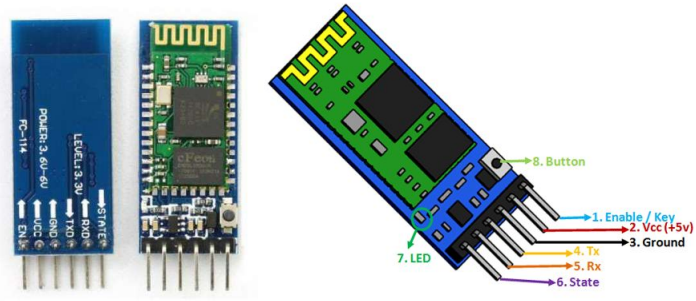
Bluetooth Module
(Sends and Receives Data)

What is a Bluetooth Module?



Scientific Fact and Applications

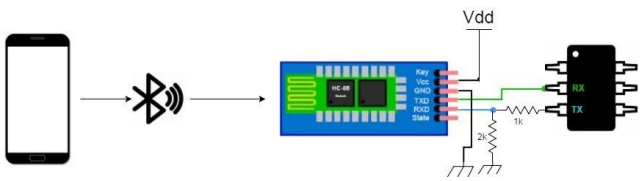
Master-Slave configuration is the base on which Bluetooth Module operates, making it a great solution for wireless communication. The Arduino Bluetooth module receives the data and sends it to the Arduino through the TX pin of the Bluetooth module (connected to RX pin of Arduino) and vice versa.

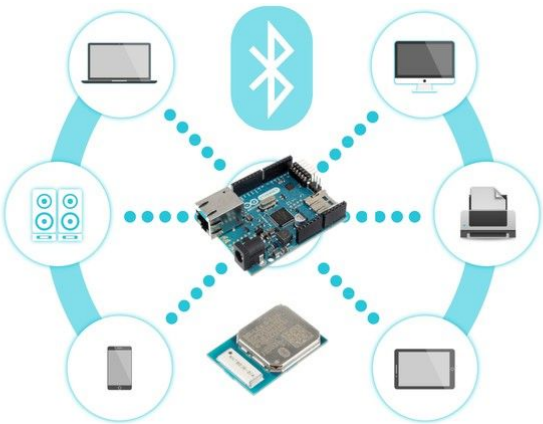
Applications:

Home Automation
Connecting home appliances to Bluetooth controlled system is a modern day approach to automation. Be it lights or fans, every other connected device can be converged into a single system configuration.

Communication among electronic gadgets
Bluetooth communication can be setup among electronic gadgets such as health-care, security alert, and entertainment electronics.

Bluetooth technology is a short-range wireless communications technology to replace the cables connecting electronic devices, allowing a person to have a phone conversation via a headset, use a wireless mouse and synchronize information from a mobile phone to a PC, all using the same core system. Bluetooth Module is used to send and receive data through serial communication. Smart devices use Bluetooth as their heart to build connectivity such as smart wristbands, Bluetooth speakers etc. Similarly, HC-05/06 gives some capability of making appliances smart by using the technology. An app can be utilised to control those appliances.





References

1. https://www.deltakit.net/product/hc05-bluetooth-module/
2. https://deepbluembedded.com/bluetooth-module-hc05-interfacing-pic-microcontroller-tutorial/
3. https://components101.com/wireless/hc-05-bluetooth-module

AN-023 Rev 1.0

Z2M Part Number:
EMC-00004-A

Bluetooth Module
(Application Note)

Project

Operate a led and blink it ON-OFF using bluetooth via a mobile phone.

Procedure

Bluetooth Module:

- Connect **Rx** of Moduleto **Tx** of Arduino
- Connect **Tx** of Moduleto **Rx** of Arduino
- Connect **Vcc** to **5V** of Arduino
- Connect **Gnd** to **Gnd** of Arduino

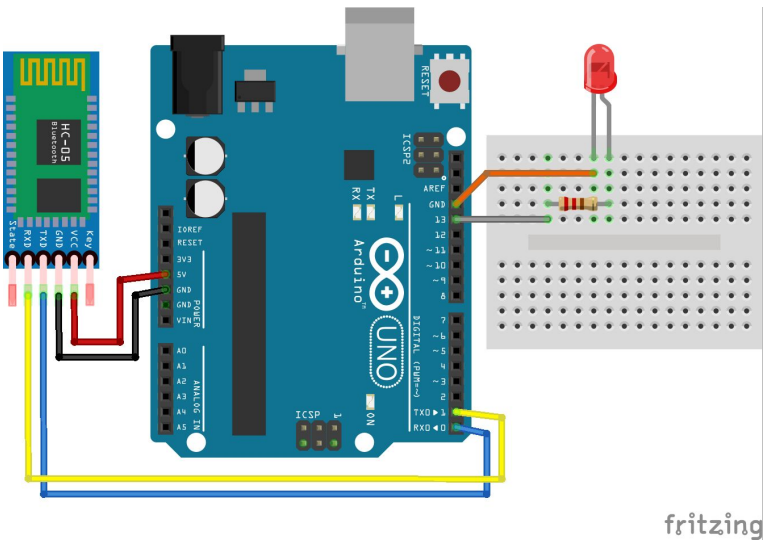
LED:

- Connect **Cathode** of led (**Shorter leg)** to **GND** of Arduino
- Connect **Anode** of LED to pin **13th** of Arduino via 220Ohm resistor

Smart Phone Setup:

Your mobile phones must have a bluetooth application installed and paired with the arduino board for controlling a remote car. The mobile app sends the following character commands. F (forward), B (Back), R (Right, L (Left), W, X, Y Z that may be assigned to any function. Refer here for Bluetooth Setup for phone.(https://tinyurl.com/EMC-003-A)

Schematic



Challenge Yourself

1. Make a smart system that can show the room's current temperature in your mobile phone
2. Design a model for for home automation that can turn on light as soon as a family member enters.

Components Required

Component	Part No.	Qty
Arduino UNO	EMX-00001-A	1
Bluetooth Module	EMC-00004-A	1
LED	EDD-00002-A	1
Resister - 220 Ohm	EDR-00001-220Z	1

Code

```
/* There are 8 different Bluetooth signals as designed in Z2M Bluetooth RC App and sent in character.
   F, B, R, L, W, X, Y, Z
   Pls note that the Bluetooth signals can be used to control other components like led and servo as well.*/

char data = 0; /*Variable to store received data*/

void setup()
{
  Serial.begin(9600);
  pinMode(13, OUTPUT);
/*Connect led to show output*/
}
void loop()
{
  if(Serial.available() > 0)
/* Check if data is received, then proceed*/
    data = Serial.read();
/*Read the incoming data*/
  Serial.println(data);
  if(data == 'F')/* Checks if the data is 'F', turns on the led*/
    digitalWrite(13, HIGH);
  else if(data == 'B')
/*  Checks  if the data is 'B', turns off the led*/
    digitalWrite(13, LOW);
}
```