EE 2004
Week 9 Homework

Note: As defined in lectures, we denote a pin inside a port as RXY, where X is the port ID ranging from A-E, and Y is the pin number ranging from 0-7.

1. A switch is connected to RB0 and an LED to RB7. Write a program to get the status of the switch and send it to the LED.

2. Assume that RB3 is an input and represents whether the door is opened. If it goes LOW, it means that the door is opened. Monitor the bit continuously. Whenever it goes LOW, send a HIGH-to-LOW pulse to RC5 to turn on the buzzer.

3. Write a program to generate a square wave of 50Hz frequency and output it to RB5. Use 16-bit mode of Timer 0 in all of the following settings. Assume the clock frequency is 4MHz. Ignore time delay generated by instructions required to detect TMR0IF after the flag is raised.
    a. Use Timer0 with the maximum prescaler.
    b. Use Timer0 with no prescaler.
    c. Use Timer0 with a prescaler = 4.

4. If we are generating a square wave on RB7, what are the lowest and the highest frequency that we can be generated using Timer0 in 16-bit mode if we load 0000 to TMR0?

5. Find the TMR0H, TMR0L values needed to generate the following time delays. Assume the clock frequency is 4MHz. Ignore time delay generated by instructions required to detect TMR0IF after the flag is raised.
    a. 2ms. Use 16-bit, no prescaler mode.
    b. 5ms. Use 16-bit mode and the largest prescaler possible.
    c. 0.2ms. Use 8-bit, no prescaler mode. TMR0H is not used. Only specify TMR0L.