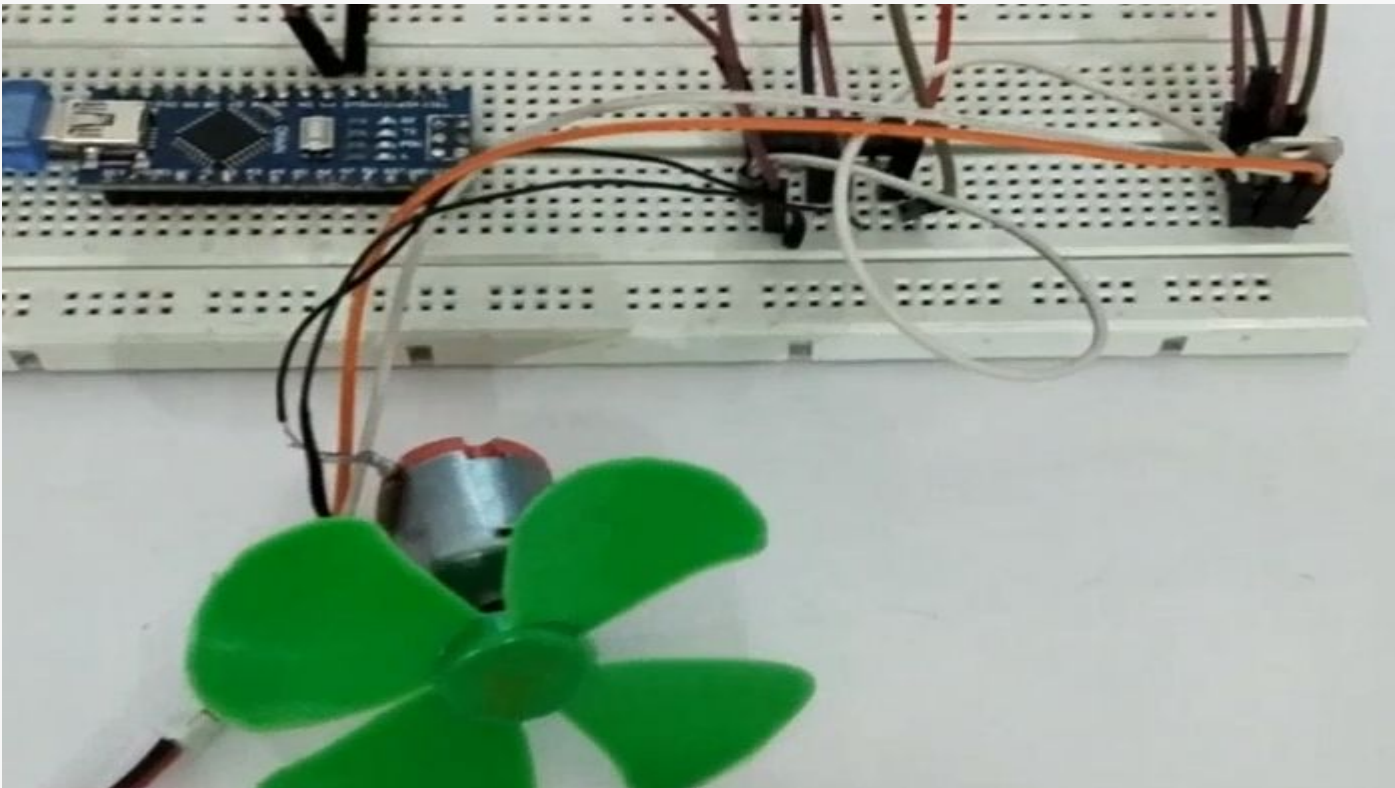


# Interfacing of DC Motor



# DC Motor

- A DC motor (Direct Current motor) is the most common type of motor.
- DC motors normally have just two leads, one positive and one negative.
- If you connect these two leads directly to a battery, the motor will rotate.
- If you switch the leads, the motor will rotate in the opposite direction.

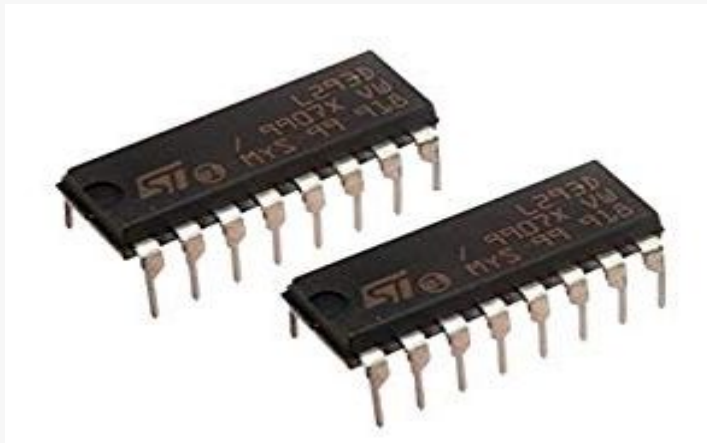


# Spin Direction Control

- To control the direction of the spin of DC motor, without interchanging the leads, you can use a circuit called an **H-Bridge**.
- An H-bridge is an electronic circuit that can drive the motor in both directions. H-bridges are used in many different applications.
- One of the most common application is to control motors in robots. It is called an H-bridge because it uses four transistors connected in such a way that the schematic diagram looks like an "H."

# L293D IC

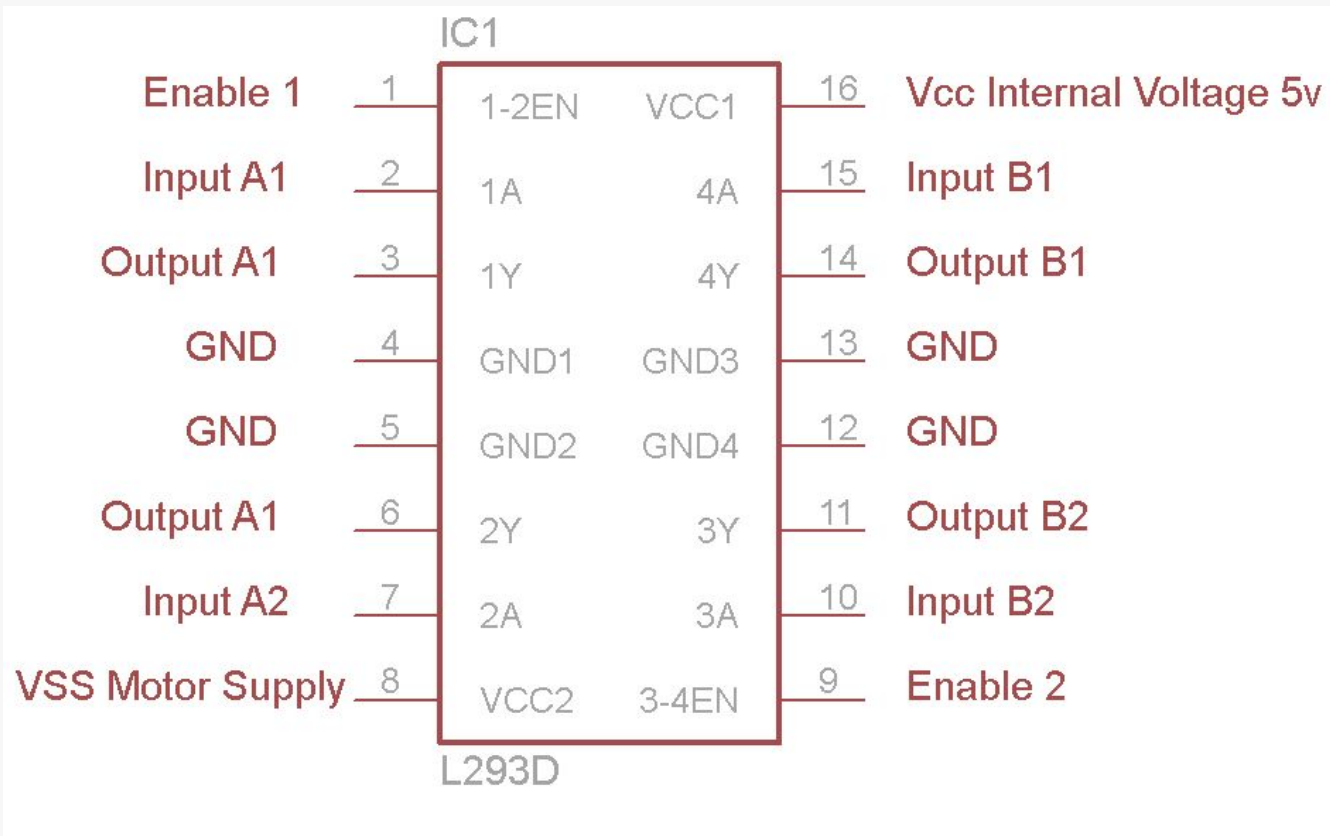
L293D is a typical Motor driver or Motor Driver IC which allows DC motor to drive on either direction. L293D is a 16-pin IC which can control a set of two DC motors simultaneously in any direction. It means that you can control two DC motor with a single L293D IC.



# Working of L293D IC

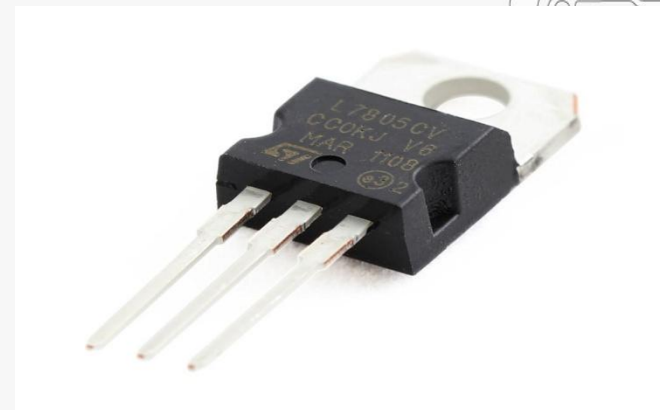
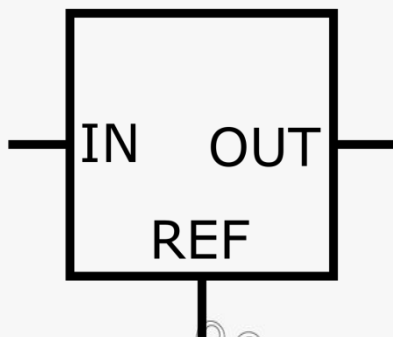
- It works on the concept of H-bridge. H-bridge is a circuit which allows the voltage to be flown in either direction. As you know voltage need to change its direction for being able to rotate the motor in clockwise or anticlockwise direction, Hence H-bridge IC are ideal for driving a DC motor.
- In a single L293D chip there are two h-Bridge circuit inside the IC which can rotate two dc motor independently. Due its size it is very much used in robotic application for controlling DC motors.

# L293D Pin Diagram



# 7805 Voltage Regulator IC

- A **voltage regulator** is used to regulate **voltage** level.
- When a steady, reliable **voltage** is needed, then **voltage regulator** is the preferred device.
- It generates a fixed output **voltage** that remains constant for any changes in an input **voltage** or load conditions.
- It acts as a buffer for protecting components from damages.

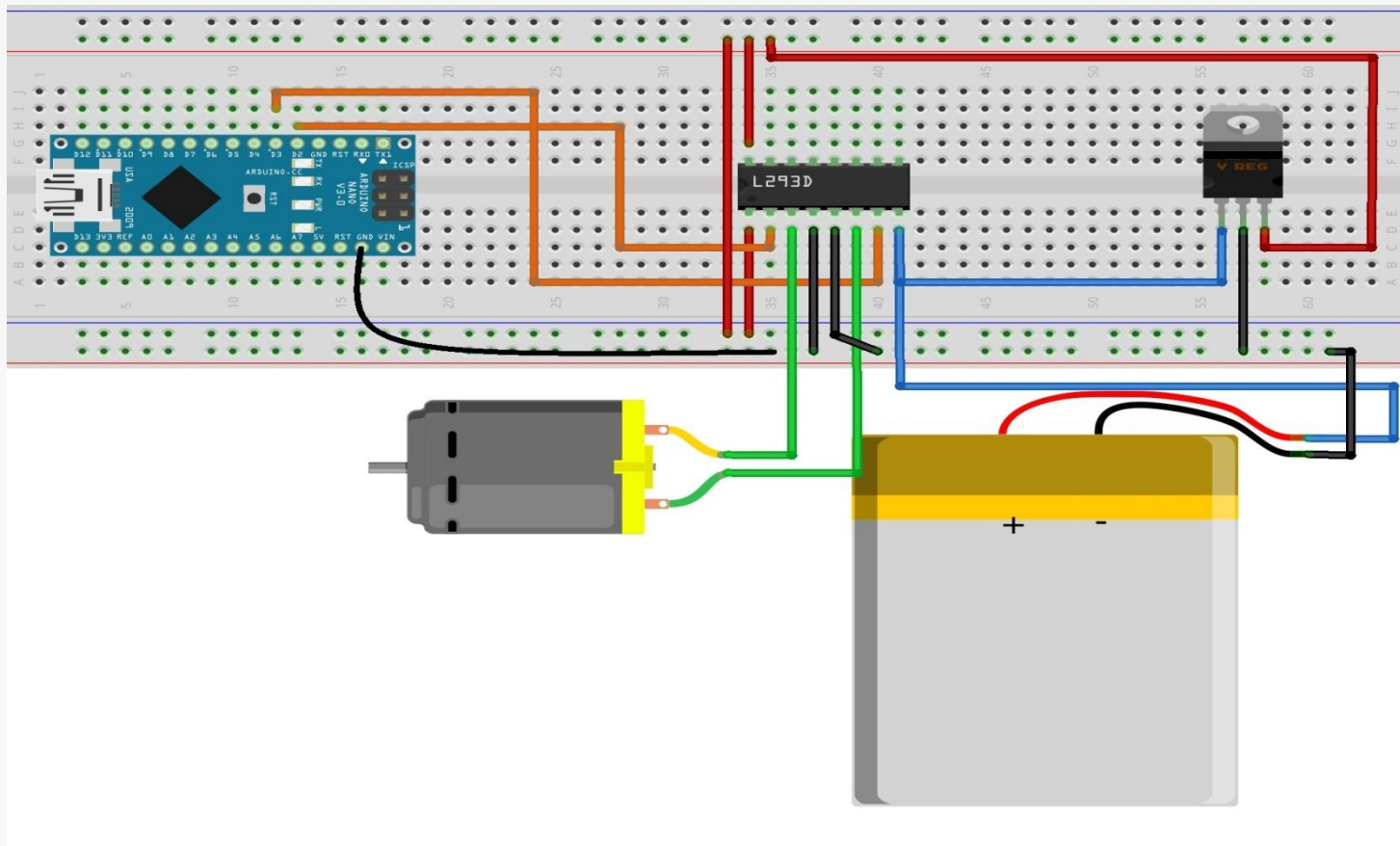


# Components Required

- Arduino Nano
- DC Motor
- L293d IC
- 7805 Voltage Regulator IC
- Breadboard
- Jumper wires




# Connection Diagram



# Connections

1. Connect pin 1, pin 16 of L293D IC with 3<sup>rd</sup> pin (5V) of 7805 IC.
2. Connect pin 2 of L293D IC with D2 pin of Arduino Nano.
3. Connect pin 3 of L293D IC with one lead of DC motor.
4. Connect pin 4,5 of L293D IC with GND pin of Arduino Nano and ground pin of li-ion battery.
5. Also connect 2<sup>nd</sup> pin (Ground) pin of 7805 IC with ground pin of li-ion battery.
6. Connect pin 6 of L293D IC with second lead of DC motor.
7. Connect pin 7 of L293D IC with D3 pin of Arduino Nano.
8. Connect pin 8 of L293D IC with 1<sup>st</sup> pin (12V) of 7805 IC and positive (12V) pin of li-ion battery.



# ABLE EDUCATION™

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# Code

Interfacing\_of\_DC\_motor | Arduino 1.8.19

File Edit Sketch Tools Help



Interfacing\_of\_DC\_motor

```
// Community of Robots//

//Dc motor example code//

int motorpin1 = 3;           //define digital output pin no.
int motorpin2 = 2;           //define digital output pin no.

void setup () {

  pinMode(motorpin1,OUTPUT); //set pin 3 as output
  pinMode(motorpin2,OUTPUT); // set pin 4 as output
}

void loop () {
  digitalWrite(motorpin1,LOW);
  digitalWrite(motorpin2,HIGH);
  delay(3000);
  digitalWrite(motorpin1,HIGH);
  digitalWrite(motorpin2,LOW);
  delay(3000);
}
```

**Project Link :** [https://youtu.be/ g-hqsoGZXQ](https://youtu.be/g-hqsoGZXQ)