

yuziting

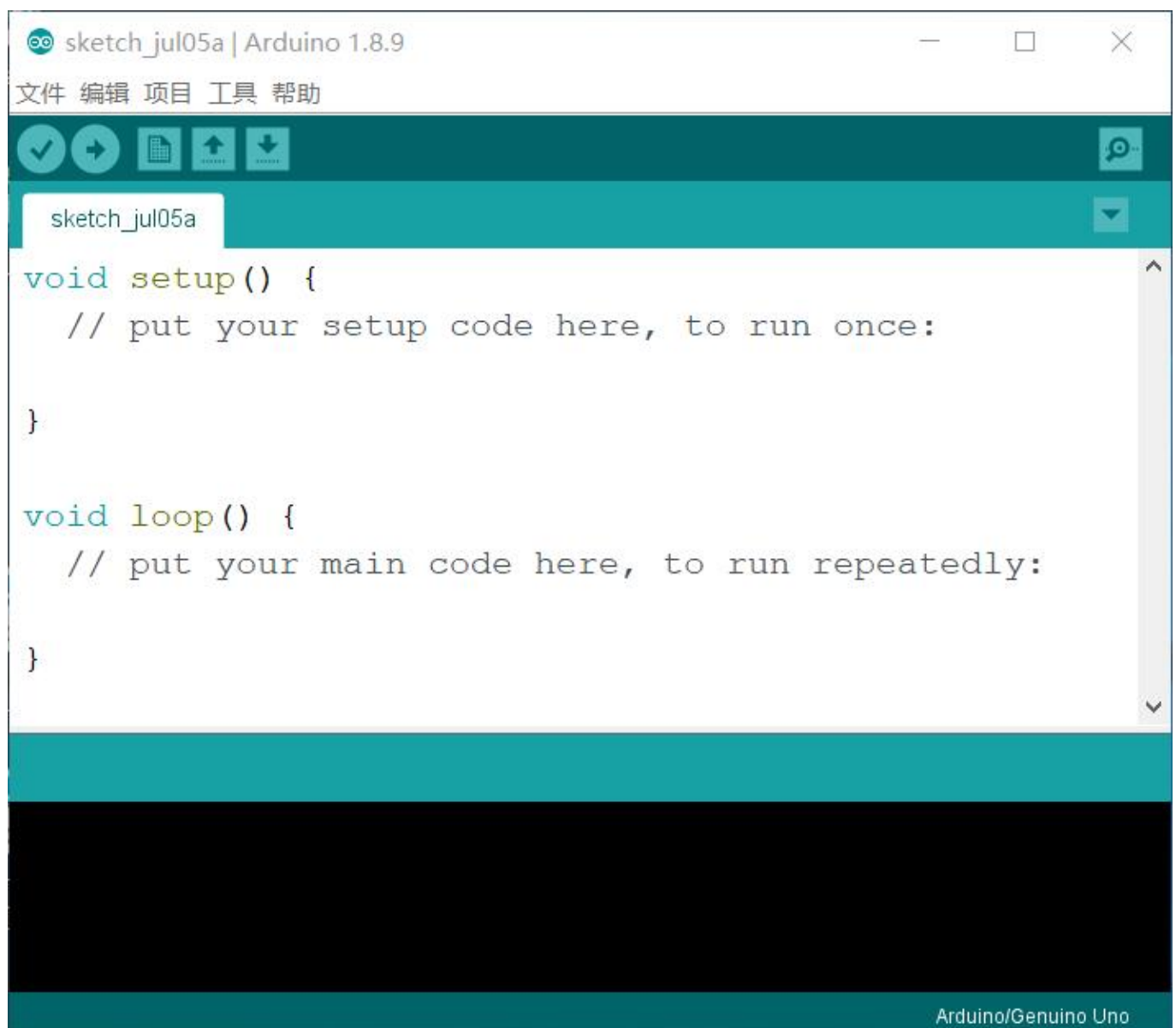
learn arduino

17050180012 于子婷

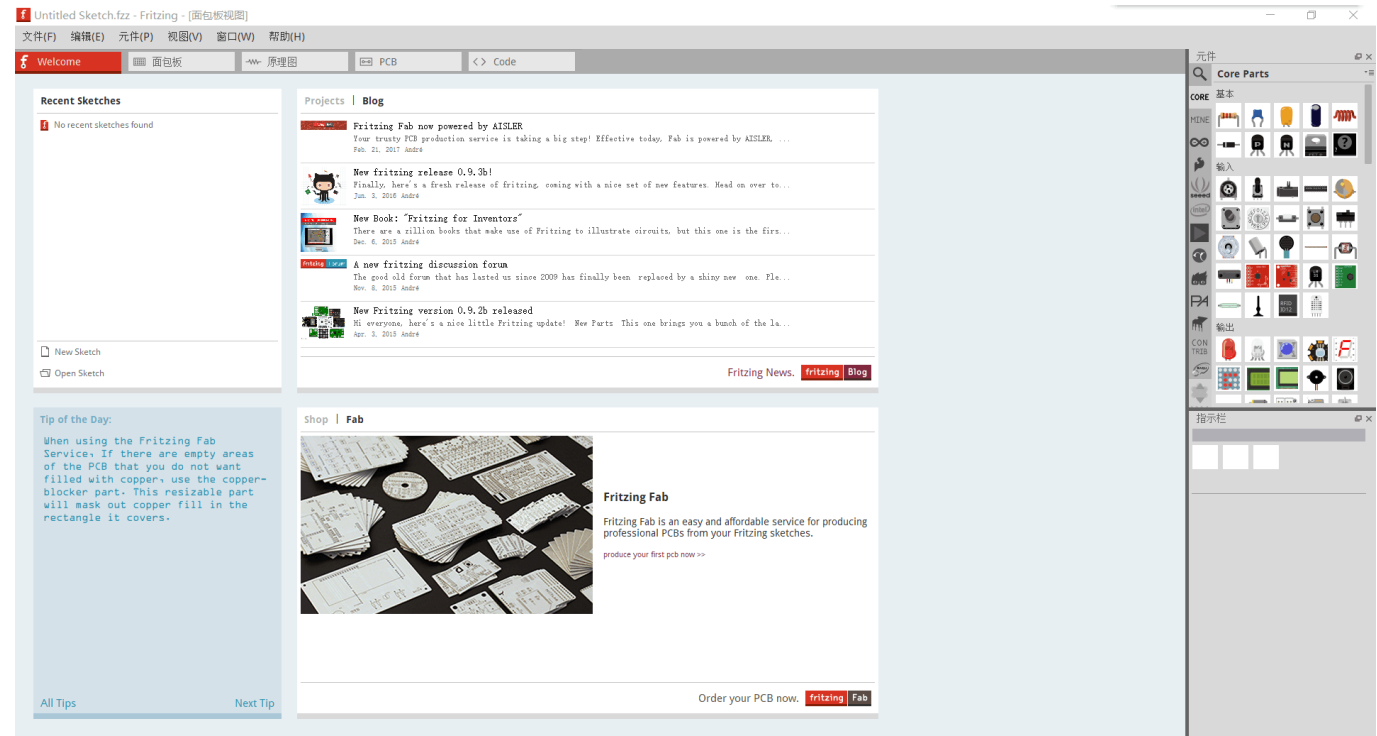
第一天 入门介绍

- 为什么要学习开源硬件
- 如何学习开源硬件
- 几个常用软件

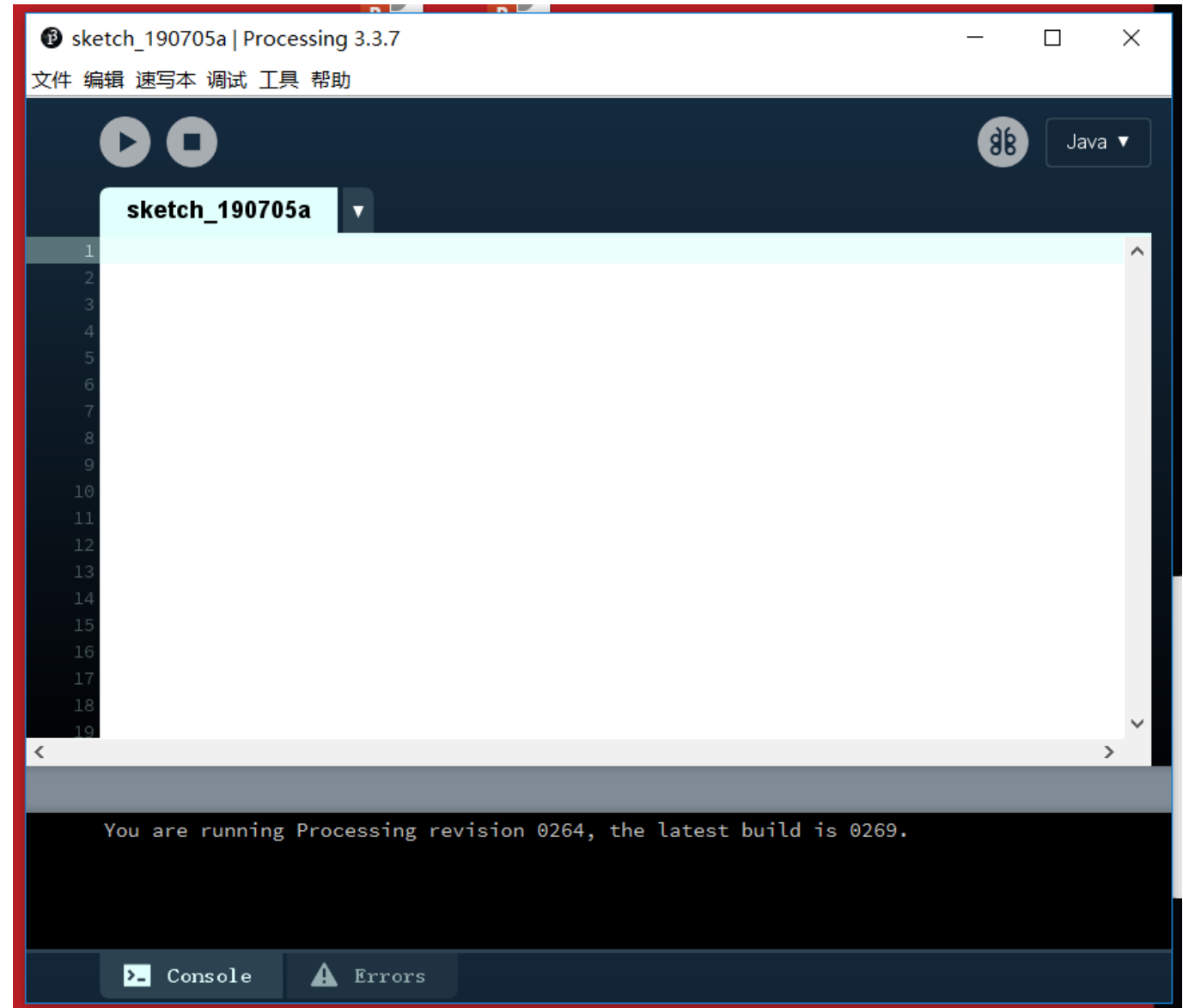
arduino



fritzing



processing



- 几个常用网站
- ubuntu.com
- www.arduino.cc
- fritzing.org
- processing.org

第二天 软件操作

- Arduino安装
- Arduino文档
- Arduino基本操作
- Arduino类库操作
- 实例：morse代码

```
//.cpp
#include "Arduino.h"
#include "Morse.h"

Morse::Morse(int pin)//构造法
{
    pinMode(pin,OUTPUT);//配置为输出
    _pin=pin;//把pin传给_pin
}

void Morse::dot()
{
    digitalWrite(_pin,HIGH);
    delay(250);
    digitalWrite(_pin,LOW);
    delay(250);
}

void Morse::dash()
{
    digitalWrite(_pin,HIGH);
    delay(1000);
    digitalWrite(_pin,LOW);
    delay(250);
}

void Morse::c_space()//字符间隔
{
    digitalWrite(_pin,LOW);
    delay(250*3);
}

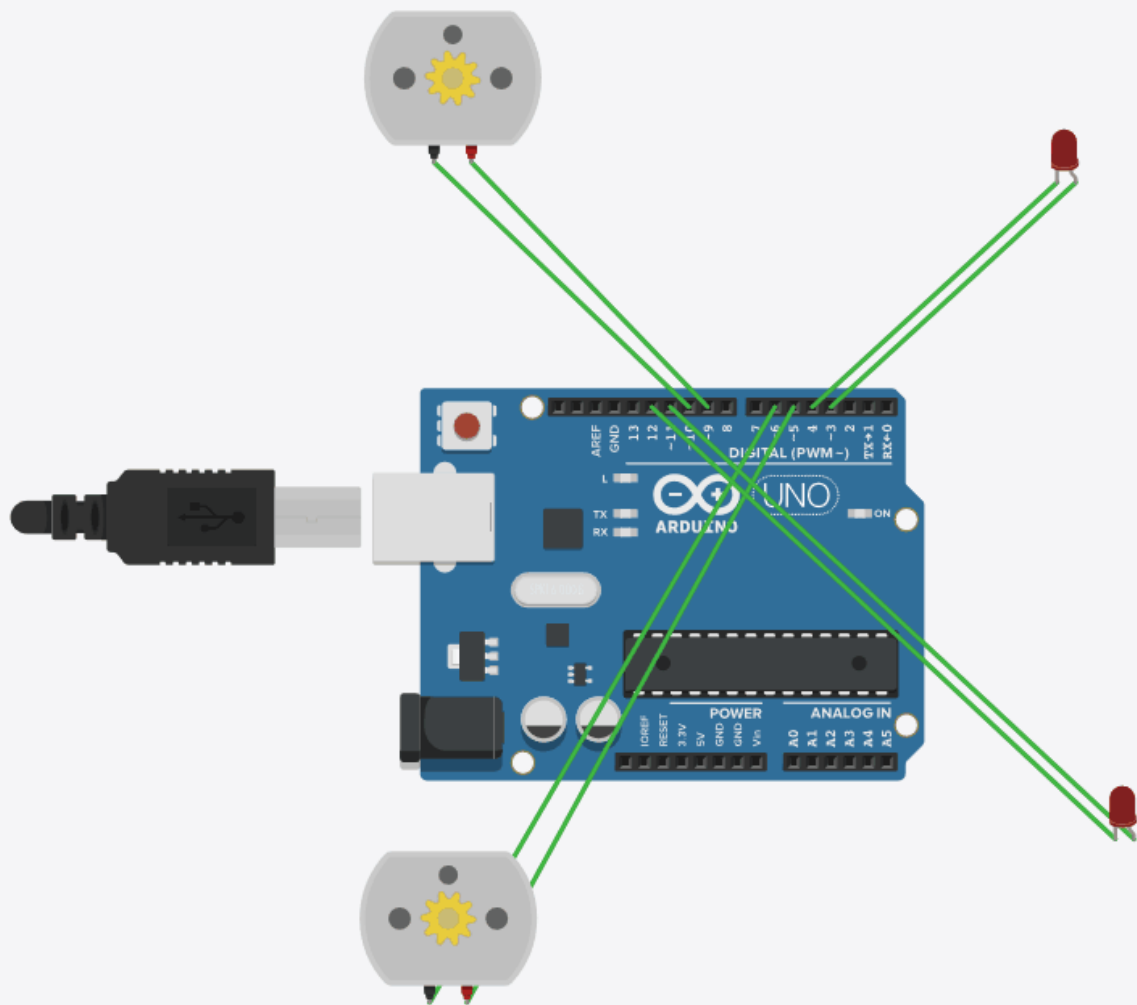
void Morse::w_space()//单词间隔
{
    digitalWrite(_pin,LOW);
    delay(250*7);
}
```

```
}
```

```
//.h
#ifndef _MORSE_H//预编译
#define _MORSE_H
class Morse
{
public:
    Morse(int pin);
    void dot();
    void dash();
    void c_space();
    void w_space();
private:
    int _pin;
};
#endif /*_MORSE_H*/
```

第三天 元器件及电路图

- 使用在线模拟网站
- 小车电路图及代码



```
void setup()
{
  pinMode(5, OUTPUT);
  pinMode(6, OUTPUT);
  pinMode(9, OUTPUT);
  pinMode(10, OUTPUT);
  pinMode(3, OUTPUT);
  pinMode(4, OUTPUT);
  pinMode(11, OUTPUT);
  pinMode(12, OUTPUT);
  Serial.begin(9600);
}
int income=0;
void loop()
{
  if(Serial.available()>0)
  {
    income=Serial.read();
    switch(income)
```

```
        {
            case 'f':
                forward();
                break;
            case 'b':
                backward();
                break;
            case 'l':
                left();
                break;
            case 'r':
                right();
                break;
            case 's':
                stop();
                break;
            default:
                break;
        }
    }
}

void forward()
{
    digitalWrite(5,HIGH);
    digitalWrite(6,LOW);
    digitalWrite(9,HIGH);
    digitalWrite(10,LOW);
}

void backward()
{
    digitalWrite(6,HIGH);
    digitalWrite(5,LOW);
    digitalWrite(10,HIGH);
    digitalWrite(9,LOW);
}

void left(
{
    digitalWrite(5,HIGH);
    digitalWrite(6,LOW);
    digitalWrite(10,HIGH);
    digitalWrite(9,LOW);
    digitalWrite(3,HIGH);
    digitalWrite(4,LOW);
}

void right()
{
    digitalWrite(6,HIGH);
    digitalWrite(5,LOW);
    digitalWrite(9,HIGH);
    digitalWrite(10,LOW);
    digitalWrite(11,HIGH);
    digitalWrite(12,LOW);
}

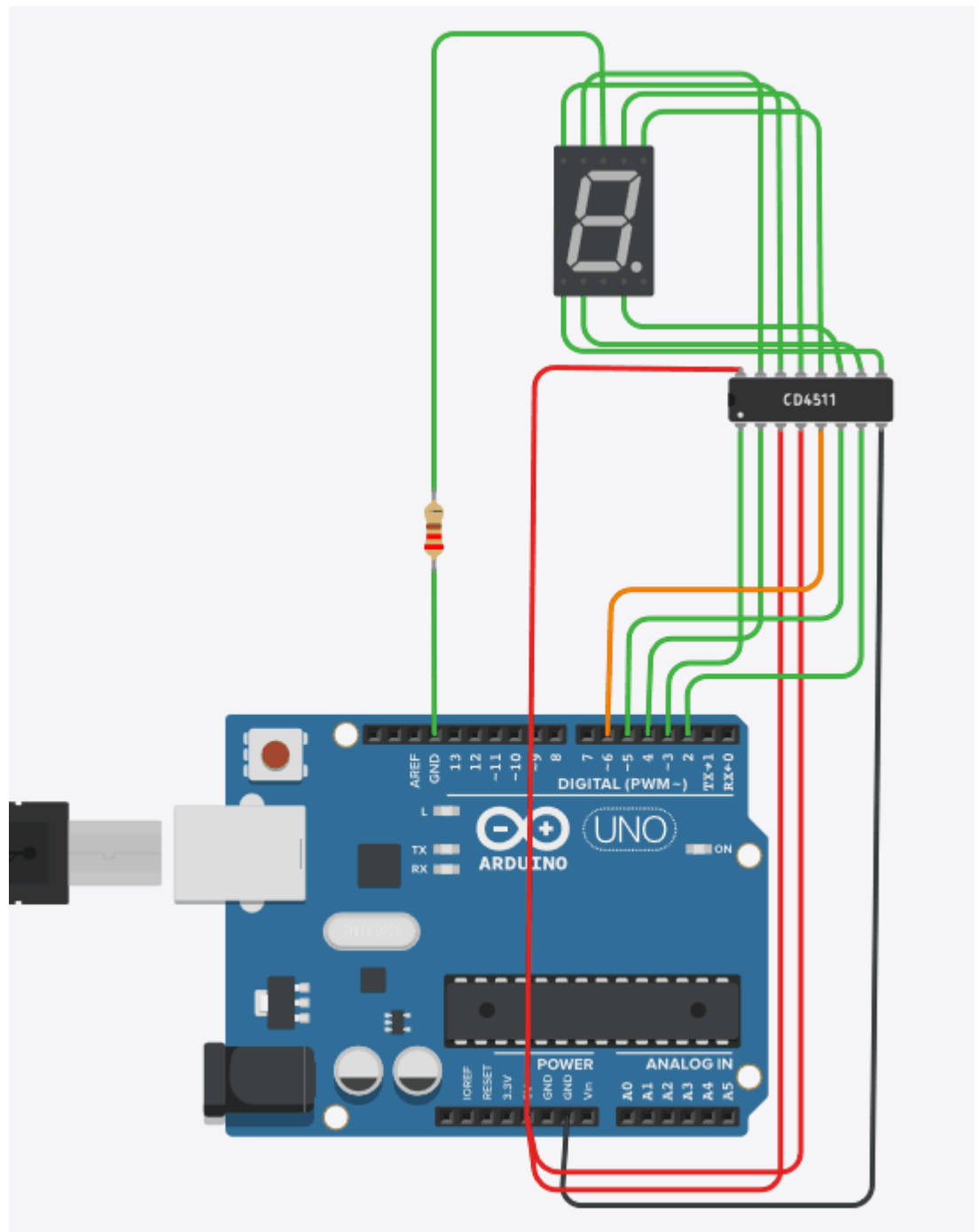
void stop()
```

```

{
  digitalWrite(5,LOW);
  digitalWrite(6,LOW);
  digitalWrite(9,LOW);
  digitalWrite(10,LOW);
}

```

- 7位译码器使用



- CD4511IC使用

```

#include<stdio.h>
//int income=0;
void setup()
{
  pinMode(2, OUTPUT);
}

```

```
pinMode(3, OUTPUT);
pinMode(4, OUTPUT);
pinMode(5, OUTPUT);
pinMode(6, OUTPUT);
Serial.begin(9600);

}

void loop()
{
  digitalWrite(2,LOW);
  digitalWrite(3,LOW);
  digitalWrite(4,LOW);
  digitalWrite(5,LOW);
  digitalWrite(6,LOW);
  int income=0;
  if(Serial.available()>0)
  {
    delay(10);
    income=Serial.read();
  }
  //income=income- '0';
  switch(income){
    case'0':
      digitalWrite(2,LOW);
      digitalWrite(3,LOW);
      digitalWrite(4,LOW);
      digitalWrite(5,LOW);
      delay(1000);
      break;
    case'1':
      digitalWrite(2,HIGH);
      digitalWrite(3,LOW);
      digitalWrite(4,LOW);
      digitalWrite(5,LOW);
      delay(1000);
      break;
    case'2':
      digitalWrite(2,LOW);
      digitalWrite(3,HIGH);
      digitalWrite(4,LOW);
      digitalWrite(5,LOW);
      delay(50000);
      break;
    case'3':
      digitalWrite(2,HIGH);
      digitalWrite(3,HIGH);
      digitalWrite(4,LOW);
      digitalWrite(5,LOW);
      delay(1000);
      break;
    case'4':
      digitalWrite(2,LOW);
      digitalWrite(3,LOW);
```



```
digitalWrite(4,HIGH);
digitalWrite(5,LOW);
delay(1000);
break;
case '5':
digitalWrite(2,HIGH);
digitalWrite(3,LOW);
digitalWrite(4,HIGH);
digitalWrite(5,LOW);
delay(1000);
break;
case '6':
digitalWrite(2,LOW);
digitalWrite(3,HIGH);
digitalWrite(4,HIGH);
digitalWrite(5,LOW);
delay(1000);
break;
case '7':
digitalWrite(2,HIGH);
digitalWrite(3,HIGH);
digitalWrite(4,HIGH);
digitalWrite(5,LOW);
delay(1000);
break;
case '8':
digitalWrite(2,LOW);
digitalWrite(3,LOW);
digitalWrite(4,LOW);
digitalWrite(5,HIGH);
delay(1000);
break;
case '9':
digitalWrite(2,HIGH);
digitalWrite(3,LOW);
digitalWrite(4,LOW);
digitalWrite(5,HIGH);
delay(1000);
break;
}
}
```

第四天 总结

- 我参加了“开源硬件实战”的企业课程，介绍了Arduino的使用方法，学习了led灯间断闪烁，小车前进后退左转右转向灯，7段数码管的显示几个实验的仿真和程序编写，以及在Github有了属于自己的资料库，并学会上传和下载资料。
- 双创是机遇，也是挑战；通过与企业专家交流学习，学到了很多知识，认识到了自己的不足，也会在今后的学习生活中吸取经验教训，继续研究开源硬件，丰富自己的知识储备，在大学期间找到自己兴趣所在，不虚度这四年光阴。