

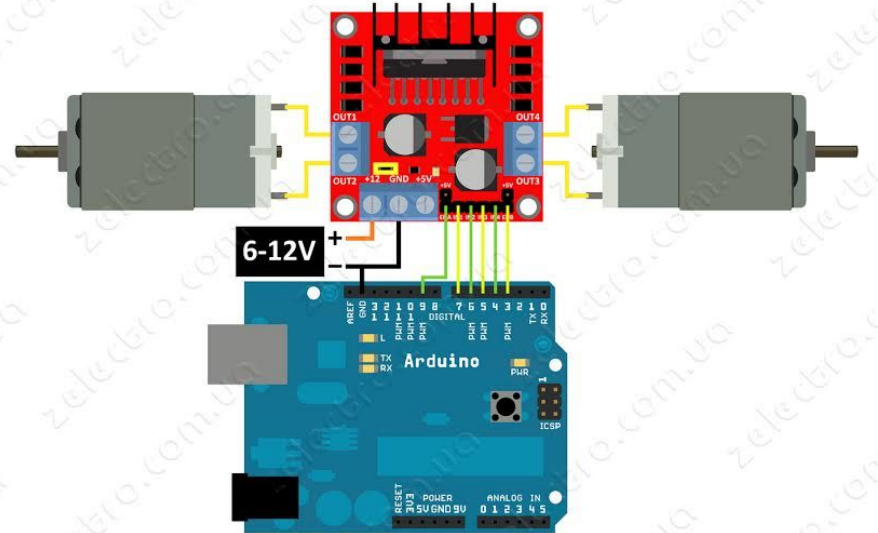
INTERFACING MOTORS WITH ARDUINO

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GEAR MOTOR



CONNECTION DIAGRAM



CODE FOR 2 WHEEL DRIVE, 2WD IN SHORT

DEFINING PINS

//Connect the motor pins to PWM pins of arduino

```
#define left_pin_1 3
```

```
#define left_pin_2 5
```

```
#define right_pin_1 6
```

```
#define right_pin_2 9
```

CONTD.. [SETTING PINS AS OUTPUT]

```
void setup()  
{  
    //Setting the motor pins as output  
    pinMode(left_pin_1, OUTPUT);  
    pinMode(left_pin_2, OUTPUT);  
    pinMode(right_pin_1, OUTPUT);  
    pinMode(right_pin_2, OUTPUT);  
}
```

CONTD [MOTOR DRIVING HELPER FUNCTION]

```
void set_motors(int lspeed, int rspeed)
{
    //Forward || Stop[if lspeed==rspeed==0]
    if (lspeed >= 0 && rspeed >= 0)
    {
        analogWrite(left_pin_1, lspeed);
        digitalWrite(left_pin_2, LOW);
        analogWrite(right_pin_1, rspeed);
        digitalWrite(right_pin_2, LOW);
    }
}
```

CONTD.

```
// Right || Clockwise rotation
```

```
else if (lspeed >= 0 && rspeed < 0)
```

```
{
```

```
    //Converting rspeed to positive
```

```
    rspeed = -rspeed;
```

```
    analogWrite(left_pin_1, lspeed);
```

```
    digitalWrite(left_pin_2, LOW);
```

```
    digitalWrite(right_pin_1, LOW);
```

```
    analogWrite(right_pin_2, rspeed);
```

```
}
```

CONTD..

```
// Left || Anticlockwise rotation
```

```
else if (lspeed < 0 && rspeed >= 0)
```

```
{
```

```
    lspeed = -lspeed;
```

```
    digitalWrite(left_pin_1, LOW);
```

```
    analogWrite(left_pin_2, lspeed);
```

```
    analogWrite(right_pin_1, rspeed);
```

```
    digitalWrite(right_pin_2, LOW);
```

```
}
```

CONTD...

```
//Backward
```

```
else
```

```
{
```

```
    lspeed = -lspeed;
```

```
    rspeed = -rspeed;
```

```
    analogWrite(left_pin_2, lspeed);
```

```
    digitalWrite(left_pin_1, LOW);
```

```
    analogWrite(right_pin_2, rspeed);
```

```
    digitalWrite(right_pin_1, LOW);
```

```
}
```

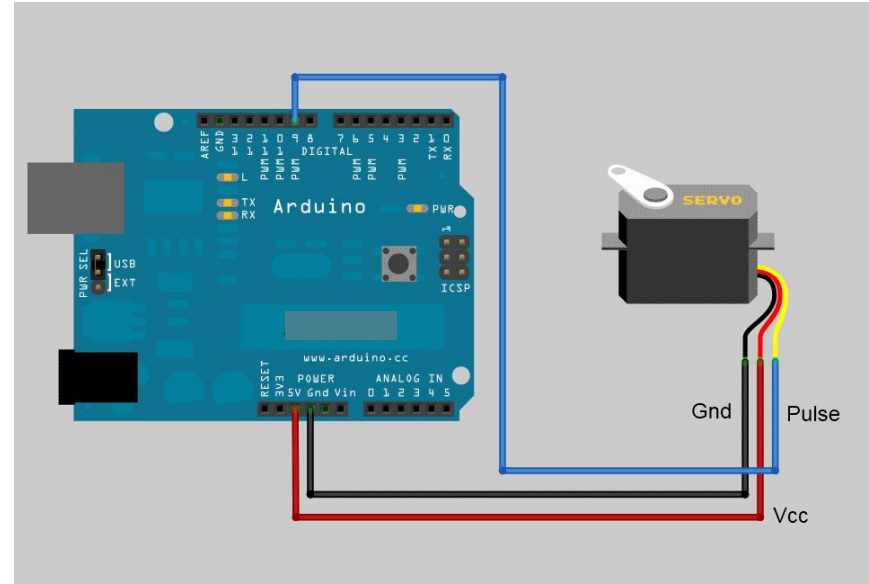
```
}
```


CONTD....

```
void loop() {  
  // Forward for 2 seconds  
  set_motors(150, 150);  
  delay(2000);  
  
  // Backward for 2 seconds  
  set_motors(-150, -150);  
  delay(2000);  
  
  // Left for 2 seconds  
  set_motors(0, 150);  
  delay(2000);  
  
  // Right for 2 seconds  
  set_motors(150, 0);  
  delay(2000);  
}
```

INTERFACING SERVO MOTORS

BLUE MICRO SERVO



CONNECTION DIAGRAM

CODE

```
#include <Servo.h>
#define servo_pin 9

Servo myservo;  // create servo object to control a servo

int pos = 0;    // variable to store the servo position

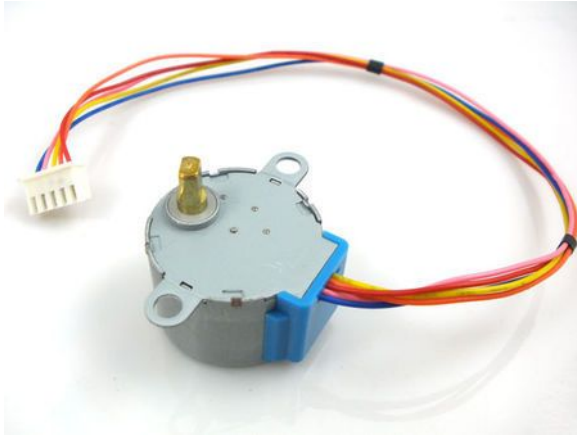
void setup() {
  myservo.attach(servo_pin);
}
```

This code can be found at : http://bit.ly/workshop_day1 or, Arduino IDE > Examples > Servo > Sweep

CONTD..

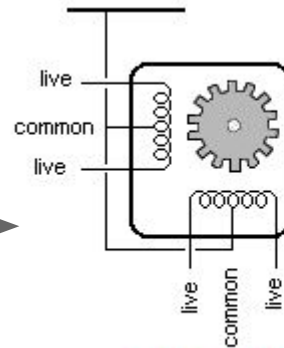
```
void loop() {  
    for (pos = 0; pos <= 180; pos += 1) {  
        // in steps of 1 degree  
        myservo.write(pos);  
        delay(15);  
    }  
    for (pos = 180; pos >= 0; pos -= 1) {  
        myservo.write(pos);  
        delay(15);  
    }  
}
```

INTERFACING STEPPER MOTORS

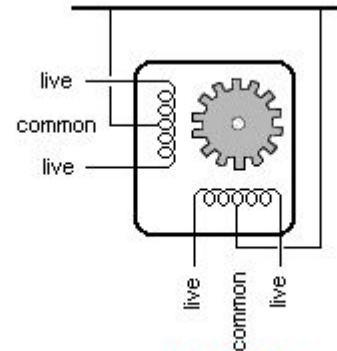


← BYJ48 STEPPER MOTOR

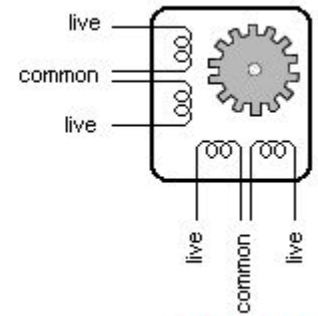
WIRE IDENTIFICATION →



5 WIRES



6 WIRES



8 WIRES

CODE

```
#include <Stepper.h>
```

```
const int stepsPerRevolution = 200;  // change this to  
fit the number of steps per revolution
```

```
// initialize the stepper library on pins 8 through 11:  
Stepper myStepper(stepsPerRevolution, 8, 9, 10, 11);
```

```
void setup() {  
  // set the speed at 60 rpm:  
  myStepper.setSpeed(60);  
}
```

This code can be found at : http://bit.ly/workshop_day1 or, Arduino IDE > Examples > Stepper> stepper_oneRevolution

CONTD

```
void loop() {  
  // step one revolution in one direction:  
  myStepper.step(stepsPerRevolution);  
  delay(500);  
  
  // step one revolution in the other direction:  
  myStepper.step(-stepsPerRevolution);  
  delay(500);  
}
```



That's all Folks!