Electronics Engineering

Project Report

Home Automation System

4th SEMESTER

Submitted to: Engr. Ali Hassan

Session: ME-13 **Section: C** **Group:**

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Objective:

In this project we created a home automation system using Arduino based systems, We used various electronic devices that work along an Arduino to form a complete automatic home control system.

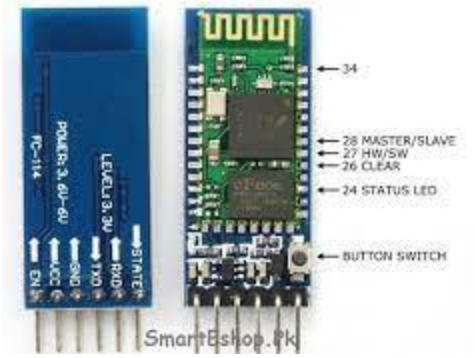
Literature Review:

Home automation systems have gained significant popularity in recent years, offering convenience, energy efficiency, and enhanced security to homeowners. This literature review explores the existing research and developments related to Arduino-based home automation systems. Arduino, an open-source microcontroller platform, enables the creation of customizable and cost-effective solutions for home automation. Several automation technologies have been utilized in home automation systems, including wireless communication protocols such as Zigbee, Wi-Fi, and Bluetooth. These technologies allow devices to communicate with each other and the central control unit, facilitating seamless integration and remote control of various household appliances and systems.

Construction:

1. Arduino UNO:

2. HC-05 BT:



3. Resistor 470 Ohm:

4. Fan (12v):

5. Dual channel 5 Volt relay Module:

6. Led:

7. 9V D.C. Battery:

Working:

1. Connect the Rx pin of Arduino uno to the Tx HC-05BT.
2. Connect the Tx pin of Arduino uno to the Rx HC-05BT.
3. Connect the 5V Vcc pin of the Arduino UNO to the HC-05BT Vcc and 5V relay module
4. Connect the in1 and in2 of the 5V relay module to the 13 and 12 pin of the Arduino UNO.
5. Connect the 9V battery to the led, 5V relay and Fan.

Code:

The code used was

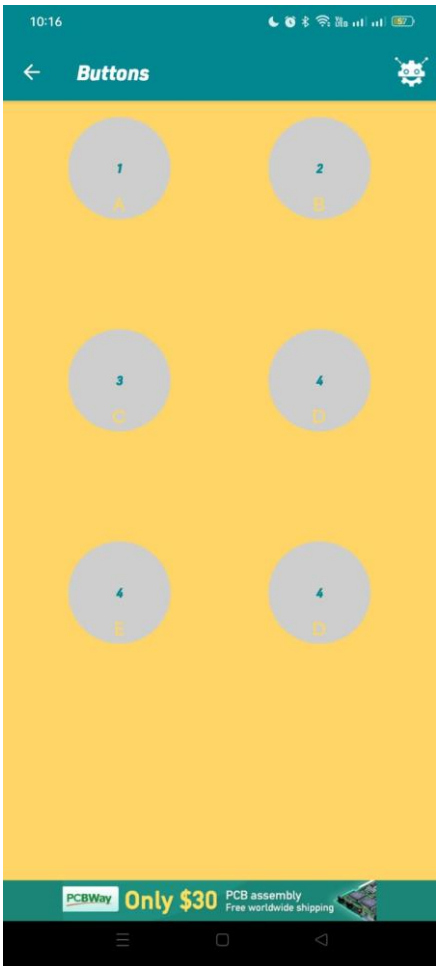
```
char val;

void setup() {
  pinMode(13, OUTPUT);
  pinMode(12,OUTPUT);
  Serial.begin(9600);

}
```

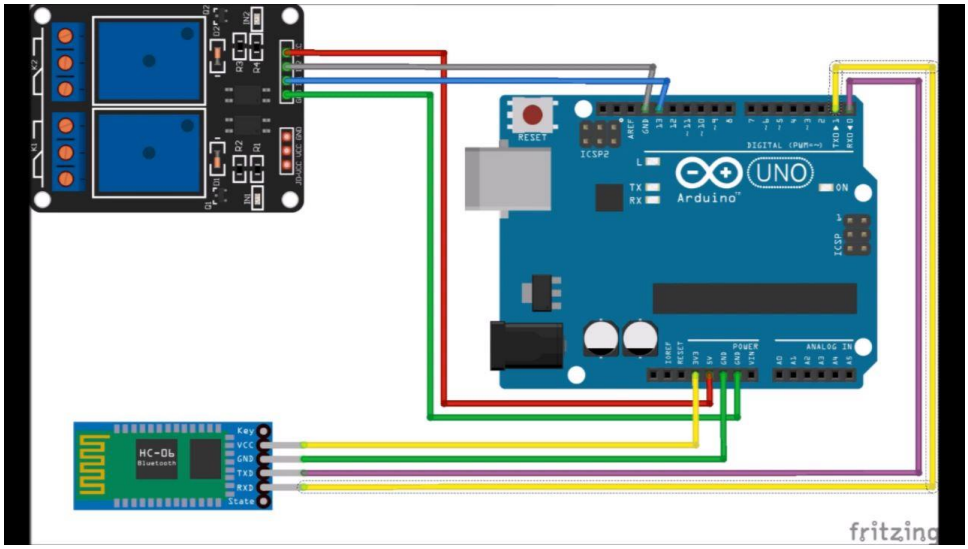
```
void loop() {
  if (Serial.available()) {
    val = Serial.read();
    Serial.println();
  }
  if (val == '1')
  { digitalWrite(13, HIGH);


  }
  else if (val == '2')
  {
    digitalWrite(13, LOW);
  }
  else if (val == '3')
  {
    digitalWrite(12, HIGH);
  }
  else if (val == '4')
  {
    digitalWrite(12, LOW);
  }
  delay(100);
}
```

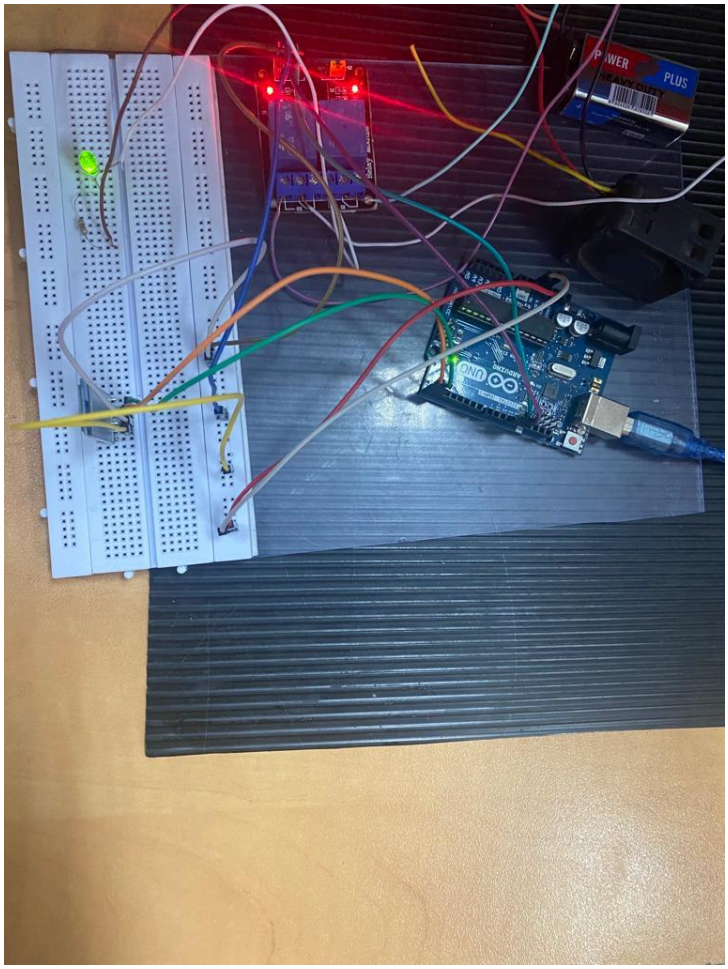


After that trhe user interface of the App was :

Circuit Diagrams:



The image at the end of the project is:



Conclusion:

We created a home automation system using Arduino UNO. The Project helped us in understanding the working of Arduino with a Bluetooth chip. We were able to see the usefulness of using Bluetooth connected automation. This project helped us gain experience on the working of Arduino and understand how this system could be implemented in real life.