PREMIER UNIVERSITY CHATTOGRAM

DEPARTMENT OF **COMPUTER SCIENCE AND ENGINEERING**

Lab Report

COURSE NAME	Microcontrollers Laboratory
COURSE CODE	CSE3816
REPORT NO	06
REPORT NAME	Bluetooth Controlled Robotic Car Using Arduino.
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SUBMITTED TO

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REMARKS	**SUBMITTED BY**	
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	SECTION	A

Experiment Name:

Bluetooth Controlled Robotic Car Using Arduino.

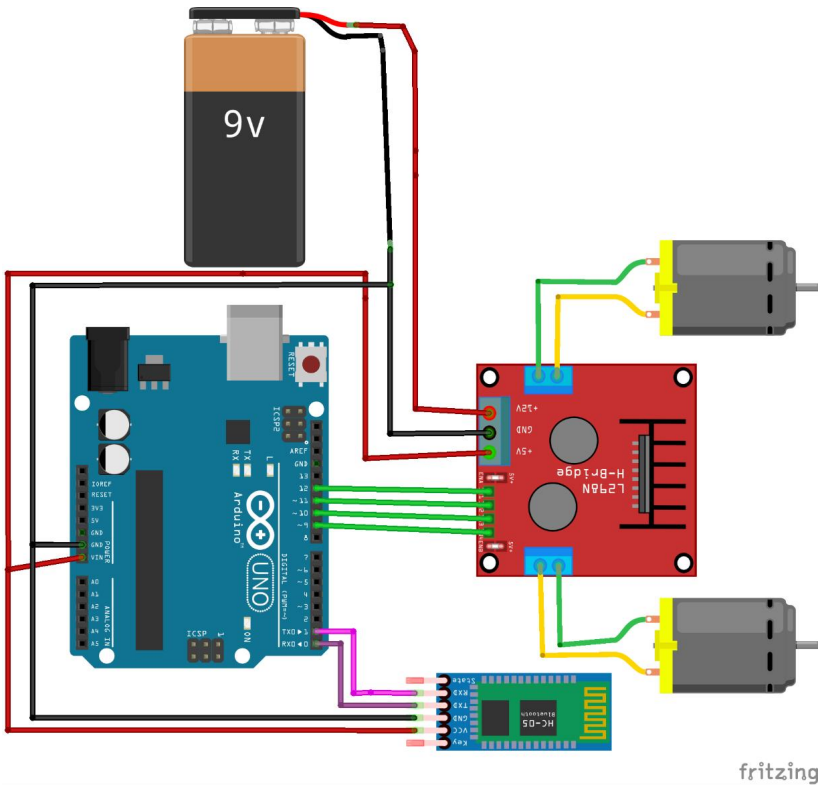
Objective:

The objective of this project is to transform a remote-controlled toy car into a Bluetooth-controlled robotic car using an Arduino Uno and an HC-05 Bluetooth module. The car will be controlled via an Android smartphone.

Instruments Required:

. Arduino Uno
· HC-05 Bluetooth Module
· L298N Motor Driver
· 2 Wheel Chassis with Castor Wheel
· 3 7V Battery with Holder - 2 pcs
· Jumper Wires
· RC Toy Car (for transformation)

Circuit Diagram:



Source Code:

```
int m1a = 9;
int m1b = 10;
int m2a = 11;
int m2b = 12;
char val = 'S';  // Initialize val with 'S' to ensure the car is stopped
initially

void setup()
{
  pinMode(m1a, OUTPUT);  // Digital pin 9 set as output Pin
  pinMode(m1b, OUTPUT);  // Digital pin 10 set as output Pin
  pinMode(m2a, OUTPUT);  // Digital pin 11 set as output Pin
  pinMode(m2b, OUTPUT);  // Digital pin 12 set as output Pin
  Serial.begin(9600);
}

void loop()
{
  if (Serial.available() > 0)
  {
    val = Serial.read();
    Serial.println(val);
  }

  switch(val)
  {
    case 'F': // Forward
      digitalWrite(m1a, HIGH);
      digitalWrite(m1b, LOW);
      digitalWrite(m2a, HIGH);
      digitalWrite(m2b, LOW);
      break;

    case 'B': // Backward
      digitalWrite(m1a, LOW);
      digitalWrite(m1b, HIGH);
      digitalWrite(m2a, LOW);
      digitalWrite(m2b, HIGH);
      break;

    case 'L': // Left
      digitalWrite(m1a, LOW);
      digitalWrite(m1b, LOW);
      digitalWrite(m2a, HIGH);
      digitalWrite(m2b, LOW);
      break;
```

```
    case 'R': // Right
      digitalWrite(m1a, HIGH);
      digitalWrite(m1b, LOW);
      digitalWrite(m2a, LOW);
      digitalWrite(m2b, LOW);
      break;

    case 'S': // Stop
      digitalWrite(m1a, LOW);
      digitalWrite(m1b, LOW);
      digitalWrite(m2a, LOW);
      digitalWrite(m2b, LOW);
      break;

    case 'I': // Forward Right
      digitalWrite(m1a, HIGH);
      digitalWrite(m1b, LOW);
      digitalWrite(m2a, LOW);
      digitalWrite(m2b, LOW);
      break;

    case 'J': // Backward Right
      digitalWrite(m1a, LOW);
      digitalWrite(m1b, HIGH);
      digitalWrite(m2a, LOW);
      digitalWrite(m2b, LOW);
      break;

    case 'G': // Forward Left
      digitalWrite(m1a, LOW);
      digitalWrite(m1b, LOW);
      digitalWrite(m2a, HIGH);
      digitalWrite(m2b, LOW);
      break;

    case 'H': // Backward Left
      digitalWrite(m1a, LOW);
      digitalWrite(m1b, LOW);
      digitalWrite(m2a, LOW);
      digitalWrite(m2b, HIGH);
      break;

    default:
      // Do nothing
      break;
  }
}
```

Output:

The robotic car will respond to commands sent from an Android smartphone over Bluetooth. The car will move forward, backward, left, right, or stop based on the specific command received.

Discussion:

In this experiment, we implemented a Bluetooth-controlled robotic car using an Arduino Uno, an HC-05 Bluetooth module, and an L298N motor driver. The project demonstrates how to control an RC toy car via commands sent from an Android smartphone. The Arduino receives these commands through the Bluetooth module and then directs the motor driver to control the car's movements (forward, backward, left, right, and stop). This practical application showcases the integration of wireless communication and motor control, highlighting the ease of transforming traditional RC vehicles into smart, Bluetooth-enabled devices. The project provides a solid foundation in Arduino programming and introduces essential concepts in robotics and electronics.