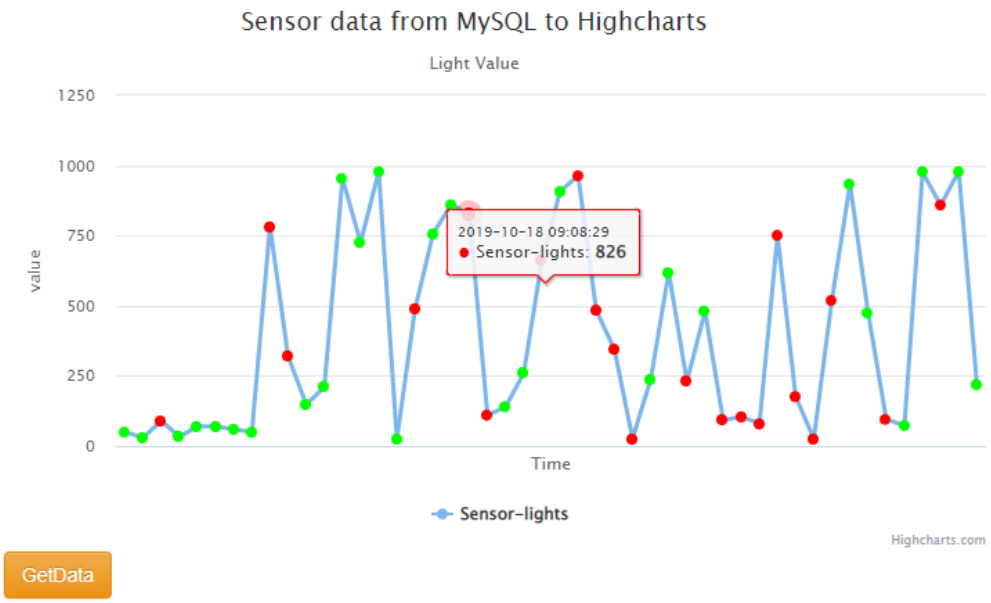
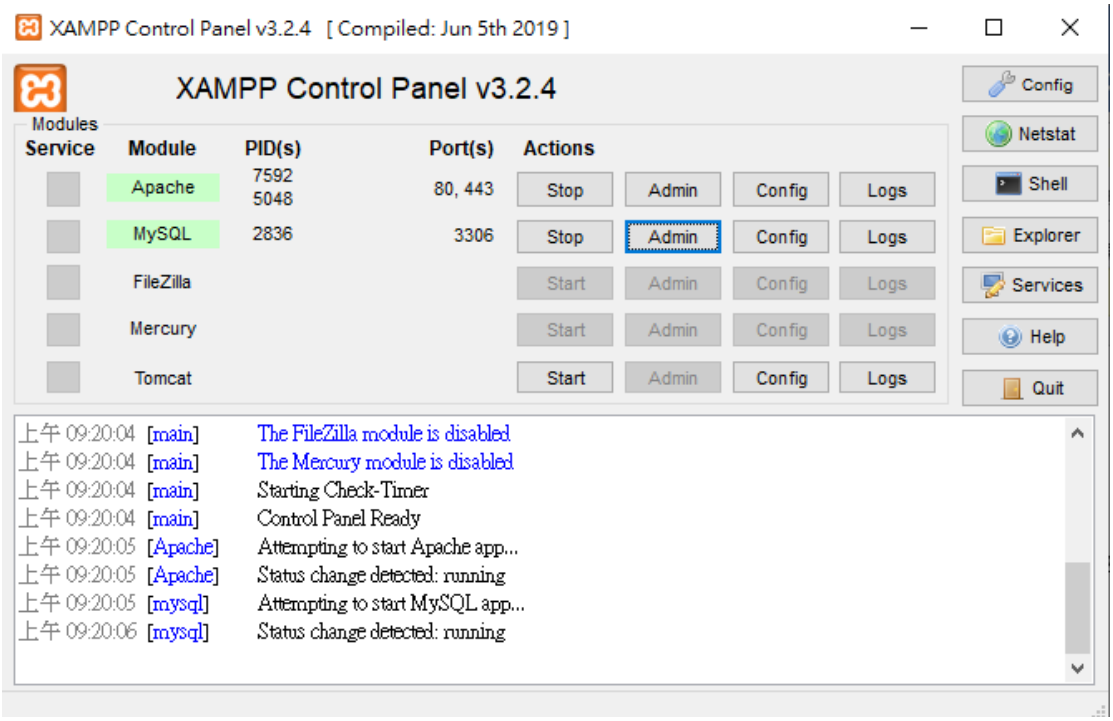
物聯網作業 HW5

資工碩一 403401263 蘇亭云

(20%) Part 1: localhost 呈現 highchart 圖形

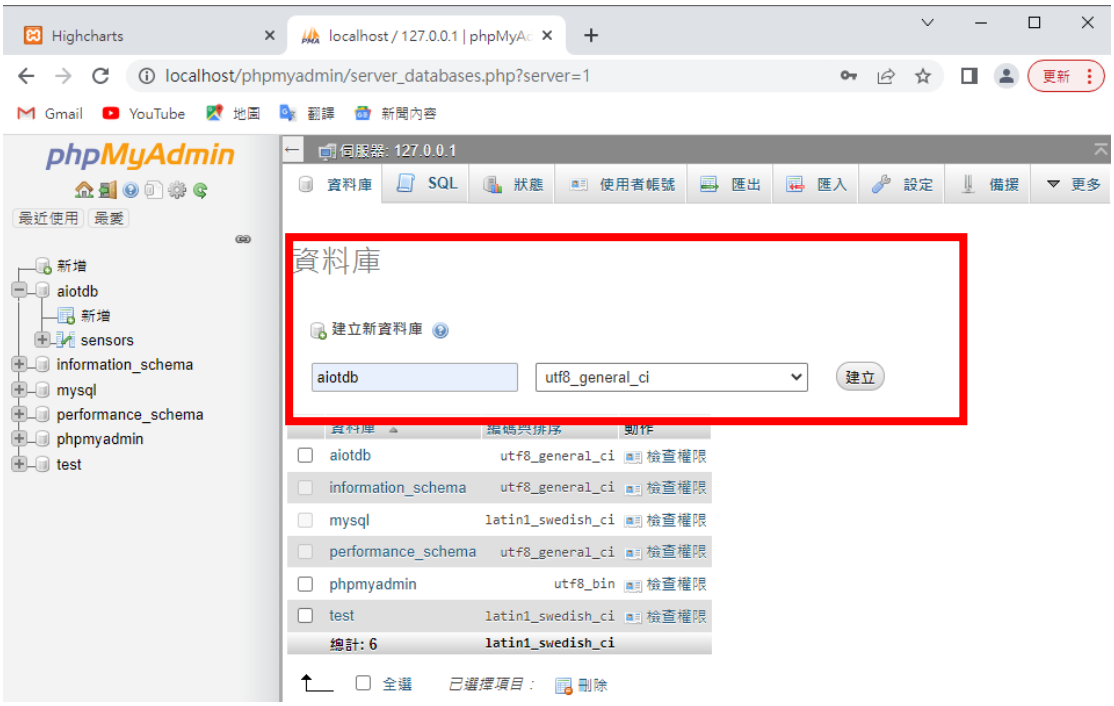


STEP1. 開啟 XAMPP 的 Apache 和 MySQL

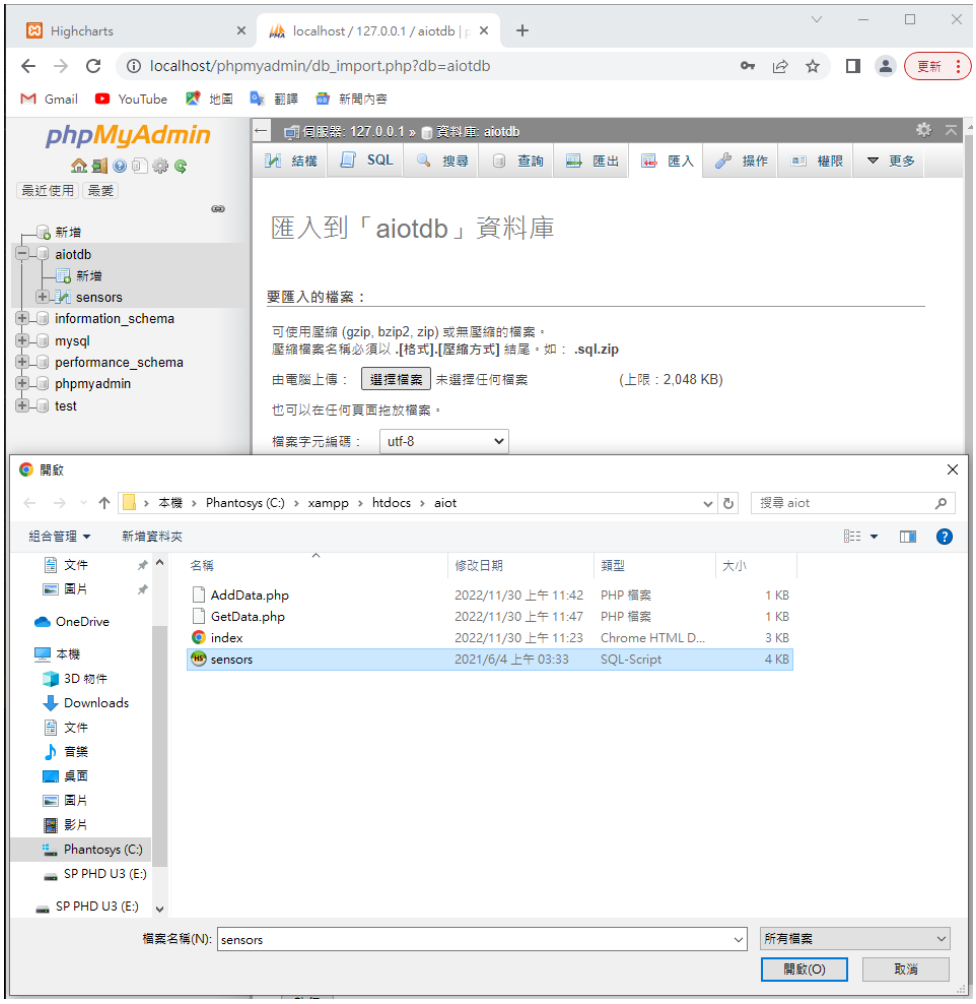


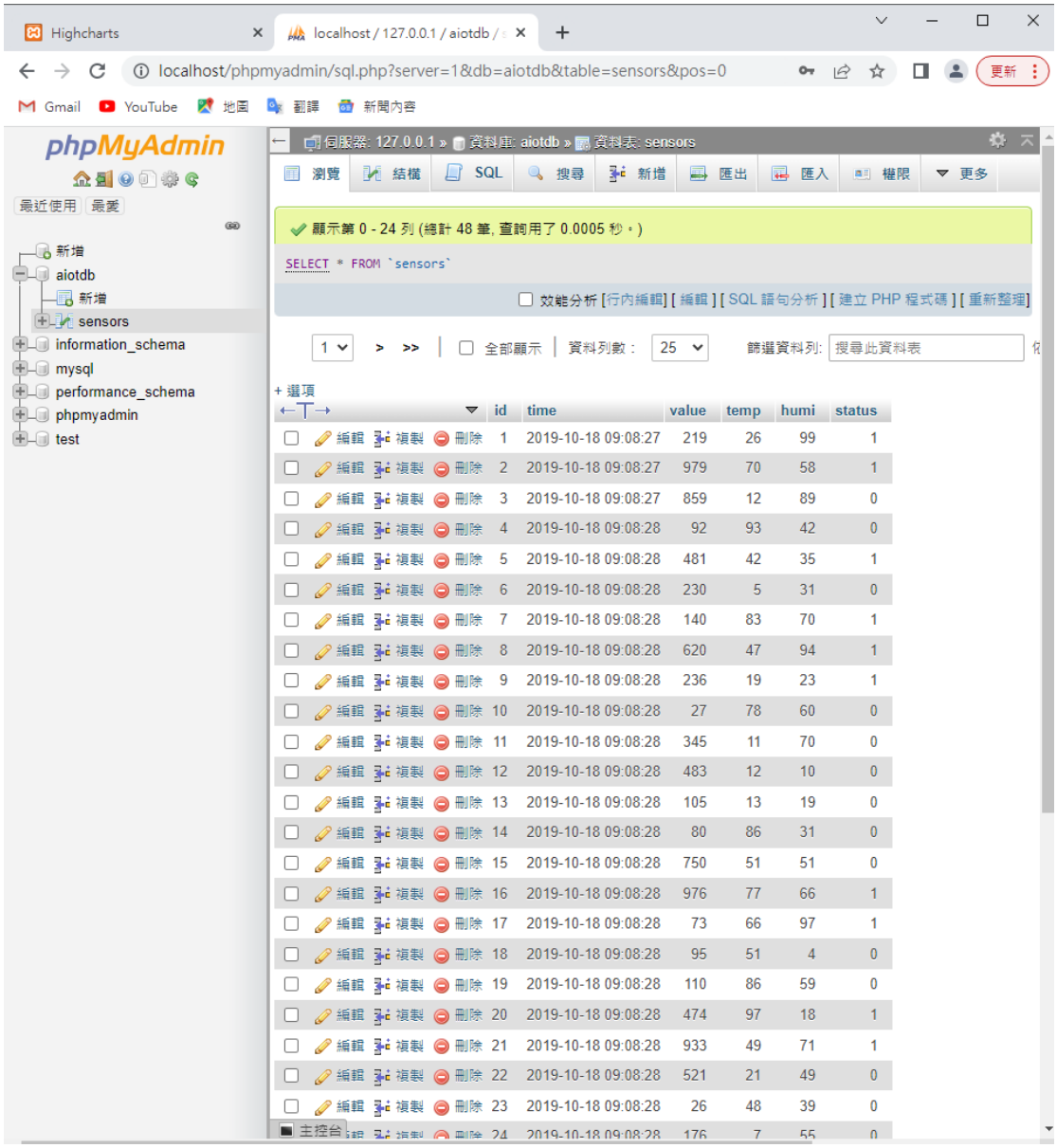
STEP2.按 MySQL Admin 開啟 phpmyadmin localhost/phpMyAdmin

STEP.2-1 創 aiotdb 資料庫

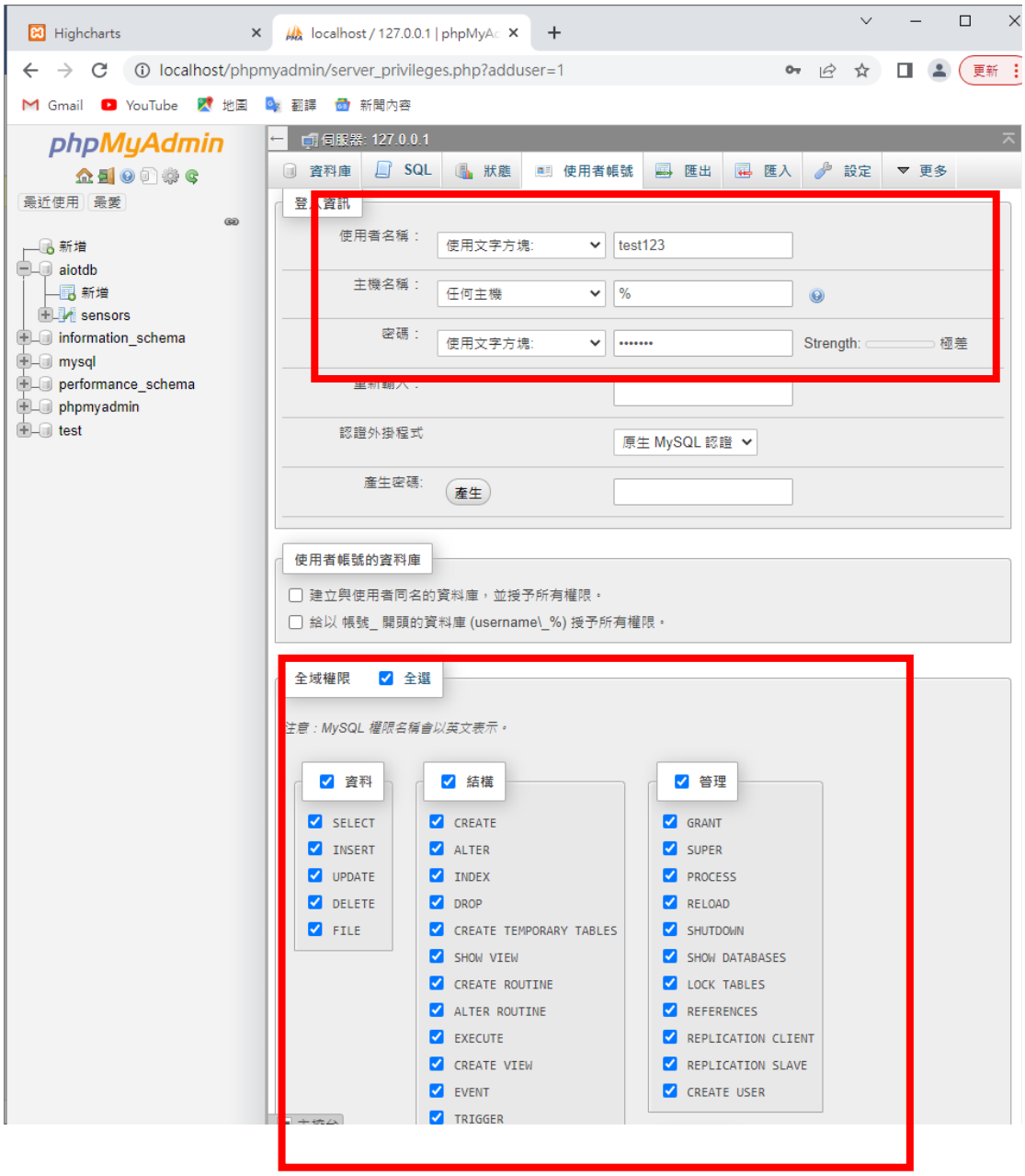


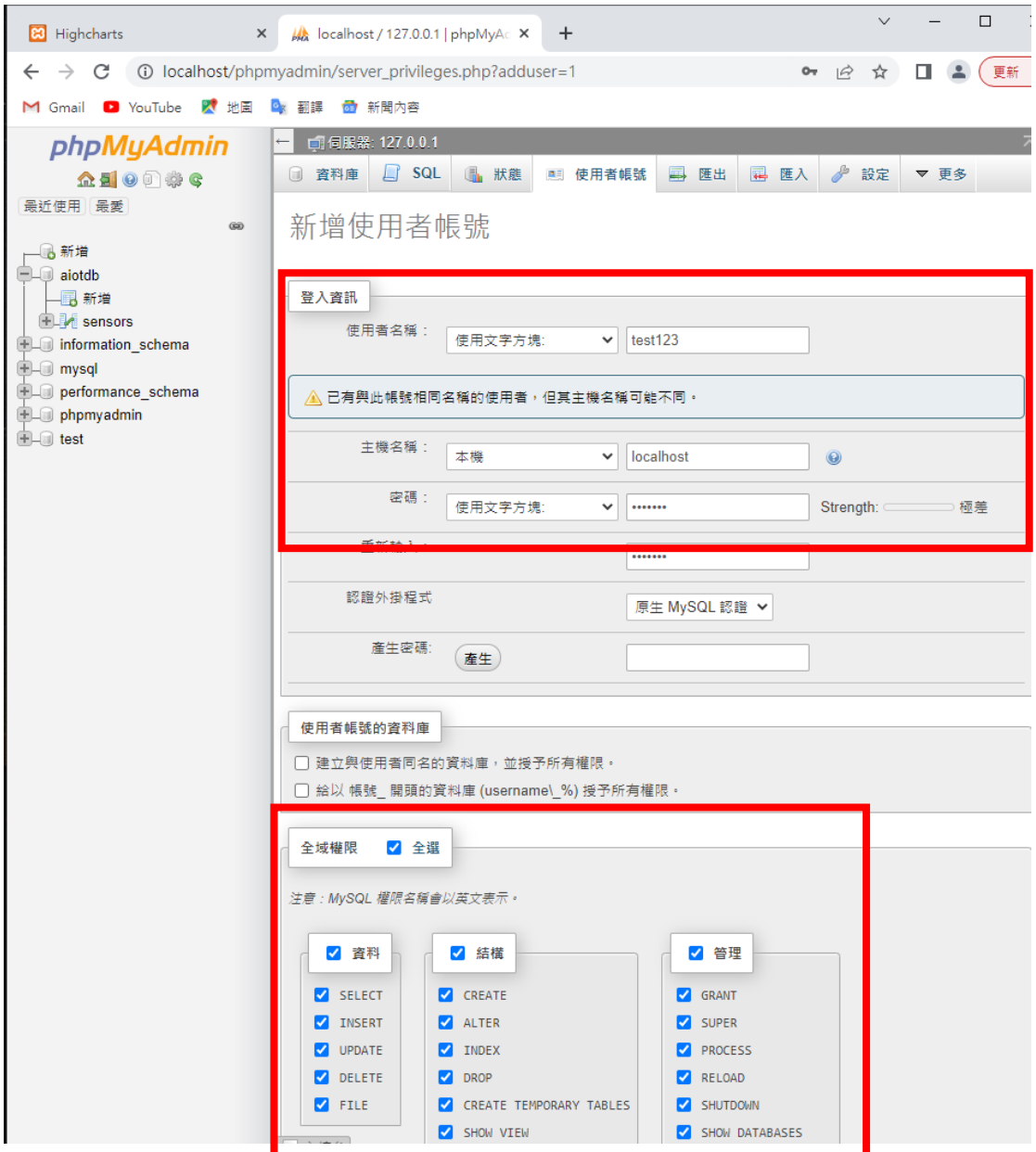
STEP.2-2 匯入資料表 sensors




Highcharts
localhost / 127.0.0.1 / aiotdb /
localhost/phpmyadmin/sql.php?server=1&db=aiotdb&table=sensors&pos=0
更新
Gmail
YouTube
地圖
翻譯
新聞內容
phpMyAdmin
最近使用
最愛
新增
aiotdb
新增
sensors
information_schema
mysql
performance_schema
phpmyadmin
test
伺服器: 127.0.0.1 » 資料庫: aiotdb » 資料表: sensors
瀏覽
結構
SQL
搜尋
新增
匯出
匯入
權限
更多
顯示第 0 - 24 列 (總計 48 筆, 查詢用了 0.0005 秒。)
SELECT * FROM `sensors`
效能分析 [行內編輯] [編輯] [SQL 語句分析] [建立 PHP 程式碼] [重新整理]
全部顯示
資料列數：
25
篩選資料列:
搜尋此資料表
+ 選項
id time value temp humi status
編輯 複製 刪除 1 2019-10-18 09:08:27 219 26 99 1
編輯 複製 刪除 2 2019-10-18 09:08:27 979 70 58 1
編輯 複製 刪除 3 2019-10-18 09:08:27 859 12 89 0
編輯 複製 刪除 4 2019-10-18 09:08:28 92 93 42 0
編輯 複製 刪除 5 2019-10-18 09:08:28 481 42 35 1
編輯 複製 刪除 6 2019-10-18 09:08:28 230 5 31 0
編輯 複製 刪除 7 2019-10-18 09:08:28 140 83 70 1
編輯 複製 刪除 8 2019-10-18 09:08:28 620 47 94 1
編輯 複製 刪除 9 2019-10-18 09:08:28 236 19 23 1
編輯 複製 刪除 10 2019-10-18 09:08:28 27 78 60 0
編輯 複製 刪除 11 2019-10-18 09:08:28 345 11 70 0
編輯 複製 刪除 12 2019-10-18 09:08:28 483 12 10 0
編輯 複製 刪除 13 2019-10-18 09:08:28 105 13 19 0
編輯 複製 刪除 14 2019-10-18 09:08:28 80 86 31 0
編輯 複製 刪除 15 2019-10-18 09:08:28 750 51 51 0
編輯 複製 刪除 16 2019-10-18 09:08:28 976 77 66 1
編輯 複製 刪除 17 2019-10-18 09:08:28 73 66 97 1
編輯 複製 刪除 18 2019-10-18 09:08:28 95 51 4 0
編輯 複製 刪除 19 2019-10-18 09:08:28 110 86 59 0
編輯 複製 刪除 20 2019-10-18 09:08:28 474 97 18 1
編輯 複製 刪除 21 2019-10-18 09:08:28 933 49 71 1
編輯 複製 刪除 22 2019-10-18 09:08:28 521 21 49 0
編輯 複製 刪除 23 2019-10-18 09:08:28 26 48 39 0
主控台

STEP.2-3 創使用者名稱: 帳號：test123 密碼：test123

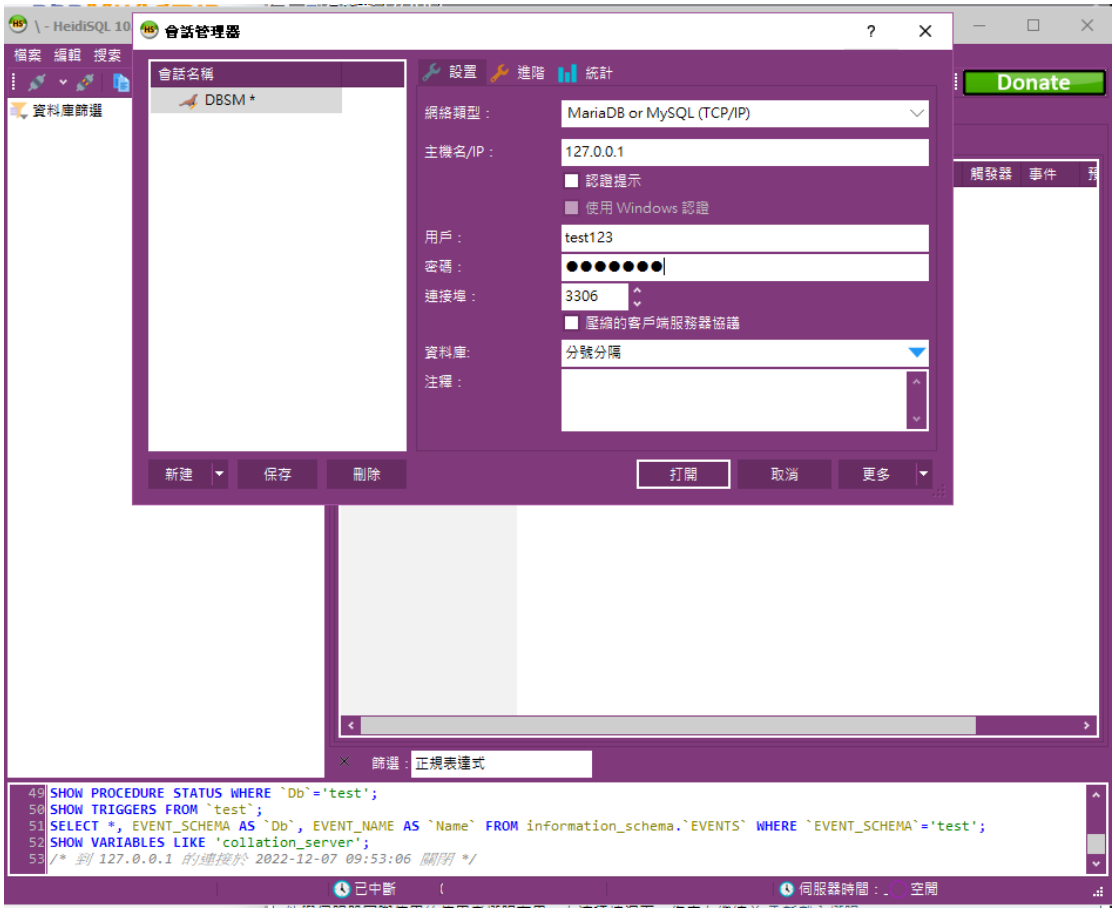




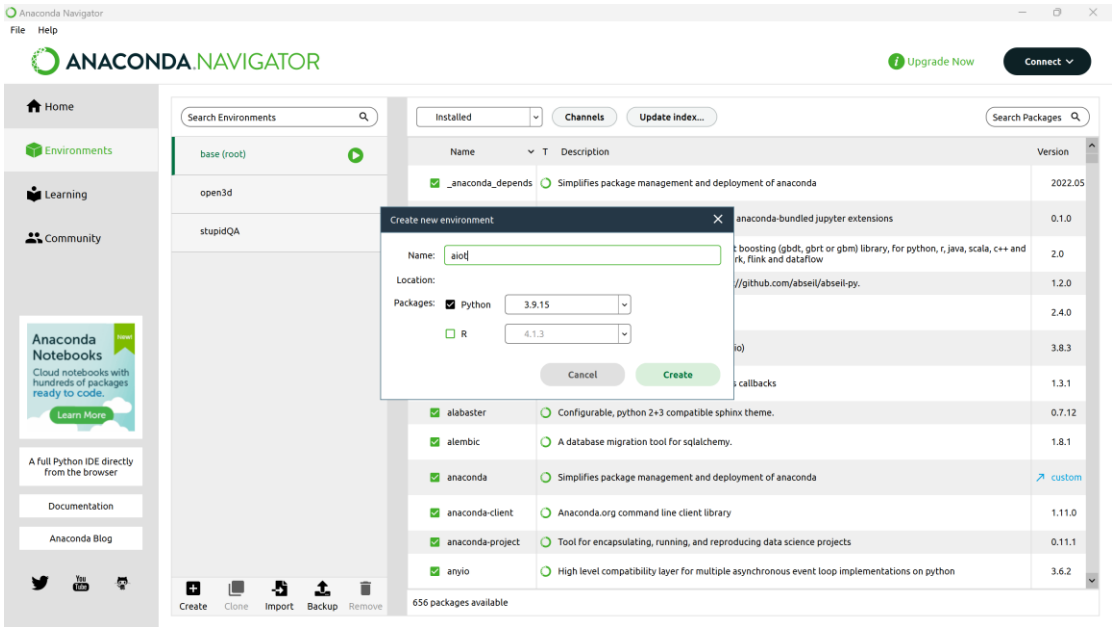
使用者帳號一覽

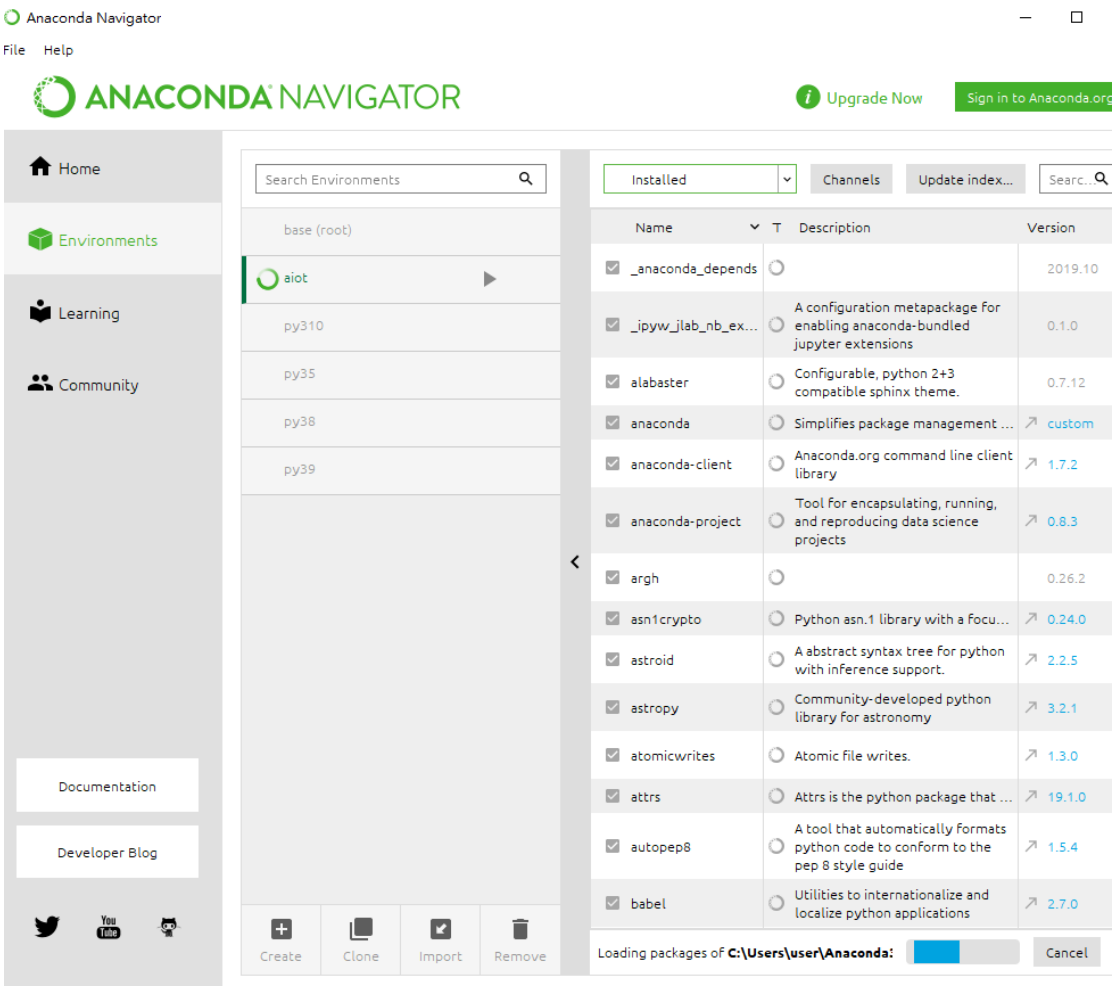
	使用者名稱	主機名稱	密碼	全域權限	使用者群組	允許授權(Grant)	動作
☐	任何	%	否	USAGE		否	編輯權限 匯出
☐	pma	localhost	否	USAGE		否	編輯權限 匯出
☐	root	127.0.0.1	否	ALL PRIVILEGES		是	編輯權限 匯出
☐	root	::1	否	ALL PRIVILEGES		是	編輯權限 匯出
☐	root	ec2amaz-1qpqh3j	否	ALL PRIVILEGES		是	編輯權限 匯出
☐	root	localhost	否	ALL PRIVILEGES		是	編輯權限 匯出
☐	test123	%	是	ALL PRIVILEGES		是	編輯權限 匯出
☐	test123	localhost	是	ALL PRIVILEGES		是	編輯權限 匯出

STEP3 使用軟體 HeidiSQL 下 SQL 指令

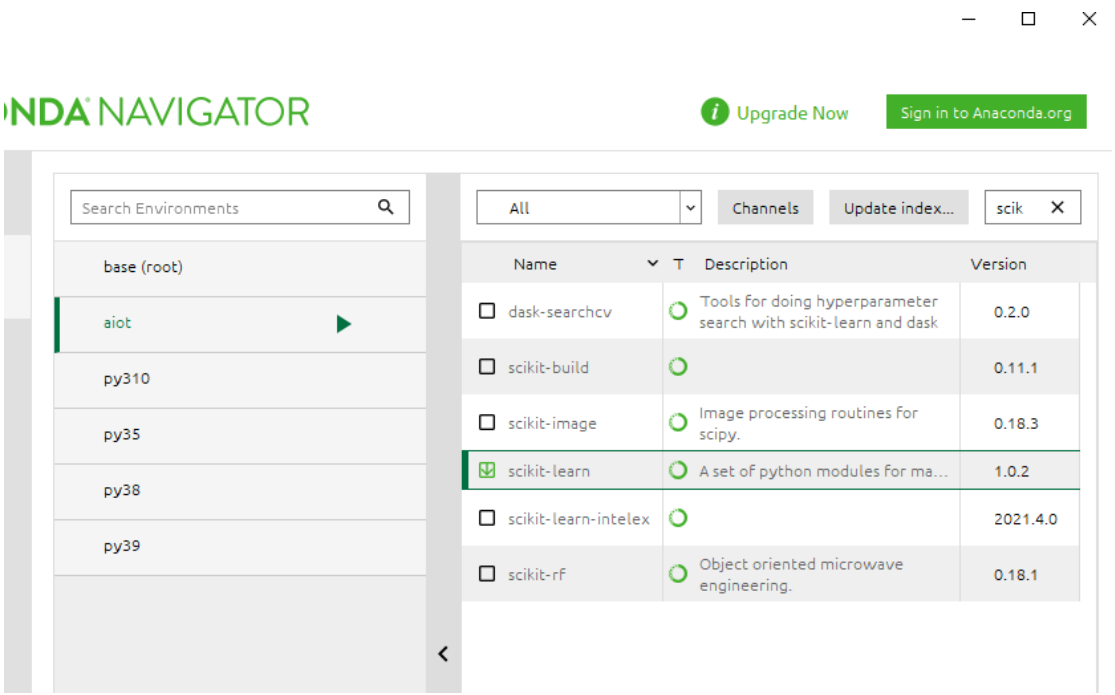


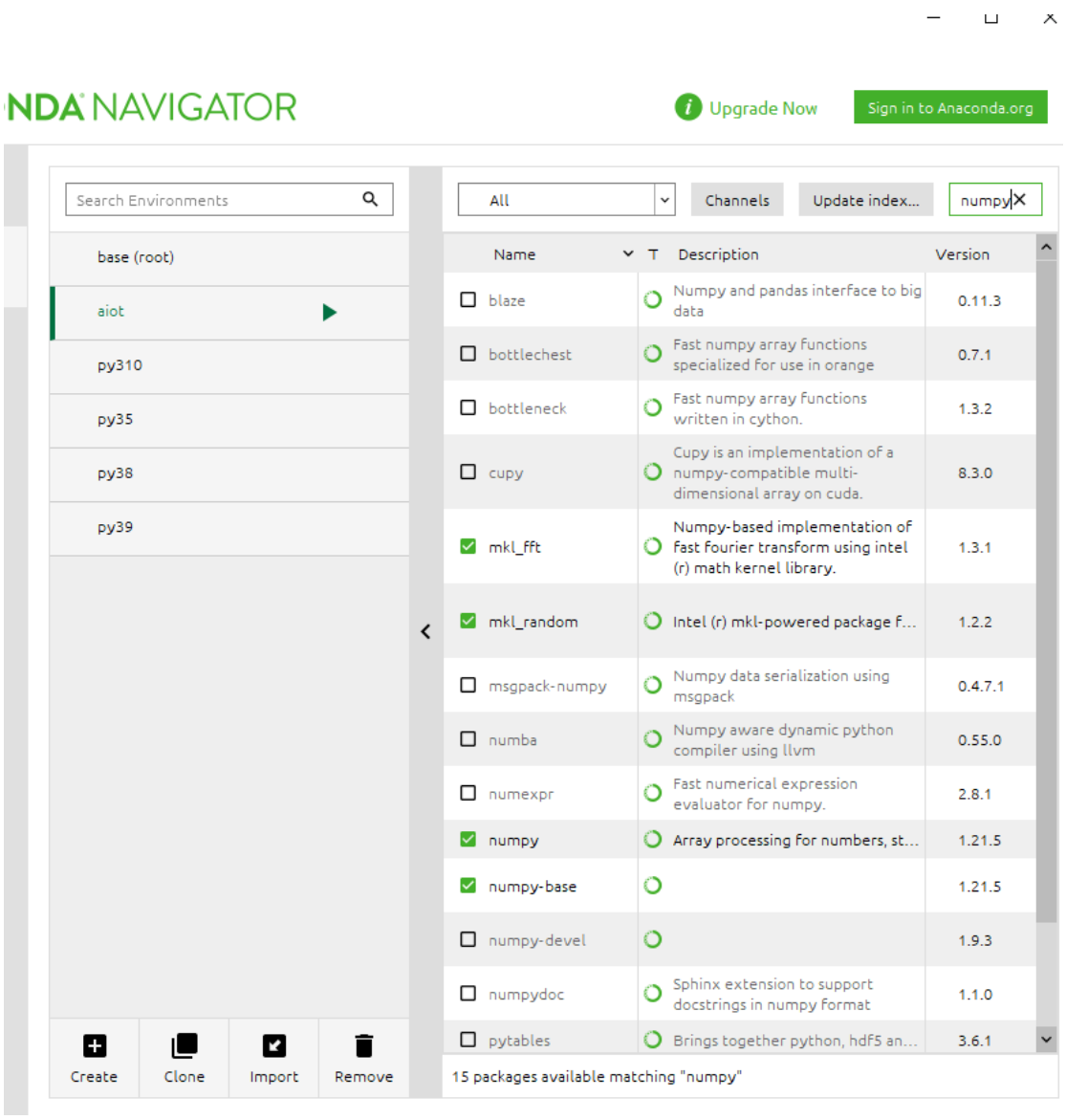
STEP4 用 ANACONDA 建新環境





下載套件 1.Scikit-learn 2.pandas 3.numpy

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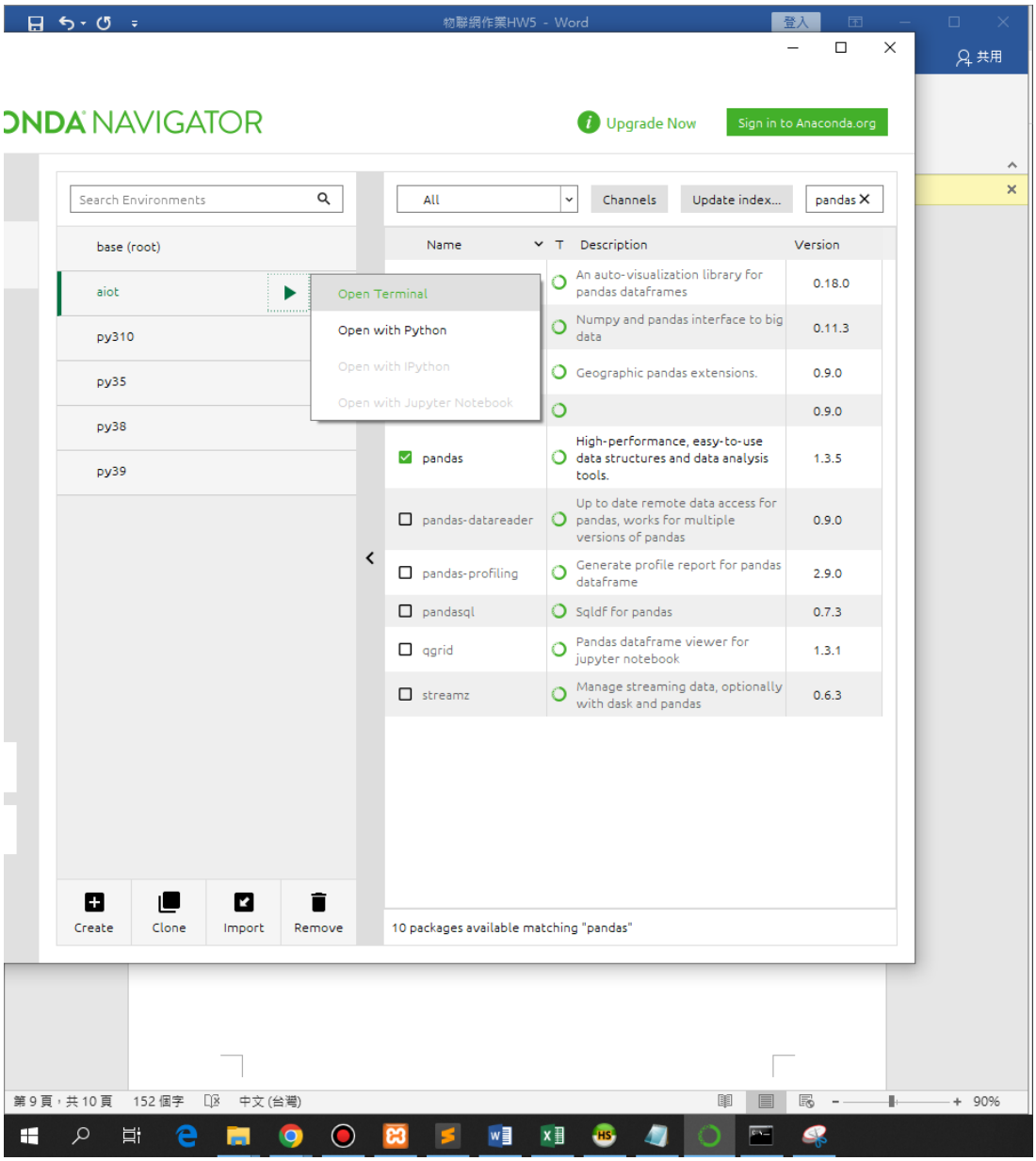
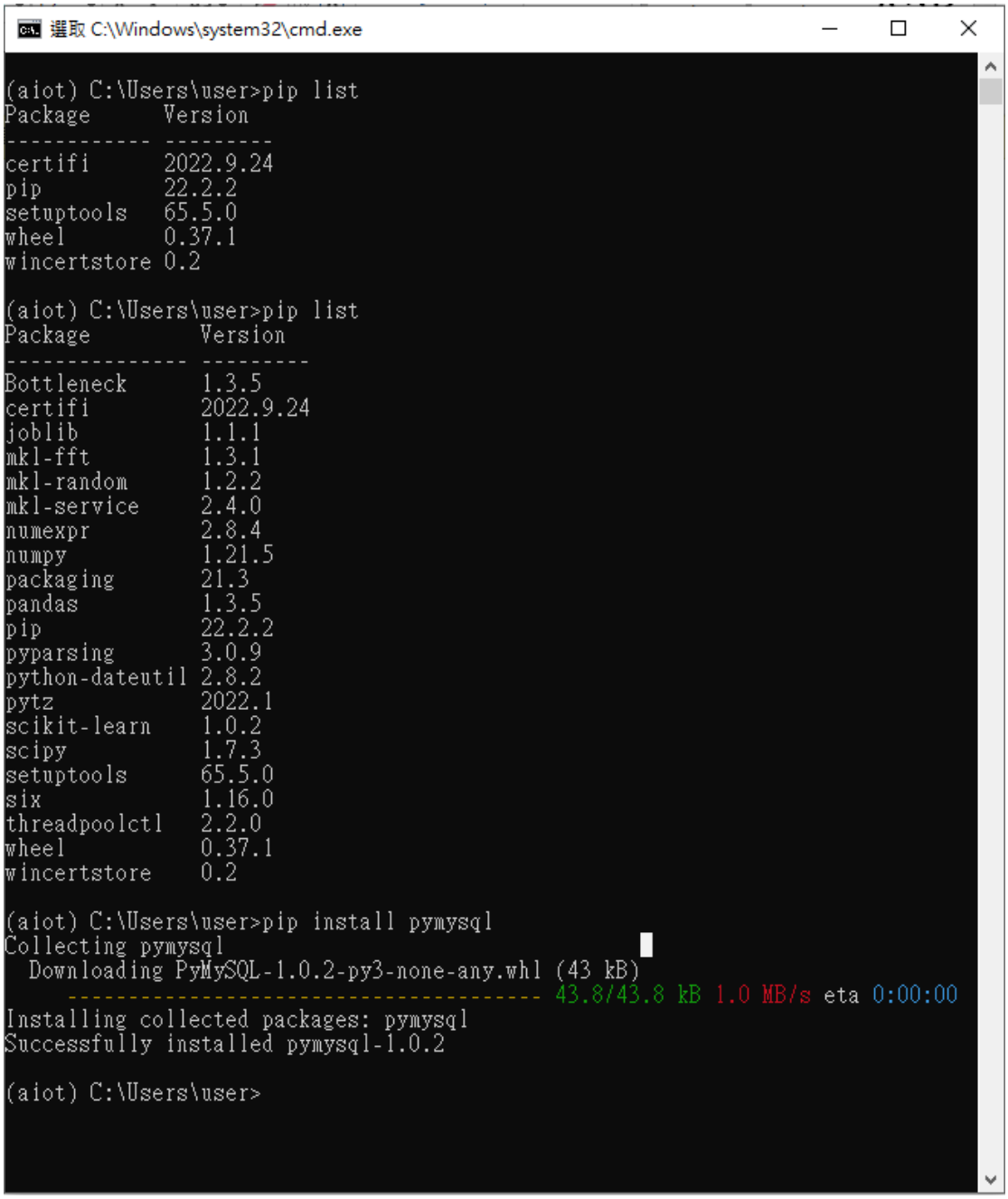
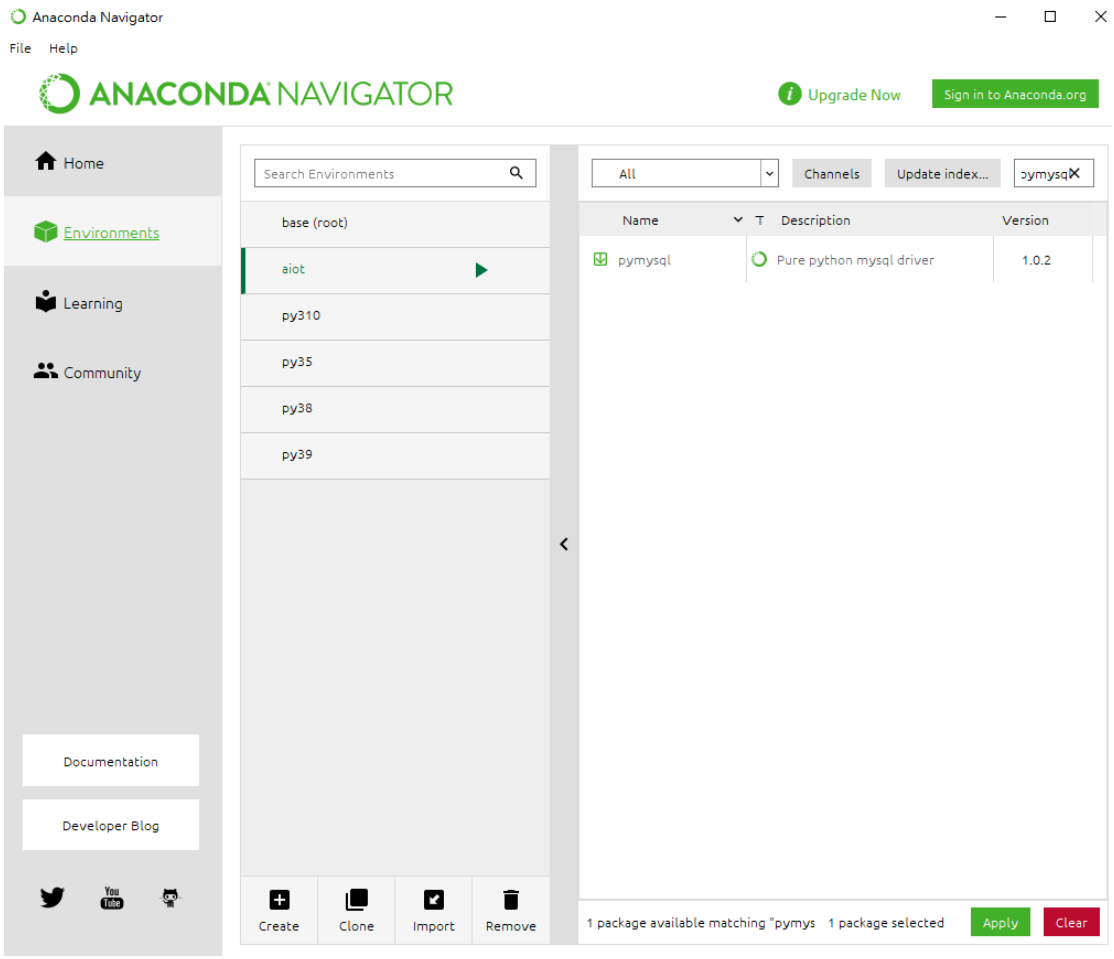
Sign in to Anaconda.org
Search Environments
base (root)
aiot
py310
py35
py38
py39
Create
Clone
Import
Remove
All
Channels
Update index...
numpy
Name
T
Description
Version
blaze
Numpy and pandas interface to big data
0.11.3
bottlechest
Fast numpy array functions specialized for use in orange
0.7.1
bottleneck
Fast numpy array functions written in cython.
1.3.2
cupy
Cupy is an implementation of a numpy-compatible multi-dimensional array on cuda.
8.3.0
mkl_fft
Numpy-based implementation of fast fourier transform using intel (r) math kernel library.
1.3.1
mkl_random
Intel (r) mkl-powered package f...
1.2.2
msgpack-numpy
Numpy data serialization using msgpack
0.4.7.1
numba
Numpy aware dynamic python compiler using llvm
0.55.0
numexpr
Fast numerical expression evaluator for numpy.
2.8.1
numpy
Array processing for numbers, st...
1.21.5
numpy-base
1.21.5
numpy-devel
1.9.3
numpydoc
Sphinx extension to support docstrings in numpy format
1.1.0
pytables
Brings together python, hdf5 an...
3.6.1
15 packages available matching "numpy"


物聯網作業HW5 - Word
登入
共用
ONDA NAVIGATOR
Upgrade Now
Sign in to Anaconda.org
Search Environments
base (root)
aiot
py310
py35
py38
py39
Open Terminal
Open with Python
Open with IPython
Open with Jupyter Notebook
All
Channels
Update index...
pandas
Name
T
Description
Version
An auto-visualization library for pandas dataframes
0.18.0
Numpy and pandas interface to big data
0.11.3
Geographic pandas extensions.
0.9.0
0.9.0
pandas
High-performance, easy-to-use data structures and data analysis tools.
1.3.5
pandas-datareader
Up to date remote data access for pandas, works for multiple versions of pandas
0.9.0
pandas-profiling
Generate profile report for pandas dataframe
2.9.0
pandasql
Sqldf for pandas
0.7.3
qgrid
Pandas dataframe viewer for jupyter notebook
1.3.1
streamz
Manage streaming data, optionally with dask and pandas
0.6.3
Create
Clone
Import
Remove
10 packages available matching "pandas"
第 9 頁，共 10 頁
152 個字
中文 (台灣)
90%


選取 C:\Windows\system32\cmd.exe
(aiot) C:\Users\user>pip list
Package Version
certifi 2022.9.24
pip 22.2.2
setuptools 65.5.0
wheel 0.37.1
wincertstore 0.2
(aiot) C:\Users\user>pip list
Package Version
Bottleneck 1.3.5
certifi 2022.9.24
joblib 1.1.1
mkl-fft 1.3.1
mkl-random 1.2.2
mkl-service 2.4.0
numexpr 2.8.4
numpy 1.21.5
packaging 21.3
pandas 1.3.5
pip 22.2.2
pyparsing 3.0.9
python-dateutil 2.8.2
pytz 2022.1
scikit-learn 1.0.2
scipy 1.7.3
setuptools 65.5.0
six 1.16.0
threadpoolctl 2.2.0
wheel 0.37.1
wincertstore 0.2
(aiot) C:\Users\user>pip install pymysql
Collecting pymysql
Downloading PyMySQL-1.0.2-py3-none-any.whl (43 kB)
43.8/43.8 kB 1.0 MB/s eta 0:00:00
Installing collected packages: pymysql
Successfully installed pymysql-1.0.2
(aiot) C:\Users\user>


Anaconda Navigator
File Help
ANACONDA NAVIGATOR
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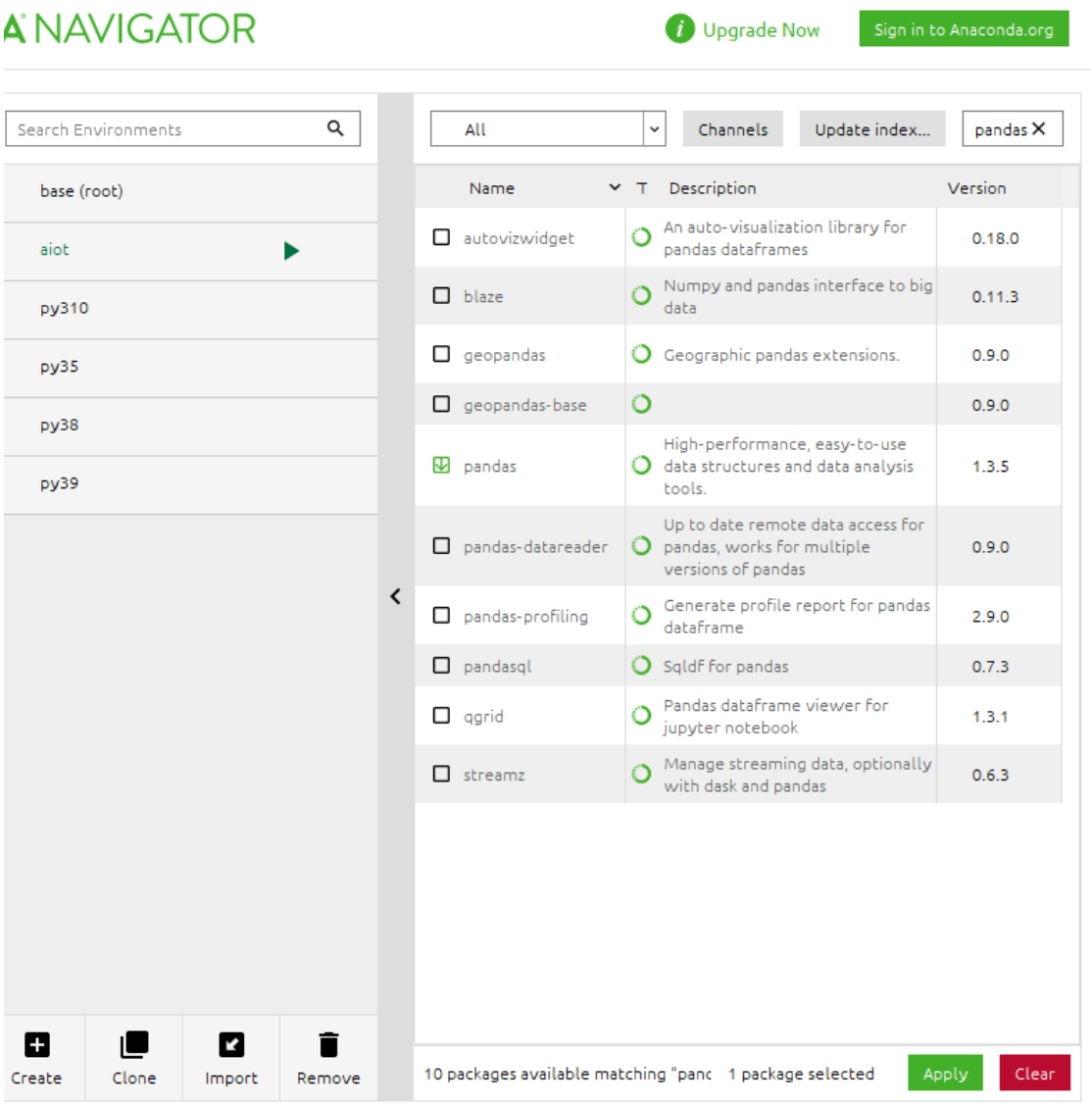
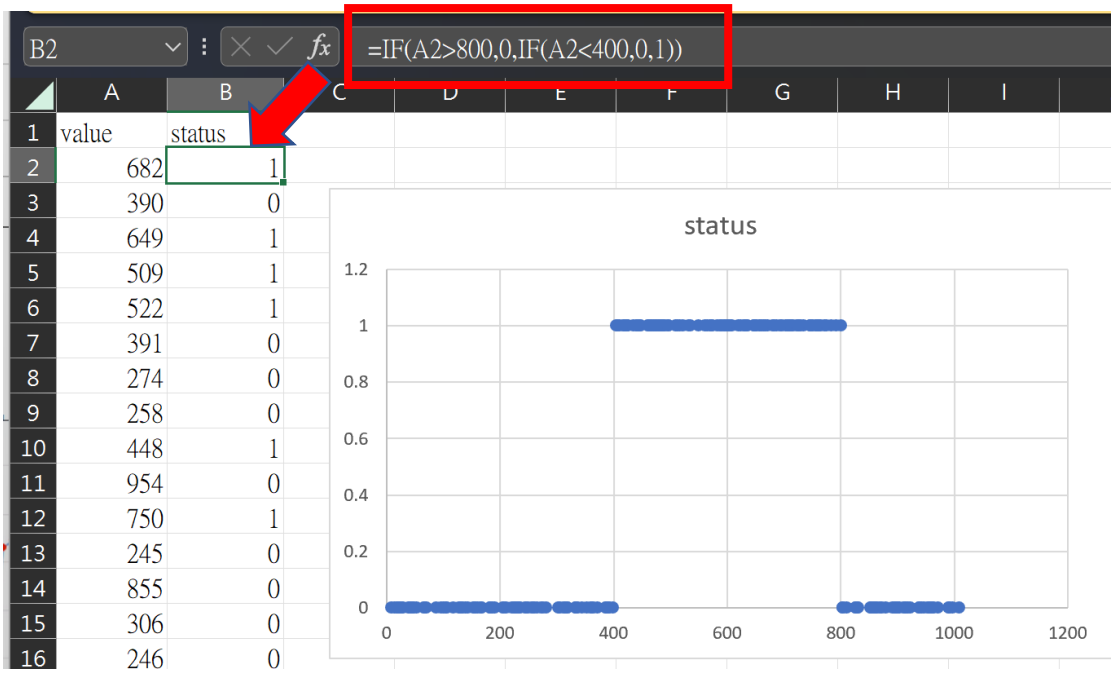
Sign in to Anaconda.org
Home
Environments
Learning
Community
Documentation
Developer Blog
Search Environments
base (root)
aiot
py310
py35
py38
py39
Create
Clone
Import
Remove
All
Channels
Update index...
pymysql
Name
T
Description
Version
pymysql
Pure python mysql driver
1.0.2
1 package available matching "pymys
1 package selected
Apply
Clear

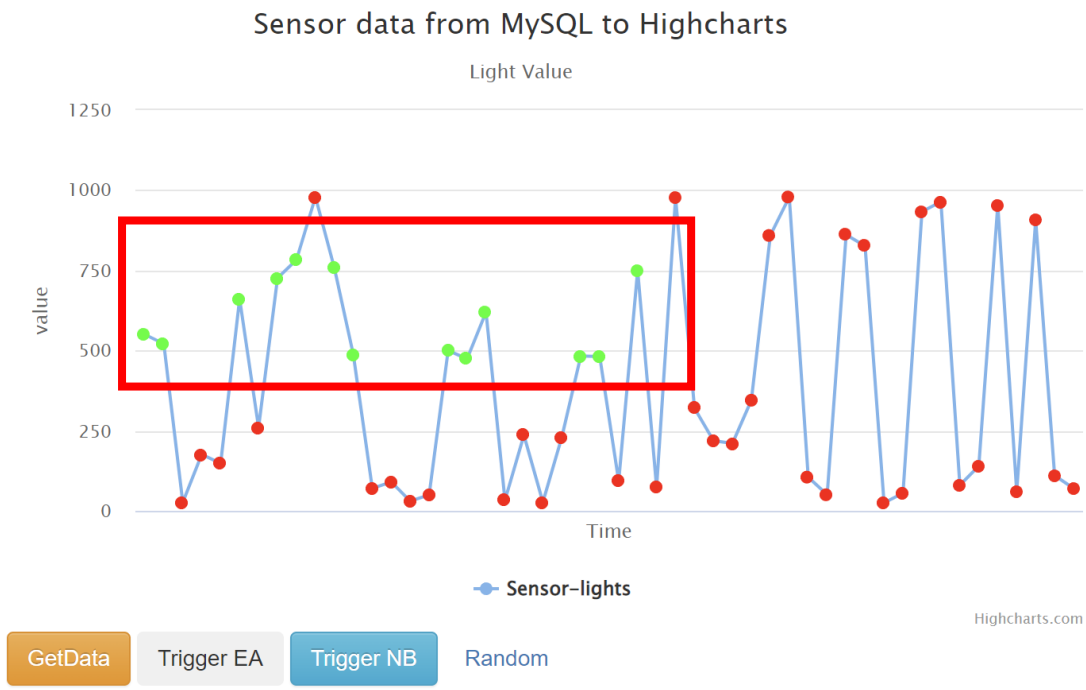


(20%) Part 2: AI Module 與 web 互動 (要實現 AI 複雜一點的判斷 非線性 using trainN.csv)



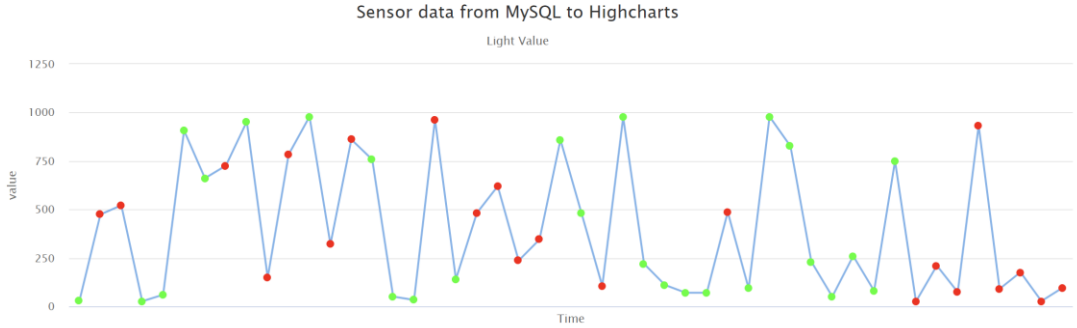
Light value 400~800 >> status=1

Light value < 400 or > 800 >> status=0




```
// show last 50 筆 data 小於50筆:0 大於50筆-50
for (var i = ((data.length<50)? 0:data.length-50); i < data.length; i++)
```

按 Random button 可以將 status 狀態用亂 >> 紅綠點隨機

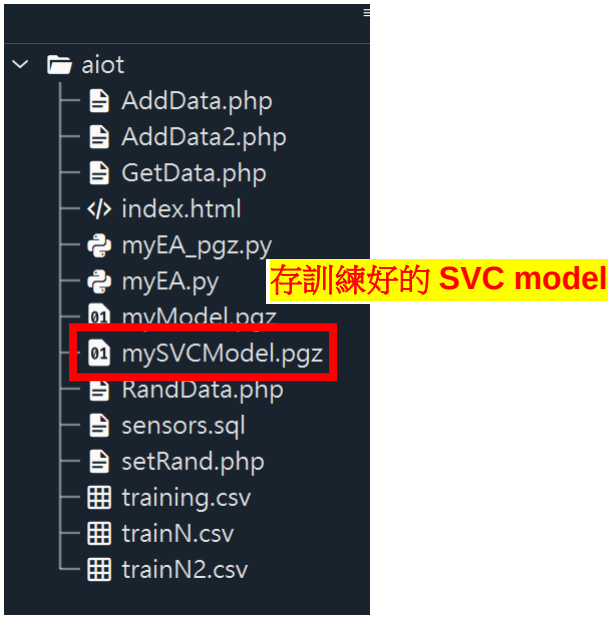


再執行 EA.py 可恢復

(20%) Part 3: AI module myAI.pkz 訓練出來放到 web, (也就是不再需要 training.csv)

- 使用 pickle 儲存模型並利用 gzip 壓縮

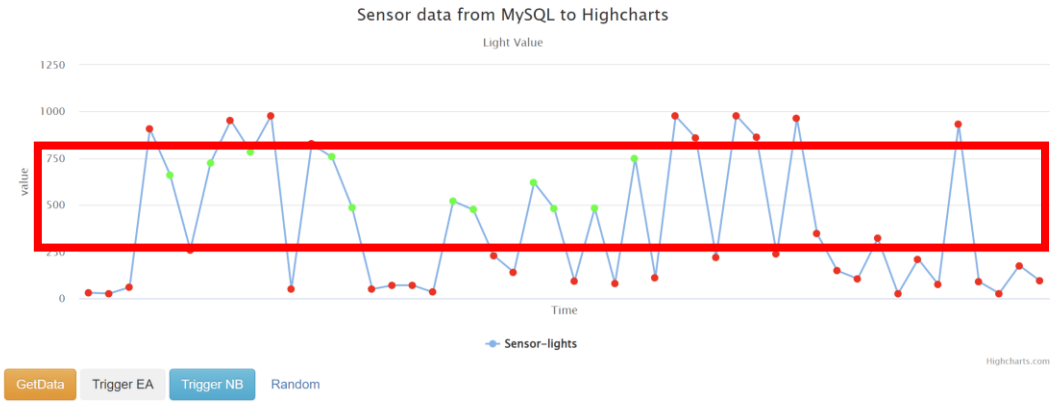
```
#==== gzip and pickle
import pickle
import gzip
with gzip.GzipFile('mySVCModel.pgz', 'w') as f:
    pickle.dump(model, f)
```



存訓練好的 SVC model

用存好的 SVC model 做訓練

```
#======= load model ============
import pickle
import gzip

#讀取Model
with gzip.open('mySVCModel.pgz', 'r') as f:
    model = pickle.load(f)
```



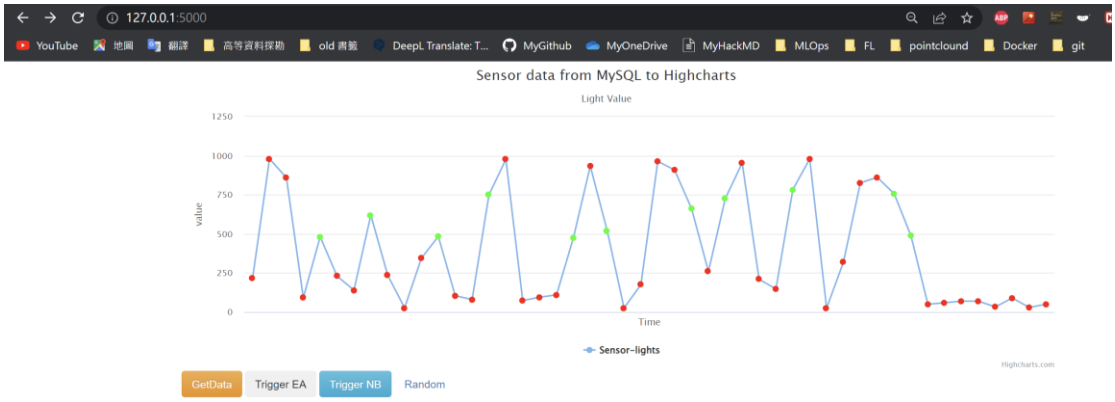
(20%) Part 4: 改用 flask 框架

Demo 影片：https://youtu.be/esFO0mnexmM

python app.py

```
if __name__ == '__main__':
    app.run(debug=True, use_reloader=True, port=5000)
```

```
(aiot) C:\xampp\htdocs\flask_AIoT>python app.py
 * Serving Flask app 'app' (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployment.
   Use a production WSGI server instead.
 * Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
 * Restarting with watchdog (windowsapi)
 * Debugger is active!
 * Debugger PIN: 372-687-086
```



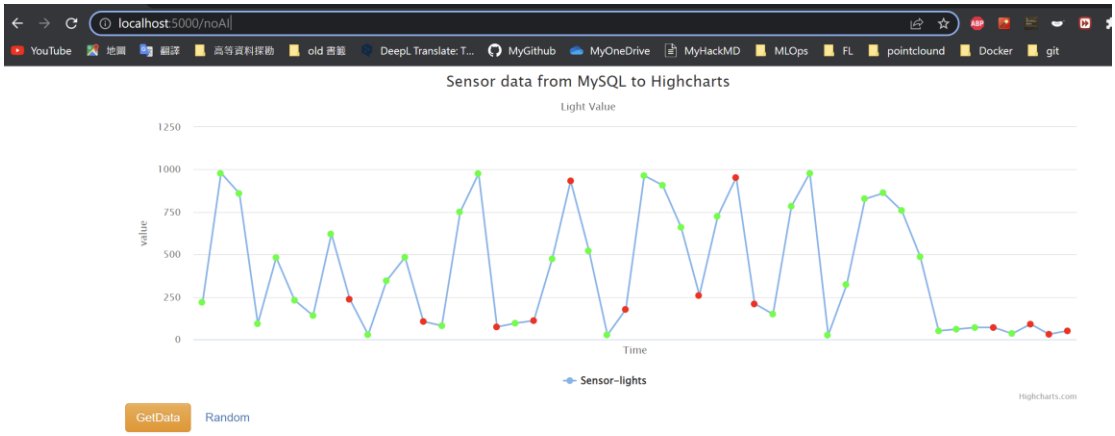
getData.php 改成 getData

```
$(function () {
    $.ajax({
        url: '/getData',//連接的URL
        data: {} ,//夾帶的參數
        dataType: 'json', //資料格式
        success: function(data) //傳送成功的function
            {
                lights = [];
                humis=[];
                temps = [];
                time = [];

                // show last 50 筆 data 小於50筆:0 大於50筆-50
                for (var i = ((data.length<50)? 0:data.length-50); i < data.length; i++)
                {

                    if(parseInt(data[i][5])==0){
                        lights.push({y:parseInt(data[i][2]), color: '#FF0000' });
                        humis.push({y:parseInt(data[i][3]), color: '#FF0000' });
                        temps.push({y:parseInt(data[i][4]), color: '#FF0000' });
                    }else{
                        lights.push({y:parseInt(data[i][2]), color: '#00FF00' });
                        humis.push({y:parseInt(data[i][3]), color: '#00FF00' });
                        temps.push({y:parseInt(data[i][4]), color: '#00FF00' });
                    }
                    time.push(data[i][1]);
                }
                highcharsinit();
                } //success end

        }); //ajax end

    }); //function end
</script>
```

```
@app.route("/getData")
def getData():
    myserver ="localhost"
    myuser="test123"
    mypassword="test123"
    mydb="aiotdb"

    debug =0
    from  pandas import DataFrame as df
    import pandas as pd                    # 引用套件並縮寫為 pd
    import numpy as np

    import pymysql.cursors
    #db = mysql.connector.connect(host="140.120.15.45",user="toto321", passwd="12345678", db='
    #conn = mysql.connector.connect(host=myserver,user=myuser, passwd=mypassword, db=mydb)
    conn = pymysql.connect(host=myserver,user=myuser, passwd=mypassword, db=mydb)

    c = conn.cursor()
    if debug:
        input("pause.. conn.cursor() ok.....")

    #====== 執行 MySQL 查詢指令 ======#
    c.execute("SELECT * FROM sensors")
```

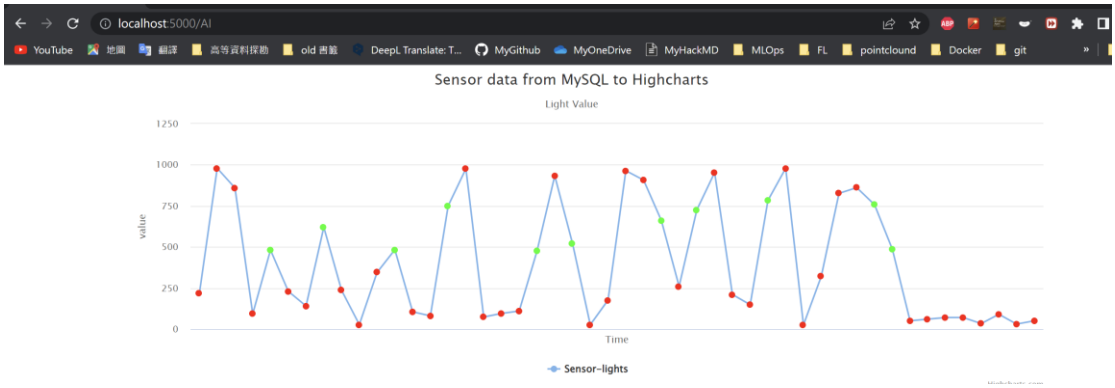
一開始下 SQL 弄亂 各點 status

```
#======= 執行 MySQL 更新指令 =======#
c.execute("UPDATE sensors SET STATUS=RAND()")
conn.commit()
```



用預訓練模型 train

```
# 原EA.py
@app.route("/getPredict")
def getPredict():

    # step 1 : connect DB
    myserver ="localhost"
    myuser="test123"
    mypassword="test123"
    mydb="aiotdb"

    debug =0
    from  pandas import DataFrame as df
    import pymysql.cursors
    conn = pymysql.connect(host=myserver,user=myuser, passwd=mypassword, db=mydb)
    c = conn.cursor()
    if debug:
        input("pause.. conn.cursor() ok.......")

    #step 2: load model  #讀取Model###
    import pickle
    import gzip
    with gzip.open('model/mySVCModel.pgz', 'r') as f:
        model = pickle.load(f)
```



(20%) Part 5:改成 ngrok 讓他有一個 domain name