**電通二甲微處理器實驗 實驗結報**

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| **實驗名稱** | **Lab 03 – 類比輸入** | | |
| **組別** | **13** | **組員** | **04050865 高健銘** |
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1. **實驗目的**

使用USB-Serial做為輸入輸出，讀取類比輸入之數值

1. **實驗步驟**

由Arduino傳送訊息給PC，PC經由Serial Monitor接收，由PC傳送指令至Arduino

1. **程式碼**

第一題

|  |
| --- |
| const byte LED=13; |
|  | void setup() { |
|  | Serial.begin(9600); |
|  | Serial.println("Welcome to Arduino!"); |
|  |  |
|  | } |
|  |  |
|  | void loop() { |
|  | int val; |
|  | if(Serial.available()){ |
|  | val = Serial.read(); |
|  | if(val=='1'){ |
|  | digitalWrite(LED, HIGH); |
|  | Serial.print("LED ON"); |
|  | delay(1000); |
|  | } else if (val == '0'){ |
|  | digitalWrite(LED, LOW); |
|  | Serial.print("LED OFF"); |
|  | delay(1000); |
|  | } |
|  | } |
|  |  |
|  | } |

第二題

|  |
| --- |
| float Vin,Analogin=0; |
|  | void setup() { |
|  | Serial.begin(9600); |
|  | pinMode(A0,INPUT); |
|  | } |
|  |  |
|  | void loop() { |
|  | // int i; |
|  |  |
|  | for(int i=0;i<5;i++) |
|  | Analogin = 0.7\* Analogin + 0.3\* analogRead(A0); |
|  | Vin =Analogin \* 5 / 1024; |
|  | Serial.println(Vin); |
|  | delay(500); |
|  | } |

第三題

|  |
| --- |
| int i; |
|  | double R1=1031000; |
|  | double R2=2.29; |
|  | double sensorValue=1031002.29; |
|  | double sensorVoltage=5; |
|  | void setup() { |
|  | Serial.begin(9600); |
|  | pinMode(A1,INPUT); |
|  |  |
|  | } |
|  |  |
|  | void loop() { |
|  | double Vin=5; |
|  | for (i=0;i<=5;i++) |
|  | sensorValue = 0.7\* sensorValue + 0.3\* analogRead(A1); |
|  |  |
|  |  |
|  | sensorVoltage = sensorValue \* 5 / 1024; |
|  | // sensorVoltage= 5 \* R1 / (R1+R2) |
|  | R1 = sensorVoltage \* (1031002.29) / 5; |
|  | Serial.print(sensorValue); |
|  | Serial.print('/'); |
|  | Serial.print(sensorVoltage); |
|  | Serial.print('/'); |
|  | Serial.println(R1); |
|  | delay(500); |
|  | } |

第四題

|  |
| --- |
| double sensorValue; |
| double sensorVoltage; |
|  |
| void setup() { |
| Serial.begin(9600); |
| pinMode(A1,INPUT); |
|  |
| } |
|  |
| void loop() { |
| double Vin=5; |
| int i; |
| for (i=0;i<=4;i++) |
| sensorValue = 0.7\* sensorValue + 0.3\* analogRead(A1); |
| sensorVoltage = sensorValue \* 5 / 1024; |
| Serial.println(sensorVoltage); |
| delay(500); |
| } |