lesson

6

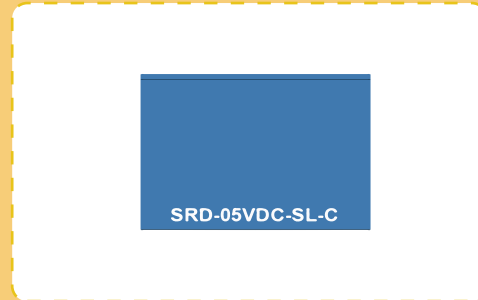# Relay

Overview

In this lesson, you will learn how to use a relay.

Component Required:
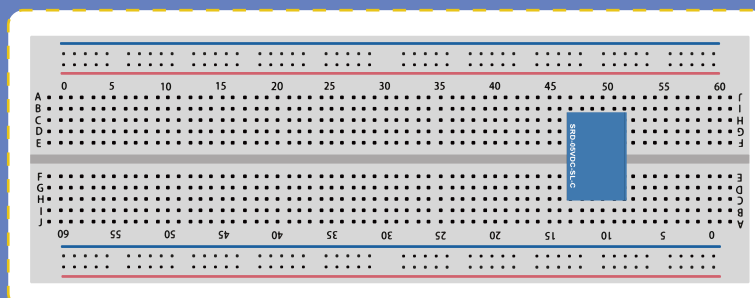
(1)x Elegoo Uno R3

(1) x 830 tie-points breadboard

(1) x Fan blade and 3-6v dc motor

(1) x L293D IC

(1) x 5v Relay

(1) x Power Supply Module

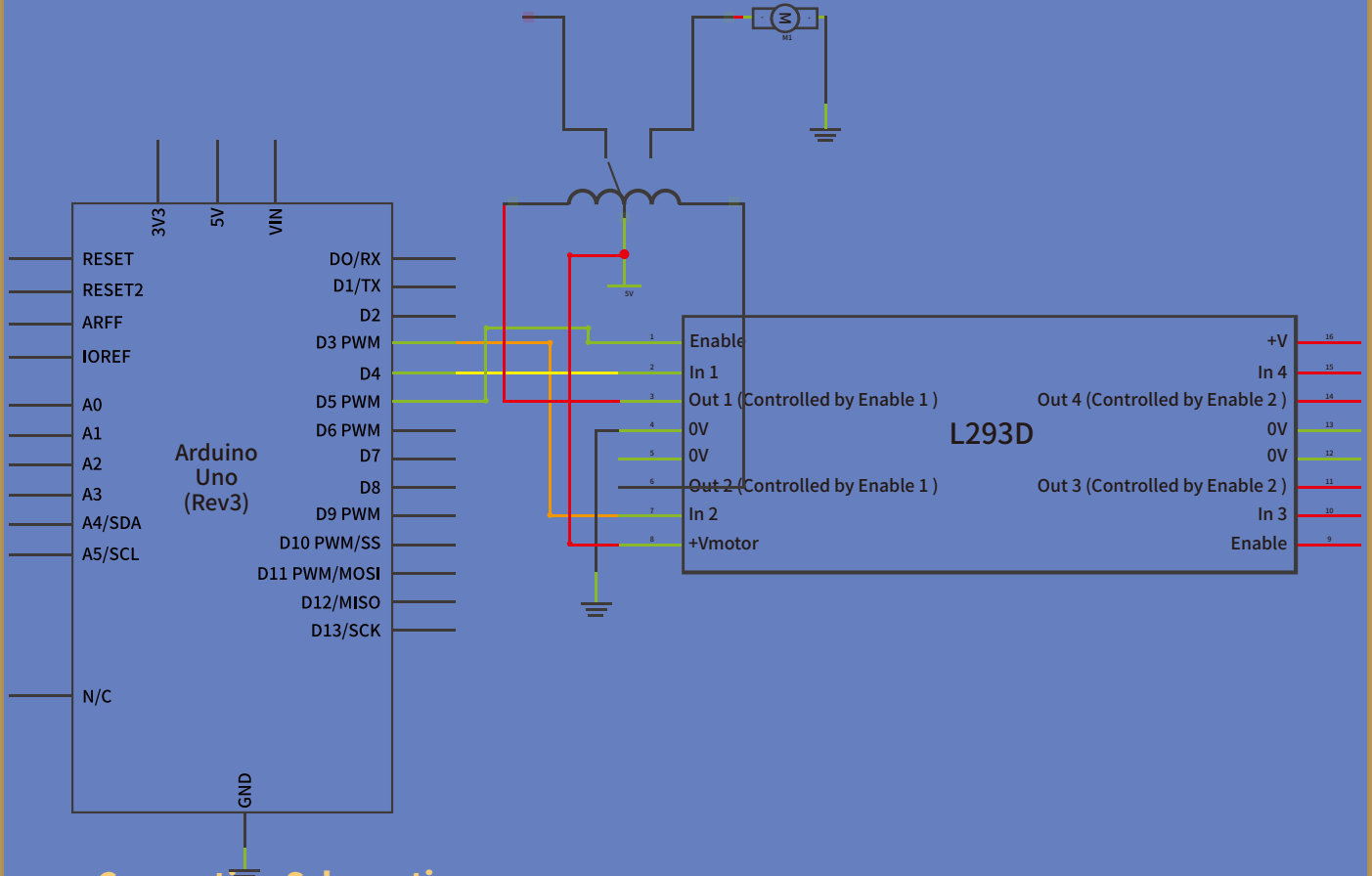(1) x 9V1A Adapter

(8) x M-M wires (Male to Male jumper wires)
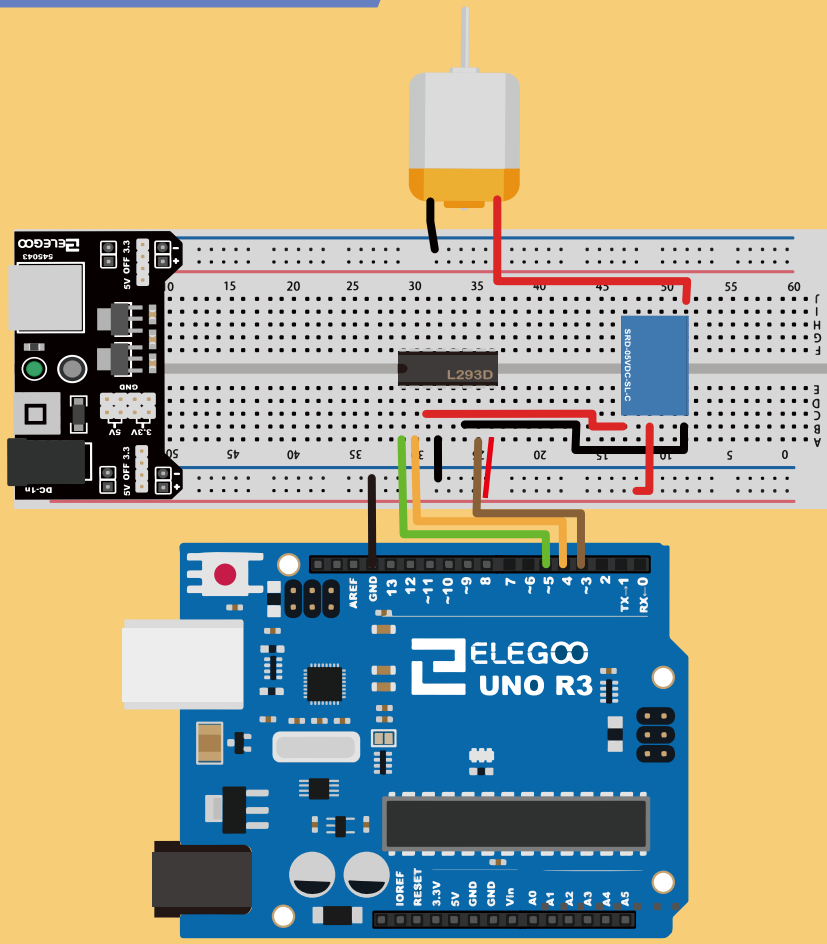

Component Introduction

Relay:

A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, as in solid-state relays. Relays are used where it is necessary to control a circuit by a low- power signal (with complete electrical isolation between control and controlled circuits), or where several circuits must be controlled by one signal. The first relays were used in long-distance telegraph circuits as amplifiers. They repeated the signal coming in from one circuit and re-transmitted it on another circuit. Relays were used extensively in telephone exchanges and early computers to perform logical operations.

A type of relay that can handle the high power required to directly control an electric motor or other loads is called a contactor. Solid-state relays control power circuits with no moving parts, instead using a semiconductor device to perform the switching. Relays with calibrated operating characteristics are sometimes multiple operating coils, which are used to protect electrical circuits from overloads and faults. In modern electrical power systems, these functions are performed by digital instruments called 'protective relays'.

Below is the schematic of how to drive relay with Arduino.

You may be confused about how to insert the relay into the bread board. As the picture below shows, you will have to bend one of the pins of the relay slightly then you can insert it into the breadboard.

Connection Schematic

Arduino Uno (Rev3)

3V3 5V VIN

RESET
RESET2
ARFF
IOREF

A0
A1
A2
A3
A4/SDA
A5/SCL

N/C

GND

DO/RX
D1/TX
D2
D3 PWM
D4
D5 PWM
D6 PWM
D7
D8
D9 PWM
D10 PWM/SS
D11 PWM/MOSI
D12/MISO
D13/SCK

M
M1

5V

L293D

Enable
In 1
Out 1 (Controlled by Enable 1)
0V
0V
Out 2 (Controlled by Enable 1)
In 2
+Vmotor

+V
In 4
Out 4 (Controlled by Enable 2)
0V
0V
Out 3 (Controlled by Enable 2)
In 3
Enable

1
2
3
4
5
6
7
8

16
15
14
13
12
11
10
9

Wiring diagram

L293D

SRD-05VDC-SL-C

ELEGOO
UNO R3

Code

■ After wiring, please open the program in the code folder- **Relay** and click UPLOAD to upload the program. See Lesson 5 of part 1 for details about program uploading if there are any errors.

■ After program loading, turn on all the power switches. The relay will pick up with a ringing sound. Then, the motor will rotate. After a period of time, the relay will be released, and the motor stops.