**EENG 3040 Microprocessors**

**In Class Exercise 6**

**Interrupts**

**To be done during the lecture period on September 14, 2015**

* Describe the purpose of each of the bits of the INTCON register in your own words

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| Bit | Purpose |
| 0 | PORTB Change Interrupt Flag - there was a state change |
| 1 | External Interrupt Flag - external interrupt occurred |
| 2 | Timer0 Overflow Interrupt Flag - the timer overflowed |
| 3 | PORTB Change Interrupt Enable |
| 4 | INT External Interrupt Enable |
| 5 | Timer0 Overflow Interrupt Enable |
| 6 | Peripheral Interrupt Enable |
| 7 | Global Interrupt Enable - gotta turn this on to use anything else |

* What is the difference between an enable bit and a flag bit?

Interrupt flag bits are set when an interrupt condition occurs, regardless of the state of its corresponding enable bit or the Global Enable bit. You should make sure the appropriate interrupt flag bits are clear before enabling an interrupt.

* Write an interrupt service routine (ISR) that does the following:
* Stores the contents of the W register into a variable named WCopy
* Stores the contents of the STATUS register into a variable named StatCopy
* Checks to see if the value on PORTB is equal to 7, if it is, increment a variable named COUNT
* Restore the value of the STATUS register
* Restore the value of the W register
* Return from interrupt

BCF STATUS,RP0

BCF STATUS,RP1

WCOPY EQU 20H

STATCOPY EQU 21H

COUNT EQU 22H

BANKSEL INTCON

BSF INTCON,GIE

BSF INTCON,3

* What values would need to be in the INTCON and OPTION\_REG in order to have an interrupt configured for the rising edge of RB0? If a particular bit does not matter, indicate it as an X.

|  |  |
| --- | --- |
| INTCON |  |
| OPTION\_REG |  |