

CE-1921 - Dr. Durant - Quiz 3
Spring 2018, Week 3

1. (8 points) Translate the following C/Java-like function into ARMv4 assembly. Use the standard ARM registers for arguments and return value

```
unsigned int sum(unsigned int n0, unsigned int n1) {
    unsigned int result = n0;
    for (unsigned int i = n0+1; i <= n1; ++i) {
        result += i;
    }
    return result;
}
```

```
.text          ; indicate code segment; no deduction if omitted
```

; Recall that the for loop order is (1) initialize, (2) comparison/predicate and end if false, (3) execute body, (4) update and go to (2)

; The initial result/return value is the same as the 1st input argument, so r0 is conveniently set up for us.

```
sum:          add r2,r0,#1      ; i = n0+1
again:       cmp r2,r1        ; i <= n1
             movhi pc,lr     ; or ::: bhi done ::: done: mov pc,lr
             add r0,r0,r2    ; result += i
             add r2,r2,#1    ; ++i
             b again
```

2. (2 points) Write a main routine that calls your function with the arguments 17 and 33, moves the returned value to r7, and then hangs/spins on one instruction forever.

```
main:       mov r0,#17
            mov r1,#33
            bl sum
            mov r7,r0
```

```
end:       b end
```