Voice Controlled Car using Arduino and HC-05

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***Abstract*—In this manual we will be making a voice controlled robot toy car using Arduino, HC-05 bluetooth module, and an app from playstore for serial monitor using Google's voice to text translator.**

1 Hardware Setup

Problem 1. Assemble the motors, chassis and wheels to build the toycar.

Problem 2. Stick the breadboard to the chassis of the toycar.

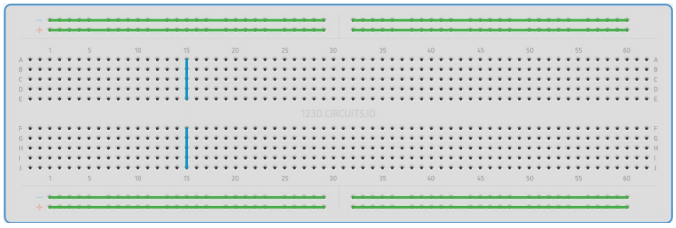

Fig. 2

Problem 3. Stick a 9V battery to the breadboard and connect the positive and negative terminals to extreme ends of the breadboard.

Problem 4. Provide 9V to the supply pin of the Arduino.

Problem 5. Plug the L293D motor driver IC in Fig. 5 on the breadboard.

Problem 6. Connect the L293D pins according to Table 6.

Problem 7. HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. Plug the HC-05 in Fig. 7 to the breadboard.

Problem 8. Connect the RX pin of HC-05 to the TX (pin D1) of the arduino and the TX pin of HC-05 to the RX (pin D0) of the arduino. Connect the GND and 5V pins to the respective pins of the Arduino.

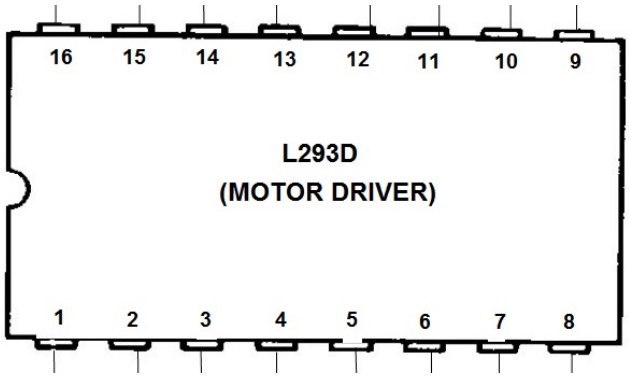

Fig. 5

Power	**L293D**			
9V	1	8	9	16
GND	4	5	12	13

Arduino	D2	D3	D4	D5
L293D	2	7	10	15

Motor	**+**		**-**	
L293D	3	11	6	14

TABLE 6

Problem 9. Connect the Arduino to the computer.

2 Software Control

Problem 10. Upload the following code into the Arduino.

```
int motor_input1=2;
int motor_input2=3;
int motor_input3=4;
int motor_input4=5;
String voice="";
void setup()
{
  Serial.begin(9600);
  pinMode(motor_input1, OUTPUT);
        //RIGHT MOTOR
```

Fig. 7

```
  pinMode(motor_input2, OUTPUT);
        //RIGHT MOTOR
  pinMode(motor_input3, OUTPUT);
        //LEFT MOTOR
  pinMode(motor_input4, OUTPUT);
        //LEFT MOTOR
}
void loop()
{
  while(Serial.available()>0)
    {
    delay(10);
    char c=Serial.read();

    voice+=c;
    }
 if (voice.length() > 0)
 {
  //Serial.println(voice);
  if(voice=="forward")
    {
    digitalWrite(motor_input1,
       HIGH);
    digitalWrite(motor_input2, LOW
       );
    digitalWrite(motor_input3,
       HIGH);
    digitalWrite(motor_input4, LOW
       );
    Serial.println("forward");
    delay(800);
    voice = "";
    }
else
if(voice=="back")
    {
    digitalWrite(motor_input1, LOW
       );
    digitalWrite(motor_input2,
       HIGH);
    digitalWrite(motor_input3, LOW
       );
    digitalWrite(motor_input4,
       HIGH);
    Serial.println("back");
    delay(800);
    voice = "";
    }
else
if(voice=="left")
    {
    digitalWrite(motor_input1,
       HIGH);
    digitalWrite(motor_input2, LOW
       );
    digitalWrite(motor_input3, LOW
       );
    digitalWrite(motor_input4,
       HIGH);
    Serial.println("left");
    delay(800);
    voice = "";
    }
else
if(voice=="right")
    {
    digitalWrite(motor_input1, LOW
       );
    digitalWrite(motor_input2,
       HIGH);
    digitalWrite(motor_input3,
       HIGH);
    digitalWrite(motor_input4, LOW
       );
    Serial.println("right");
    delay(800);
    voice = "";
    }
```

```
  else
  if(voice=="stop")
    {
    digitalWrite(motor_input1, LOW
        );
    digitalWrite(motor_input2, LOW
        );
    digitalWrite(motor_input3, LOW
        );
    digitalWrite(motor_input4, LOW
        );
    Serial.println("stop");
    delay(800);
    voice = "";
    }
  else
    {
    voice = "";
    }

  }
}
```

3 Setting Up the App

Problem 11. Download "Arduino Bluetooth Controller" app on your android device from Playstore.

Problem 12. Pair HC-05 module with your android device using bluetooth. (If password is asked, type 1234 or 0000)

Problem 13. Open the "Arduino Bluetooth Controller" app and connect to HC-05. Connecting icon can be found on the top right corner as shown in Fig. 13

Problem 14. Open voice controller section in the app.

Problem 15. Tap to give commands (forward, back, left, right, stop).

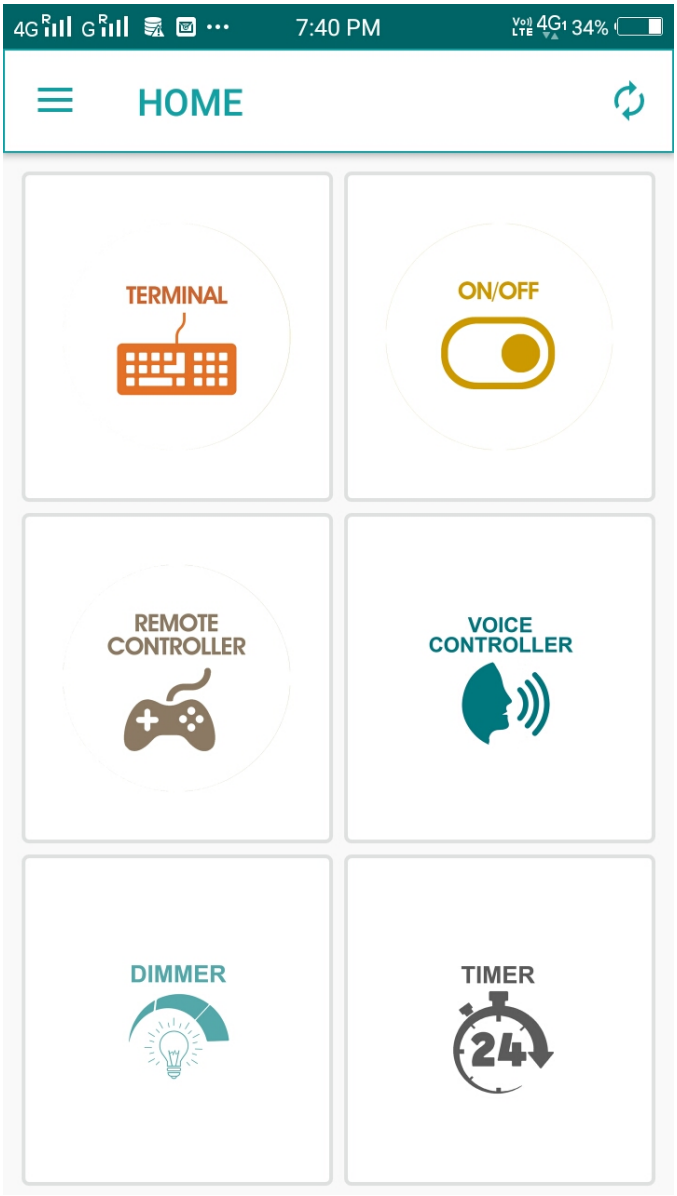

Fig. 13