Computer Science 315
Spring 2016
Computer Architecture
Homework #4 Solutions

1)

2.12.1 0x50000000
2.12.2 overflow
2.12.3 0xB0000000
2.12.4 no overflow
2.12.5 0xD0000000
2.12.6 overflow

2)

2.23 $t2 = 3

3)

2.26.1 20

2.26.2
```
i = 10;
do {
    B += 2;
    i = i - 1;
} while ( i > 0)
```

2.26.3 5*N

4)

```
        .text
        .global  Sum
Sum:
        push    %rbp            # At the start of the function it's
                                #    customary to push the base pointer
                                #    onto the stack.
        mov     %rsp, %rbp
        mov     %rdi, %rax
        mov     %rdi, %rcx
        mov     %rsi, %rdx
                                # Now the base and the top of the stack
                                #    frame are the same.
       cmp     %rdi, %rsi      #comepares a and b
       jg  loop
        jl  less_than
        je  equal_to
loop:                           # b > a
        add $1, %rcx
        add %rcx, %rax
        cmp  %rcx, %rdx
        je done
        jmp loop
less_than:                              # b < a
        mov   $0, %rax
        jmp   done
equal_to:
        mov   %rsi, %rax      #if equal set ret val, rax = rsi
        jmp   done
done:
        leave                   # Set stack pointer to frame pointer
                                #    and pop old frame pointer
        ret                     # Pop return address and jump to it
```