The **L293D** is a popular **motor driver IC** used to control **DC motors** and **stepper motors** with microcontrollers like **Arduino**, **Raspberry Pi**, or other embedded systems. Since most microcontrollers cannot supply enough current to directly drive a motor, the L293D acts as an **interface between the controller and the motor**.

Here's a breakdown of the **L293D features**:

- **Dual H-Bridge**: Can drive **2 DC motors** independently, or **1 stepper motor**.
- **Voltage Range**:
    - Logic (Vcc1): **5V** (for microcontroller interface).
    - Motor supply (Vcc2): **4.5V to 36V** (for motors).
- **Current Handling**: Up to **600 mA per channel** (1.2 A peak).
- **Direction Control**: Each motor can move **forward** or **reverse**.
- **Enable Pins**: Used to turn each motor ON/OFF.
- **Diodes Inside**: Built-in protection from back EMF of motors.

Pin Configuration:

Pin	Name	Function
1	Enable 1,2	Enables Motor 1 (high = ON)
2	Input 1	Control Motor 1 direction
3	Output 1	Motor 1 terminal A
4,5	GND	Ground
6	Output 2	Motor 1 terminal B
7	Input 2	Control Motor 1 direction
8	Vcc2 (Motor V)	Motor power supply (4.5–36V)
9	Enable 3,4	Enables Motor 2 (high = ON)
10	Input 3	Control Motor 2 direction
11	Output 3	Motor 2 terminal A
12,13	GND	Ground
14	Output 4	Motor 2 terminal B
15	Input 4	Control Motor 2 direction
16	Vcc1 (Logic V)	Logic supply (5V)

Basic Working:

- To rotate a DC motor **forward**:
    - Input1 = HIGH, Input2 = LOW → Motor rotates in one direction.
- To rotate **backward**:
    - Input1 = LOW, Input2 = HIGH → Motor rotates in opposite direction.
- If both inputs are the same (HIGH-HIGH or LOW-LOW), motor **stops** (braking).
- Enable pin must be HIGH for motor to run.
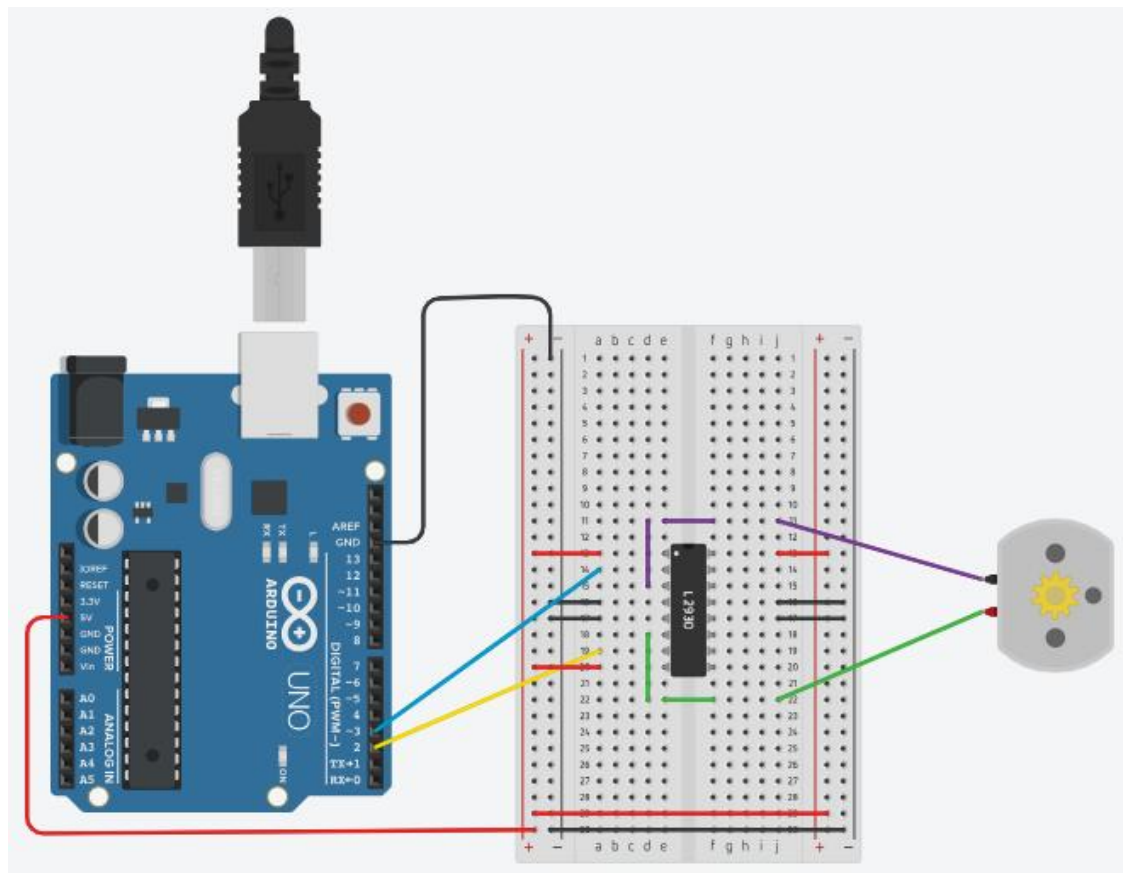
```
int motorPin1 = 2;  // Input1
int motorPin2 = 3;  // Input2
void setup() {
        pinMode(motorPin1, OUTPUT);
        pinMode(motorPin2, OUTPUT);
}
void loop() {
// Forward
        digitalWrite(motorPin1, HIGH);
        digitalWrite(motorPin2, LOW);
        delay(2000);
// Backward
        digitalWrite(motorPin1, LOW);
        digitalWrite(motorPin2, HIGH);
        delay(2000);
// Stop
        digitalWrite(motorPin1, LOW);
        digitalWrite(motorPin2, LOW);
        delay(2000);
}
```