

# Lab147 : Matplotlib Pyplot

## Matplotlib繪圖

(別怕! 跟著做你就會!)

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請至 [www.hcdtech.com.tw](http://www.hcdtech.com.tw) 下載教材



<http://www.hcdtech.com.tw/Python.htm>



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所有的考卷都可以考100分，是我們自己錯過了！

## 學習秘訣=發問+練習

考卷發下去，時間到了收回來，如果沒有考到100分，這很正常。重點來了，不會的可以問，問完了練習，準備好了考卷再發下去。第二次還是沒有考到100分，這也很正常。沒關係，再來一次，不會的可以問，問完了練習，準備好了考卷第三次再發下去，.....，考到第N次如果還是沒有考到100分。沒關係，再來，不會的可以問，問完了練習，N+1次、N+2次、.....，你們都很聰明，知道我在說什麼，到最後考卷一定可以考100分！看懂了妳/你就會知道，原來學習的秘訣就是發問和練習！今天開始不懂就問，問完了練習，明年的妳/你肯定不一樣！

# 學習如何學習！

1

1 2

1 2 3

.....

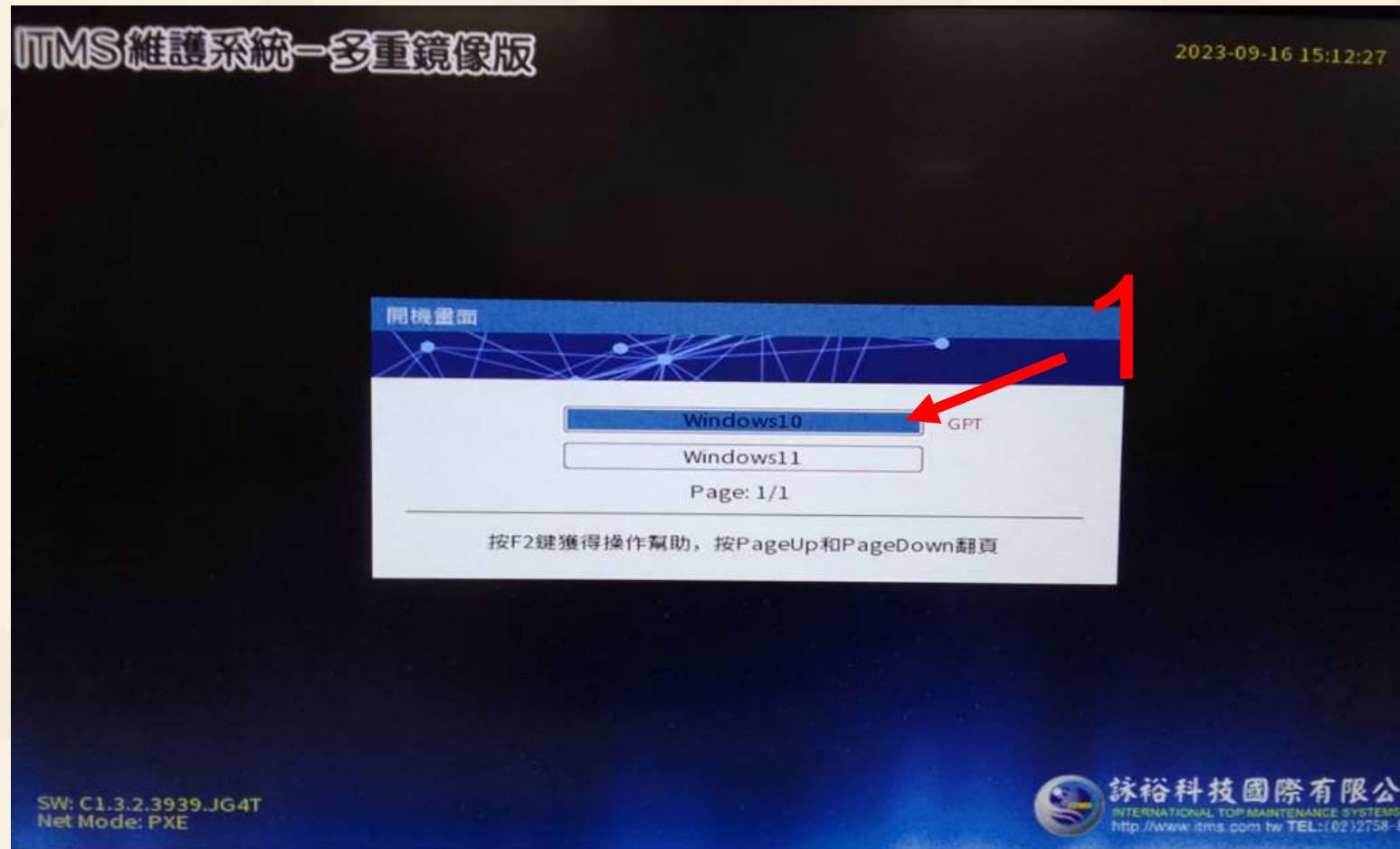
1 2 3 4 5 6 7 8 9 10

## 金字塔念書法



如果一本書有10個章節！先看第1章，在看第2章之前再把第1章看一遍，在看第3章之前再把第1, 2章看一遍，.....，等看到第10章的時候，第1, 2, 3, 4章恐怕已經背起來了！我稱這種念書法為金字塔念書法，今天開始照著做，明年的妳/你肯定不一樣！

# 請使用 Windows 10



## 1. 選用 Windows 10.

# 善用 Google 翻譯



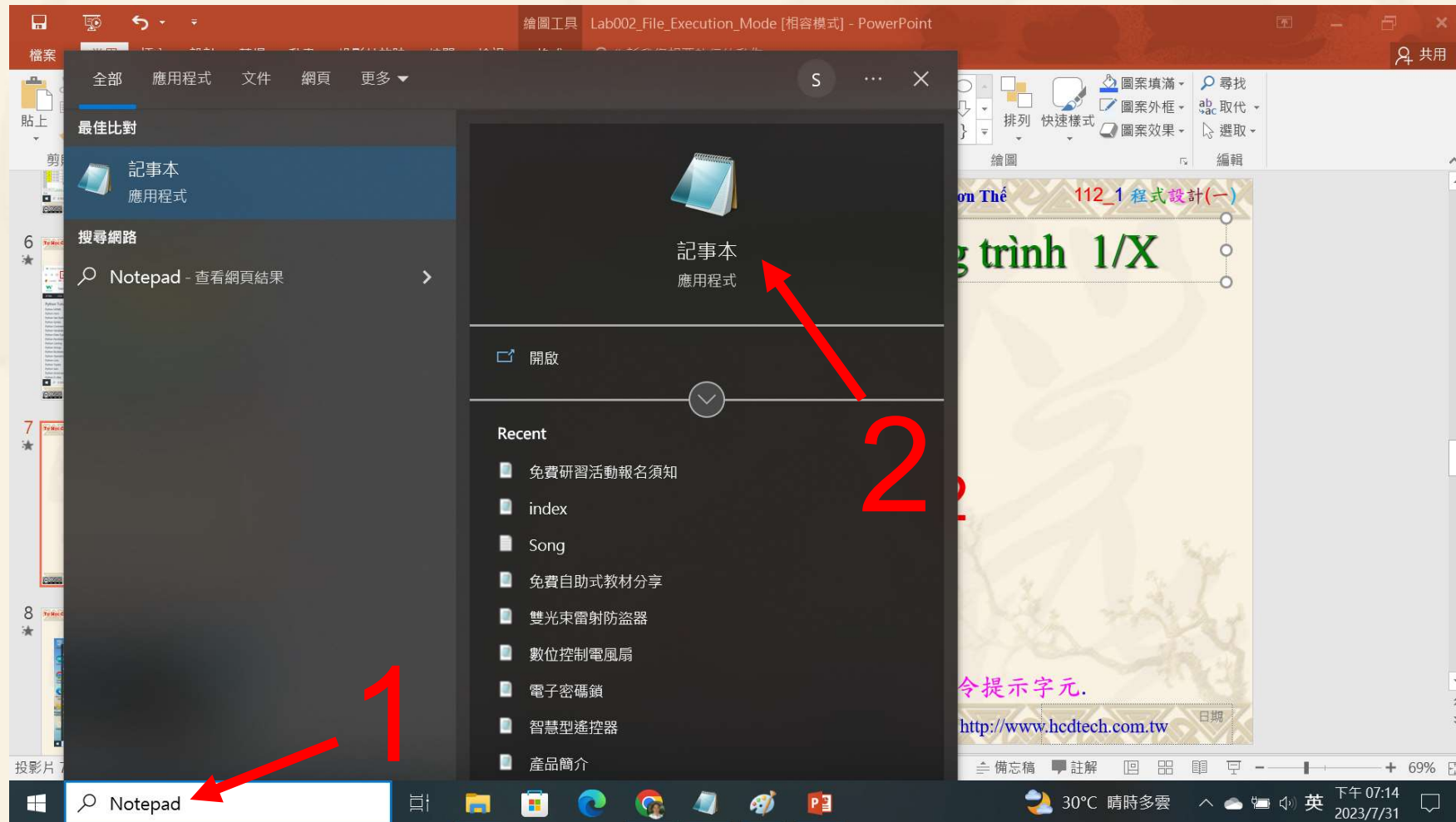
# 請先開啟網頁閱讀

The screenshot shows a web browser window with the following elements:

- Address Bar:** `w3schools.com/python/matplotlib_pyplot.asp` (highlighted with a red box).
- Navigation Bar:** HTML, CSS, JAVASCRIPT, SQL, PYTHON (selected).
- Left Sidebar:** Python Read Files, Python Write/Create Files, Python Delete Files, Python Modules (NumPy Tutorial, Pandas Tutorial, SciPy Tutorial, Django Tutorial), Python Matplotlib (Matplotlib Intro, Matplotlib Get Started, **Matplotlib Pyplot**, Matplotlib Plotting, Matplotlib Markers, Matplotlib Line, Matplotlib Labels, Matplotlib Grid).
- Main Content:**
  - Section: **Matplotlib Pyplot**
  - Section: **Pyplot**
  - Text: "Most of the Matplotlib utilities lies under the `pyplot` submodule, and are usually imported under the `plt` alias:"
  - Code Snippet: 

```
import matplotlib.pyplot as plt
```
- Callout:** A yellow bubble with the text "請用善用 Google 翻譯 讀懂 網頁 內容" points to the address bar.
- Advertisements:** "Holiday Special! Certify Your Skills! Boost Your Career Get Full Access! Save 775\$ Start Today!" and "Build Your Career! Get Full Access Save 775\$ Start Today!"
- Taskbar:** Windows search bar, taskbar icons (File Explorer, Edge, Chrome, LINE, etc.), system tray (CNY, date/time: 2023/12/22 09:04).

# 建立程式文件 1/4



1. 鍵盤輸入Notepad. 2. 用滑鼠點選記事本.



# 建立程式文件 2/4

```

*未命名 - 記事本
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明
print("P11211XXX practices Lab147.")

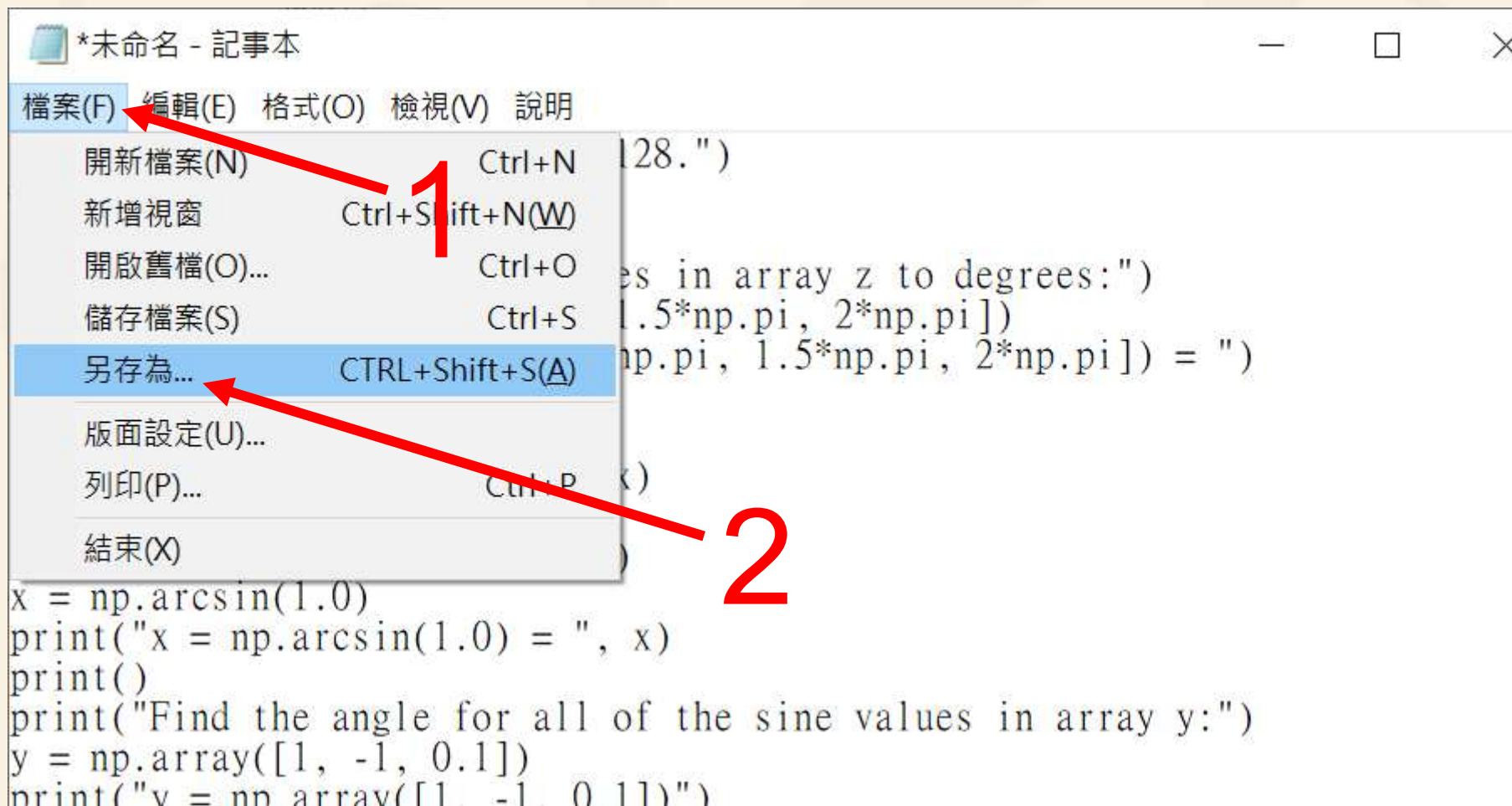
import matplotlib.pyplot as plt
import numpy as np
print("Draw a line in a diagram from position (1, 3) to position (8, 10):")
xpoints = np.array([1, 8])
ypoints = np.array([3, 10])
plt.plot(xpoints, ypoints)
plt.show()
print()
print("Draw two points in the diagram, one at position (1, 3) and one in position (8, 10):")
xpoints = np.array([1, 8])
ypoints = np.array([3, 10])
plt.plot(xpoints, ypoints, 'o')
plt.show()
print()
print("Draw a line in a diagram from position (1, 3) to (2, 8) then to (6, 1) and finally to position (8, 10):")
xpoints = np.array([1, 2, 6, 8])
ypoints = np.array([3, 8, 1, 10])
plt.plot(xpoints, ypoints)
plt.show()
print()
print("Plotting without x-points:")
ypoints = np.array([3, 8, 1, 10, 5, 7])
plt.plot(ypoints)
plt.show()
    
```

將P11211XXX修改為您的學號



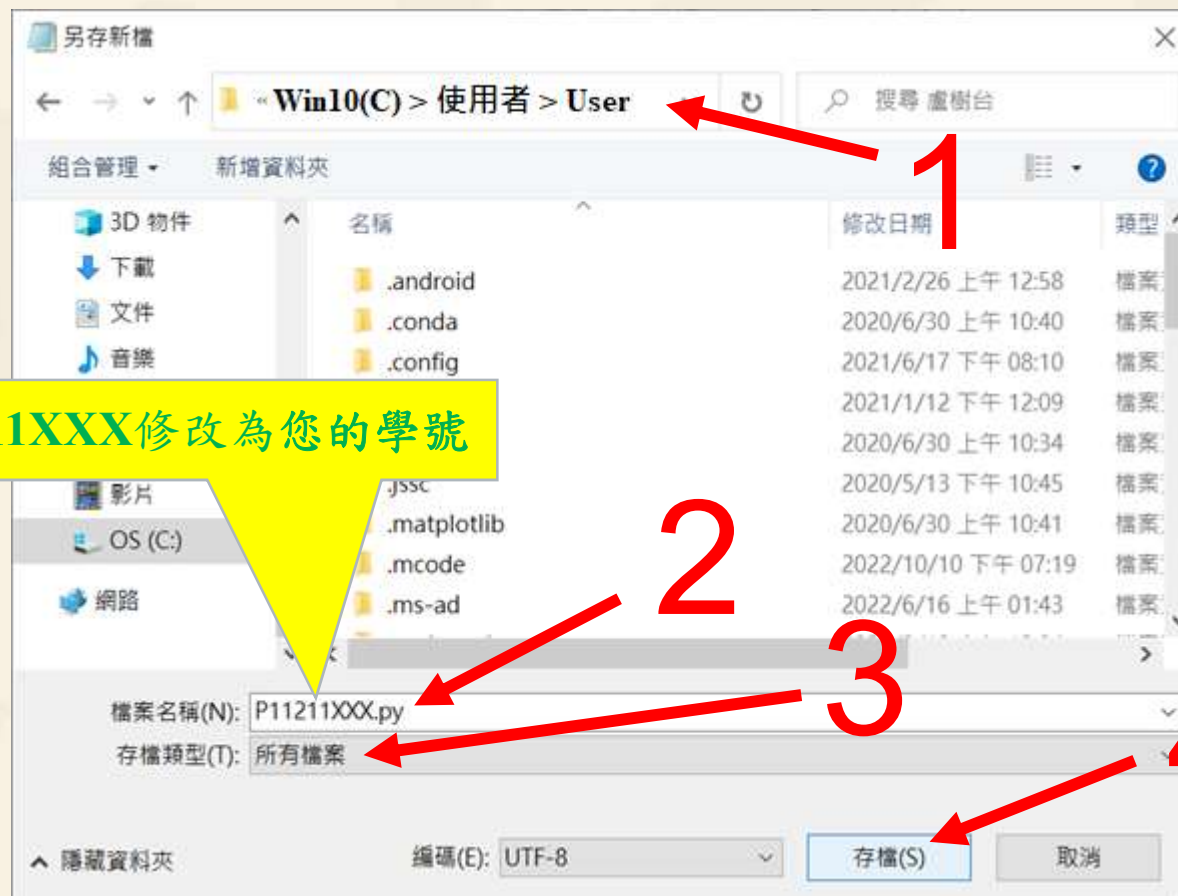
## 1. 用鍵盤輸入程式代碼.

# 建立程式文件 3/4



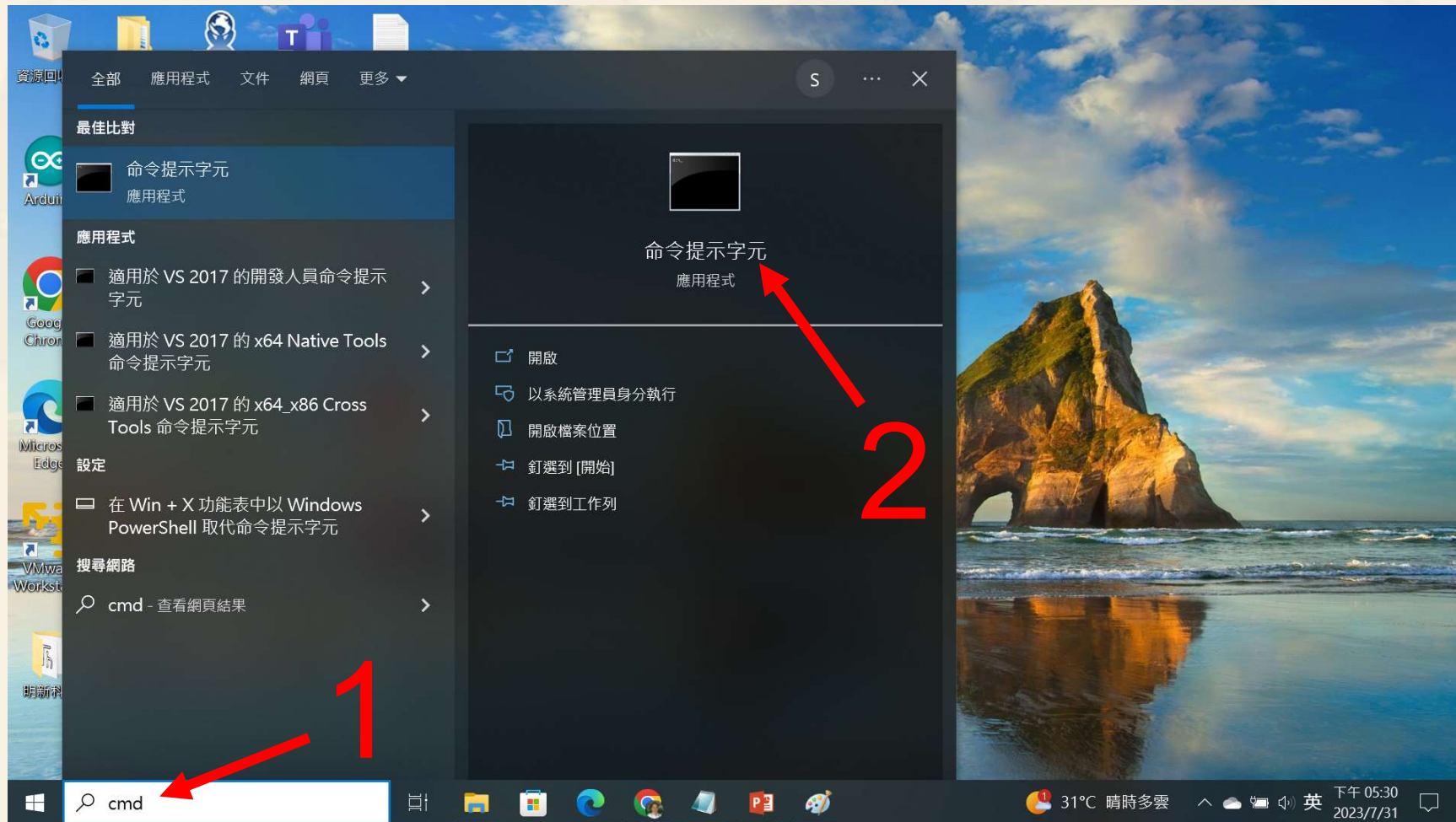
1. 用滑鼠點選檔案. 2. 用滑鼠點選另存為....

# 建立程式文件 4/4



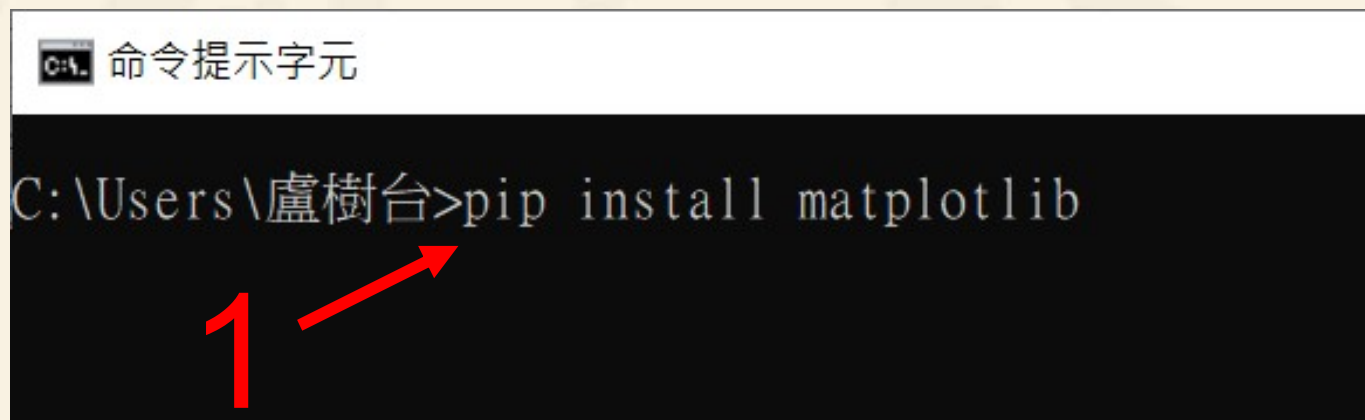
1. 資料夾 = C:\使用者>User>.
2. 檔案名稱 = P11211XXX.py .
3. 存檔類型(T) = 所有檔案.
4. 用滑鼠點選存檔.

# 檔案執行模式 1/3



1. 鍵盤輸入cmd.
2. 用滑鼠點選命令提示字元.

# 檔案執行模式 2/3



```
C:\Users\盧樹台>pip install matplotlib
```



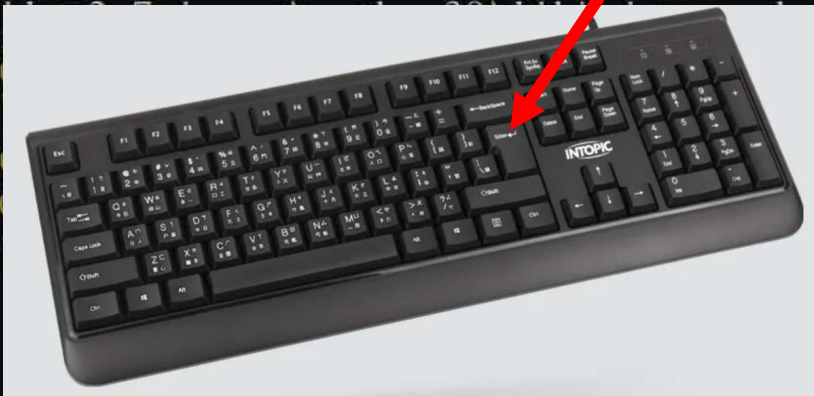
1. 用鍵盤輸入pip install matplotlib.
2. 按一下Enter.

# 檔案執行模式 3/3

C:\> 命令提示字元

```
C:\Users\盧樹台>pip install matplotlib
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
Requirement already satisfied: matplotlib in c:\python39\lib\site-packages (3.8.2)
Requirement already satisfied: numpy<2,>=1.21 in c:\python39\lib\site-packages (f
Requirement already satisfied: contourpy>=1.0.1 in c:\python39\lib\site-packages (
Requirement already satisfied: cyclor>=0.10 in c:\python39\lib\site-packages (from
Requirement already satisfied: pillow>=8 in c:\python39\lib\site-packages (from ma
Requirement already satisfied: python-dateutil<3, >=2.8.2 in c:\python39\lib\site-packa
WARNING: Ignoring invalid distribution -ip (
WARNING: Ignoring invalid distribution -ip (
WARNING: You are using pip version 21.1.1, however
You should consider upgrading via the 'c:\py
C:\Users\盧樹台>Python P11211XXX.py
```

將P11211XXX修改為您的學號



1. 用鍵盤輸入Python P11211XXX.py .
2. 按一下Enter.

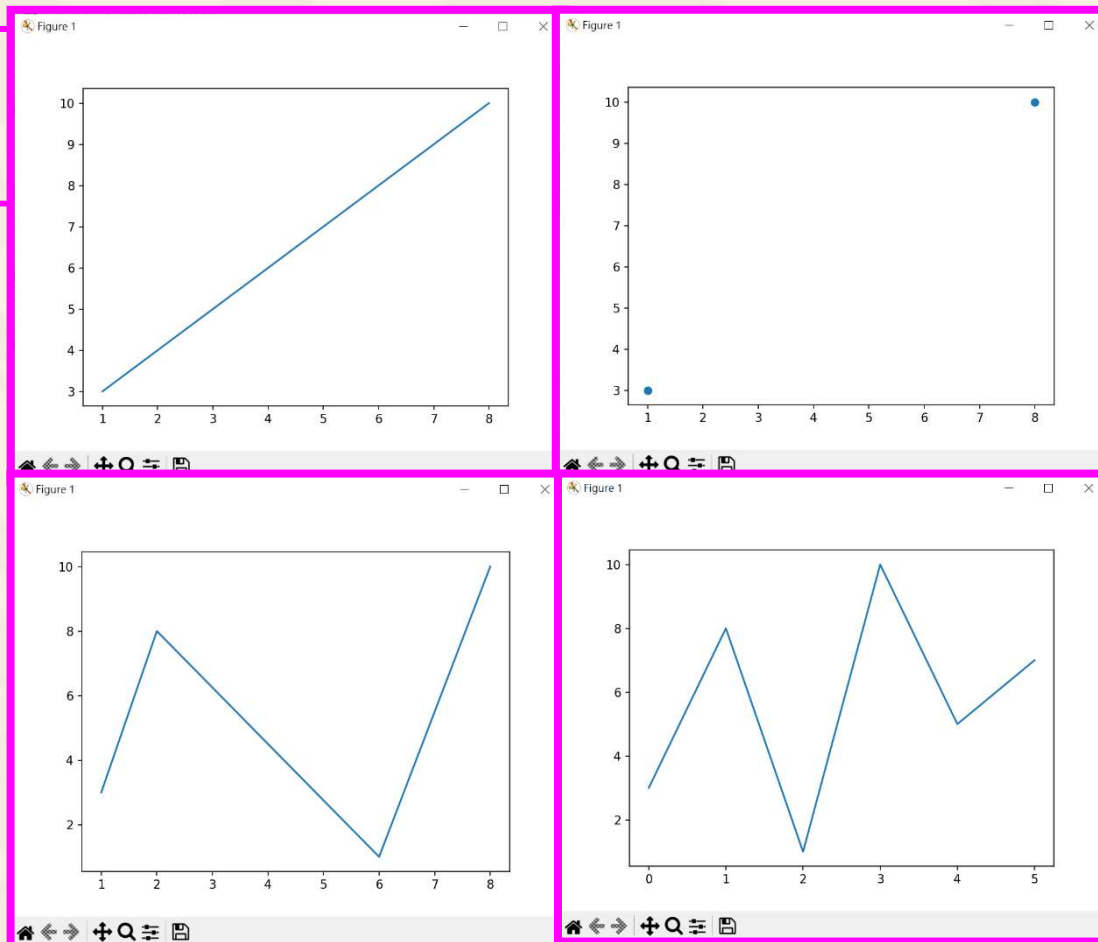
# Verification Criteria of Lab147

## (Lab147的驗收規範) Matplotlib繪圖

**P11211XXX 必需  
更換為您的學號**

Ask the teacher to give you points after completing the illustrated results.

(完成右圖指定成果後請教師在您的座位驗收並讓您簽名加分)



**每一個學生都要做Lab147至少一次!**

# 養成良好的工作態度

- 離開實驗室時請整理自己的工作座位，為自己的工作態度加分：
  - (1)滑鼠鍵盤歸位 (2)電腦關機 (3)螢幕關閉電源 (4)椅背靠妥 (5)個人責任區(工作座位及週邊範圍)應整潔，不遺留垃圾紙屑等。

