Introduction to Internet of Things Assignment 1

Syed Farhan Jafri

21L – 6074

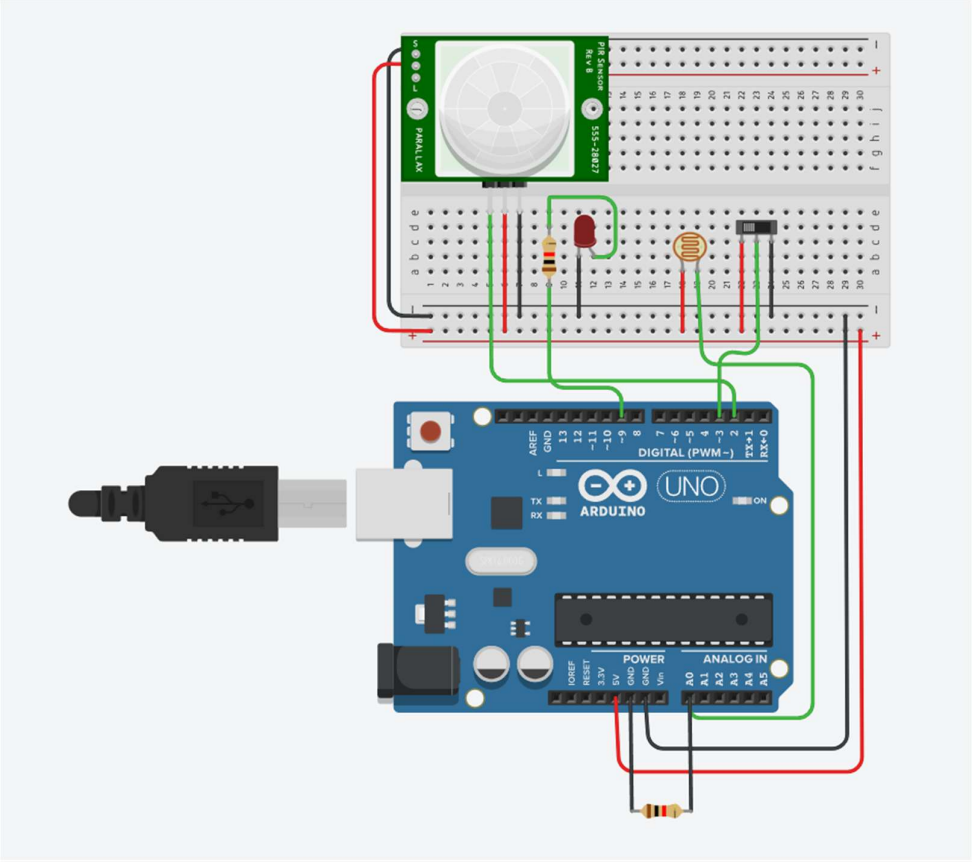
BSE-8A

Deliverable Part 1:

Automated Lighting System (Even Roll Number)

Design Link: https://www.tinkercad.com/things/bk8hk6YWWGi-iot-assignment-1/editel?returnTo=https%3A%2F%2Fwww.tinkercad.com%2Fdashboard&sharecode=nQC4OJd4p76W53620pQMi9mfnlqZS2OCqFZVnETnZJI

Circuit:



Arduino Source Code:

```
const int pirPin = 2;
const int ldrPin = A0;
const int ledPin = 9;
const int switchPin = 3;

bool systemOn = true;
unsigned long lastMotionTime = 0;

const unsigned long timeout = 5000;
// const unsigned long timeout = 300000;

void setup() {
  pinMode(pirPin, INPUT);
  pinMode(ldrPin, INPUT);
  pinMode(ledPin, OUTPUT);
  pinMode(switchPin, INPUT_PULLUP);

  Serial.begin(9600);
}

void loop()
{
  systemOn = digitalRead(switchPin) == HIGH; //current switch state

  if (!systemOn)
  {
    digitalWrite(ledPin, LOW);
    Serial.println("System is Off. LED turned Off.");
    return;
  }

  int motionDetected = digitalRead(pirPin);
  int lightLevel = analogRead(ldrPin);

  Serial.print("LDR Value: ");
  Serial.print(lightLevel);
  Serial.print(" and PIR: ");
  Serial.println(motionDetected ? "Motion Detected" : "No Motion");

  if (motionDetected)
  {
    lastMotionTime = millis(); // Reset when motion is detected
  }

  // check if motion detected and dark
  if ((millis() - lastMotionTime < timeout) && (lightLevel < 200))
  {
    int brightness = map(lightLevel, 0, 1023, 255, 0);
    analogWrite(ledPin, brightness);
    Serial.print("LED On - Brightness: ");
    Serial.println(brightness);
  } else
  {
    digitalWrite(ledPin, LOW);
    Serial.println("LED Off - No motion/Enough Light");
  }

  delay(500);
}
```

Deliverable Part 2

Successfully credit claimed