Experiment 3.2

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Subject Name: IOT LAB
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1. **Aim**: Real Time application of controlling actuators through Bluetooth application using Arduino.

2. **Components Required:**
   You will need the following components –
   1. 8 Male/Male Jumper Wires
   2. 1 HC-05 Bluetooth Module
   3. 1 (5 mm) LED: Red
   4. 1 Arduino UNO
   5. App: Bluetooth Arduino LED Control

3. **Arduino Bluetooth:**

Flexible and packed with high Bluetooth transmission speed, the Grove – Blueseeed LE – Dual Model (HM13) uses a CSR dual-mode Bluetooth chip, with the ARM architecture single chip that supports AT instructions. This allows users like to have control over the serial baud rate, equipment name, and pairing password!

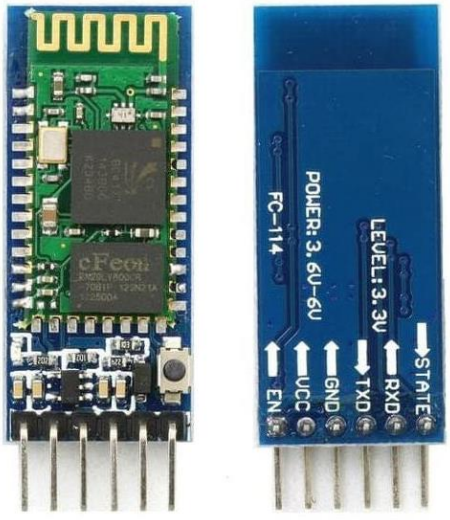


Fig. 1 Module HC-05

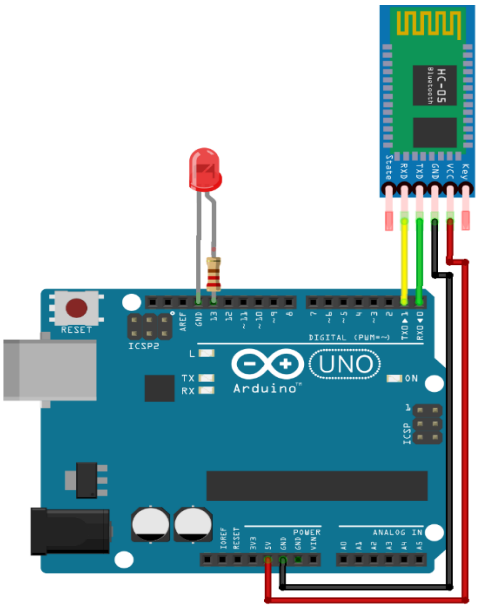


Fig. 2 Connection [We didn't use Resistor]

4. **CODE:**

```
#include <SoftwareSerial.h>
SoftwareSerial Myblue(10,11);
char switchstate;
int LED = 13;
 void setup() {

 Serial.begin(9600);
 pinMode(LED, OUTPUT);

 }
 void loop() {

 while(Serial.available()>0)
 {
   switchstate = Serial.read();

 if(switchstate == '1'){
 digitalWrite(13, HIGH);

 }
 else if(switchstate == '0'){
 digitalWrite(13, LOW);
}
 }
 }
```

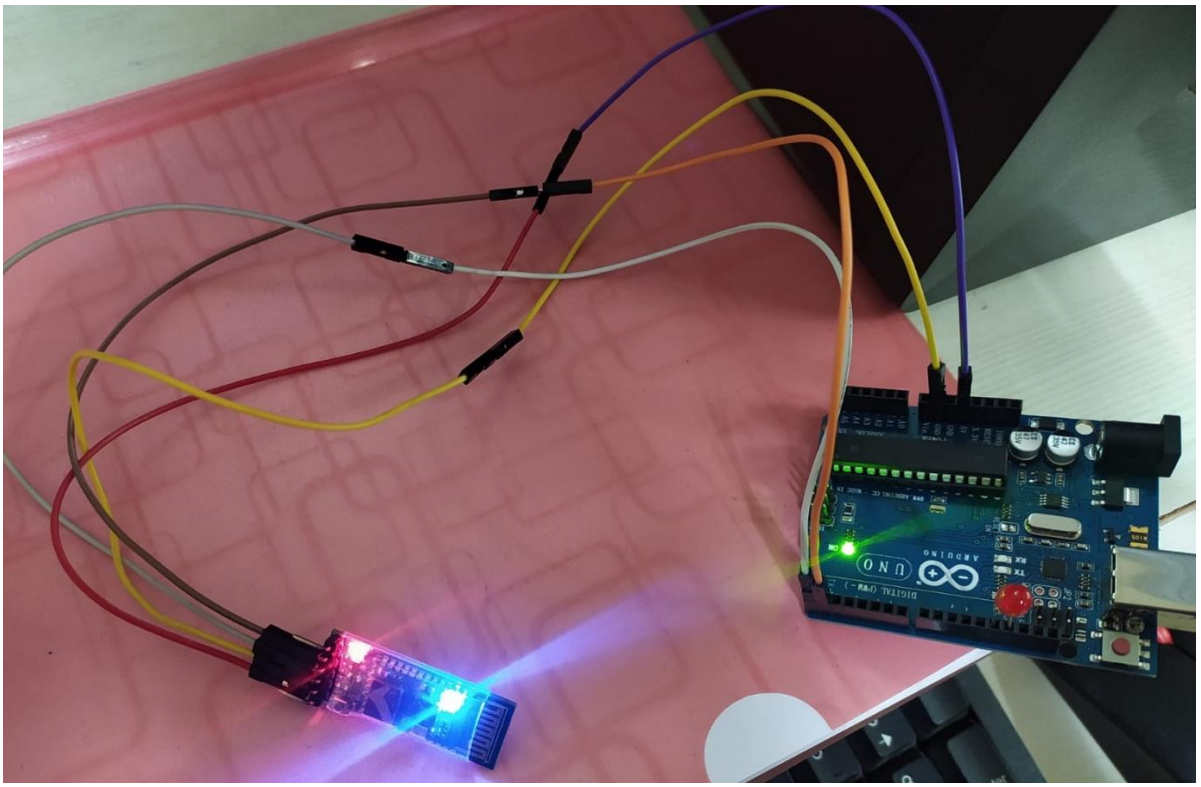
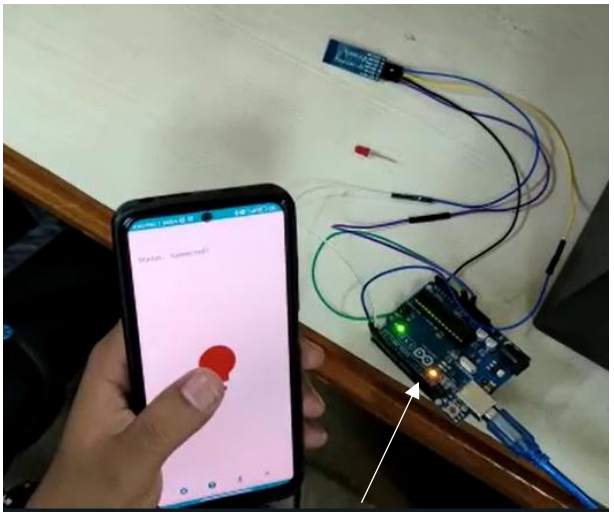


FIG. 3: CIRCUIT WITH ALL WIRED CONNECTIONS TO ARDUINO AND HC-05.

5. OUTPUT:

BUTTON OFF



BUTTON ON

6. ANALYSIS:

1. We can setup a separate LED or any other device like home appliances.
2. We can use this setup to automate different devices in order to transform them into smart devices with smart control.

7. OBSERVATIONS:

1. There is a limitation of Distance as it works on Bluetooth which has limited range.
2. The nominal range of the HC-05 is 10m, afterwards it starts connection lose.