

Lab1

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- 完整程式碼

```
const int buttonPin = 2, resistorPin = A0;
const int r1_ledPin = 13, r2_ledPin = 12, g_ledPin = 11, y_ledPin = 10;
int ledState = LOW, buttonState = LOW, lastButtonState = LOW;
int resistorValue = 0, mode = 1, led_high = 13, led_low = 10;
unsigned long lastDebounceTime = 0, debounceDelay = 50;

void setup() {
  pinMode(r1_ledPin, OUTPUT);
  pinMode(r2_ledPin, OUTPUT);
  pinMode(g_ledPin, OUTPUT);
  pinMode(y_ledPin, OUTPUT);
  pinMode(buttonPin, INPUT);
}

void loop() {
  int reading = digitalRead(buttonPin);
  if (reading != lastButtonState) {
    lastDebounceTime = millis();
  }
  if ((millis() - lastDebounceTime) > debounceDelay) {
    if(reading != buttonState) {
      buttonState = reading;
      if (buttonState == HIGH) {
        mode = !mode;
      }
    }
  }
  lastButtonState = reading;

  resistorValue = analogRead(resistorPin);
  if (mode) {
    digitalWrite(r1_ledPin, ledState);
    digitalWrite(r2_ledPin, ledState);
```

```

        digitalWrite(g_ledPin, ledState);
        digitalWrite(y_ledPin, ledState);
        delay(resistorValue);
        ledState = !ledState;
    }
    else {
        digitalWrite(led_low, LOW);
        digitalWrite(led_high, HIGH);
        delay(resistorValue);
        led_high = (led_high == 10)? 13 : led_high-1;
        led_low = (led_low == 10)? 13 : led_low-1;
    }
}

```

各部分功能說明

```

const int buttonPin = 2, resistorPin = A0;
const int r1_ledPin = 13, r2_ledPin = 12, g_ledPin = 11, y_ledPin = 10;
int ledState = LOW, buttonState = LOW, lastButtonState = LOW;
int resistorValue = 0, mode = 1, led_high = 13, led_low = 10;
unsigned long lastDebounceTime = 0, debounceDelay = 50;

```

宣告腳位、變數。

```

pinMode(r1_ledPin, OUTPUT);
pinMode(r2_ledPin, OUTPUT);
pinMode(g_ledPin, OUTPUT);
pinMode(y_ledPin, OUTPUT);
pinMode(buttonPin, INPUT);

```

把 LED 設為 OUTPUT，BUTTON 設為 INPUT。

```

int reading = digitalRead(buttonPin);
if (reading != lastButtonState) {
    lastDebounceTime = millis();
}
if ((millis() - lastDebounceTime) > debounceDelay) {
    if(reading != buttonState) {
        buttonState = reading;
        if (buttonState == HIGH) {

```

```

        mode = !mode;
    }
}
lastButtonState = reading;

```

讀 BUTTON 的值，並做 debounce，按下按鈕來切換 mode。

```

if (mode) {
    digitalWrite(r1_ledPin, ledState);
    digitalWrite(r2_ledPin, ledState);
    digitalWrite(g_ledPin, ledState);
    digitalWrite(y_ledPin, ledState);
    delay(resistorValue);
    ledState = !ledState;
}

```

將全部的 LED 腳位同時設成 HIGH 跟 LOW，讓它們同時閃爍，並以 delay(resistorValue)來控制速度。

```

else {
    digitalWrite(led_low, LOW);
    digitalWrite(led_high, HIGH);
    delay(resistorValue);
    led_high = (led_high == 10)? 13 : led_high-1;
    led_low = (led_low == 10)? 13 : led_low-1;
}

```

將全部的 LED 腳位輪流設成 HIGH 跟 LOW，讓它們輪流亮起，並以 delay(resistorValue)來控制速度。

● 本次實驗之心得

這次是這堂課的第一次 lab，對 arduino 的各種事物都還不是很熟悉，但感覺蠻有趣的 ♪・o・♪

特別感謝助教們下課後還留下來協助大家，才能順利完成！