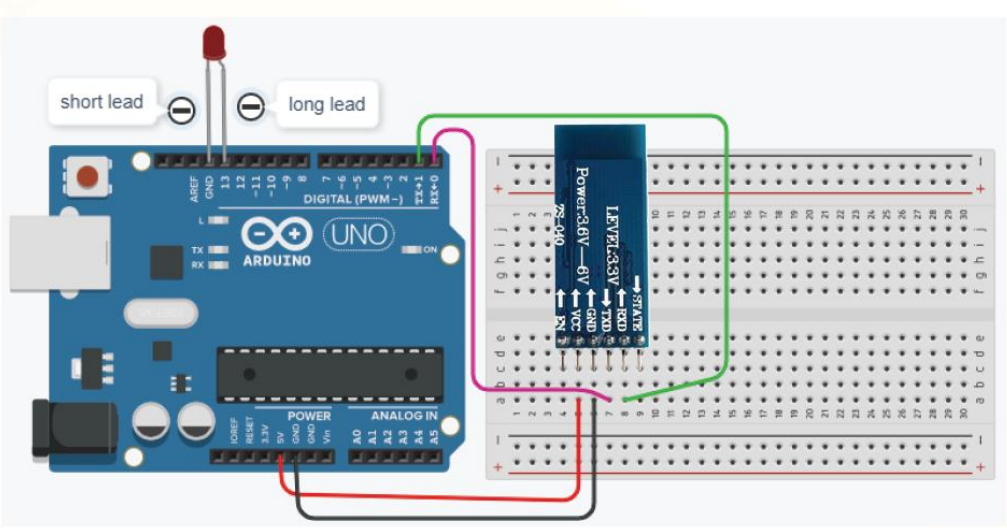
Control LED Through Smart Phone

Aim: - In this we learn that how we can control LED with our smart phone using Bluetooth Module.

Component Requirements

Sl. No	Items	Quantity
1	Arduino Uno	1
2	Cable	1
3	Led	1
4	Bluetooth Module	1
5	Jumper Wire M-M	4
6	Breadboard	1
7	Battery 9 Volt	1
8	Battery Cap	1

Circuit Diagram



Circuit connections procedure

- Take 1 Arduino board, 1 breadboard and place it side by side
- Mount bluetooth module on breadboard.
- Take 4 male to female wires and connect to in front of each pin of

the bluetooth module on the breadboard.

- Note: Except 1st and last pin of bluetooth module use middle 4 pins.
- Now connect the other end of those 4 wires to the arduino board as per given details

Bluetooth	Arduino
VCC	5V
GND	GND
TXD	RX
RXD	TX

- Connect the long lead/leg of the LED to pin no 13 of the arduino board
- Connect the short lead/leg of the LED to the GND pin of the Arduino

Procedure to Upload Code

- Once you complete the circuit connections connect the arduino board to your laptop/computer system using arduino cable.
- Open arduino IDE.
- Go to File->Open>Download>select control_led_through_ smartphone.
- Remove the TX/RX pin connected to the arduino board.
- Click on the upload option.
- After successfully uploading the code. Connect the TX/RX wires again.

Note: Do not use the TX/RX pin of the arduino board while uploading the code, otherwise you will get an uploading error.

Program

```
#define ledPin 13
void setup(){
pinMode(ledPin,OUTPUT);
Serial.begin(9600);
}
void loop(){
```

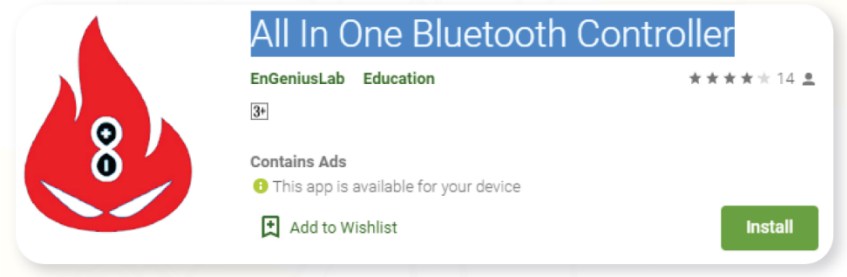
```
if(Serial.available()){
char data=Serial.read();
if(data=='1'){
digitalWrite(ledPin,HIGH);
Serial.println("LED is ON");
}
else if (data=='0'){
digitalWrite(ledPin,LOW);
Serial.println("led is OFF");
}
}
}
```

Interfacing Between Hardware And Android Bluetooth App:

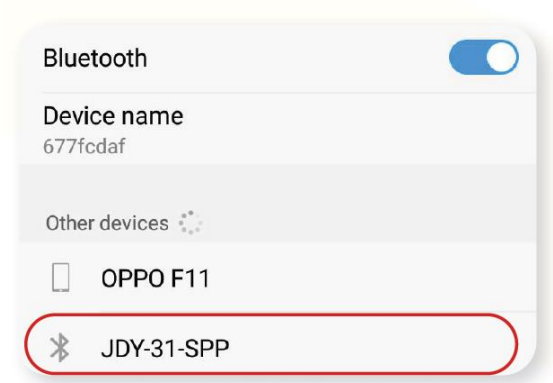
Step 1: Do the connection as shown above. Connect arduino to your laptop/computer using arduino cable. Led on the bluetooth module starts blinking.

Step 2: Download and install the "All In One Bluetooth Controller" App from the play store or app store.

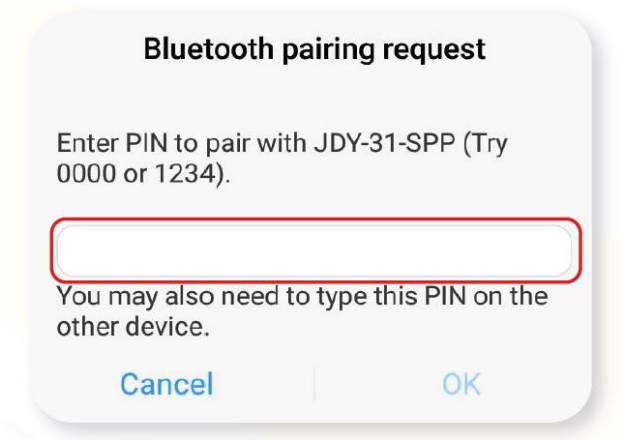
Here is the Link to download the App: Click Ctrl+ Click to open this link
https://play.google.com/store/apps/details?id=com.bluetoothcontroller.gameapp



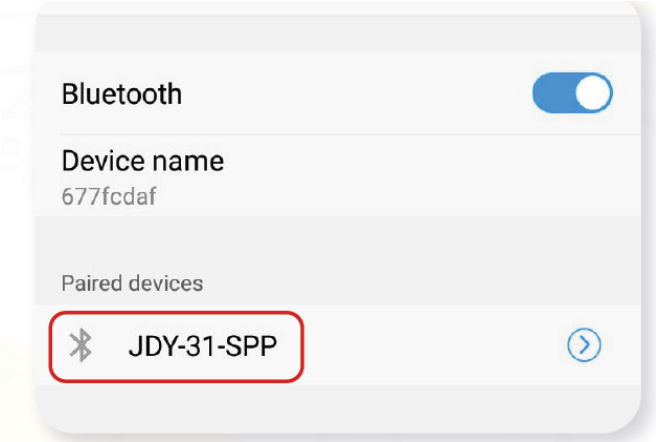
Step 3: Open your Mobile Bluetooth Settings->Turn On the Bluetooth.



Step 4: Select JDY-31-SPP or HC-05 device, it will start pairing that device, enter pairing pin as 1234.

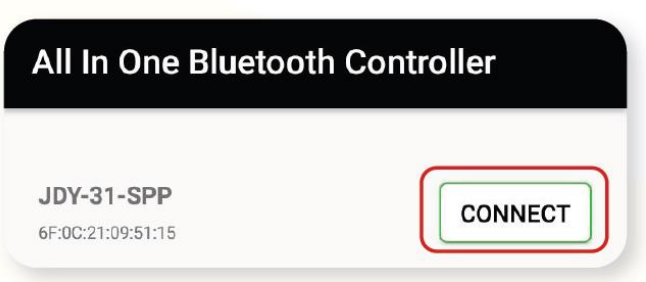


Step 5: After successfully paired then it will come under the paired devices section.

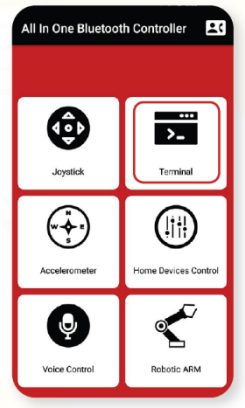


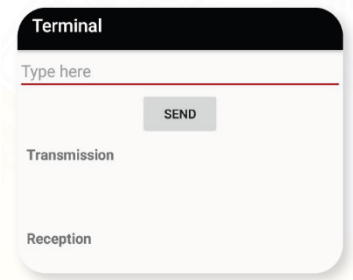
Step 6: Open bluetooth app which was installed previously.

Step 7: You will get a paired device list like this, click on CONNECT option, it will try to connect with your bluetooth device.



Step 8: If it is connected, this page will open. You will find 6 options in that app, click on terminal and send commands like either 0 or 1, as per 0 and 1 commands Led output will change





Output

1. You can see after sending 0 or 1 commands from the app, there is change led output on the arduino board.
    - If you send 1, the led will turn ON.
    - If you send 0, the led will turn OFF.

9V Battery connection:

1. You are powering the arduino through your laptop. You can also power the arduino through 9v battery.
2. Disconnect the arduino cable and connect the 9v battery to the arduino board using the power jack connector. Now you can see the circuit is working.

Troubleshoot

Issue	Solution
Case 1 : My code is not being uploaded?	. Remove TX/RX wires from the ardui no board. Then upload the code. After successfully uploading the code, connect those wires again.

	2. Check whether the board and port in the Arduino IDE is selected or not.
Case 2: In mobile bluetooth settings which bluetooth device needs to pair?	JDY-31-SPP or HC-05

Case 3: The Bluetooth is not connecting to the app?	. Make sure that bluetooth is powered ON and that module is blinking. Also make sure your connections are tight, loose jumpers may lead to improper connectivity. . Unpair the bluetooth from mobile settings and pair it again and try to connect with the bluetooth from the All in one App.
Case 4: No data is coming on the serial monitor.	Check bluetooth TX/RX connections with the arduino board. Bluetooth Module Arduino Board RXD ---------- TX TXD ---------- RX GND ---------- GND VCC ---------- 5V