

## CS150 - Computer Organization and Architecture

### Homework #6 - Spring 2024

Build a subroutine in CS150 AVR assembly language named `NumOnesInR16`. Your `NumOnesInR16` subroutine will count the number of bits that are one (or *set*) in R16 and place the resulting count into R1. You may only use instructions that are contained within the CS150 AVR instruction subset. Be sure to test your subroutine by building some code that calls it with different values in R16.

```
;
; This function counts the number of 1 bits in R16 and
; stores the result in R1.
;
NumOnesInR16:
    eor r0,r0 ; r0 = 0
    eor r1,r1 ; set result to 0
N1R16_Next:
    cpi r16,0
    brbs 1,N1R16_Done
    add r16,r16
    adc r1,r0
    rjmp N1R16_Next
N1R16_Done:
    ret
```