

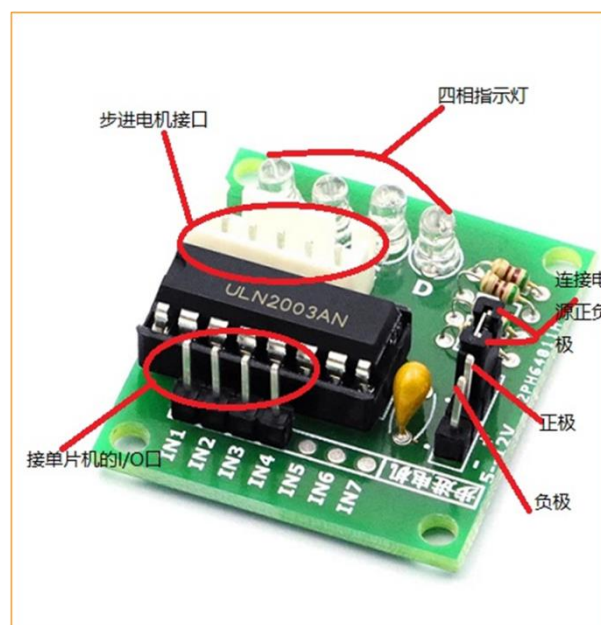
## DC-Motor Experiment

### Introduction to dc motor

A dc motor is an electric motor that converts direct current energy into mechanical energy. It is widely used in electric drive because of its good speed regulation. Dc motor can be divided into permanent magnet, separate excitation and self-excitation according to excitation mode.

When the dc power supply is supplied to the armature winding through the brush, the conductor at the n-pole on the armature surface can flow through the same direction of the current. According to the left hand rule, the conductor will be subjected to counterclockwise torque. The current flowing through the lower part of the s-pole on the surface of the armature also flows in the same direction. Similarly, according to the left-hand rule, the conductor will also be subjected to the torque acting in the counterclockwise direction. Thus, the entire armature winding, or rotor, will rotate counterclockwise, and the input direct current energy will be converted into the output mechanical energy on the rotor shaft. Composed of stator and rotor, stator: base, main magnetic pole, commutator pole, brush device; Rotor (armature) : armature core, armature winding, commutator, shaft, fan, etc.

ULN2003 stepper motor drive board: A, B, C, D led indicates the working state of the four-phase stepper motor. Equipped with standard interface of stepper motor, it can be directly plugged and unplugged when using.



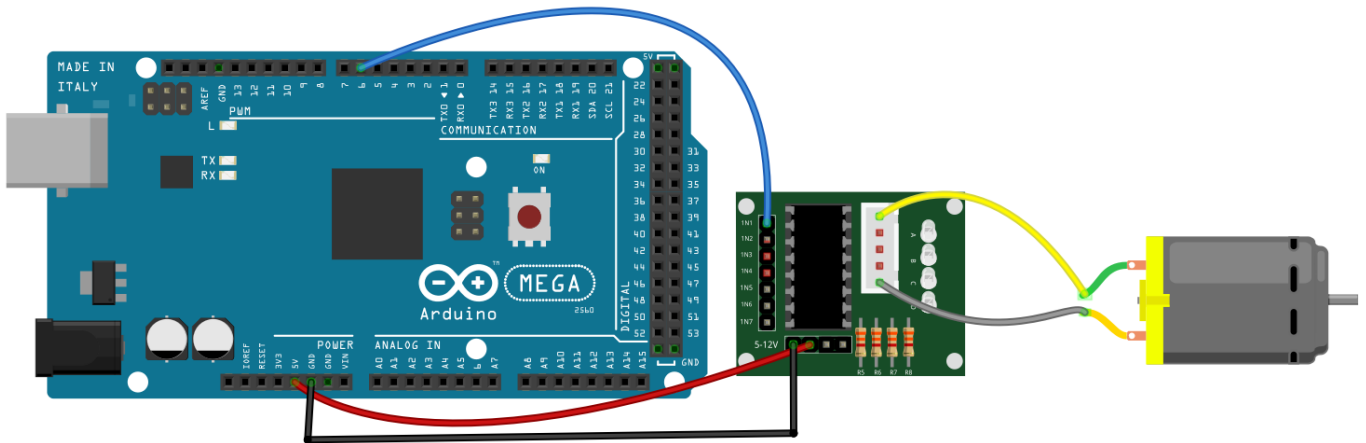
### experimental objective

Use Arduino control board to control dc motor rotation

## Component List

- Arduino Mega 2560 motherboard
- MianBaoBan
- USB cable
- ZhiLiuDianJi \*1
- DianJiQuDongBan
- FengShanYe
- ReGanTiaoXian

## Wiring of Circuit



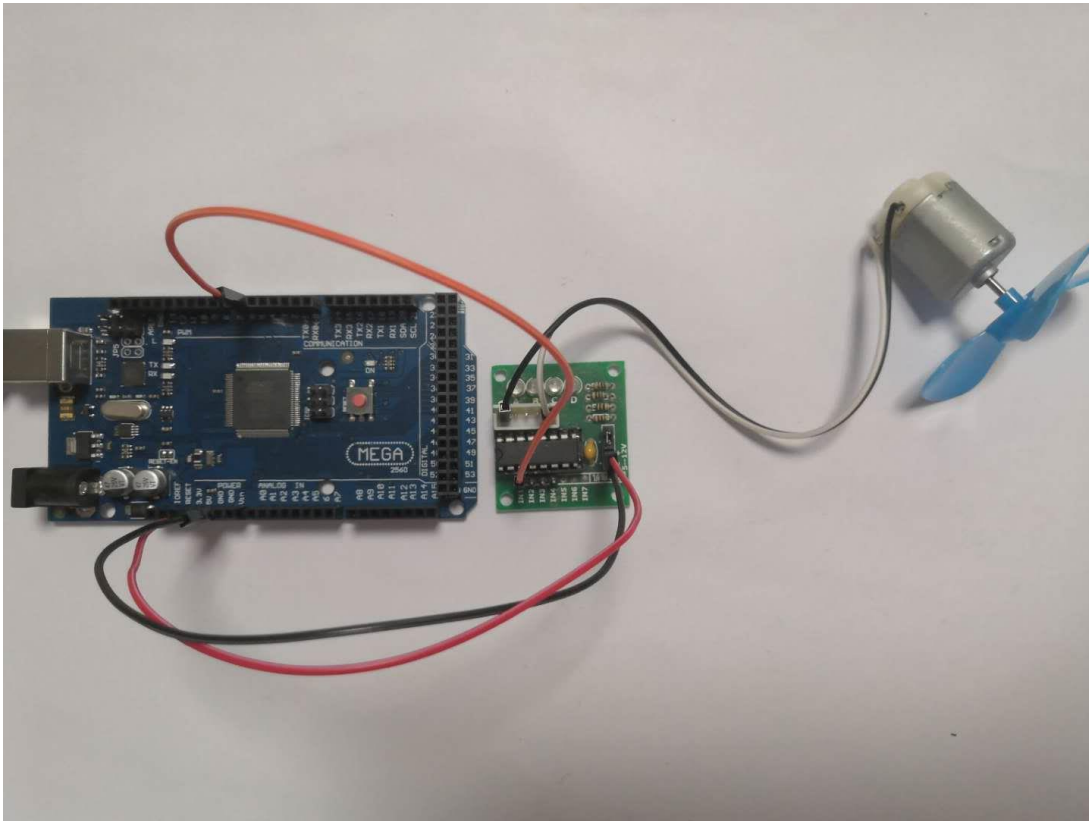
## Code

```
int motor=6; // Set the motor pin to pin6

void setup()
{
    pinMode(motor, OUTPUT); // Set the motor interface to output mode
}

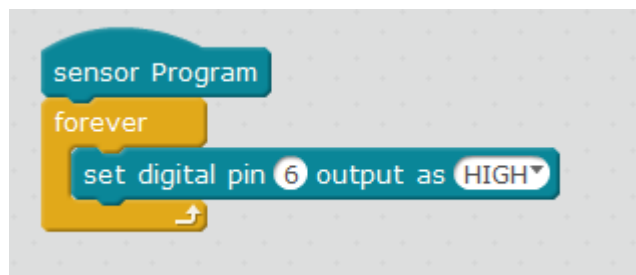
void loop()
{
    digitalWrite(motor, HIGH); // Set the motor level to high level
}
```

## Experiment Result



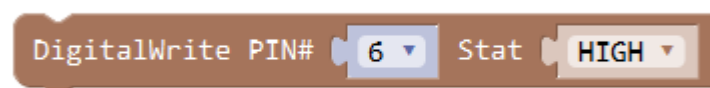
### MBlock graphical programming program

The program prepared by mBlock is shown in the figure below:



### Mixly graphical programming program

Mixly writes the DC motor program as shown below:



## MagicBlock graphical programming program

MagicBlock writes the DC motor program as shown below:

