**Lab1**

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* **完整程式碼**

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| 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**

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| 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。

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| 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。

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| 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。

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| 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。

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| 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ʕ •̀ o •́ ʔ

特別感謝助教們下課後還留下來協助大家，才能順利完成！