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Department of Aerospace and Mechanical Engineering
Mechatronics Laboratory
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Laboratory Task Sheet 03

Title: Blinking LED

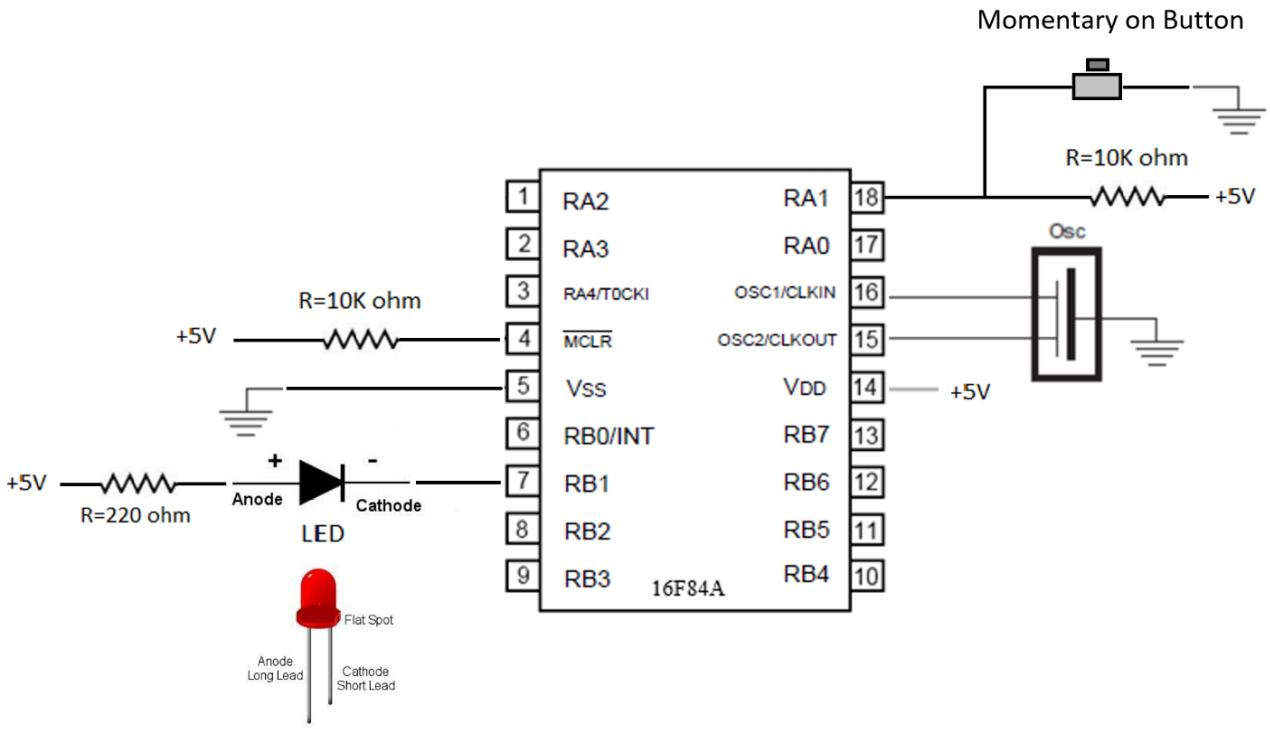
Registers to be learned: STATUS,RP0 & STATUS,RP1

Objective: Program the microcontroller such that when the button is pressed the LED turns on and off (blinks) for durations of 200 milliseconds, and when the button is not pressed the LED turns off.

Hint: Use MPLAB's Stopwatch to create an approximate delay of 100 milliseconds only by changing the value of ByteB and ByteC while ByteA = 1. Then set ByteA = 2 to get an approximate delay of 200 milliseconds.

Tasks:

1. Create the circuit below where LED is connected to RB1 and Button is connected to RA1.



2. Make a copy of the P16f84A_Template file and name it TASK03Group00. Open the file in MPLAB Software and use the table below to construct the code.

Suggested Code Structure
Define ByteA, ByteB, and ByteC as memory files
Start
Call Initialization **Go to Main**
Main Check if the button is pressed or not If it is pressed, go to Blink If it is not pressed, go to TurnOFF
Blink Turn on the LED Call Delay Turn off the LED Call Delay Go to Main
TurnOFF Turn off the LED Go to Main
Delay Move a decimal value to ByteA Move a decimal value to ByteB Move a decimal value to ByteC Decrement ByteC and repeat the Inner-Inner Loop until ByteC is zero Decrement ByteB and repeat the Inner-Outer loop until ByteB is zero Decrement ByteA and repeat the Outer-Outer loop until ByteA is zero return
Initialization Bank1 Use TRISA to define PORTA1 as input Use TRISB to define PORTB1 as output Bank0 Initialize PORTB1 to turn off the LED Return
end

3. Program the microcontroller and test it on the circuit.
4. Demonstrate the result to the instructor.
5. Upload the code on D2L and save it for yourself.