
        sw t2, 8(sp)
        sw t3, 4(sp)
        sw t4, 0(sp)
        add t1,x0,x0            #x = 0
        add a0,x0,x0            #sum=0
loop:   bge t1, a1, end         #loop until x >= n
        slli t2, t1, 2          #t2 is 4xindex (byte offset)
        add t3, t2, a2          #t3 is address a[x]
        lw t4,0(t3)             #t4 is data a[x]
        add a0,a0,t4            #sum+=a[x]
        addi t1,t1,1            #loop x++
        j loop
        end:
        lw t4, 0(sp)            #pop used from stack
        lw t3, 4(sp)
        lw t2, 8(sp)
        lw t1, 12(sp)
        addi sp,sp,16           #move stack pointer
        ret                     #return function call
```