

ECE 3724/CS 3124 Quiz #3 -- Reese

Location	Contents:
0x05A	0xB3
0x05B	0x2A
0x05C	0x4F
0x05D	0xD7
....	
0x250.....	0x9F
0x251.....	0xB2

Assume the W register has the value 0xD3 in it.

1. (2 pts) Give the machine code for the instruction: *addwf 0x221,w*

```

                                0010 01da ffff ffff
addwf 0x221,w                  0010 0101 0010 0001
                                2      5      2      1
= 0x2521    (d = 0 because destination is w),
              (a = 1, because 0x221 is not in access bank, must use BSR)
note only the last 8 bits of 0x221 is encoded in the instruction.
    
```

2. (2 pts) The machine code 0x2BAF is what PIC18 instruction?

```

0x2BAF = 0010 1011 1010 1111
The first 6 bits (0010 10) indicates an INCF instruction.
INCF = 0010 10da ffff ffff
d = 1, so destination is file register (f)
a = 1, so use BSR (banked)
0x2BAF is incf 0xAF,f, BANKED
    
```

3. (2 pts) *subwf 0x5C,f*

0x05C = (0x5C) - (w) = 0x4F - 0xD3 = 0x7C
new value of location 0x05C is 0x7C

4. (2 pts) *movlw 0x5D*

move the literal value 0x5D to W, so new value of W is 0x5D.

5. (2 pts) Write an instruction sequence (mnemonics only, no machine code) that copies the contents of location 0x05B to location 0x251.

The Easy Way
`movff 0x05B, 0x251`

The Hard Way
`movf 0x05B, w ; w <- (0x05B)`
`movlb 0x2 ; BSR = 2`
`movwf 0x251 ; 0x251 <- w`