Lab 3

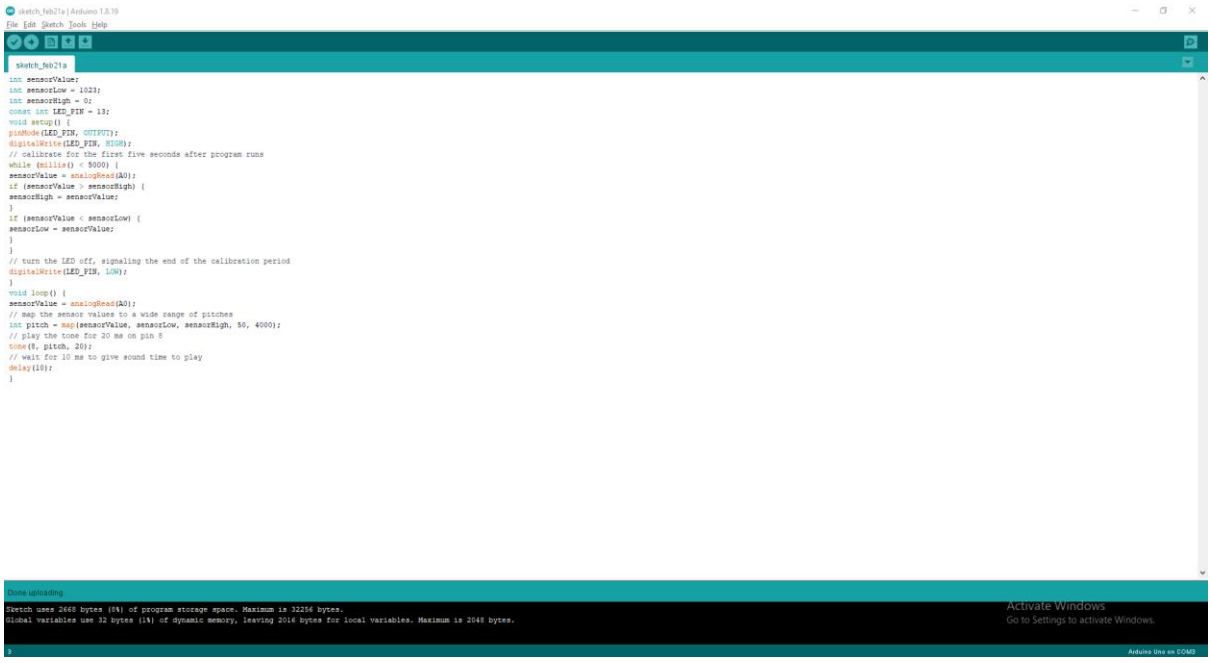
COMP6043: Physical Computing

Student ID: R00201303

Date: 21.02.2022

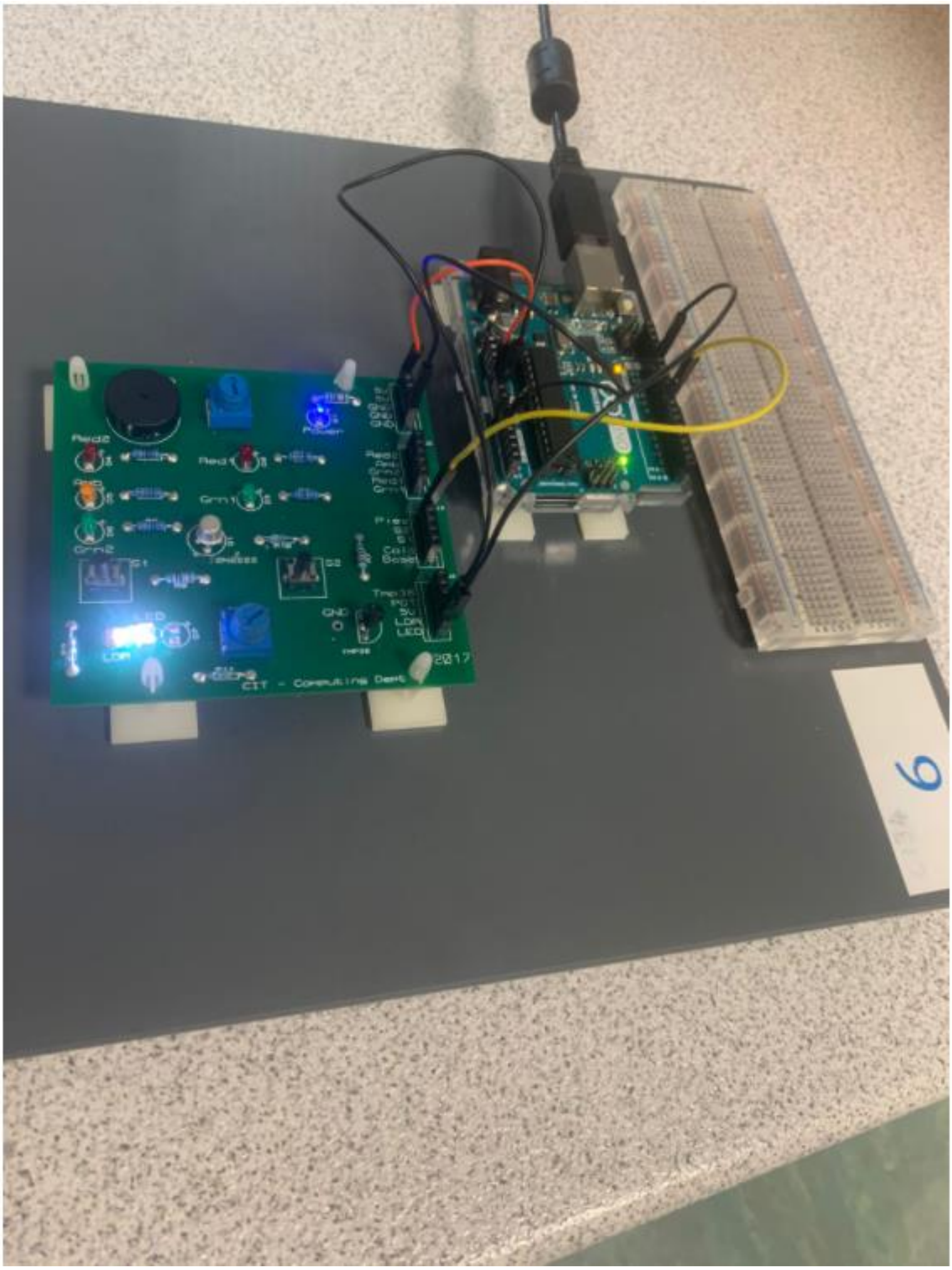
Group: COMP1D-Y

Task1:

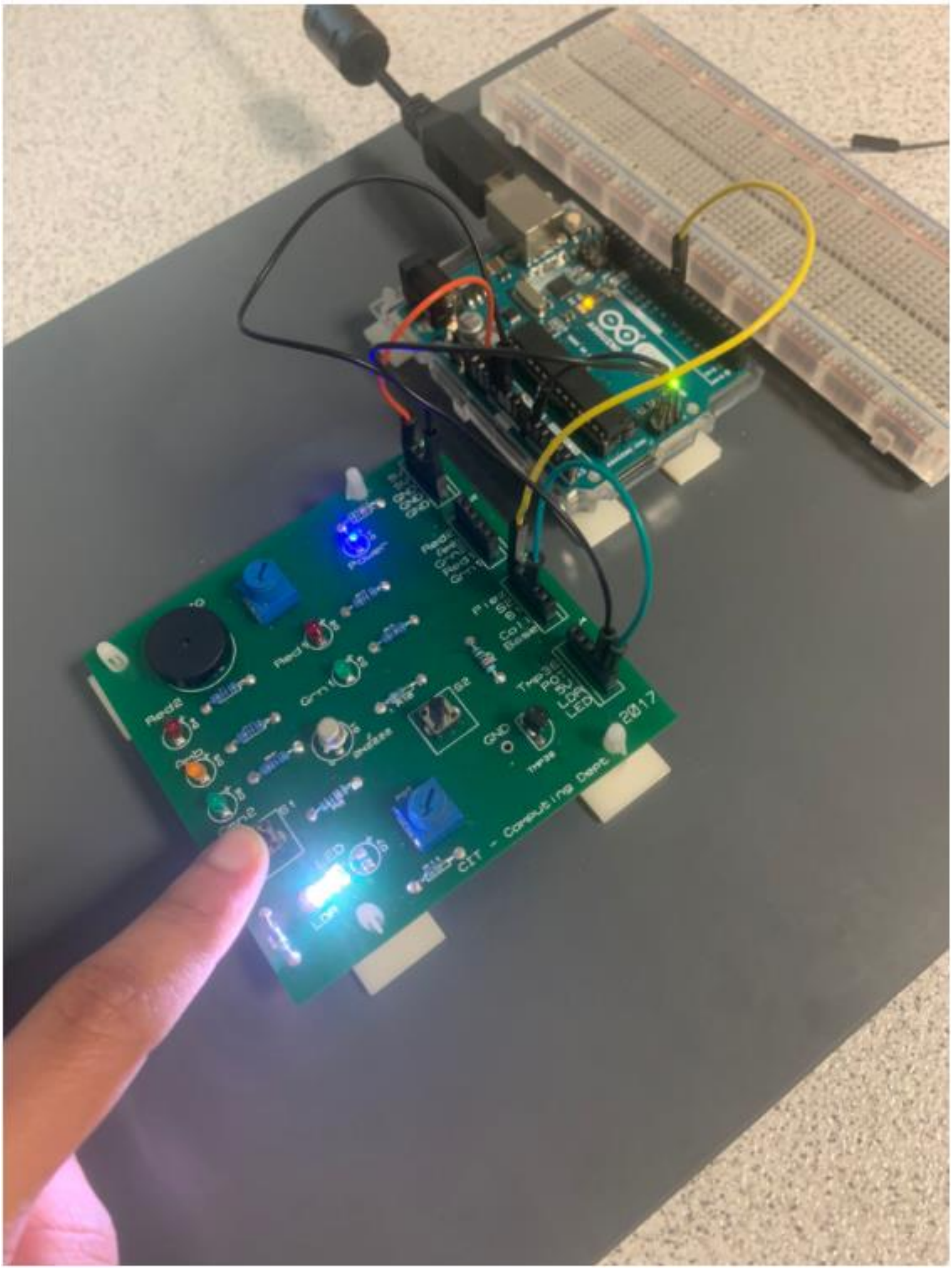


Task2:


sketch_feb21a | Arduino 1.8.19
File Edit Sketch Tools Help
Upload
sketch_feb21a
int sensorValue;
int sensorLow = 1023;
int sensorHigh = 0;
const int LED_PIN = 13;
void setup() {
pinMode(LED_PIN, OUTPUT);
digitalWrite(LED_PIN, HIGH);
// open a serial connection to display values
Serial.begin(9600);
// calibrate for the first five seconds after program runs
while (millis() < 5000) {
sensorValue = analogRead(A0);
if (sensorValue > sensorHigh) {
sensorHigh = sensorValue;
}
if (sensorValue < sensorLow) {
sensorLow = sensorValue;
}
}
// turn the LED off, signaling the end of the calibration period
digitalWrite(LED_PIN, LOW);
}
void loop() {
sensorValue = analogRead(A0);
Serial.println(sensorValue);
float voltage = (sensorValue/1023.0)*5.0;
float R = (4700)/(5-voltage);
Serial.print(R);
// map the sensor values to a wide range of pitches
int pitch = map(sensorValue, sensorLow, sensorHigh, 50, 4000);
// play the tone for 20 ms on pin 8
tone(8, pitch, 20);
// wait for 10 ms to give sound time to play
delay(10);
}
Done uploading.
Sketch uses 5412 bytes (16%) of program storage space. Maximum is 32256 bytes.
Global variables use 221 bytes (10%) of dynamic memory, leaving 1827 bytes for local variables. Maximum is 2048 bytes.
Activate Windows
Go to Settings to activate Windows.
25
Arduino Uno on COM3



Task3: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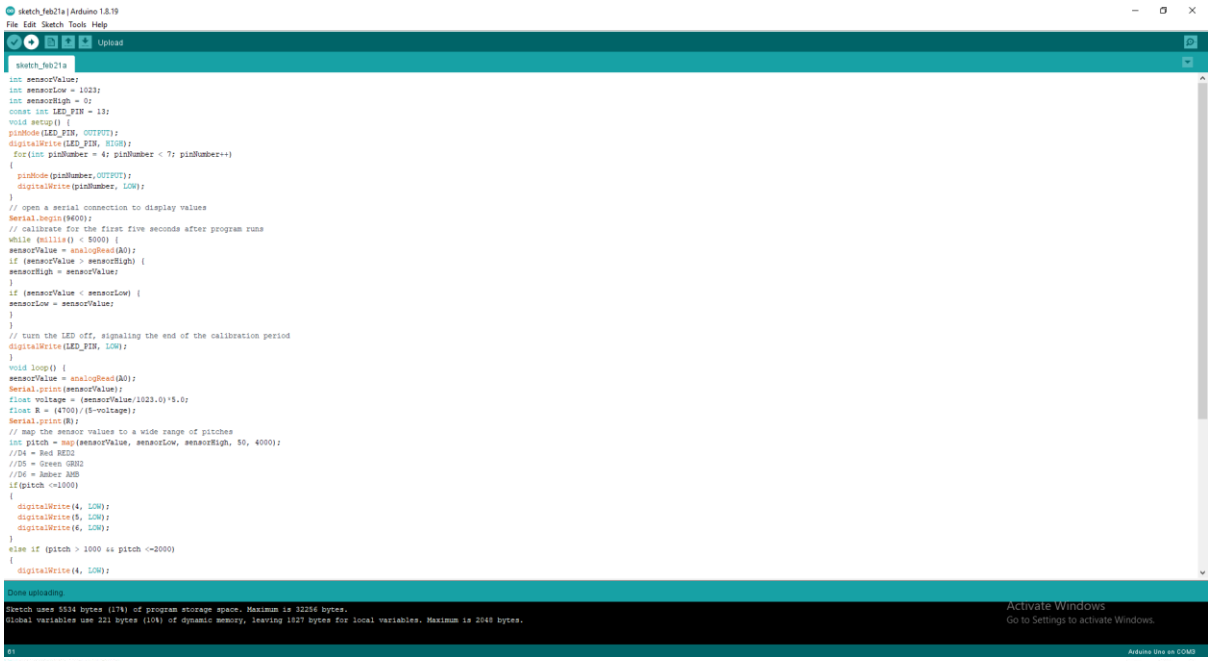
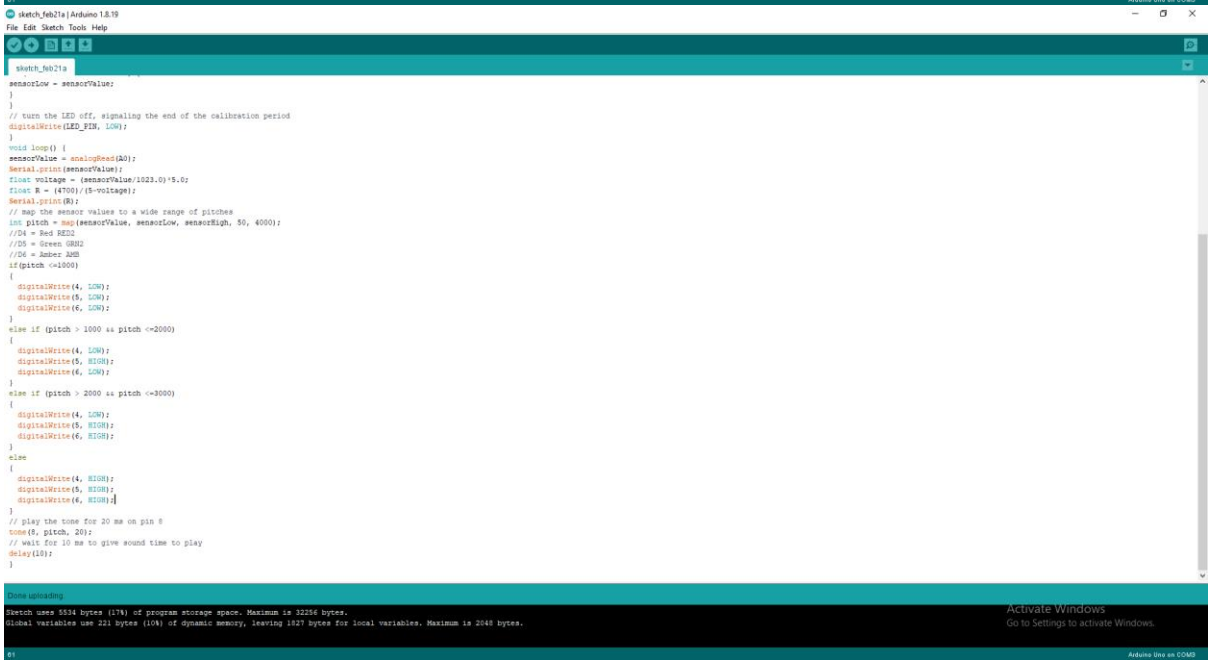
Task4:



```
int sensorValue;
int sensorLow = 1023;
int sensorHigh = 0;
const int LED_PIN = 13;
void setup() {
pinMode(LED_PIN, OUTPUT);
digitalWrite(LED_PIN, HIGH);
 for(int pinNumber = 4; pinNumber < 7; pinNumber++)
{
  pinMode(pinNumber,OUTPUT);
  digitalWrite(pinNumber, LOW);
}
// open a serial connection to display values
Serial.begin(9600);
// calibrate for the first five seconds after program runs
while (millis() < 5000) {
sensorValue = analogRead(A0);
if (sensorValue > sensorHigh) {
sensorHigh = sensorValue;
}
if (sensorValue < sensorLow) {
sensorLow = sensorValue;
}
}
// turn the LED off, signaling the end of the calibration period
digitalWrite(LED_PIN, LOW);
}
void loop() {
sensorValue = analogRead(A0);
Serial.print(sensorValue);
float voltage = (sensorValue/1023.0)*5.0;
float R = (4700)/(5-voltage);
Serial.print(R);
// map the sensor values to a wide range of pitches
int pitch = map(sensorValue, sensorLow, sensorHigh, 50, 4000);
//D4 = Red RED2
//D5 = Green GRN2
//D6 = Amber AMB
if(pitch <=1000)
{
  digitalWrite(4, LOW);
  digitalWrite(5, LOW);
  digitalWrite(6, LOW);
}
else if (pitch > 1000 && pitch <=2000)
{
  digitalWrite(4, LOW);
```

```
Done uploading.
Sketch uses 5534 bytes (17%) of program storage space. Maximum is 32256 bytes.
Global variables use 221 bytes (10%) of dynamic memory, leaving 1827 bytes for local variables. Maximum is 2048 bytes.
```

```
sensorLow = sensorValue;
}
}
// turn the LED off, signaling the end of the calibration period
digitalWrite(LED_PIN, LOW);
}
void loop() {
sensorValue = analogRead(A0);
Serial.print(sensorValue);
float voltage = (sensorValue/1023.0)*5.0;
float R = (4700)/(5-voltage);
Serial.print(R);
// map the sensor values to a wide range of pitches
int pitch = map(sensorValue, sensorLow, sensorHigh, 50, 4000);
//D4 = Red RED2
//D5 = Green GRN2
//D6 = Amber AMB
if(pitch <=1000)
{
  digitalWrite(4, LOW);
  digitalWrite(5, LOW);
  digitalWrite(6, LOW);
}
else if (pitch > 1000 && pitch <=2000)
{
  digitalWrite(4, LOW);
  digitalWrite(5, HIGH);
  digitalWrite(6, LOW);
}
else if (pitch > 2000 && pitch <=3000)
{
  digitalWrite(4, LOW);
  digitalWrite(5, HIGH);
  digitalWrite(6, HIGH);
}
else
{
  digitalWrite(4, HIGH);
  digitalWrite(5, HIGH);
  digitalWrite(6, HIGH);
}
// play the tone for 20 ms on pin 8
tone(8, pitch, 20);
// wait for 10 ms to give sound time to play
delay(10);
}
```

```
Done uploading.
Sketch uses 5534 bytes (17%) of program storage space. Maximum is 32256 bytes.
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```

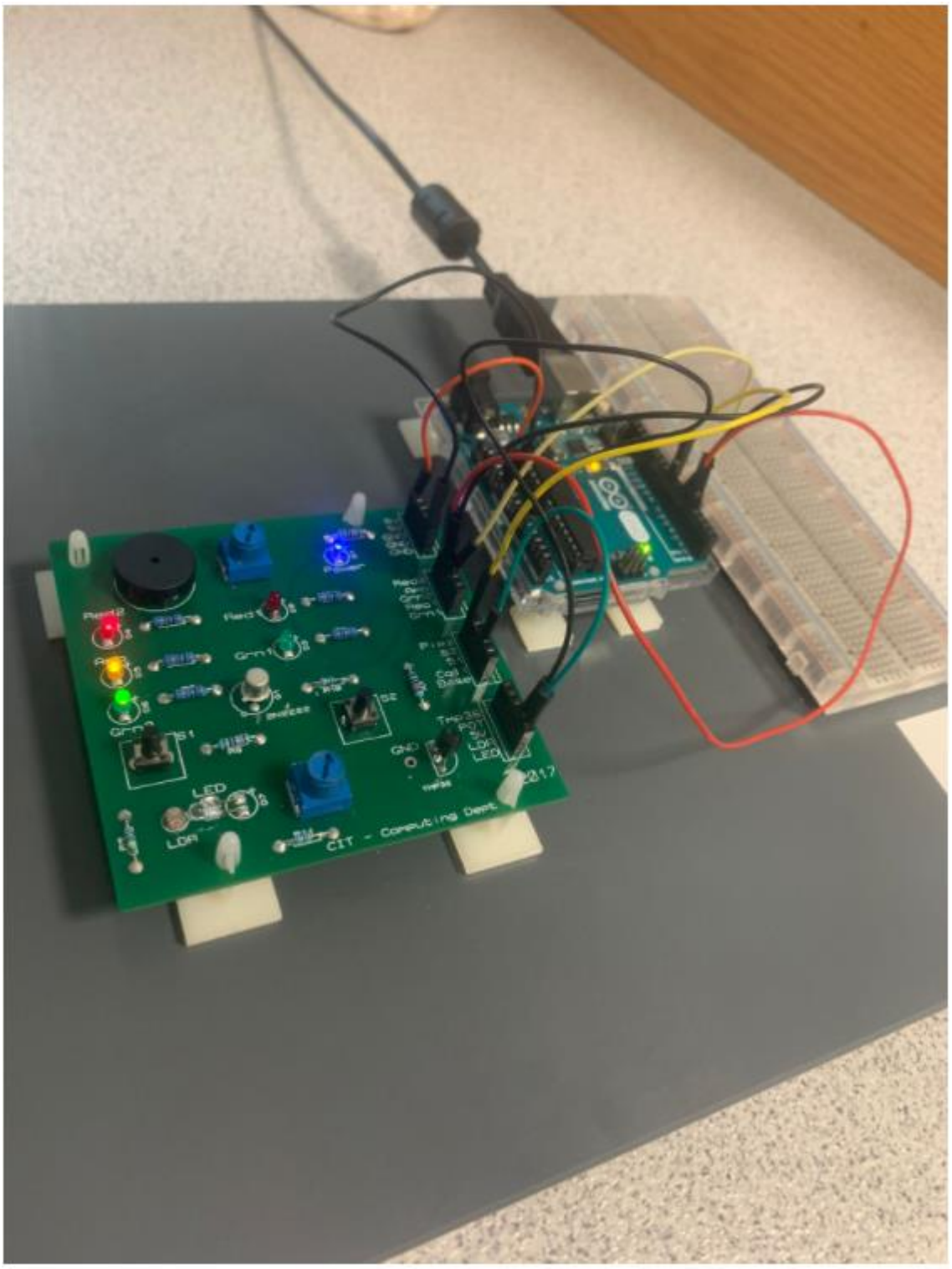
LED
LDR
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