Homework #1

The interrupt routine (ISR) for the microcontroller lab is setup to toggle through the different motor speeds whenever the interrupt is called. Since the PCINT interrupt calls the routine whenever there is a pin change, the code will execute whenever the button switch is pressed and again when it is released. In this homework, you will rewrite the ISR code so that the motor varies it speed only when the button switch is pressed, not released.

To write the code, consider the following questions:

1. What is the default state of the button (e.g., when the switch is open, is its voltage high or low)?
2. When the button is pressed, what is the state of the pin (again, is it high or low)?
3. How would you read the port pins into a variable? To accomplish this you will need to know the port letter the PCINT pin is on and which of the bits of that port corresponds to the button switch.
4. What would you do to the variable so that it ignores all other pins (e.g., sets them to zero) and only keeps the original value of the PCINT pin?
5. What value should this pin be to initiate the change in duty cycle?

Now, write the code so that only when the button is pressed does it change the speed of the motor!