

Project 3

Motor Drivers

Objectives:

- Understand how to use the Arduino IDE
- Understand basic Arduino commands and code structure
- Understand concepts related to inputs and outputs using motor driver to turn on and off LEDs
- Understand simple coding logic and design

Get into groups of 3 or 4 and complete the following exercises.

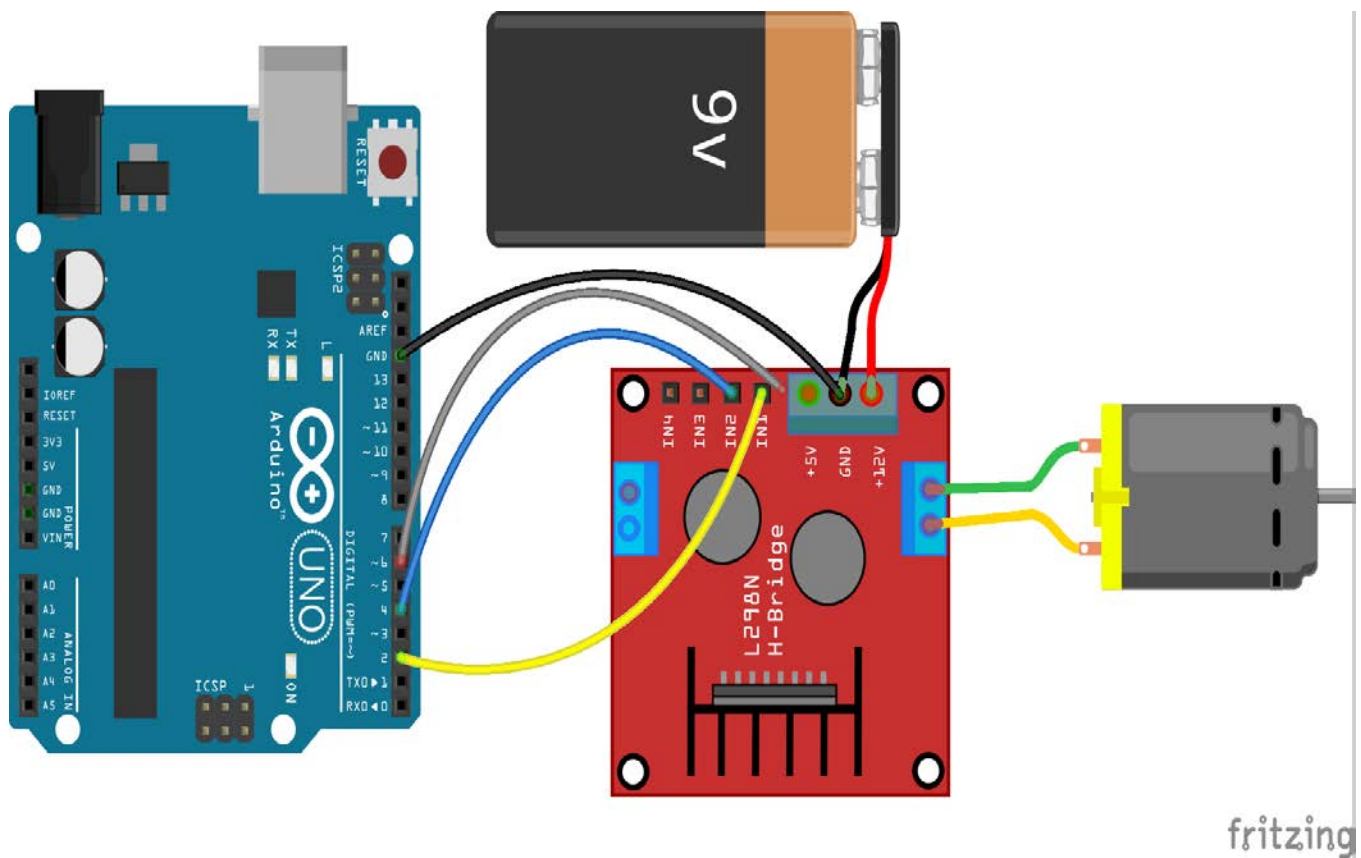
Group Members

Let's Get Moving

This exercise will demonstrate how to set up motor driver and turn each motor on and off.

Supplies Needed:

- 1x Arduino
- 1x Motor Driver
- 9x jumper wires
- 1x 9v Battery
- 2x Motors



```

int leftM1 = 4;
int leftM2 = 5;
int rightM1 = 6;
int right M2 = 7;

long duration = 200;
int right = 0;
int left = 0;

/*Function to drive motors*/
void drive(int left, int right)
{
    if((left==0) && (right==1))
    {
        digitalWrite(leftM1, HIGH);
        digitalWrite(leftM2, LOW);
        digitalWrite(rightM1, HIGH);
        digitalWrite(rightM2, LOW);
    }
    if((left==1) && (right==0))
    {
        digitalWrite(leftM1, HIGH);
        digitalWrite(leftM2, LOW);
        digitalWrite(rightM1, LOW);
        digitalWrite(rightM2, LOW);
    }
    if((left==0) && (right==1))
    {
        digitalWrite(leftM1, LOW);
        digitalWrite(leftM2, LOW);
        digitalWrite(rightM1, HIGH);
        digitalWrite(rightM2, LOW);
    }
    if((left==0) && (right==0))
    {
        digitalWrite(leftM1, LOW);
        digitalWrite(leftM2, LOW);
        digitalWrite(rightM1, LOW);
        digitalWrite(rightM2, LOW);
    }
    else
    {
        Serial.println("Invalid motor value!");
    }
    delay(duration);
}

```

```

/*Sets up modes for each pin*/
Void setup()
{
    pinMode(leftM1, OUTPUT);
    pinMode(leftM2, OUTPUT);
    pinMode(rightM1, OUTPUT);
    pinMode(rightM2, OUTPUT);
    Serial.begin(9600);
}

```

```

/*Program loop*/
Void loop()
{
    drive(left, right);
    left = 1;
    drive(left, right);
    right = 1;
    drive(left, right);
    left = 0;
    drive(left, right);
    right = 0;
    drive(left, right);
}

```

Changing It Up

Now that you know how to turn on and off the motors, try adding code to each decision block to stop the motor for a small bit of time, and then reverse direction. How did you accomplish this and why does that work?