**電通二乙微處理器實驗 實驗結報**

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| **實驗名稱** | **Lab 9 Bluetooth low energy** | | |
| **組別** |  | **組員** | **05052446 李嘉誠** |

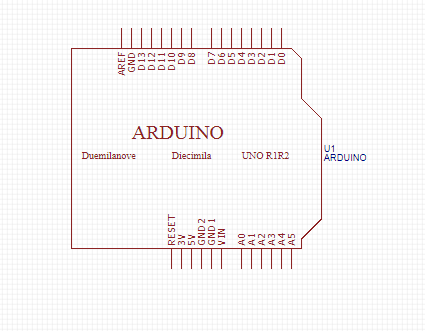
1. **實驗步驟**

**CHECK POINT 1.** **由手機 App 看到自己的 7697 iBeacon**

**CHECK POINT 2.** **由手機 App 看到自己的 7697 EddyStone URL Beacon網址**

**CHECK POINT 3.** **由手機 App 控制 7697 LED**

1. **電路圖**



1. **程式碼**

Check point 1.

#include <LBLE.h>

#include <LBLEPeriphral.h>

void setup() {

//Initialize serial and wait for port to open:

Serial.begin(9600);

// Initialize BLE subsystem

Serial.println("BLE begin");

LBLE.begin();

while (!LBLE.ready()) {

delay(100);

}

Serial.println("BLE ready");

// configure our advertisement data as iBeacon.

LBLEAdvertisementData beaconData;

// This is a common AirLocate example UUID.

LBLEUuid uuid("E2C56DB5-DFFB-48D2-B060-D0F5A71096E0");

beaconData.configAsIBeacon(uuid, 24, 46, -40);

Serial.print("Start advertising iBeacon with uuid=");

Serial.println(uuid);

// start advertising it

LBLEPeripheral.advertise(beaconData);

}

void loop() {

// The underlying framework will advertise periodically.

// we simply wait here.

//

// You can use iBeacon apps such as

// "Locate Beacon" by Radius Networks on iOS devices

// to locate this beacon.

delay(3000);

}

Check point 2.

#include <LBLE.h>

#include <LBLEPeriphral.h>

void setup() {

//Initialize serial and wait for port to open:

Serial.begin(115200);

// Initialize BLE subsystem

Serial.println("BLE begin");

LBLE.begin();

while (!LBLE.ready()) {

delay(100);

}

Serial.println("BLE ready");

// configure our advertisement data as iBeacon.

LBLEAdvertisementData beaconData;

// make an Eddystone-URL beacon that board casts

// https://labs.mediatek.com

// Note 1: You can obmit the suffix and tail part, e.g.

// https://goo.gl/Aq18zF

// can be constructed with

// configAsEddystoneURL(EDDY\_HTTPS, "goo.gl/Aq18zF");

// Note 2: Note that total url length must not exceed 17 bytes.

//

// Please refer to https://github.com/google/eddystone/tree/master/eddystone-url#url-scheme-prefix

// to know how the prefix/suffix/tails are expanded.

beaconData.configAsEddystoneURL(EDDY\_HTTPS, "05052446", EDDY\_DOT\_COM);

Serial.print("Start advertising Eddystone-URL");

// start advertising it

LBLEPeripheral.advertiseAsBeacon(beaconData);

}

void loop() {

// The underlying framework will advertise periodically.

// we simply wait here.

//

// You should be able to search this beacon with tools such as "Beacon Tools" on iOS or

// "Physical Web" app on Android.

delay(3000);

}

Check point3.

#include <LBLE.h>

#include <LBLEPeriphral.h>

// Define a simple GATT service with only 1 characteristic

LBLEService ledService("05052446-E8F2-537E-4F6C-D104768A1214");

LBLECharacteristicInt switchCharacteristic("19B10011-E8F2-537E-4F6C-D104768A1214", LBLE\_READ | LBLE\_WRITE);

void setup() {

// Initialize LED pin

pinMode(LED\_BUILTIN, OUTPUT);

digitalWrite(LED\_BUILTIN, LOW);

//Initialize serial and wait for port to open:

Serial.begin(9600);

// to check if USR button is pressed

pinMode(6, INPUT);

// Initialize BLE subsystem

LBLE.begin();

while (!LBLE.ready()) {

delay(100);

}

Serial.println("BLE ready");

Serial.print("Device Address = [");

Serial.print(LBLE.getDeviceAddress());

Serial.println("]");

// configure our advertisement data.

// In this case, we simply create an advertisement that represents an

// connectable device with a device name

LBLEAdvertisementData advertisement;

advertisement.configAsConnectableDevice("LEE");

// Configure our device's Generic Access Profile's device name

// Ususally this is the same as the name in the advertisement data.

LBLEPeripheral.setName("LEE");

// Add characteristics into ledService

ledService.addAttribute(switchCharacteristic);

// Add service to GATT server (peripheral)

LBLEPeripheral.addService(ledService);

// start the GATT server - it is now

// available to connect

LBLEPeripheral.begin();

// start advertisment

LBLEPeripheral.advertise(advertisement);

}

void loop() {

delay(1000);

Serial.print("conected=");

Serial.println(LBLEPeripheral.connected());

if (digitalRead(6))

{

Serial.println("disconnect all!");

LBLEPeripheral.disconnectAll();

}

if (switchCharacteristic.isWritten()) {

const char value = switchCharacteristic.getValue();

switch (value) {

case 1:

digitalWrite(LED\_BUILTIN, HIGH);

break;

case 0:

digitalWrite(LED\_BUILTIN, LOW);

break;

default:

Serial.println("Unknown value written");

break;

}

}

}

1. **實驗結果及分析**

**Check point1**

**把Major和Minor改成學號**

**Check point2**

**把網址改成學號**

**Check point3**

**當輸入1時,LED亮**

**當輸入0時,LED不亮**

**心得：這次的內容很簡單**