

Title: Voice Control Home Automation System Using Arduino and HC-05

I. Summary

The project is to build a Voice Control Home Automation System Using Arduino and HC-05. This project utilizes a microcontroller and Bluetooth module. A microcontroller is a compact integrated circuit designed to govern a specific operation in an embedded system. So in this system the microcontroller controls the function of the lights. HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. This way the lights can be controlled wirelessly with Bluetooth.

II. Objective

The purpose of the project is for students to gain real word experience using IoT devices and microcontroller. Also, to give student experience with integrating the devices into real applications.

III. Industry-Based Application

Digital Logic Design is the representation of signals and sequences of a digital circuit through numbers. It is the basis for digital computing and provides a fundamental understanding on how circuits and hardware communicate within a computer. Digital logic is typically implemented into most electronic devices, including calculators, computers, video games, and watches. This project introduces how to connect IoT (internet of things) devices to circuitry through the android application. Also, the project introduces the students to Bluetooth. Moreover, the

product will allow individuals to get familiar with a microcontroller. Microcontrollers are used in various application in the industry. This project will develop the students programming skills and circuit design for real world application of a product. The project will teach student about home automation. This product can be incorporated with smart cities and smart homes. These things are growing rapidly and will be incorporated into everyday living. Furthermore, it shows students that engineering can be used to design a wide-range of products.

IV. Methodology

a. Components

- i. Arduino Uno and Genuino Uno
- ii. HC-05 Bluetooth Module
- iii. Jumper Wires
- iv. Two AC Bulbs (Red, Yellow)
- v. Relay

Applications and Online Services

- vi. Arduino IDE
- vii. Android IoTBoys (Android App)

b. Procedure

- i. Please watch the video link before starting the project
- ii. Use the circuit diagram below to construct the project

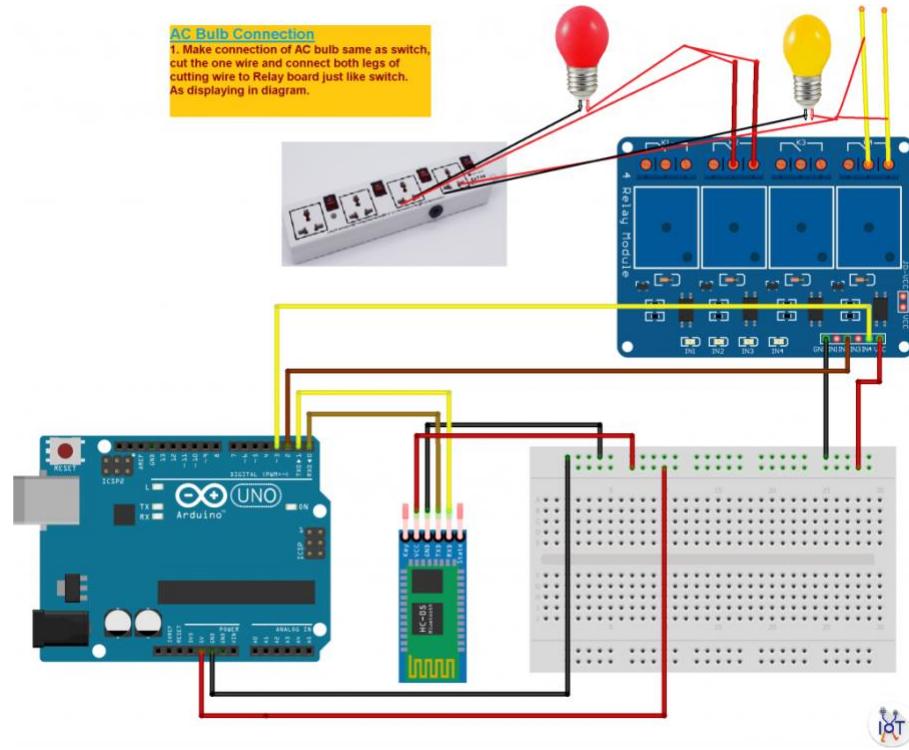


Figure 1- the figure above is the circuit diagram for the Voice Control Home Automation System Using Arduino and HC-05

- iii. Next download the applications listed
- iv. Lastly program the Arduino using the code listed in the appendix

V. References

Website: https://create.arduino.cc/projecthub/iotboys/voice-control-home-automation-system-using-arduino-and-hc-05-92c622?ref=similar&ref_id=45626&offset=1

video: <https://youtu.be/fs06eMlZ-to>

VI. Appendix

Arduino Code:

```

String voice;
int RED = 2;
int YELLOW = 3;
```

```
void RedOn(){
    digitalWrite (RED, LOW);
}

void RedOff(){
    digitalWrite (RED, HIGH);
}

void YellowOn(){
    digitalWrite (YELLOW, LOW);
}

void YellowOff(){
    digitalWrite (YELLOW, HIGH);
}

void allon() {
    digitalWrite (RED, LOW);
    digitalWrite (YELLOW, LOW);
}

void alloff() {
    digitalWrite (RED, HIGH);
    digitalWrite (YELLOW, HIGH);
}

void setup() {
    Serial.begin(9600);
    pinMode(RED, OUTPUT);
```

```
pinMode(YELLOW, OUTPUT);

digitalWrite (RED, HIGH);

digitalWrite (YELLOW, HIGH);

}

void loop() {

while(Serial.available()) {

delay(10);

char c=Serial.read();

if(c=='#')

{

break;

}

voice += c;

}

if (voice.length() > 0) {

Serial.println(voice);

if (voice == "on" || voice=="all on")

{

allon() ;

}

else if (voice == "off" || voice=="all off")

{

alloff() ;
```

```
}

else if(voice == "red" || voice == "red on"){

    RedOn();

}

else if(voice == "red off"){

    RedOff();

}

else if(voice == "yellow" || voice == "yellow on"){

    YellowOn();

}

else if(voice == "yellow off"){

    YellowOff();

}

voice = "";

}
```