

ENCE 3210 – Microprocessors 1

Lab 2

January 16th, 2026

1 – Write a C program to count the difference between the number of times two different buttons are pressed.

- a) The button pressing operation should be defined in an ISR.
- b) Observe the count value from the watch window.
- c) If button 1 is pressed more than button 2, then turn on the red color LED. If the button pressed numbers is equal, then turn on the blue color LED. Otherwise, turn on the green color LED. If the button press numbers are equal, then turn on the blue color LED.

2 – Repeat Problem 6 from Lab 1 using interrupts.

3 – Repeat Problem 7 from Lab1 using interrupts.

4 – Write a C program such that the global integer array x with 10 elements will be filled initially. For this problem, fill it at the beginning of the code. When an interrupt comes from button 1 the ISR will be called. The ISR will calculate the global integer array y defined as $y[n] = 2 * x[n] - x[n - 1]$ where n is the index for the array. In fact, this is a simple filtering operation working with interrupts. In the actual application, the interrupt should come from some other source. The array x should also be filled by other module or a peripheral (such as ADC).