DEPARTMENT OF
COMPUTER SCIENCE & ENGINEERING

Experiment 3.2

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Semester: 6th **Subject Name: IOT LAB**
Subject Code:20CSP-358

Aim:

Real Time application of controlling actuators through Bluetooth application using Arduino.

Objectives:

- Learn about interfacing.
- Learn about IoT programming.
- Learn about HC-05 Bluetooth module

Components Required:

You will need the following components –

- 8 Male/Male Jumper Wires
- 1 HC-05 Bluetooth Module
- 1 (5 mm) LED: Red
- 1 Arduino UNO
- App: Bluetooth Arduino LED Control

About HC-05 Module:

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!

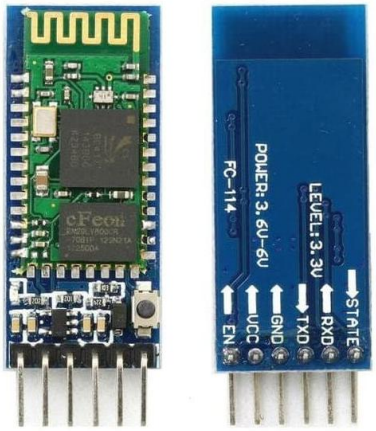

Fig1: HC-05 Bluetooth Module

Circuit Diagram:

Follow the following steps to setup the circuit for this experiment:

Step 1: Connect the BT module's Rx pin to pin 11 on the Arduino
Step 2: Connect the BT module's Tx pin to pin 10 on the Arduino
Step 3: Connect the Gnd and Vcc (5v) to the Arduino
Step 4: Connect your Arduino to PC via USB cable

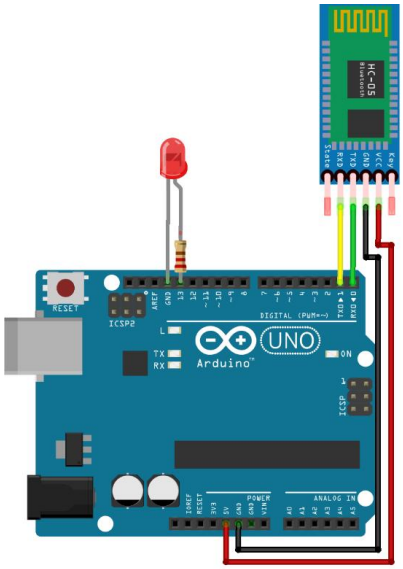

Fig2: Circuit Diagram

Arduino 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);
   }
 }
}
```

Output:

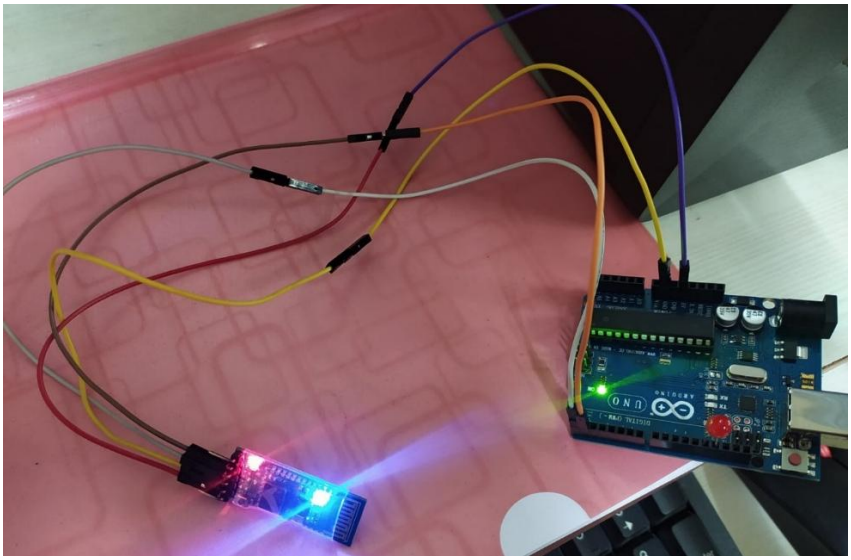

Fig3. HC-05 setup

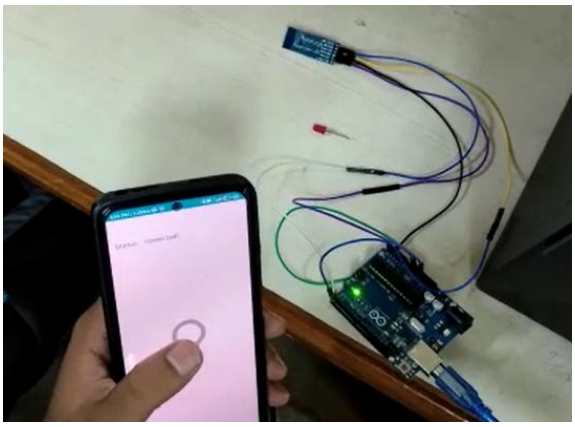

Fig4: Button OFF

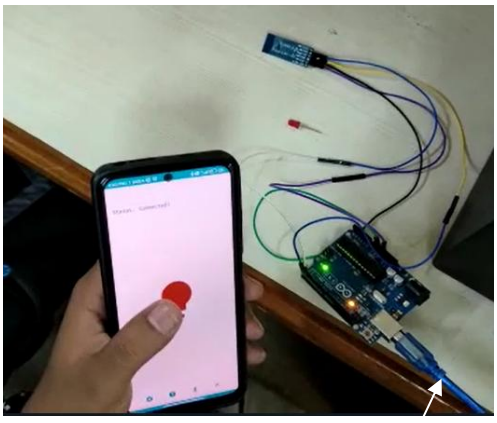

Fig5: Button ON

Learning outcomes:

- Learnt about MQ-05.
- Learnt how to interface and limitations of MQ-05 sensors about its range.
- Learnt the basic features of IoT programming