ECE 461/561 –   
Embedded System Design  
Interrupt Project

# Overview

In this project you will evaluate how long it takes the MCU to respond to an interrupt in the sample program.

Use an oscilloscope to monitor the signals from switch 3 (MCU pin 34) and LED 1(38). Evaluate the response latency between switch presses and LED changes. Note that the LED will be lit for such a short time that it will not be visible except on the oscilloscope. Press the switch repeatedly to see if the latency varies, and by how much. Your goal is to understand the why the latency varies as much as it does.

# Lab Report Questions

1. Connect scope channel 1 to the switch signal (MCU pin 34) and channel 2 to the LED 1 signal (MCU pin 38). Set the scope to trigger on the falling edge of Channel 2. Take a screenshot with the oscilloscope with infinite persistence enabled.
2. What is the minimum time observed? How many clock cycles does this represent?
3. What is the maximum time observed? How many clock cycles does this represent?
4. How do the times observed correspond with the expected interrupt response latency and instruction execution times? Why or why not? Use the debugger to examine the disassembled code for main and r\_intc2\_interrupt for clues, and refer to the RL78 Software Manual (Chapter 5) to find the timing characteristics (clock cycle counts) for RL78 instructions.