

# Lab161 : Matplotlib Histograms

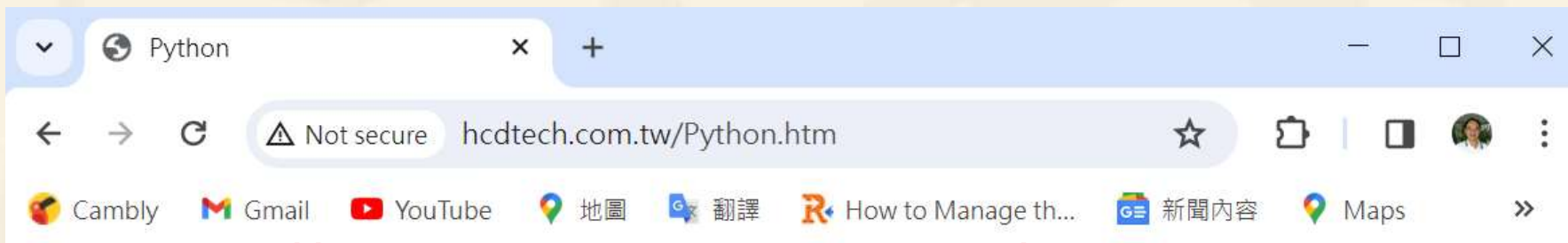
## Matplotlib 直方圖

(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

.....

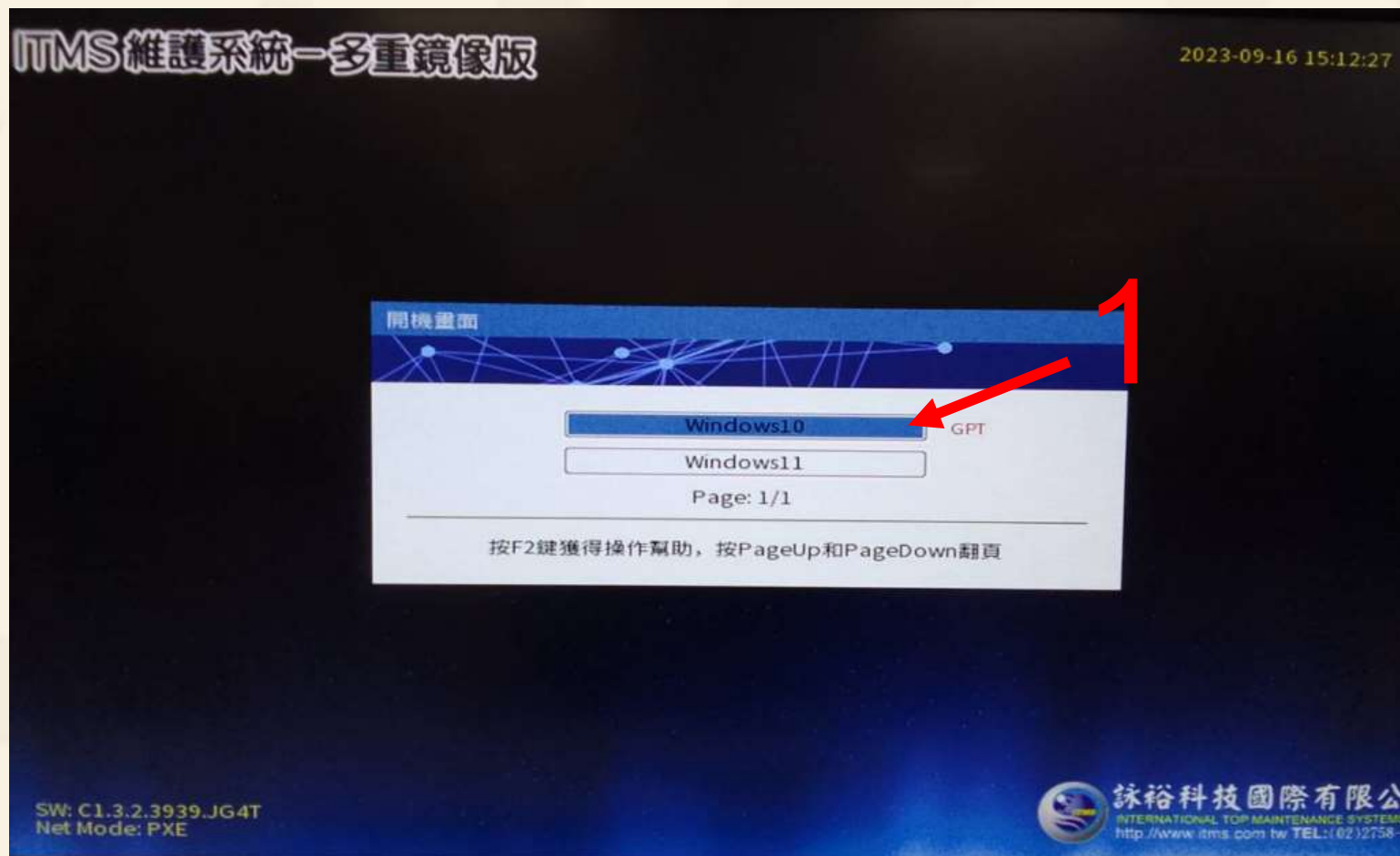
1 2 3 4 5 6 7 8 9 10

## 金字塔念書法



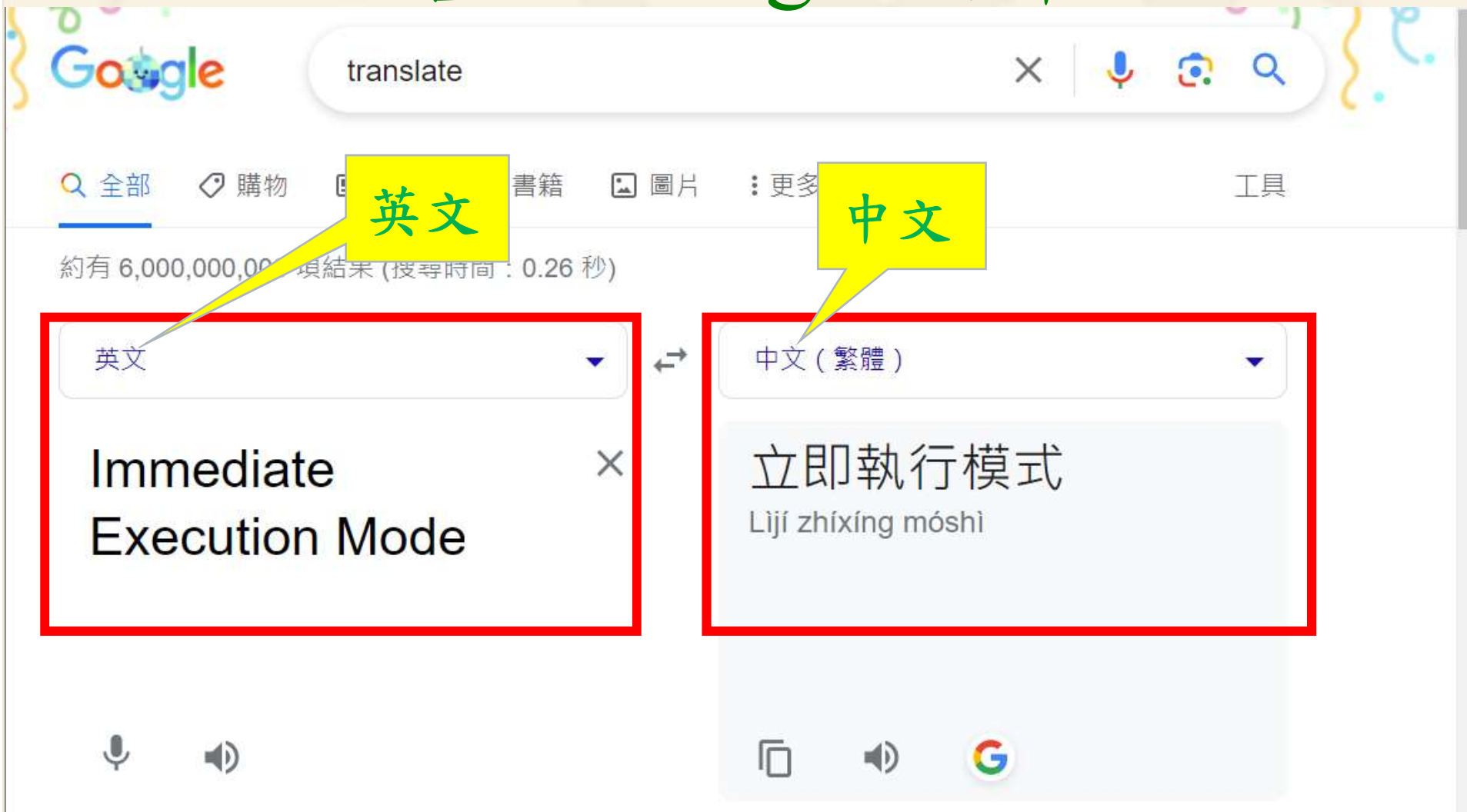
如果一本書有10個章節！先看第1章，在看第2章之前再把第1章看一遍，在看第3章之前再把第1, 2章看一遍，.....，等看到第10章的時候，第1, 2, 3, 4章恐怕已經背起來了！我稱這種念書法為金字塔念書法，今天開始照著做，明年的妳/你肯定不一樣！

# 請使用 Windows 10



## 1. 選用 Windows 10.

# 善用 Google 翻譯



# 請先開啟網頁閱讀

Matplotlib Histograms

translate - Google 搜尋

w3schools.com/python/matplotlib\_histograms.asp

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Python Matplotlib

- Matplotlib Intro
- Matplotlib Get Started
- Matplotlib Pyplot
- Matplotlib Plotting
- Matplotlib Markers
- Matplotlib Line
- Matplotlib Labels
- Matplotlib Grid
- Matplotlib Subplot
- Matplotlib Scatter
- Matplotlib Bars
- Matplotlib Histograms**
- Matplotlib Pie Charts

Machine Learning

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## Matplotlib Histograms

< Previous Next >

### Histogram

A histogram is a graph showing *frequency* distributions.

It is a graph showing the number of observations within each given interval.

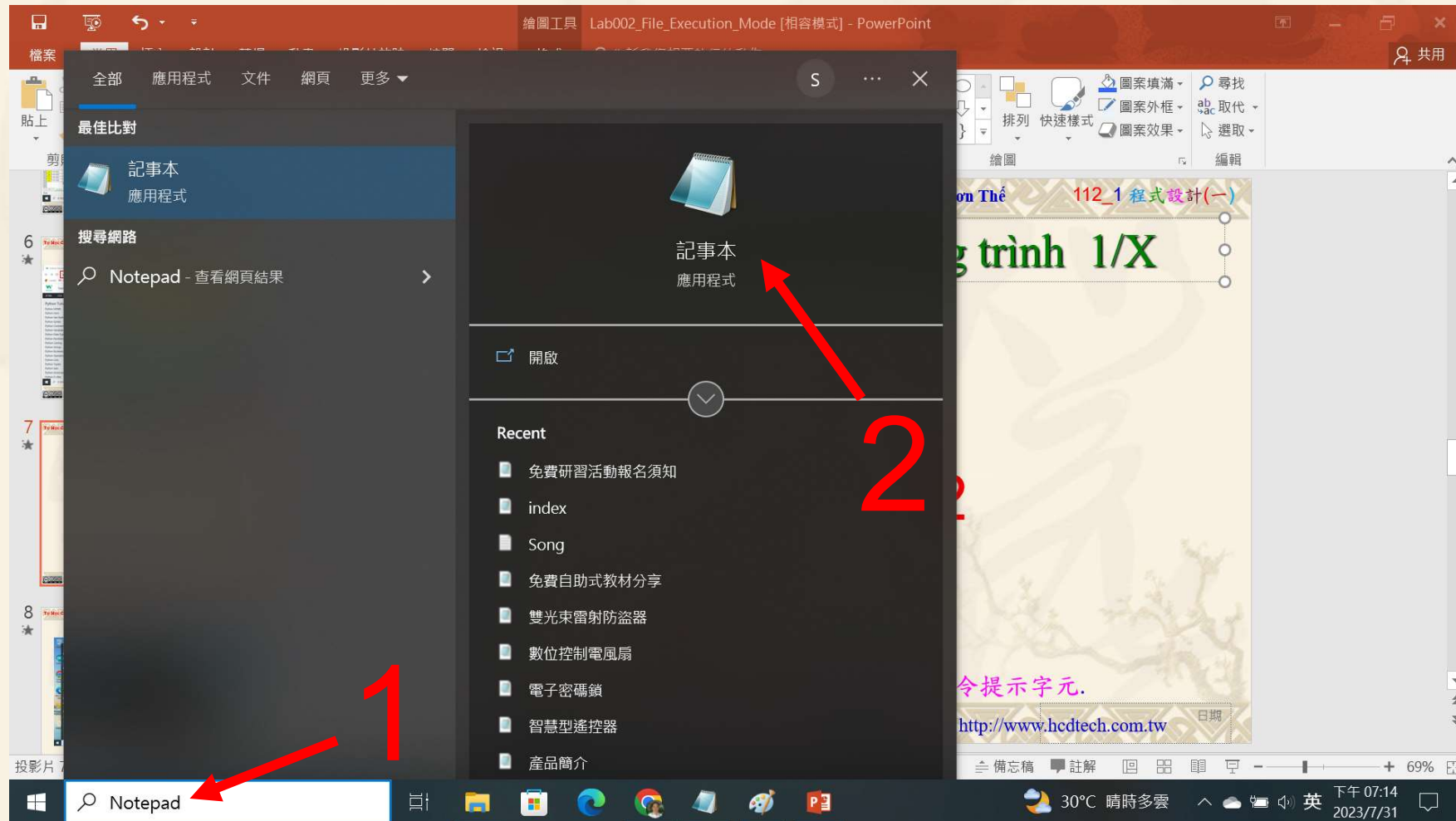
Example: Say you ask for the height of 250 people, you might end up with a histogram like this:

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19°C 上午 01:49 2023/12/28

請用善用 Google 翻譯 讀懂 網頁 內容

# 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 Lab161.")

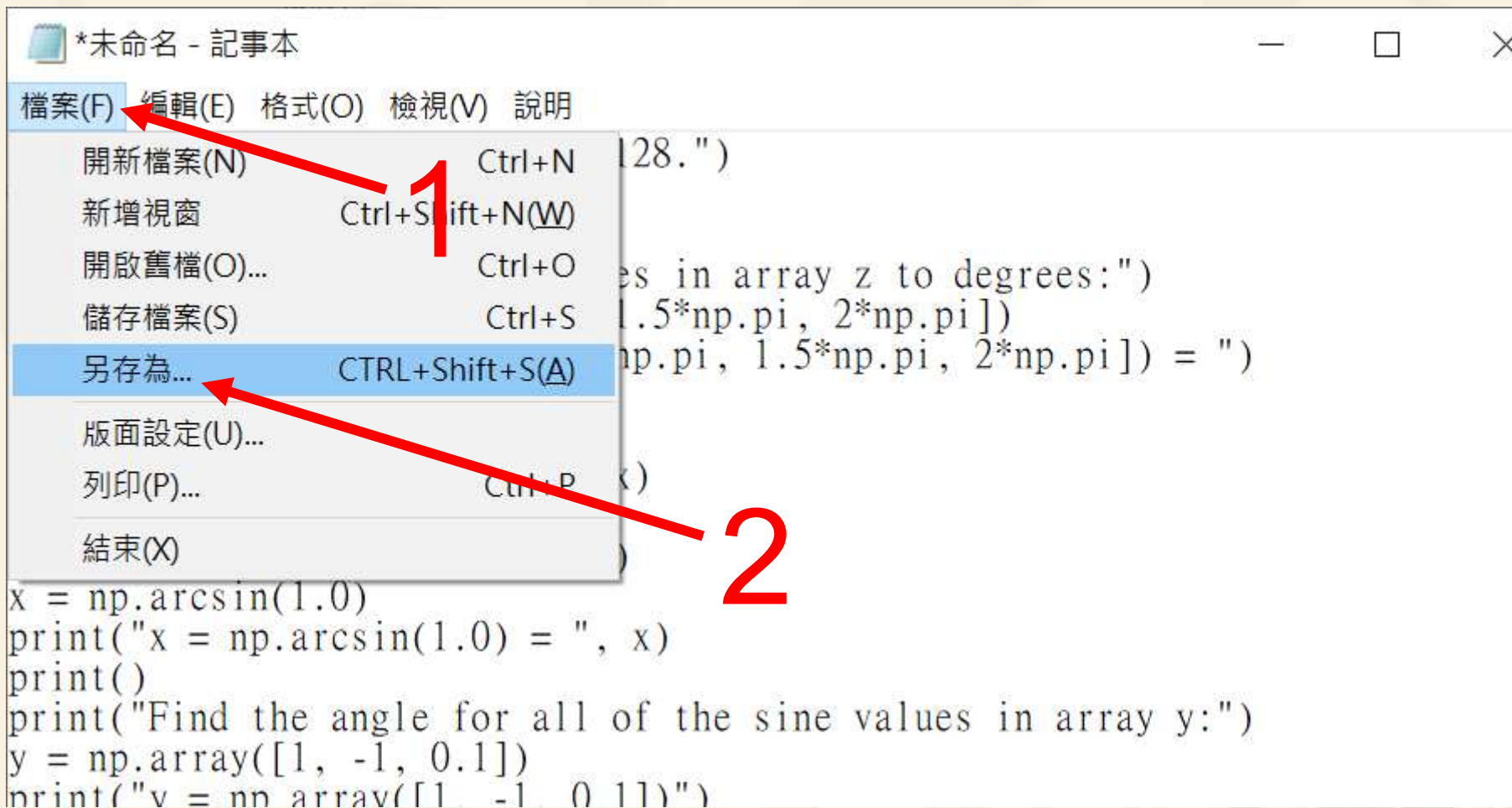
import matplotlib.pyplot as plt
import numpy as np
print("A simple histogram:")
x = np.random.normal(170, 10, 250)
print(x)
print("P11211XXX practices Lab161.")
y = input("Press the 'Enter' key on your keyboard.")
plt.hist(x)
plt.show()
    
```

將P11211XXX修改為您的學號



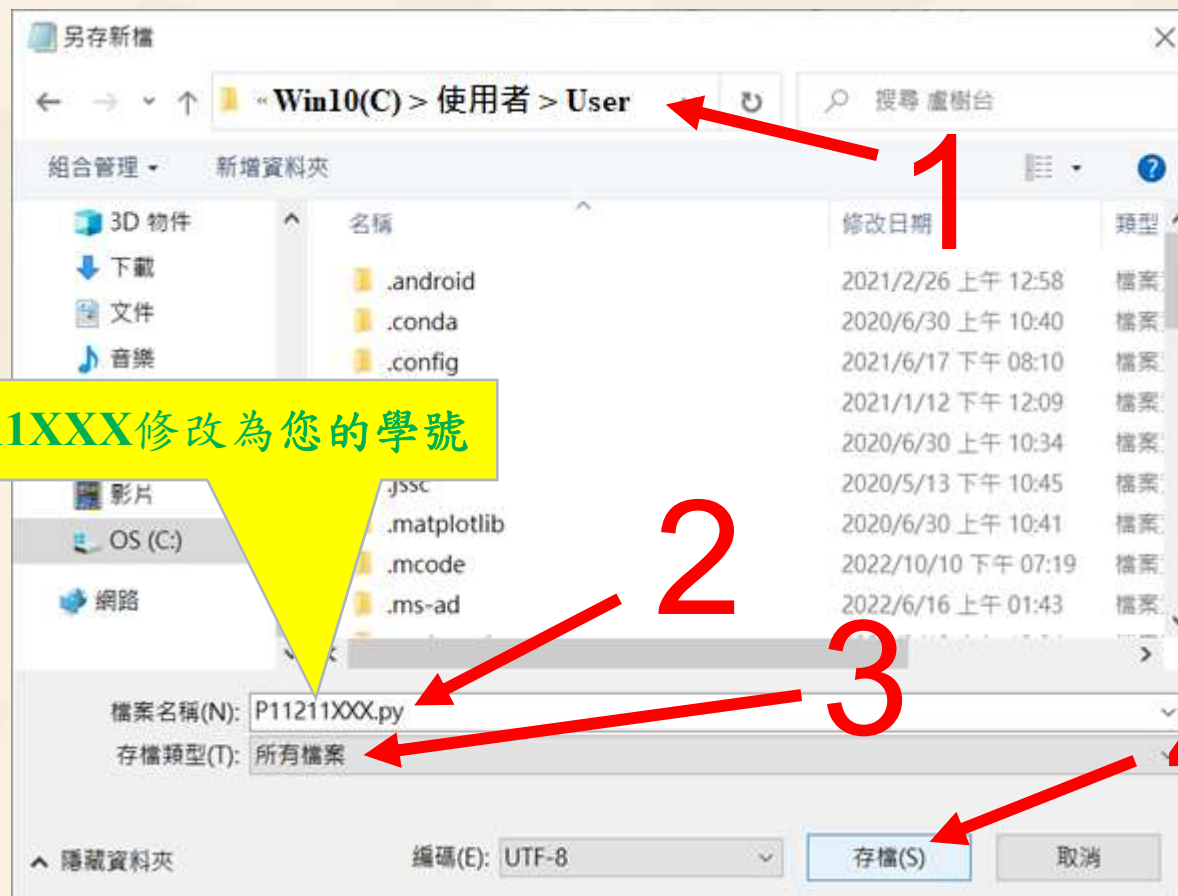
1. 用鍵盤輸入程式代碼.

# 建立程式文件 3/4



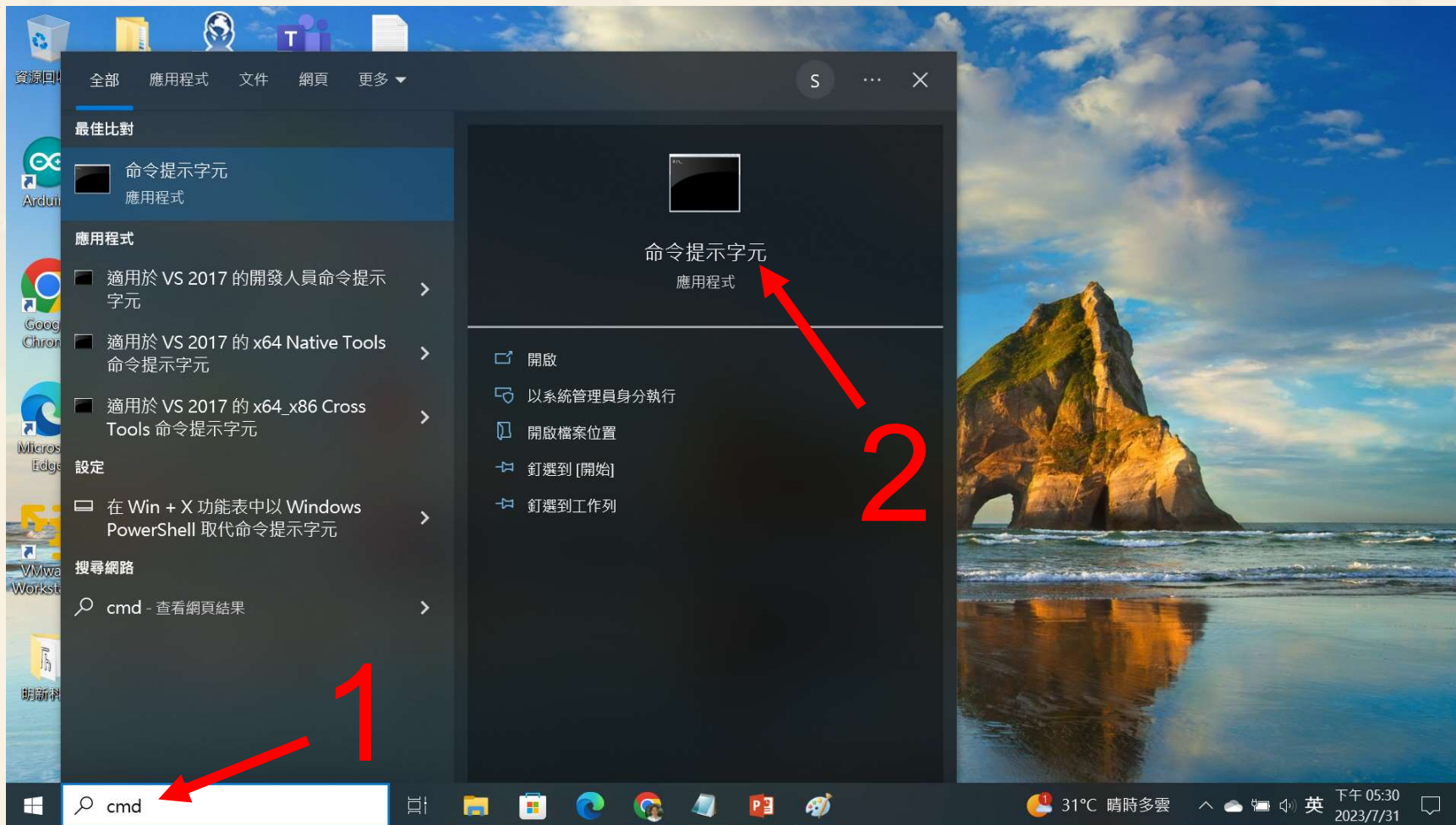
1. 用滑鼠點選檔案. 2. 用滑鼠點選另存為....

# 建立程式文件 4/4



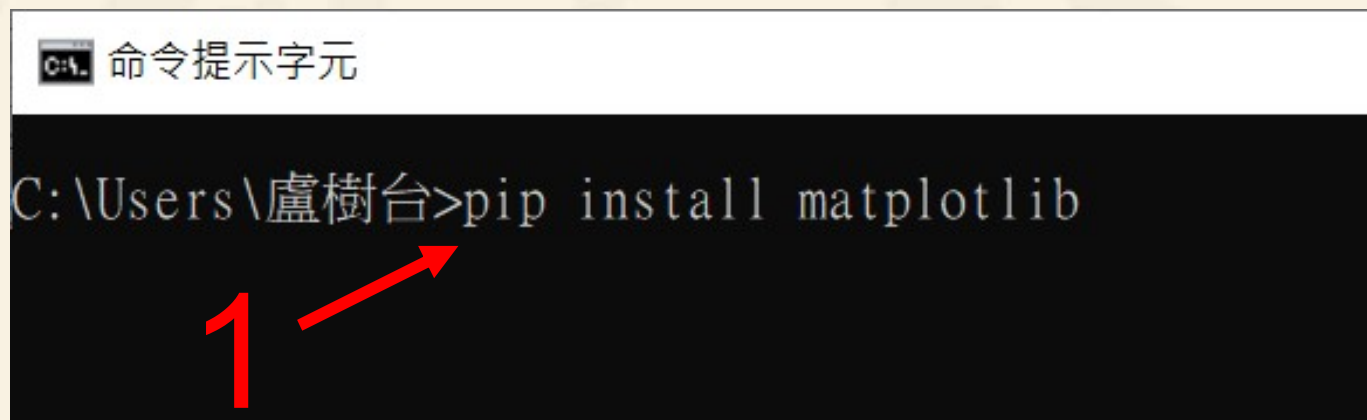
1. 資料夾 = C:\使用者>User>.
2. 檔案名稱 = P11211XXX.py .
3. 存檔類型(T) = 所有檔案.
4. 用滑鼠點選存檔.

# 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<3.0.0, >=2.8.2 in c:\python39\lib\site-packa
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packages)
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packages)
WARNING: You are using pip version 21.1.1, however your environment has Python 3.9.13.
You should consider upgrading via the 'c:\python39\lib\site-packages\pip\__main__.py'
command.
```

將P11211XXX修改為您的學號

```
C:\Users\盧樹台>Python P11211XXX.py
```



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

# Verification Criteria of Lab161 (Lab161的驗收規範) Matplotlib直方圖

**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)

The screenshot shows a terminal window titled '命令提示字元 - Python P11211XXX.py' containing a list of 50 student IDs. To the right, a window titled 'Figure 1' displays a histogram of these IDs. The histogram has a blue fill and a white border, with the x-axis ranging from 150 to 200 and the y-axis from 0 to 50. The distribution is roughly bell-shaped, peaking around 170.

```

C:\ 命令提示字元 - Python P11211XXX.py
148.60106433 171.44730612 166.27163137 175.57281758 155.12864751
173.98687533 180.37174692 175.65175839 182.80385581 167.72235458
181.27501011 161.95072948 170.3
160.686789 156.24139687 163.2
176.77937769 163.69359534 157.1
150.09643595 171.70425333 185.3
179.80768597 161.1304358 147.7
159.59697779 170.13557143 162.3
184.84918742 171.24283003 164.9
170.67025025 171.83727114 181.1
175.57031394 174.50209748 157.3
163.9542437 174.62022811 180.1
162.37292738 172.94325036 169.9
163.51748807 175.03310384 163.1
178.77138526 178.86637156 172.9
177.46402128 172.52778967 184.2
145.04166318 178.6537699 165.3
160.37020735 148.85534912 180.9
159.74953918 182.12937988 170.4
173.40082793 176.18166682 172.5
164.3230182 179.56337715 188.8
162.50784088 173.56063397 173.4
188.71186513 164.45098907 156.3
174.16033726 145.50976683 167.2
175.57962029 172.57621096 174.9
173.71286576 180.1143719 173.4
151.42183853 169.82086653 169.67907649 172.50434576 194.20155452
157.05450609 165.47136199 172.613775 156.36054047 182.20608412]
P11211XXX practices Lab161.
Press the 'Enter' key on your keyboard.
  
```

**每一個學生都要做Lab161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。

