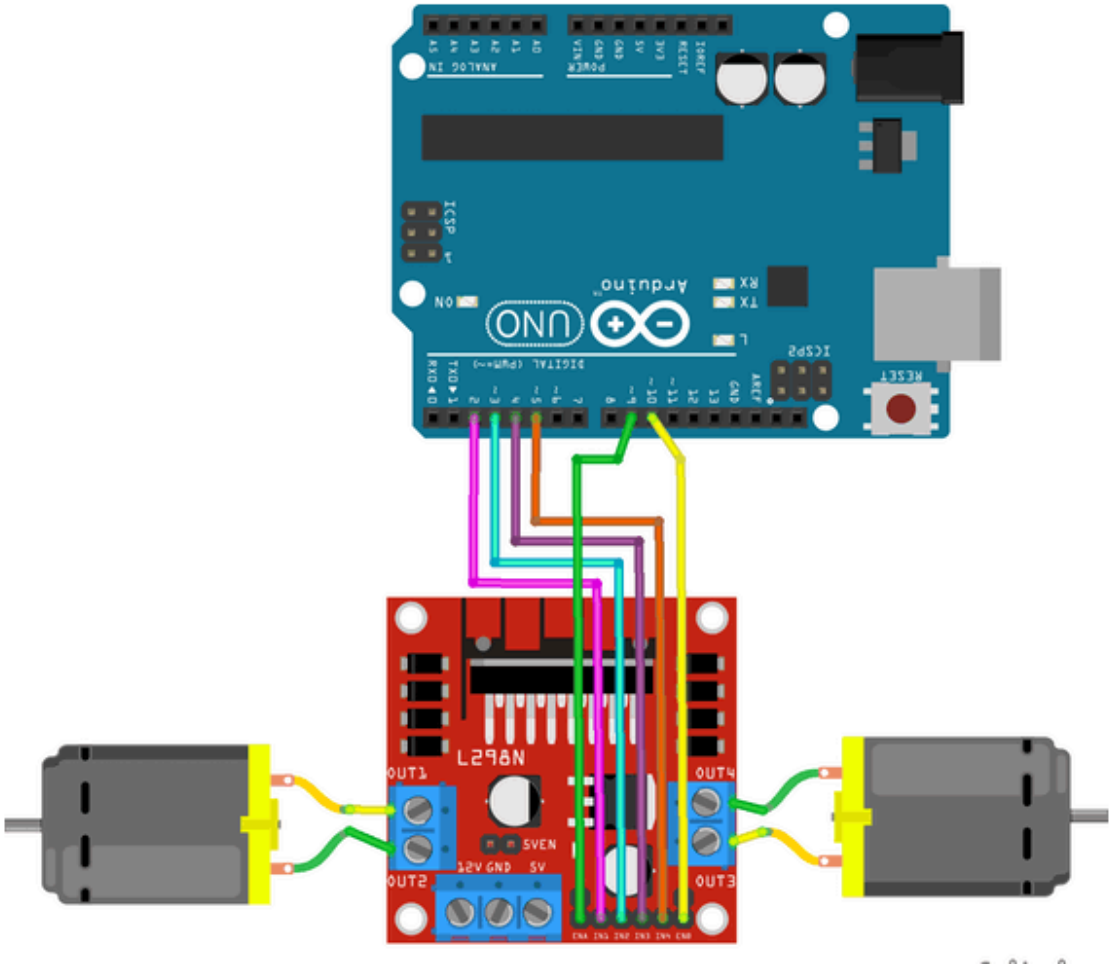
1. DC Motor using motor driver

   Circuit: (you can replace each component with a rectangle. But you have to write the pin number correctly.)



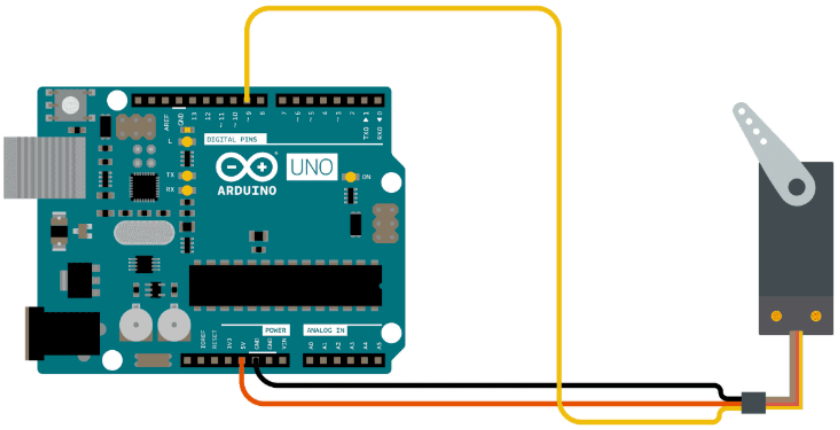
   Code:

```
int motor1pin1 = 2;
int motor1pin2 = 3;

int motor2pin1 = 4;
int   motor2pin2 = 5;

void setup() {
  // put your setup code here, to run once:
   pinMode(motor1pin1, OUTPUT);
  pinMode(motor1pin2, OUTPUT);
  pinMode(motor2pin1,   OUTPUT);
  pinMode(motor2pin2, OUTPUT);
```

```
  //(Optional)
  pinMode(9,   OUTPUT);
  pinMode(10, OUTPUT);
  //(Optional)
}

void loop() {
   // put your main code here, to run repeatedly:

  //Controlling speed (0   = off and 255 = max speed):
  //(Optional)
  analogWrite(9, 100); //ENA   pin
  analogWrite(10, 200); //ENB pin
  //(Optional)
  //forward
  digitalWrite(motor1pin1,   HIGH);
  digitalWrite(motor1pin2, LOW);

  digitalWrite(motor2pin1, HIGH);
   digitalWrite(motor2pin2, LOW);
  delay(3000);

//backward
  digitalWrite(motor1pin1,   LOW);
  digitalWrite(motor1pin2, HIGH);

  digitalWrite(motor2pin1, LOW);
   digitalWrite(motor2pin2, HIGH);
  delay(3000);

//left
  digitalWrite(motor1pin1,   LOW);
  digitalWrite(motor1pin2, HIGH);

  digitalWrite(motor2pin1, HIGH);
   digitalWrite(motor2pin2, LOW);
  delay(3000);

//right
  digitalWrite(motor1pin1,   HIGH);
  digitalWrite(motor1pin2, LOW);

  digitalWrite(motor2pin1, LOW);
   digitalWrite(motor2pin2, HIGH);
  delay(3000);


}
```

2. If a joint is initially at some angle and then it has to move 30 degree to reach a new point, design the servo with an arduino circuit and write the code.

   Circuit:



   Code:

```
#include <Servo.h>  // Include the Servo library

Servo myServo;      // Create a Servo object
int initialAngle = 0;  // Initial angle (adjust as needed)
int moveBy = 30;       // Angle to move the servo

void setup() {
  myServo.attach(9);  // Attach the servo to pin 9
  myServo.write(initialAngle);  // Set servo to the initial position
  delay(1000);  // Wait 1 second to stabilize the servo
}

void loop() {
  int newAngle = initialAngle + moveBy;  // Calculate the new angle
  myServo.write(newAngle);  // Move servo to the new angle
  delay(2000);  // Wait to observe the movement (2 seconds)

  // Reset back to the initial angle for testing purposes
  myServo.write(initialAngle);
  delay(2000);
}
```