COMP6043 Physical Computing Lab 8

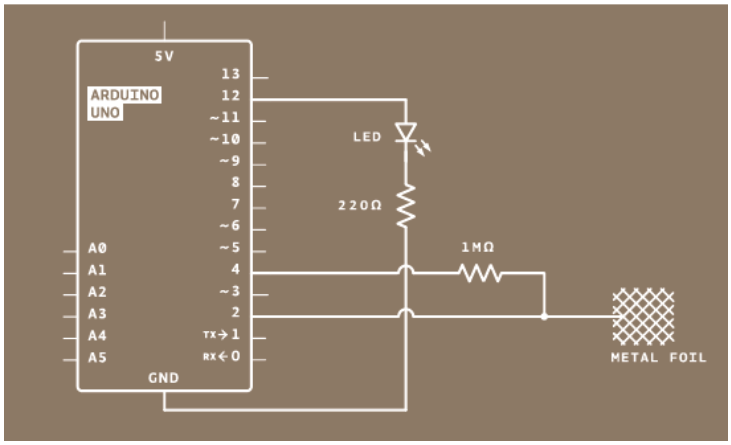
Note: if a task asks you to demonstrate your work to your lecturer, you must demonstrate and get your work signed off. Otherwise, no marks will be awarded for your work.

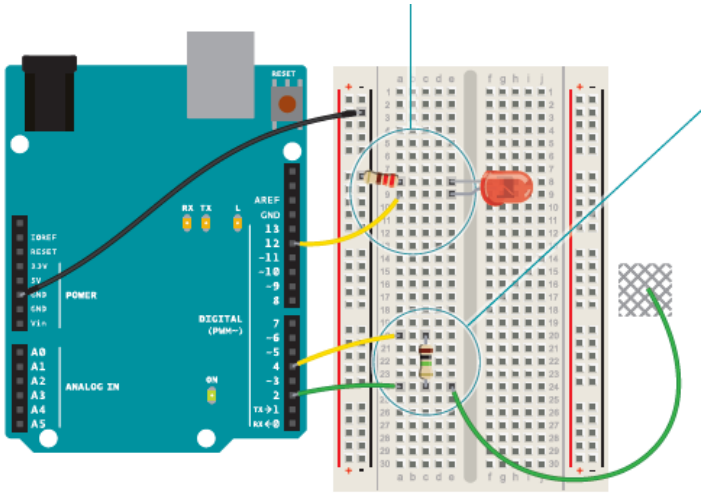
Once completed, upload your report to Canvas.

This lab is based on the Arduino Project 13 Touchy Feely Lamp (p.137 – p.142) in the Arduino Projects Book.

Task 1 [60%]

Wire up your circuit as follows:





The general circuit diagram is shown in above figures. In this project, you will create a light that turns on and off when you touch a strip of conductive material. The switch works based on capacitive sensing - your skin becomes part of the circuit! However, since

there is no conductive material available on Tinkercad, therefore, you need to think of an alternative way to simulate this, instead of a conductive material. One way to simulate this scenario is to generate random number and then based upon a range, associate conductive values that you sense from the strip. Then make a decision of turning on and off the LED. Implement your logic and upload your code to the Arduino on TinkerCad and verify that your project works correctly.

Using the virtual classroom, and the conferences chat function, demonstrate your project to your lecturer once completed.

Task 2 [30%]

Add an LCD to your circuit and show the output (random capacitive value you generated) on LCD.

Task 3 [10%]

Add two more LEDs to your circuit and modify your project as follows:

- No sensing: all LEDs off.
- Very low capacitive values: green LED on, other LEDs off.
- Normal capacitive values: green and amber LEDs on, red LED off.
- High capacitive values: only red LED on.

Copy and paste your code into your report, with a single screenshot of the circuit with the LEDs.

Demonstrate your project to your lecturer once completed.