Design & Analysis of IoT Software
SOFE 4610U

Assignment 3
Light Intensity Using Photoresistor Sensor

Team Members	Student ID
Hemshikha Sultoo	100670616
Shahroze Butt	100701891
Minhal Syed	100618744

Scope of the system

Purpose: A home automation system that can remotely or automatically control the lights.

Behavior: The home automation system ought to include automatic and manual modes; in both, it detects the amount of light and turns on and off as necessary.

System Management Requirement:The system must have remote and control capabilities.

Data Analysis Requirements: should carry out data analysis

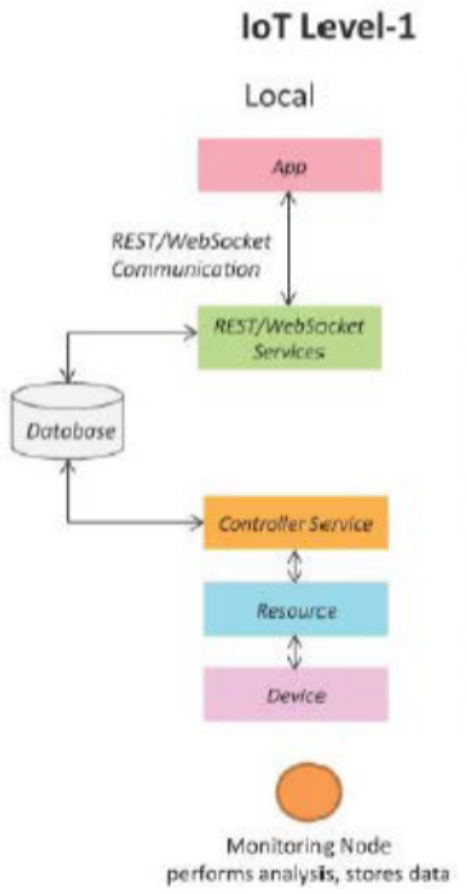
System Implementation

This system has been implemented using the Arduino. With Django and Python Firmata installed, Firmata is first compiled and uploaded on the Arduino IDE while Django is used to create a new website/web app project.

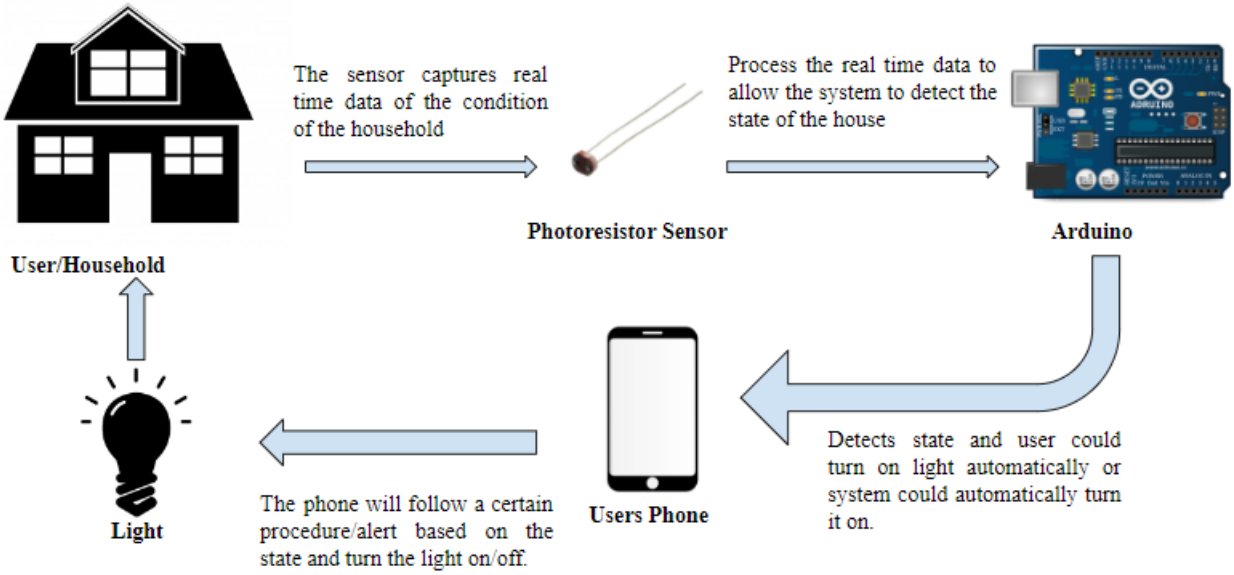
The following files are edited with the proper directory path, function names and the code for Django:

- settings.py
- urls.py
- form.py
- views.py
- index.html

IoT Level-1:
Our system is capable of understanding an architectural style that consists of a system with a single node that does nothing more complicated than record data, analyze it, and report on the brightness of a room. Being able to finally host the program for a user without requiring a costly or complex system.



System Design:



Code:

```
//set pin numbers
//const won't change
const int ledPin = 13;   //the number of the LED pin
const int btn = 7;   //Button pin
const int ldrPin = A0;  //the number of the LDR pin

int buttonState = 0;
int oldButtonState = LOW;
int ledState = LOW;

void setup() {

  Serial.begin(9600);
  pinMode(ledPin, OUTPUT);  //initialize the LED pin as an output
  pinMode(ldrPin, INPUT);   //initialize the LDR pin as an input
  pinMode(btn, INPUT_PULLUP); // initialize button as input
}

void loop() {

  int ldrStatus = analogRead(ldrPin);   //read the status of the LDR value

  //check if the LDR status is <= 300
  //if it is, the LED is HIGH

   if (ldrStatus <=500) {

    digitalWrite(ledPin, HIGH);              //turn LED on
    Serial.println("LDR is DARK, LED is ON");

   }
  else {

    digitalWrite(ledPin, LOW);          //turn LED off
    Serial.println("---------------");
  }

  int digitalVal = digitalRead(btn); // Take a reading
```

```
  if(HIGH == digitalVal)
  {
    digitalWrite(ledPin,LOW); //Turn the LED off
  }
  else
  {
    digitalWrite(ledPin,HIGH);//Turn the LED on

  }


}
```

Video Links:
https://drive.google.com/file/d/18ILW0h3Pyi-g7YZzDC1dD6fm7mDWuD3_/view?usp=share_link

https://drive.google.com/file/d/18KRLWLbXAbud9X9IdU8Bx-MLzKAN3FZ9/view?usp=share_link