

# Bluetooth Controlled Car

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## Aim ::

- ▶ To develop a remote user interface to control a car via a wireless technology.
- ▶ To add an ultrasonic sensor for obstacle detection in the car

## Components ::

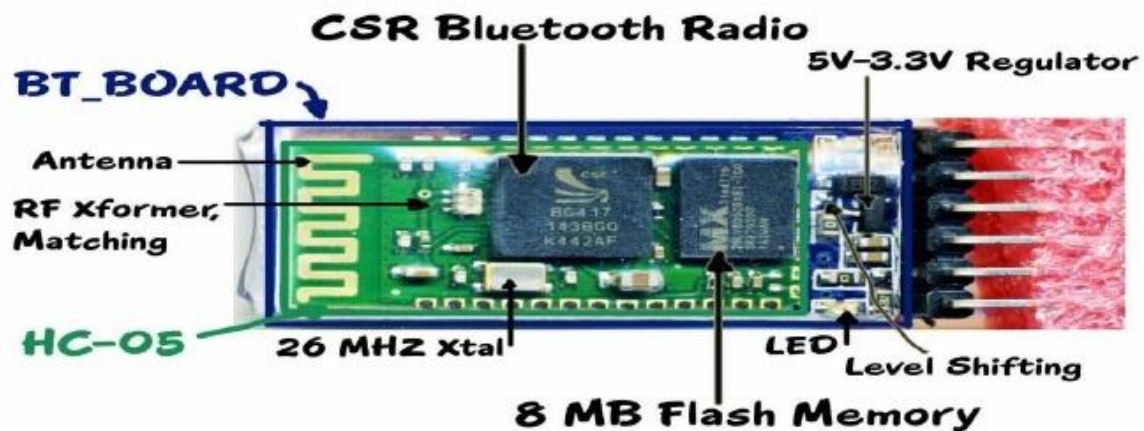
- Arduino UNO
- DC Motors 5V
- Bluetooth module HC-05
- Ultrasonic Sensor HC SR-04
- Motor Driver Shield L293D
- 9 volt Battery
- Battery Connector
- Cardboard chassis
- Wires

**Bluetooth controlled car** is controlled by using Android mobile phone instead of any other method like buttons, gesture etc. Here only needs to touch button in android phone to control the car in forward, backward, left and right directions. Here android phone is used as transmitting device and Bluetooth module placed in car is used as receiver. Android phone will transmit command using its in-built Bluetooth to car so that it can move in the required direction like moving forward, reverse, turning left, turning right and stop.

## Bluetooth Module

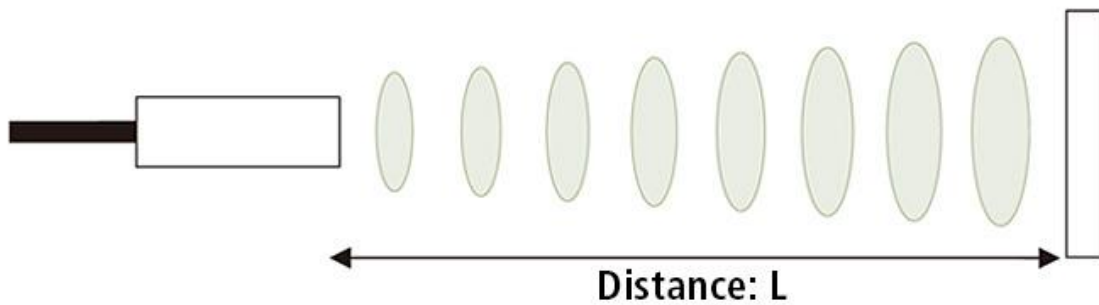
HC-05 Bluetooth module consists two things one is Bluetooth serial interface module and a Bluetooth adaptor. Bluetooth serial module is used for converting serial port to Bluetooth.

The module has two modes of operation i.e. Command mode here we can send AT commands to it and Datamode here it transmits and receives data to another bluetooth module.

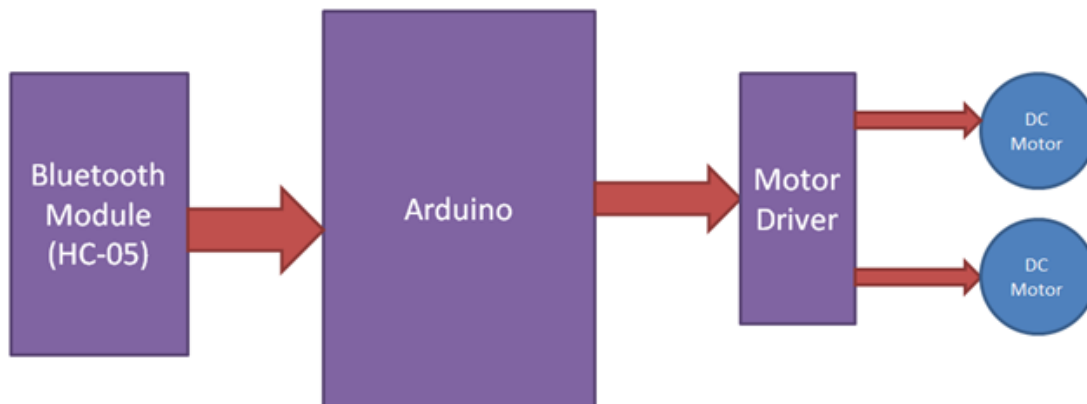


## Ultrasonic sensor

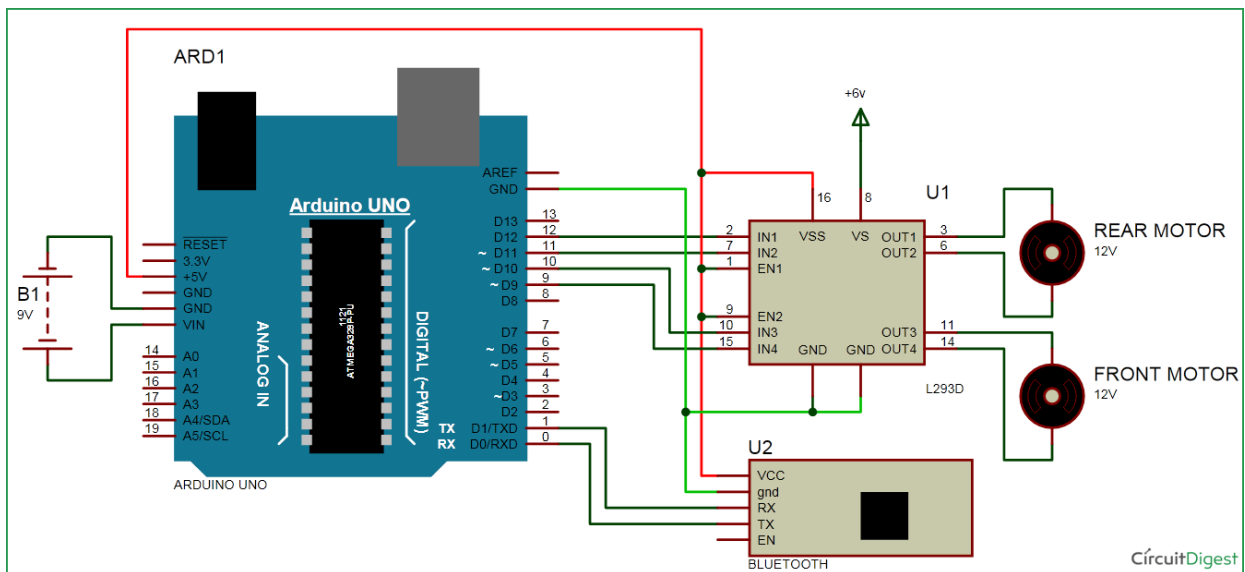
It measure distance by using ultrasonic waves. The sensor head emits an ultrasonic wave and receives the wave reflected back from the target. Ultrasonic Sensors measure the distance to the target by measuring the time between the emission and reception.



## Block Diagram



## Circuit diagram of the car



- A Motor driver is connected to arduino to run the car. Motor driver's input pins 2, 7, 10 and 15 are connected to arduino's digital pin number 12, 11, 10 and 9 respectively.
- Two DC motors were used to driver car in which one motor is connected at output pin of motor driver 3 and 6 and another motor is connected at 11 and 14.
- A 12 volt Battery is also used to power the motor driver for driving motors. Bluetooth module's RX and TX pins are directly connected at TX and RX of Arduino. And VCC and ground pin of Bluetooth module is connected at +5 volt and ground of arduino.

## Conclusion

The objective of the project is to realize smart living , through the use of Bluetooth technology we ought to show that, how efficient and safe it is to control a car using Bluetooth.

Remote car and smartphones are a perfect match. As mobile devices is a powerful technology, using them as remote for building car with advanced feature such as for tracking purpose.

## Future Scope

The knowledge is ever expanding and so are the problems which the mankind strives to solve. The current project will have lots of future scope, for example work in military purpose, the wireless technology will reduce the maintenance cost and power thefts of the system.

## Arduino Code

```
#include <AFMotor.h>
```

```
int trigPin = 6;
```

```
int echoPin = 7;
```

```
int LEDpin = 8;
```

```
long duration, cm;
```

```
AF_DCMotor left_motor1(1, MOTOR12_8KHZ);
```

```
AF_DCMotor left_motor2(2, MOTOR12_8KHZ);
```

```
AF_DCMotor right_motor1(3, MOTOR34_8KHZ);
```

```
AF_DCMotor right_motor2(4, MOTOR34_8KHZ);
```

```
String readString;
```

```
void setup()
```

```
{
```

```
  Serial.begin(9600);
```

```
  right_motor1.setSpeed(250);
```

```

    right_motor2.setSpeed(250);

    left_motor1.setSpeed(250);

    left_motor2.setSpeed(250);

    pinMode(trigPin, OUTPUT);

    pinMode(echoPin, INPUT);

    pinMode(LEDpin,OUTPUT);
}

void loop()
{
    while(Serial.available())
    {
        delay(50);

        char c=Serial.read();

        readString+=c;
    }

    digitalWrite(LEDpin,LOW);

    digitalWrite(trigPin, LOW);

    delayMicroseconds(5);

    digitalWrite(trigPin, HIGH);

    delayMicroseconds(10);

    digitalWrite(trigPin, LOW);

    pinMode(echoPin, INPUT);

    duration = pulseIn(echoPin, HIGH);

    cm = (duration/2) / 29.1;

    Serial.print(cm);

    delay(500);

    Serial.print("\n");

    if((readString.length()>0)&&(cm>50))
    {
        Serial.println(readString);

        if (readString == "FORWARD")

```

```

{
    right_motor1.run (FORWARD);
    right_motor2.run (FORWARD);
    left_motor1.run (FORWARD);
    left_motor2.run (FORWARD);
    delay(500);
}

if (readString == "BACKWARD")
{
    right_motor1.run (BACKWARD);
    right_motor2.run (BACKWARD);
    left_motor1.run (BACKWARD);
    left_motor2.run (BACKWARD);
    delay(500);
}

if (readString == "LEFT")
{
    right_motor1.run (FORWARD);
    right_motor2.run (FORWARD);
    left_motor1.run (BACKWARD);
    left_motor2.run (BACKWARD);
    delay(500);
}

if (readString == "RIGHT")
{
    right_motor1.run (BACKWARD);
    right_motor2.run (BACKWARD);
    left_motor1.run (FORWARD);
    left_motor2.run (FORWARD);
    delay(500);
}

if (readString == "STOP")

```



```
{  
    right_motor1.run (RELEASE);  
    right_motor2.run (RELEASE);  
    left_motor1.run (RELEASE);  
    left_motor2.run (RELEASE);  
    delay(500);  
}  
readString="";  
}  
if(cm<50)  
{  
    right_motor1.run (RELEASE);  
    right_motor2.run (RELEASE);  
    left_motor1.run (RELEASE);  
    left_motor2.run (RELEASE);  
    digitalWrite(LEDpin,HIGH);  
    delay(500);  
}  
}
```

## Images of Car

