# ECE 443 – Project 1

## Overview

The goal of this project is to connect BTN1 and BTN2 on the Cerebot board to their respective LEDs and operate them in a “push on, push off” manner. Each time a button is pressed, the corresponding LED will change “state” or “toggle”, e.g. turn on or turn off. The LED is unaffected when the button is released and the system can tolerate up to 20 ms of button bounce during press or release.

## Specifications

Your system will be implemented using API functions from the FreeRTOS and other PIC32 code as needed. The main() function will create one task and then start the scheduler. This “starter” task will create two queues, two instances of a “SendButton” task, and a single “ToggleLED” task. After these FreeRTOS components are created by the starter task it will delete itself by calling vTaskDelete().

## Testing

Use a combination of software and hardware instrumentation to verify task execution and collect measurement data for profiling.

## Deliverables

* Following the project packaging instructions, share the zip archive from your UI OneDrive account with jfrenzel@uidaho.edu
* Submit via OneDrive by the next class period a report (PDF) addressing the following items:
  + Your design process
  + Your testing strategy, including instrumentation
  + Estimated latency (worst case) from button press to LED toggle
  + Any limitations of your implementation

## Grading Rubric

* Project functionality (40%)
* Code documentation (comments, indentation, variable and function names) (20%)
* Report (40%) (Upload a PDF file to Canvas by the next class period)