ECE315 Introductory Microprocessor Laboratory

Lab 5

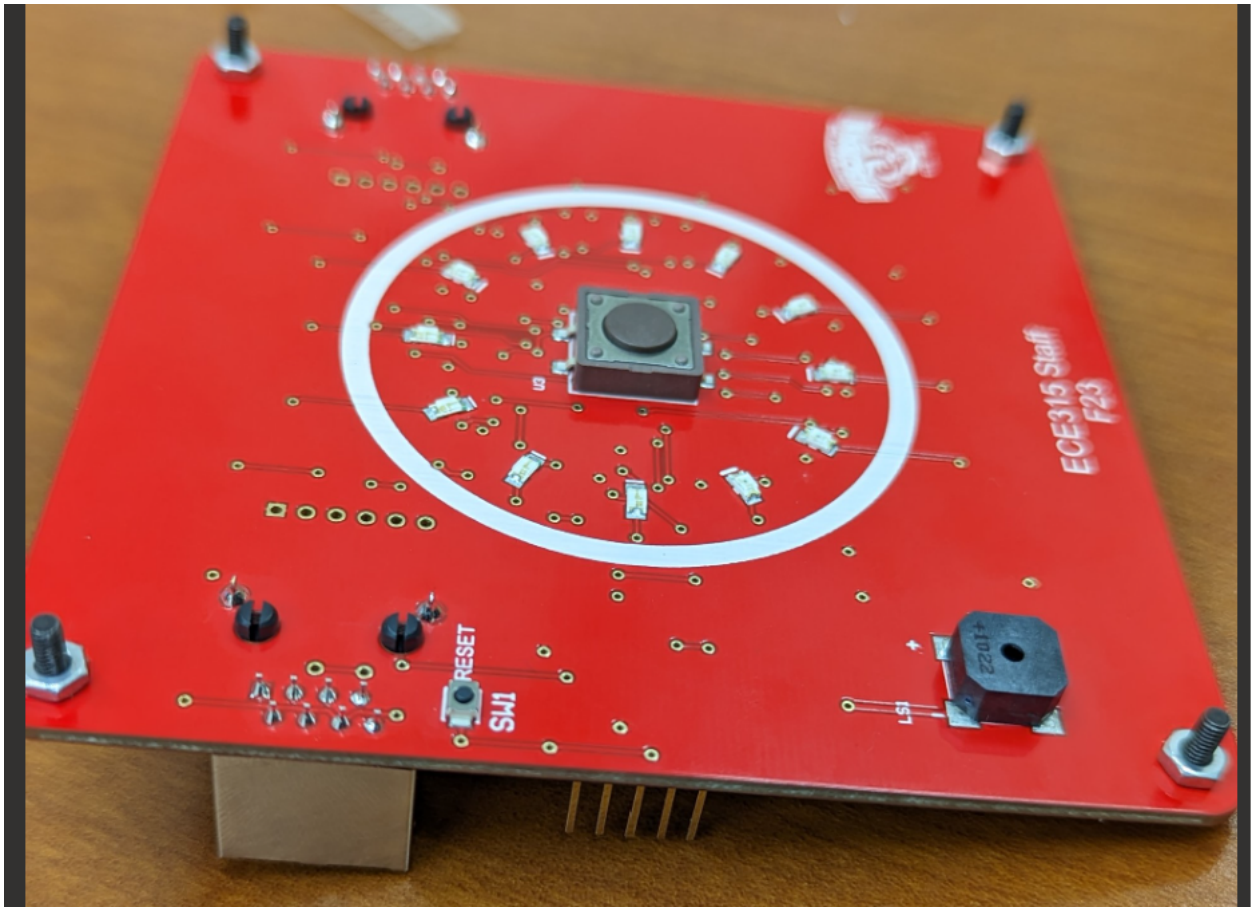
Board Build

1. Introduction

In Lab 3, you completed the layout and routing of your design. This lab will require you to assemble the components on the printed circuit board using solder paste and a reflow oven.

2. Using the Screws/Washers as Standoffs

You will need to place 4 screws and 4 washes on your PCB. Please use the image below as a reference.



3. Adding Solder Paste to Bottom of the Board

The next step in assembling your PCB will be to place solder paste on the bottom side of the board. This is the side with the LEDs and push buttons. This will be done using solder paste from a syringe that contains solder paste. You should place solder paste on all flat silver surfaces BEFORE you start placing components.

4. Placing Bottom Side Components

You will need to place the 12 LEDs, buzzer, and two push buttons. The LEDs and buzzer are polarized, so be sure to pay attention to how you place those parts.

The LEDs should have a small green line that should be aligned with the white bar near the LED footprint.

The buzzer has a “+” symbol on the top of the part that needs to be aligned with the pad connected to 3.3V.

5. Baking the Board

Once all of the bottom side parts are placed, you will bring your board to one reflow ovens. Baking on the parts will take roughly 10 minutes.

6. Adding Solder Paste to the Top of the Board

Now you will place solder paste on the top side of the board. This is the side with a majority of the parts, including the MCU.

When placing the solder paste for the MCU, place 4 thin lines of solder paste on each side of the MCU. The MCU is very small, so the pins will be bridged together with solder after the board comes out of the oven. We will fix this in a later step of the lab, so **do not** spend a lot of time trying to get the perfect amount of solder on each pin.

7. Placing Top Side Components

Just a few quick notes:

- **The RED leds in your schematic are connected to 330 ohm resistors, but you will want to use 560 ohm resistors instead.**
- The dot on the MCU needs to be aligned with the white done on the footprint
- The line on the Schottky diode needs to be aligned with the dot on the footprint.

8. Baking the Board

Once all of the top side parts are placed, you will bring your board to one reflow ovens. Baking on the parts will take roughly 10 minutes.

9. Removing Shorts

After your board has been through the reflow oven for the second time, you will go to the Qualcomm lab with one of the ECE315 staff to remove the shorts on your MCU.

10. Submitting a Photo

When your board is completed, you will need to submit a photo of you holding the board to Canvas.