PREMIER UNIVERSITY CHATTOGRAM

DEPARTMENT OF **COMPUTER SCIENCE AND ENGINEERING**

Lab Report

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REPORT NO	08
REPORT NAME	Home Automation using Arduino & Bluetooth HC-05-Module.
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	SECTION	A

Experiment Name:

Home Automation using Arduino and Bluetooth HC-05 Module.

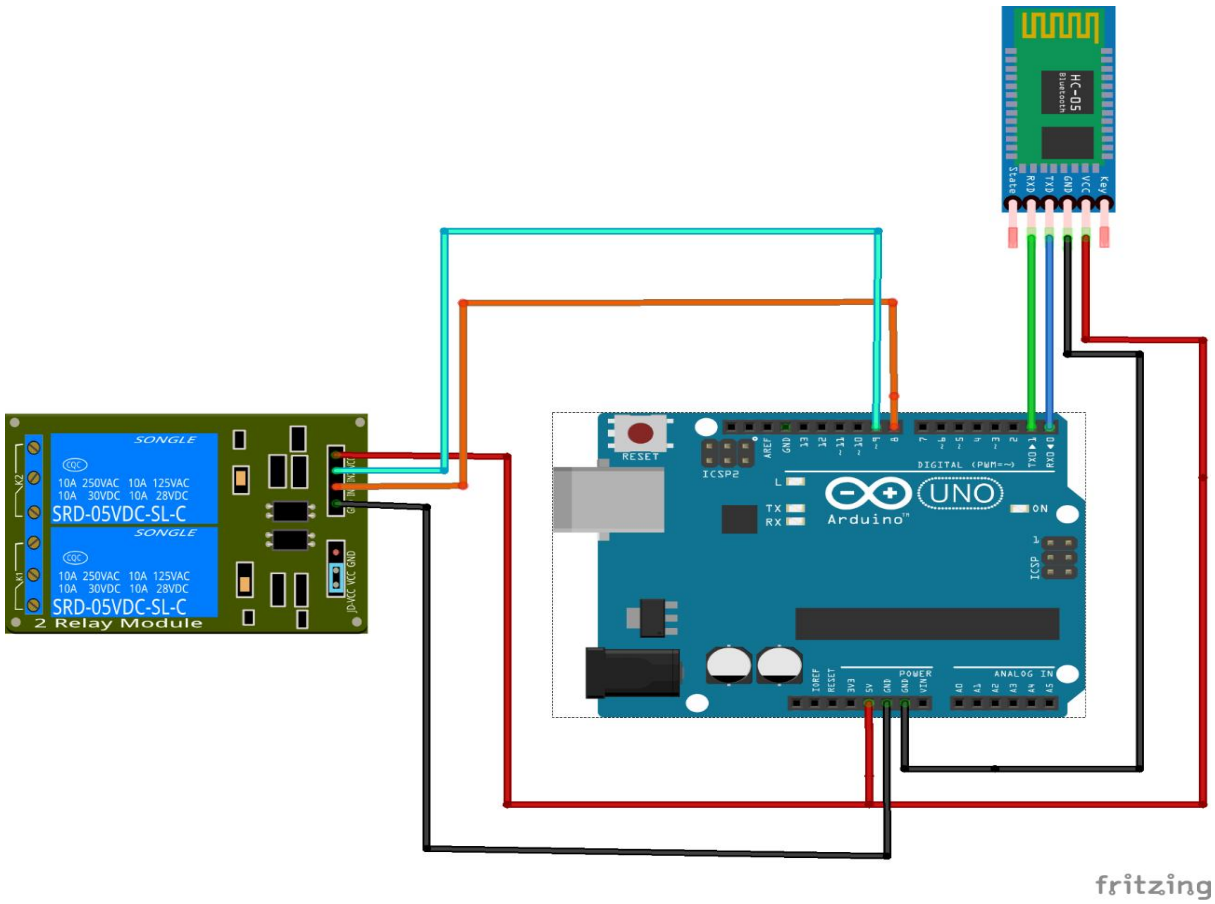
Objective:

The objective of this experiment is to design and implement a home automation system using Arduino and the HC-05 Bluetooth module. The system allows control of household appliances such as lights through a smartphone, providing convenience and enhancing energy efficiency.

Instruments Required:

- Arduino UNO
- HC-05 Bluetooth Module
- 2/4 Channel Relay Module
- AC Bulb with Holder and Wire
- 9V 1 Amp Adapter
- 220V AC Power supply
- Connecting wires
- Smart Phone (Bluetooth supported)
- Bluetooth Controller App

Circuit Diagram:



Source Code:

```
char val = 0;  // Initialize the variable
int ledpin1 = 11;
int ledpin2 = 10;

void setup() {
  pinMode(ledpin1, OUTPUT);
  pinMode(ledpin2, OUTPUT);
  Serial.begin(9600);
}

void loop() {
  if(Serial.available()) {
    val = Serial.read();
    Serial.println(val);
    delay(10); // Delay to allow serial update time
  }

  if(val == 'a') {
    digitalWrite(ledpin1, HIGH);
  }

  if(val == 'b') {
    digitalWrite(ledpin1, LOW);
  }

  if(val == 'c') {
    digitalWrite(ledpin2, HIGH);
  }

  if(val == 'd') {
    digitalWrite(ledpin2, LOW);
  }
}
```

Output:

When the source code is uploaded to the Arduino UNO and the system is powered on, the user can control the connected AC bulb using a Bluetooth-enabled smartphone. The Bluetooth Controller App on the smartphone sends specific commands ('a', 'b', 'c', 'd') to the Arduino via the HC-05 module. Based on these commands:

- Sending 'a' turns ON the first appliance (connected to ledpin1).
- Sending 'b' turns OFF the first appliance.
- Sending 'c' turns ON the second appliance (connected to ledpin2).
- Sending 'd' turns OFF the second appliance.

Discussion:

In this experiment, we implemented a home automation system using Arduino and the HC-05 Bluetooth module to control household appliances wireless. By establishing a Bluetooth connection between the Arduino and a smartphone, we enabled the user to control devices such as lights using simple commands sent via a mobile app.

This experiment demonstrates a straightforward and effective method for automating household appliances, enhancing both convenience and energy efficiency. The use of a 2/4 channel relay module was crucial, as it acted as an interface between the Arduino (which operates at a low voltage) and the high-voltage AC appliances, ensuring both safety and reliable operation.