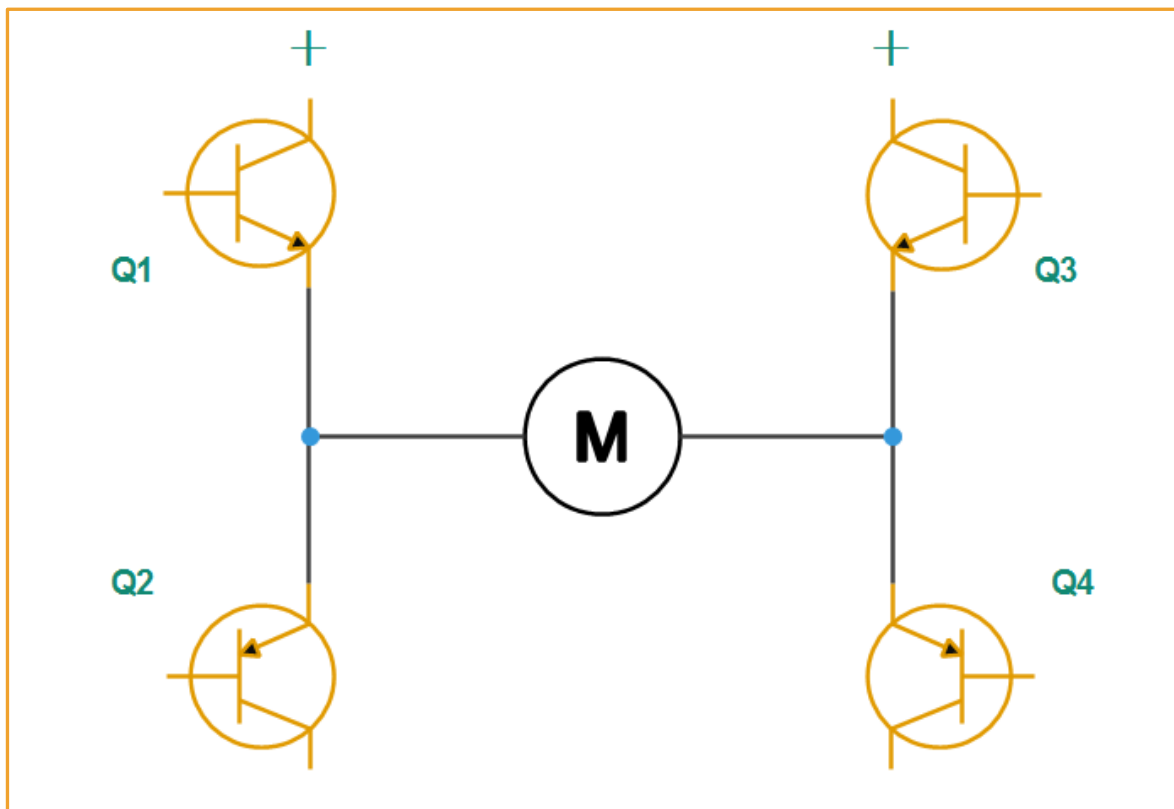


## Introduction

This experiment will use the H bridge drive circuit.

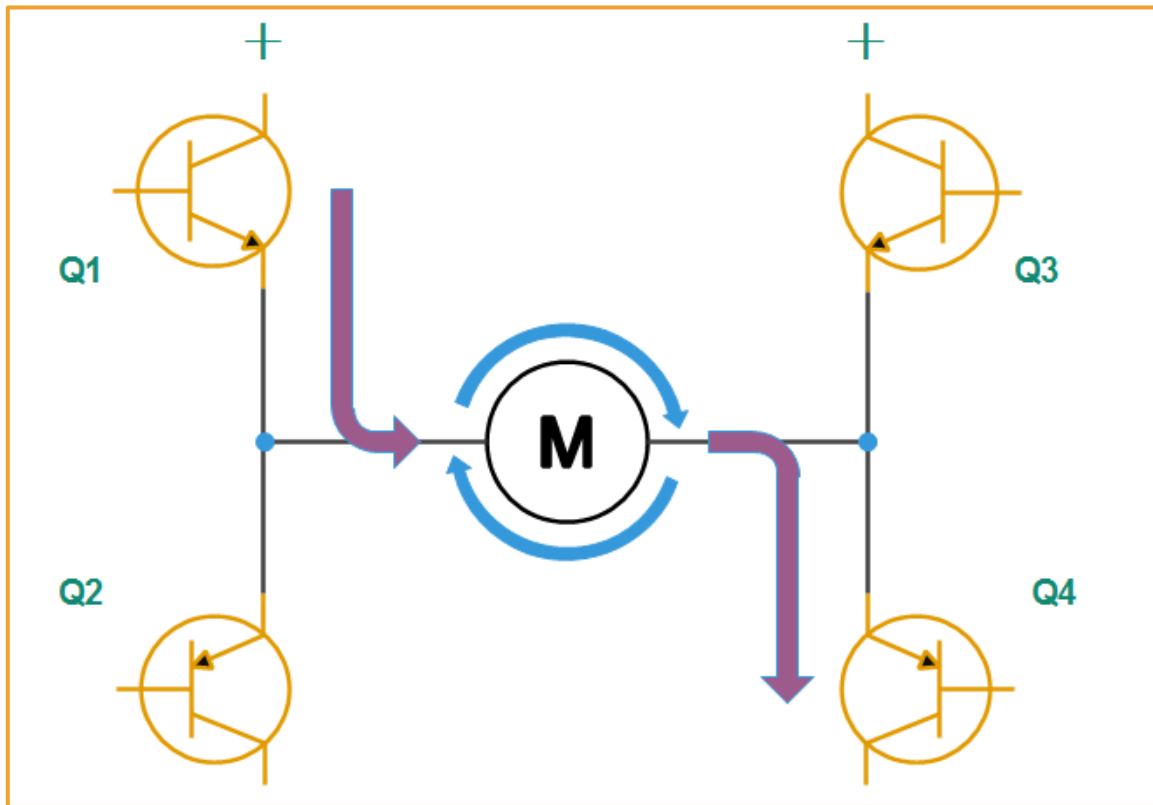
## H Bridge Circuit Drive Principle

The following figure shows a typical DC motor control circuit. The circuit is named after the "H bridge drive circuit" because it resembles the letter H. The 4 transistors form into 4 vertical legs in H, while the motor is like the bar (Note: the figure and subsequent two figure are just sketch maps, instead of schematic diagrams, the drive circuit of the transistor is not drew). As shown in the figure, the H bridge motor drive circuit consists of 4 transistors and a motor. In order to operate the motor, a pair of transistors on the diagonal must be conducted. According to the conduction of different transistors, the current may flow from left to right or right to left, so as to control the steering of the motor.

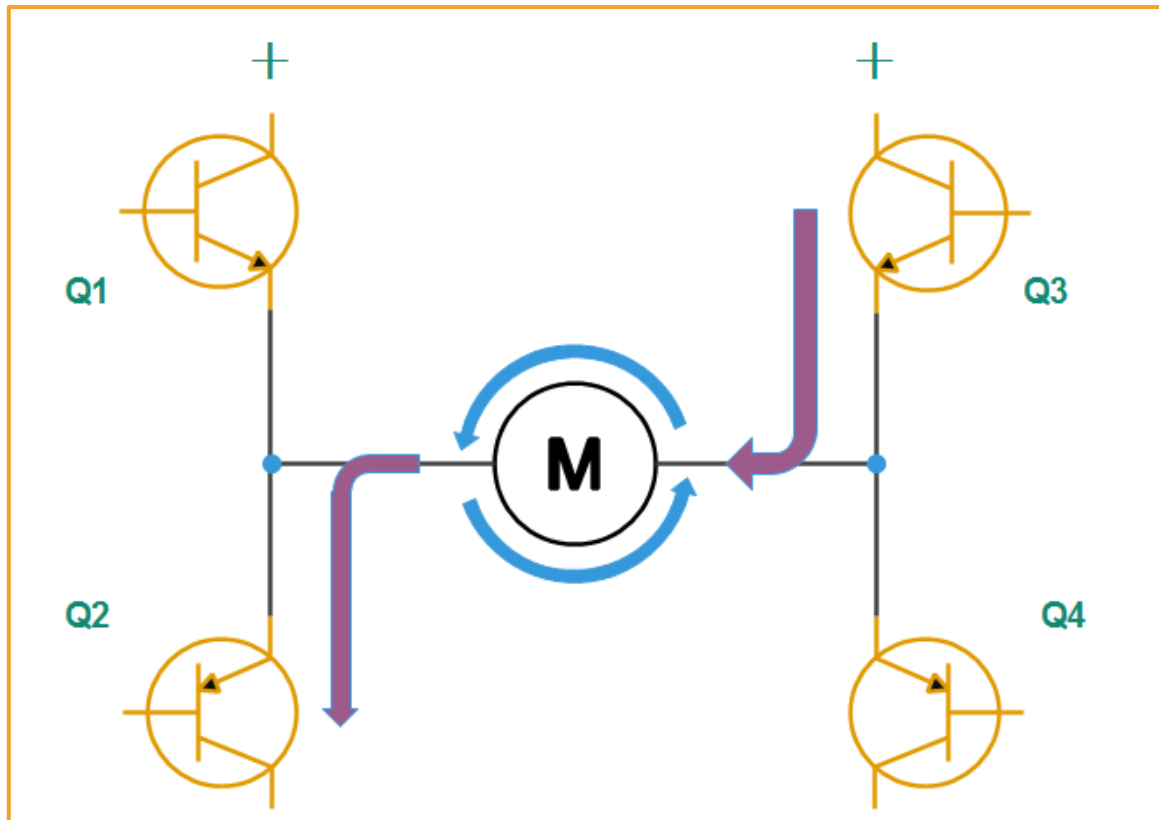


To operate the motor, a pair of transistors on the diagonal must be conducted. For example, as shown in the following figure, when the Q1 and Q4 are conducted, the current from the positive pole flows through the Q1 to the motor and then return to the negative pole through the Q4. According to the current arrow in the figure, the current will drive the motor

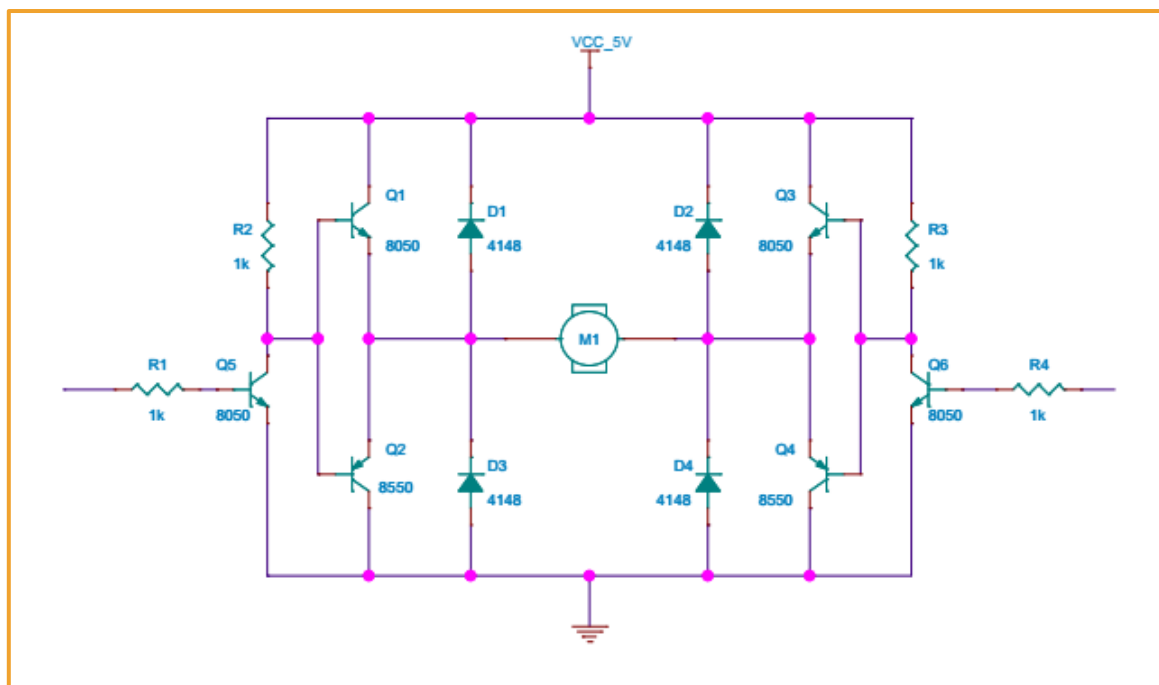
clockwise rotation. When the transistor Q1 and Q4 are conducted, the current flows from left to right through the motor, which drives the motor to rotate in a specific direction.



The following figure shows another pair of transistors Q2 and Q3 conduction, the current will flow from right to left through the motor. When the transistors Q2 and Q3 are conducted, the current flows from right to left through the motor, which drives the motor to rotate in the other direction.



H bridge Circuit Diagram

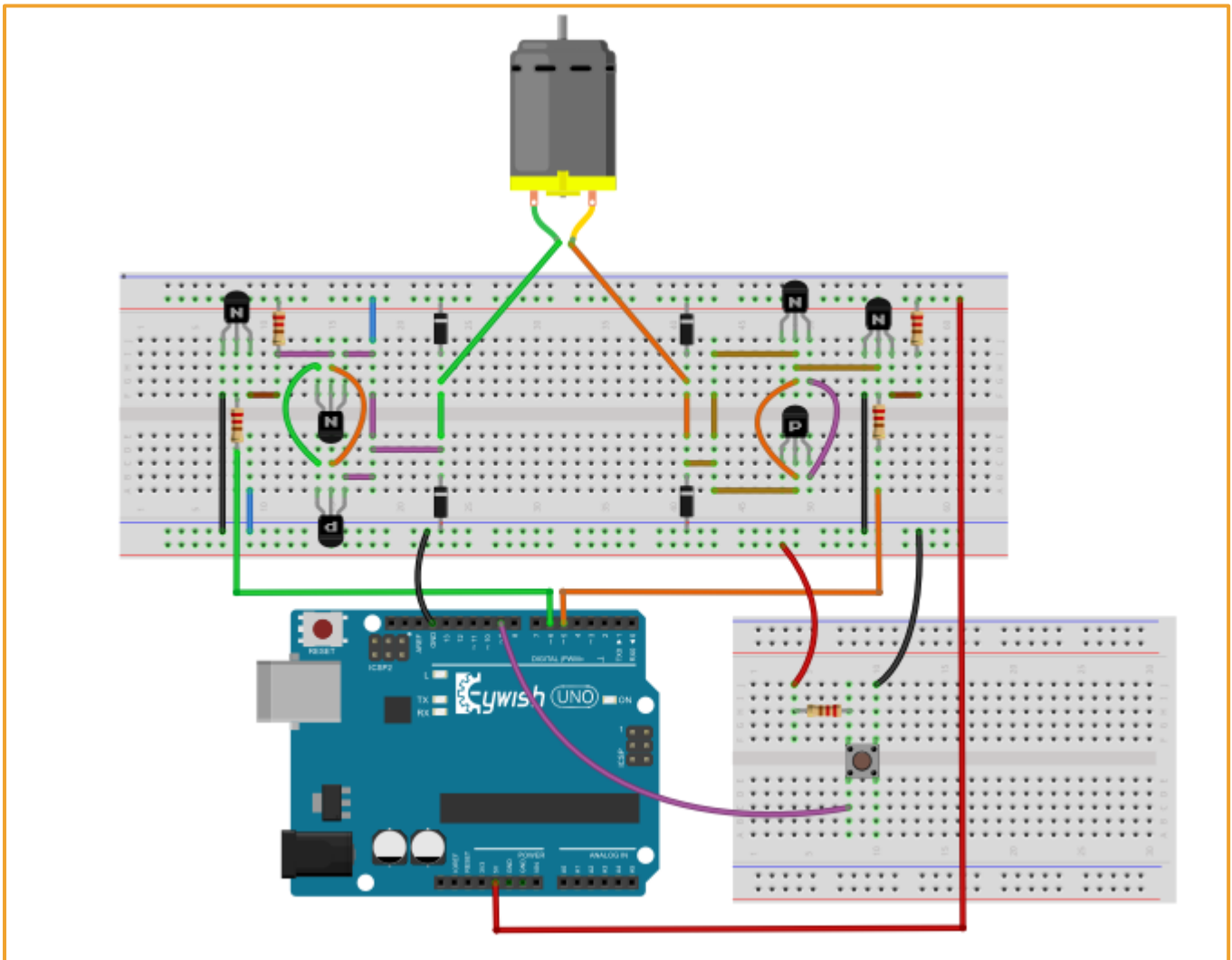


In this experiment, a key is added to the peripheral circuit, and the DC motor can be controlled by the key.

## Component List

- ◆ Keywish Arduino UNO R3 mainboard
- ◆ Breadboard
- ◆ USB cable
- ◆ DC motor \*1
- ◆ 1K resistor \*4
- ◆ 220Ω resistor \*1
- ◆ Triode PNP 8550\*2
- ◆ Triode NPN 8050\*4
- ◆ Diode 4148\*4
- ◆ Key switch \*1
- ◆ Fan blade
- ◆ Some wires

## Wiring of Circuit



## Code

```
#include <Servo.h>
int motor1=5;
int motor2=6;
int val=9;
void setup()
{
    pinMode(motor1,OUTPUT);
    pinMode(motor2,OUTPUT);
    pinMode(val,INPUT);
}
void loop()
{
    if(digitalRead(val)==HIGH)
    {
        digitalWrite(motor1,LOW);
        digitalWrite(motor2,HIGH);}
    else
    {
        digitalWrite(motor1,HIGH);
        digitalWrite(motor2,LOW); }
}
```

## Experiment Result

