

EE2905 Lab 4: Pin Interrupts

Objectives

- Develop simple breadboard circuits
- Interface to Buttons and Switches
- Utilize Pin Interrupts
- Use pointers with functions
- Use a Timer

Prelab

- Review the [Functions with Pointers](#) class notes (W3-C1)
- Review the [Interrupt Programming](#) class notes (W4-C1)
- Review the [Switch Basics](#) slides
- Review the [Debounce](#) slides
- Review the [Timer](#) class notes (W4-C2)

student
check off

-
-
-
-
-

Assignment

- **Do not start the assignment portion of the lab before the lab class. We will walk through the first part of the lab.**

Part 1: Modify the Button/LED design we created to use two external switches from the 4-switch block. The switches will be used to enable the operation of our circuit.

Switch 1 will be used to enable the increment of the counter

- sw1 = 0: No increment
- sw1 = 1: Increment when button pushed

Switch 2 will be used to enable the LED flashing:

- sw2 = 0: No Flashing
- sw2 = 1: Flash the number of collected flashes

The two switches will operate independently – note: when both switches are 1 – the circuit will operate just like the baseline.

You must use a single function to read both switches (“returns” 2 values)

Part 2: Modify the Button/LED design we created to Start and Stop a Timer, displaying the time between presses on the console and turning on the LED for that amount of time.

Press once – start timer

Press again – stop timer

Outside the ISR in a 0.5s loop – display the measured time and light the LED for that amount of time

Check Off

- Demo and document your Switch/Button/LED program 50%
- Demo and document your Timer/Button/LED program 50%

Checkoff due beginning of lab 5 (in-person or via Teams chat)

Informal Lab Report: flow diagram(2), code(2), schematic(2) - due beginning of lab 5.