電通二乙微處理器實驗 實驗結報

實驗名稱	跑馬燈		
組別	13	組員	阮翊銜

1. 實驗目的

Arduino UNO D1 – D8 分別接到 LED，實作跑馬燈展 示。

2. 實驗步驟

Checkpoint1:

1. LED 向左及向右執行花色展示

Checkpoint2:

1. 執行自定花色展示: 所有 LED 亮滅兩次 -> 左移八次 -> 所有 LED 亮滅兩次 -> 右移八次

Checkpoint3:

1. Arduino 接上一個開關
2. 開關 OFF -> LED 向左及向右執行花色展示
3. 開關 ON -> 執行自定花色展示 * 注意事項: 需完成防彈跳程式碼

3. 程式碼

Checkpoint1:

```
const byte LEDs[] = {2,3,4,5,6,7,8,9};
const byte total = sizeof(LEDs);
byte index = 0;
void setup(){

for (byte i=0;i<total;i++) {
pinMode(LEDs[i], OUTPUT);
}
}
void loop() {

for (byte i=0;i<total;i++) {
digitalWrite(LEDs[i], LOW);
}

   for (byte i=0;i<=total-1;i++){
digitalWrite(LEDs[i], HIGH);
     delay(200);
     digitalWrite(LEDs[i], LOW);
}
  for (byte i=7;i>0;i--){
digitalWrite(LEDs[i], HIGH);
    delay(200);
     digitalWrite(LEDs[i], LOW);
```

```
}
}
Checkpoint2:
const byte LEDs[] = {2,3,4,5,6,7,8,9};
const byte total = sizeof(LEDs);
byte index = 0;
void setup(){

for (byte i=0;i<total;i++) {
pinMode(LEDs[i], OUTPUT);
}
}
void loop() {

for (byte i=0;i<total;i++) {
digitalWrite(LEDs[i], LOW);
}

   for (byte i=0;i<=total-1;i++){
digitalWrite(LEDs[i], HIGH);
     delay(200);
     digitalWrite(LEDs[i], LOW);
}
  for (byte i=0;i<=1;i++){

  for (byte i=0;i<=total-1;i++){
digitalWrite(LEDs[i], HIGH);
}
  delay(200);
  for (byte i=0;i<=total-1;i++){
digitalWrite(LEDs[i], LOW);
}
   delay(200);
  }
  for (byte i=7;i>0;i--){
digitalWrite(LEDs[i], HIGH);
    delay(200);
     digitalWrite(LEDs[i], LOW);
}
  for (byte i=0;i<=1;i++){
  for (byte i=0;i<=total-1;i++){
digitalWrite(LEDs[i], HIGH);
}
  delay(200);
```

```
  for (byte i=0;i<=total-1;i++){
digitalWrite(LEDs[i], LOW);
}
    delay(200);
}
}
Checkpoint3:
const byte LEDs[] = {8,9,10,11,12,13,14,15};
const byte total = sizeof(LEDs);
//const byte sw=6;
byte index = 0;
void setup(){
  pinMode(6,INPUT);

for (byte i=0;i<total;i++) {
pinMode(LEDs[i], OUTPUT);
}
}

void loop() {
  if (digitalRead(6))
  {
for (byte i=0;i<total;i++) {
digitalWrite(LEDs[i], LOW);
}

    for (byte i=0;i<=total-1;i++){
digitalWrite(LEDs[i], HIGH);
      delay(200);
      digitalWrite(LEDs[i], LOW);
}
  for (byte i=7;i>0;i--){
digitalWrite(LEDs[i], HIGH);
     delay(200);
      digitalWrite(LEDs[i], LOW);
}
  }
else
{
for (byte i=0;i<total;i++) {
digitalWrite(LEDs[i], LOW);
}

    for (byte i=0;i<=total-1;i++){
```

```
digitalWrite(LEDs[i], HIGH);
      delay(200);
      digitalWrite(LEDs[i], LOW);
}
  for (byte i=0;i<=1;i++){

  for (byte i=0;i<=total-1;i++){
digitalWrite(LEDs[i], HIGH);
}
  delay(200);
  for (byte i=0;i<=total-1;i++){
digitalWrite(LEDs[i], LOW);
}
    delay(200);
  }
  for (byte i=7;i>0;i--){
digitalWrite(LEDs[i], HIGH);
     delay(200);
      digitalWrite(LEDs[i], LOW);
}
  for (byte i=0;i<=1;i++){
  for (byte i=0;i<=total-1;i++){
digitalWrite(LEDs[i], HIGH);
}
  delay(200);
  for (byte i=0;i<=total-1;i++){
digitalWrite(LEDs[i], LOW);
}
    delay(200);
}
}
}
```

4. 實驗結果及分析

使用 if 來判斷開關有沒有按下來讓他執行兩個結果

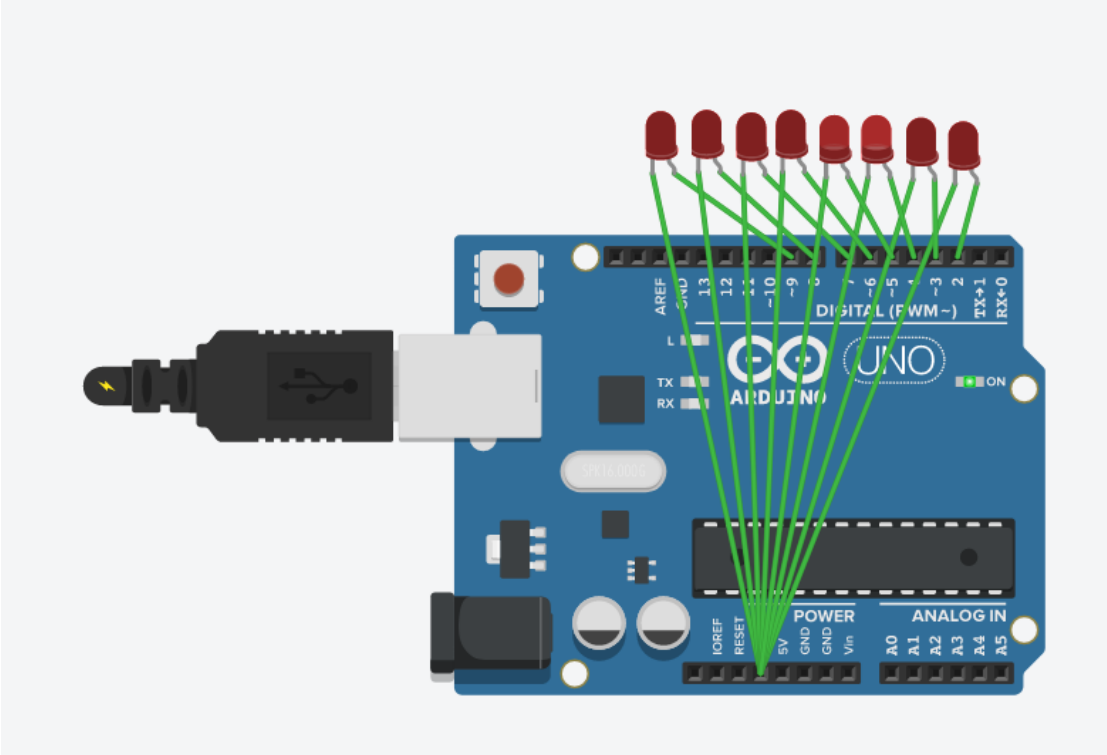
5. 心得討論

使用的 LED 變多接線變複雜之後電路圖可能接錯。

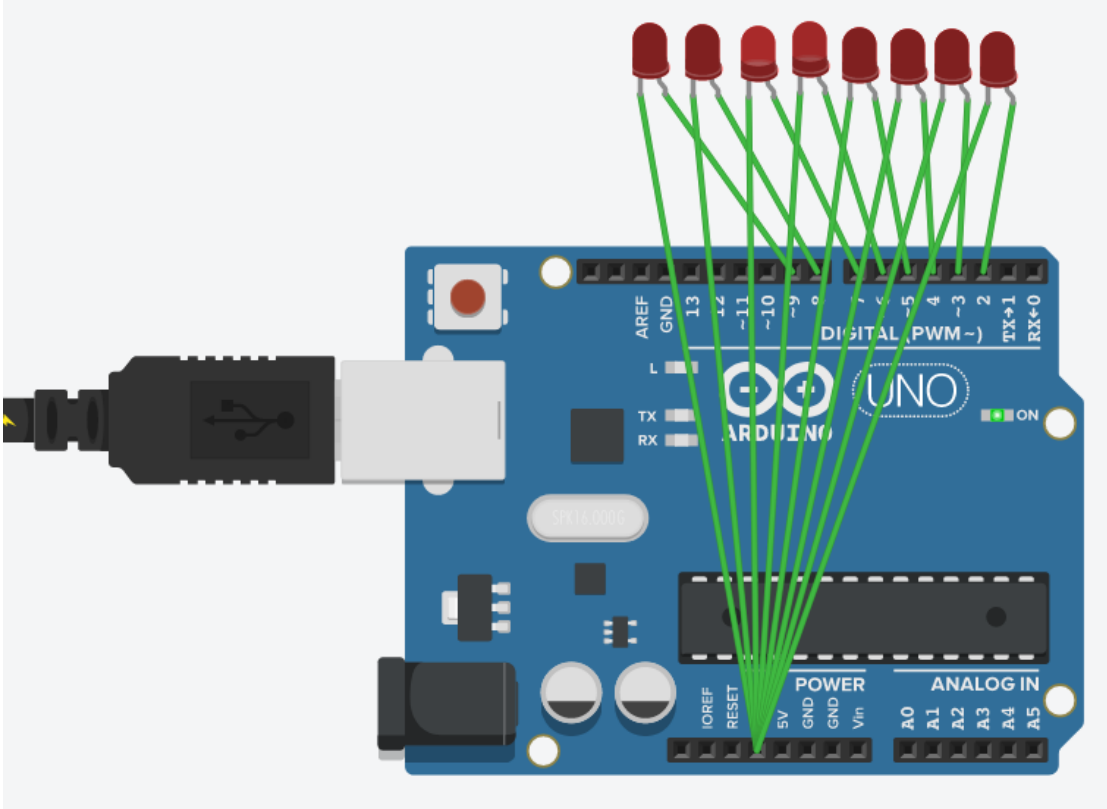
開關的使用也讓程式碼變困難。

6. 修正電路圖

Checkpoint1:



Checkpoint2:



修正程式碼