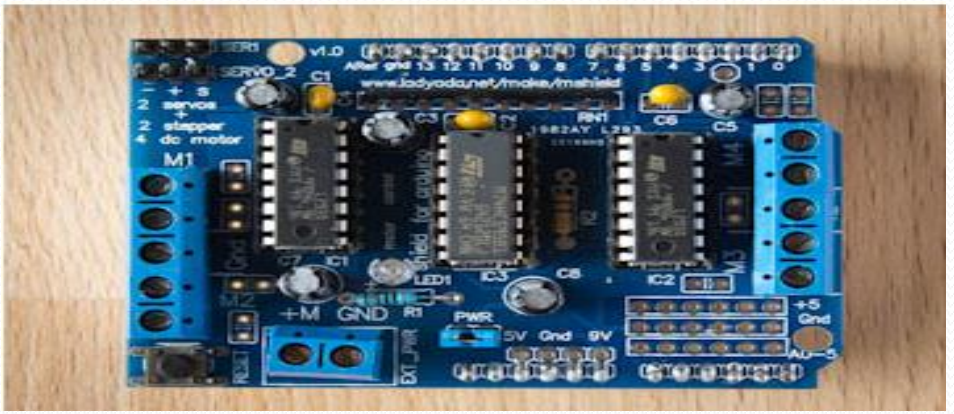
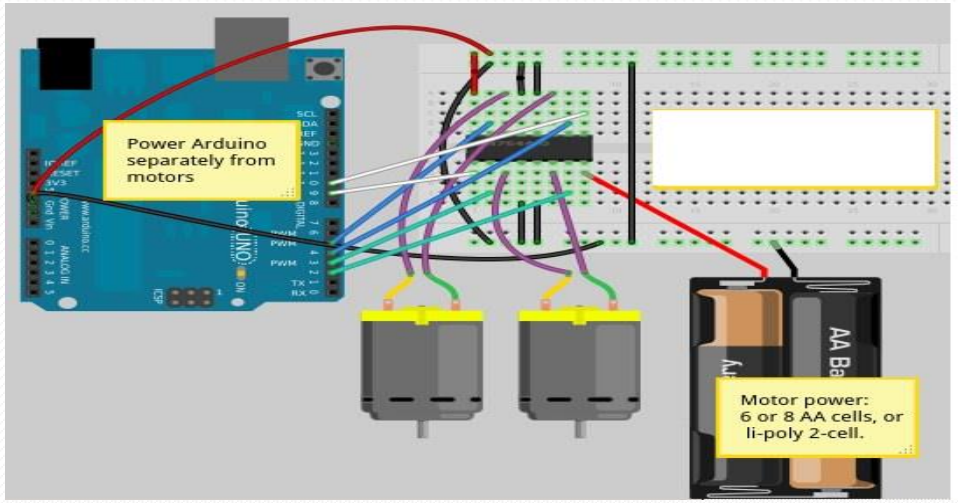
Motor Driver

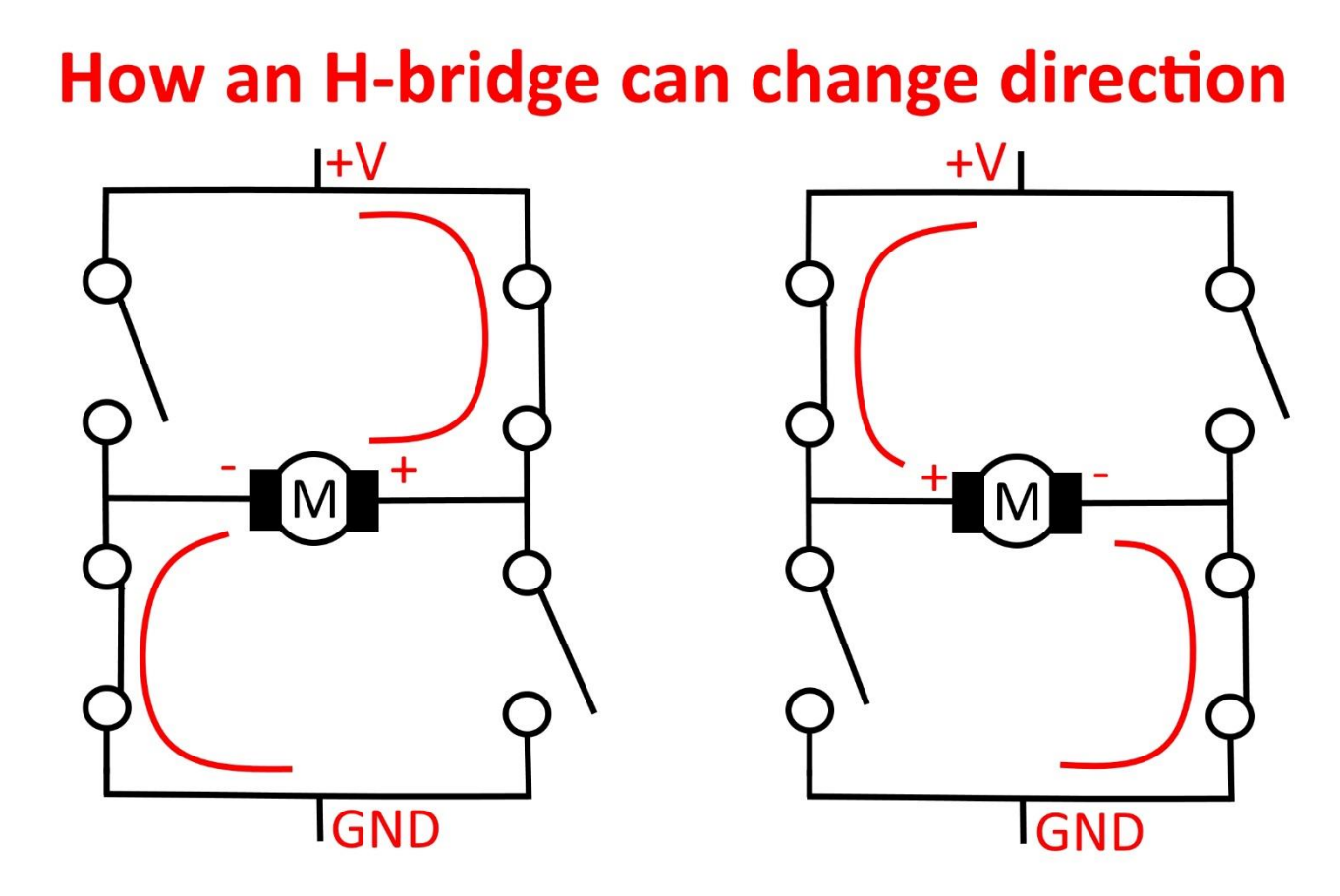
- As single component



- As circuit



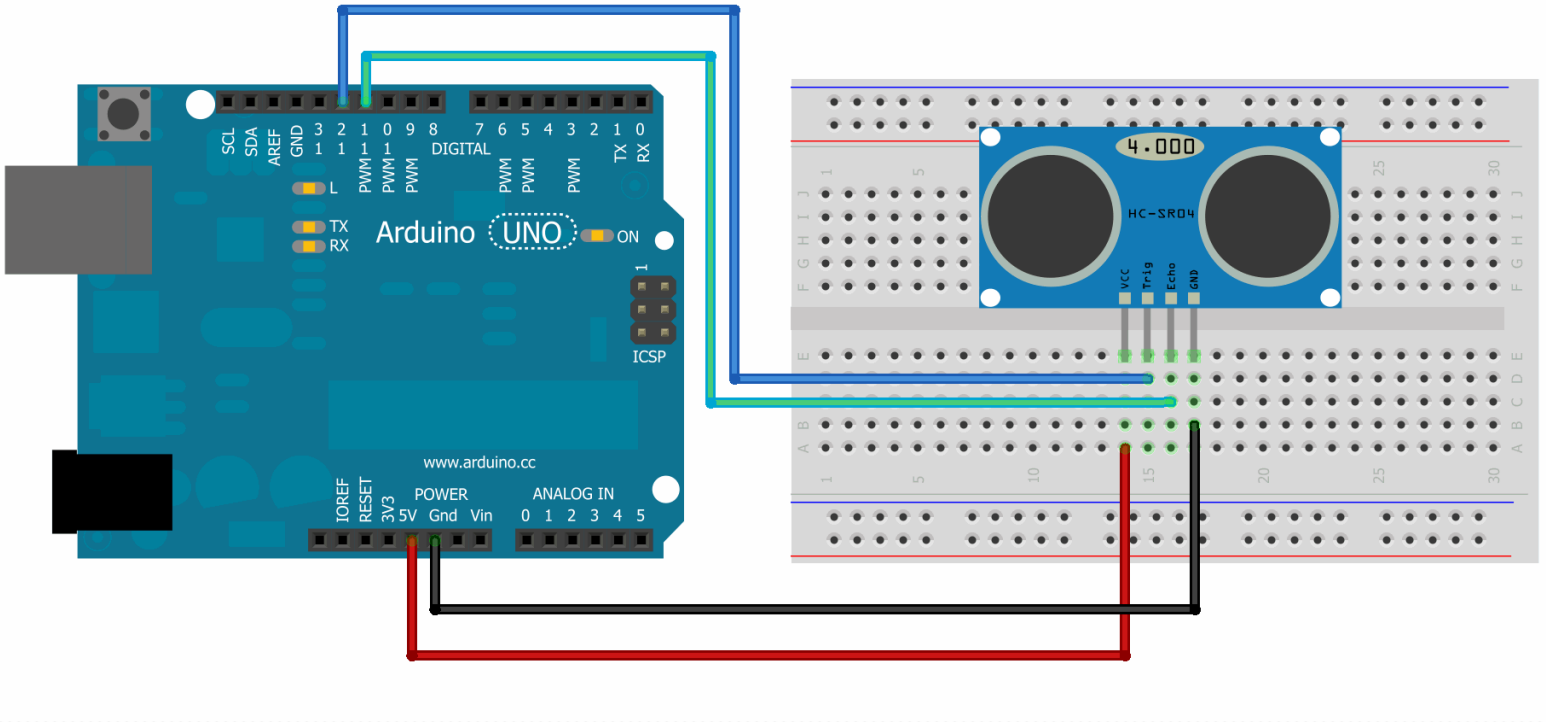
Exercise



Motordrive_PWM

```
void setup() {
 pinMode(7,OUTPUT);
 pinMode(8,OUTPUT);
 pinMode(9,OUTPUT);

}

void loop() {
 digitalWrite(7,HIGH);
 digitalWrite(8,LOW);
 analogWrite(9,80);
  delay(5000);
  digitalWrite(7,LOW);
 digitalWrite(8,HIGH);
  analogWrite(9,180);
  delay(5000);
}
```

How to connect it with Arduino



ultrasonic §

```
#define TRIG_PIN 12
#define ECHO_PIN 11
int distance = 100;
int duration;
void setup() {
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(13,OUTPUT);
  pinMode(ECHO_PIN, INPUT);
}
void loop() {
 distance = readPing();
 if(distance<=20)
  digitalWrite(13,HIGH);
 else
 digitalWrite(13,LOW);
}
```

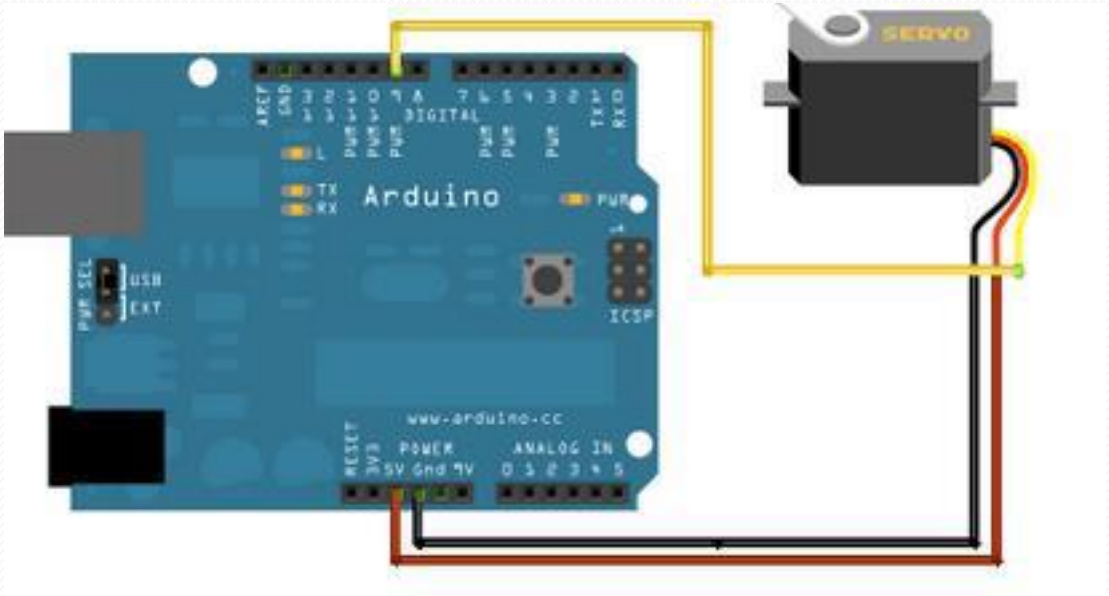
```
int readPing() {
   int duration, distance;
   digitalWrite(TRIG_PIN, LOW);
   delayMicroseconds(2);
   digitalWrite(TRIG_PIN, HIGH);
   delayMicroseconds(10);
   digitalWrite(TRIG_PIN, LOW);
   duration = pulseIn(ECHO_PIN, HIGH);
   distance = (duration/2) / 29.1;
   int cm = distance;
   if(cm==0)
   {
     cm = 100;
   }
```

Servo Motor

A Servo is a small device that has an output shaft

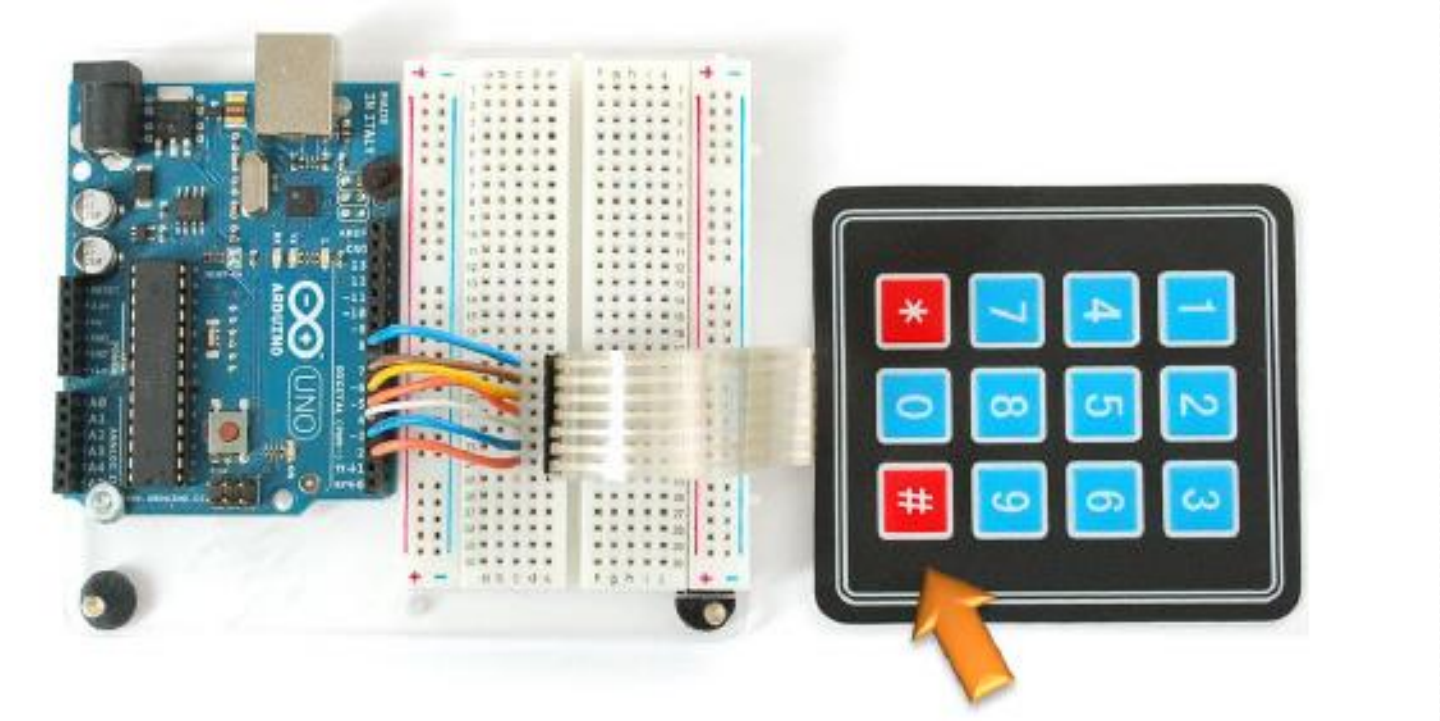
This shaft can be positioned to specific angular positions by sending the servo a coded signal

- How to connect it with Arduino



servo

```
#include <Servo.h>

Servo myservo;

void setup() {
  myservo.attach(9);
  myservo.write(125);
}

void loop() {


    myservo.write(0);
    delay(500);
    myservo.write(125);

    myservo.write(260);
    delay(500);
    myservo.write(125);
}
```


ARDUINO
UNO
*
7
4
1
0
8
5
2
#
9
6
3

```
//Example_13_Keypad_Input
#include <Keypad.h>
const byte ROWS = 4;
const byte COLS = 3;
char keys[ROWS][COLS] = { {'1','2','3'}, {'4','5','6'}, {'7','8','9'}, {'*','0','#'} };
byte rowPins[ROWS] = {8, 7, 6, 5};
byte colPins[COLS] = {4, 3, 2};
Keypad keypad = Keypad(makeKeymap(keys) , rowPins, colPins, ROWS, COLS );
void setup (){
  Serial.begin(9600);
  pinMode(13,OUTPUT);
}
void loop()
{ char key = keypad.getKey();
if (key != NO_KEY)
{ Serial.println(key);
if(key=='5')
digitalWrite(13,HIGH);
else
digitalWrite(13,LOW);
}
}
```

Any Questions