

Lab112 : Binomial Distribution

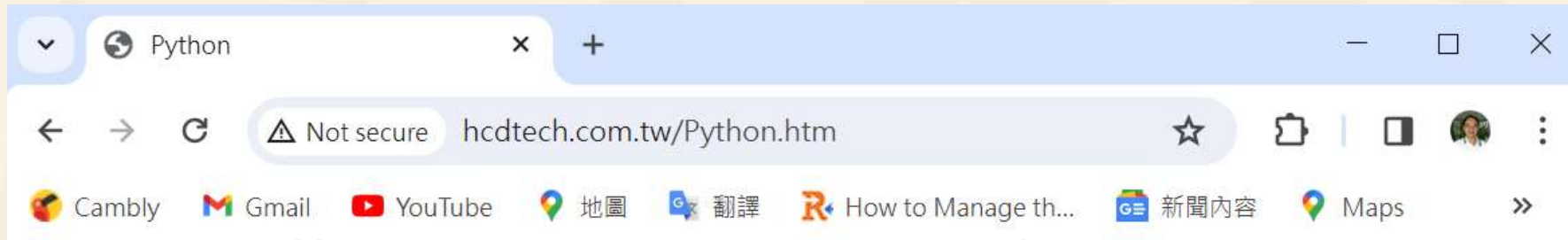
二項分佈

(別怕! 跟著做你就會!)

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請至 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

.....

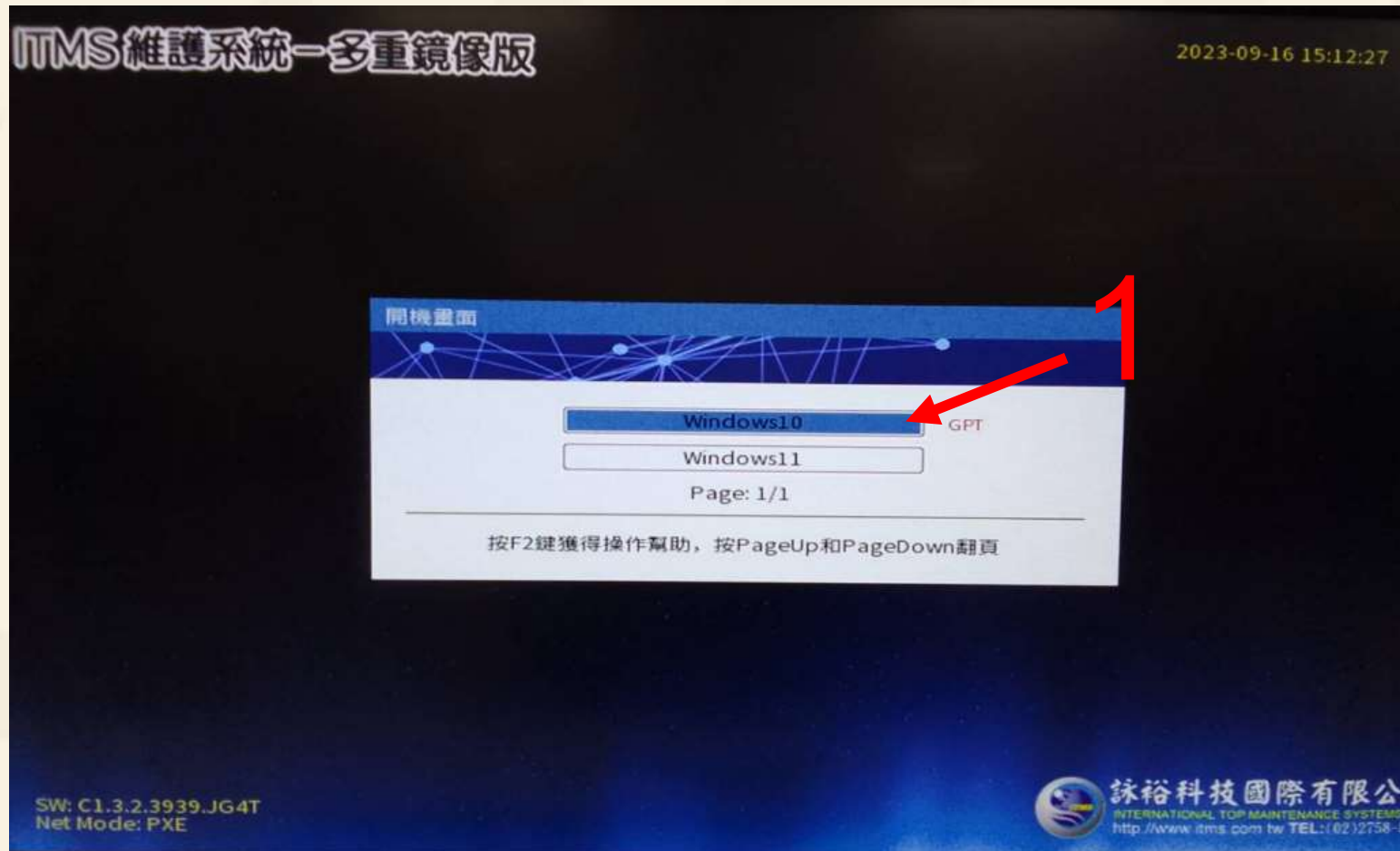
1 2 3 4 5 6 7 8 9 10

金字塔念書法



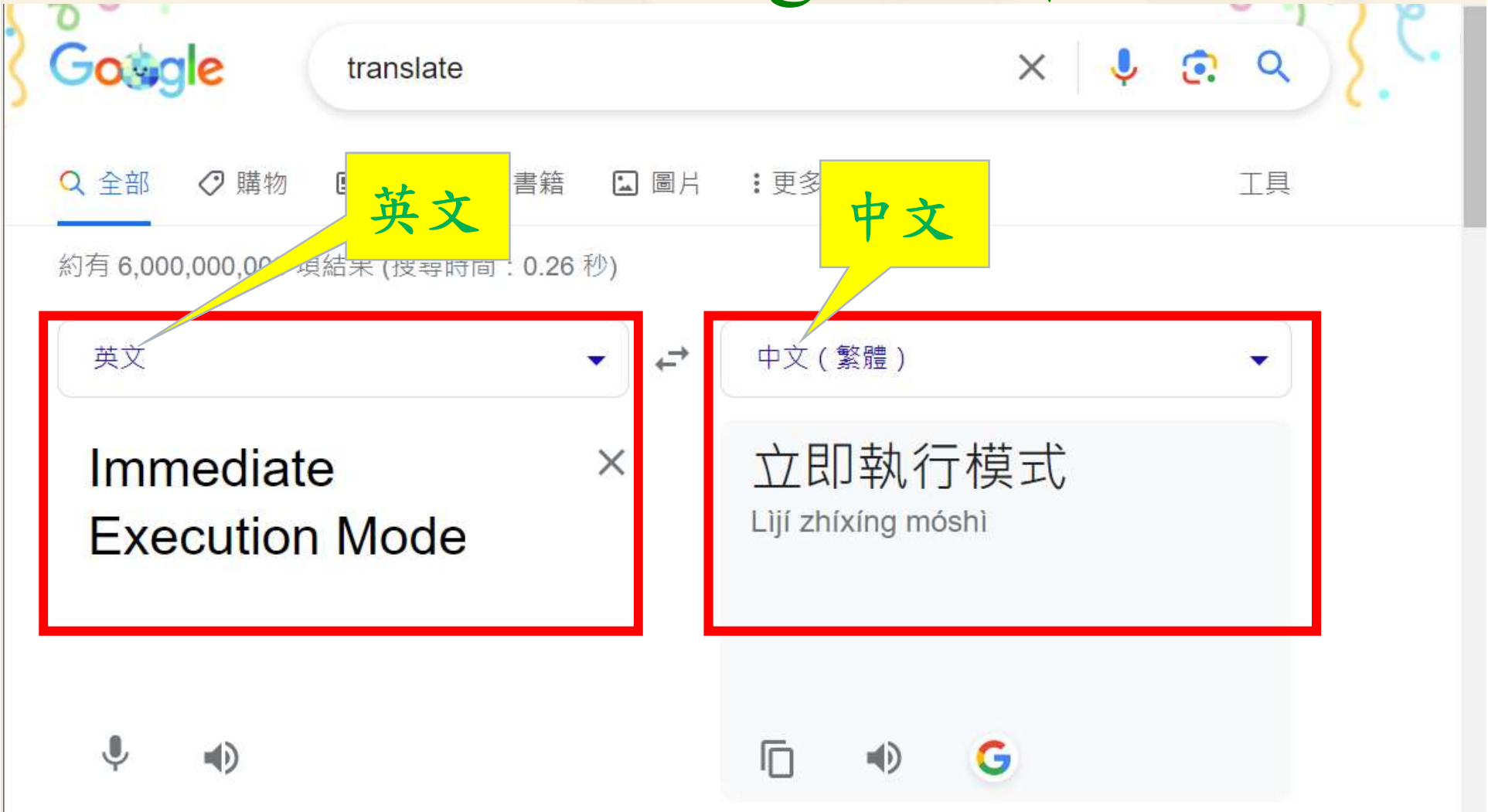
如果一本書有10個章節！先看第1章，在看第2章之前再把第1章看一遍，在看第3章之前再把第1, 2章看一遍，.....，等看到第10章的時候，第1, 2, 3, 4章恐怕已經背起來了！我稱這種念書法為金字塔念書法，今天開始照著做，明年的妳/你肯定不一樣！

請使用 Windows 10



1. 選用 Windows 10.

善用 Google 翻譯



請先開啟網頁閱讀

Binomial Distribution

w3schools.com/python/numpy/numpy_random_binomial.asp

請用善用 Google 翻譯 讀懂 網頁 內容

Binomial Distribution

Binomial Distribution is a *Discrete Distribution*.

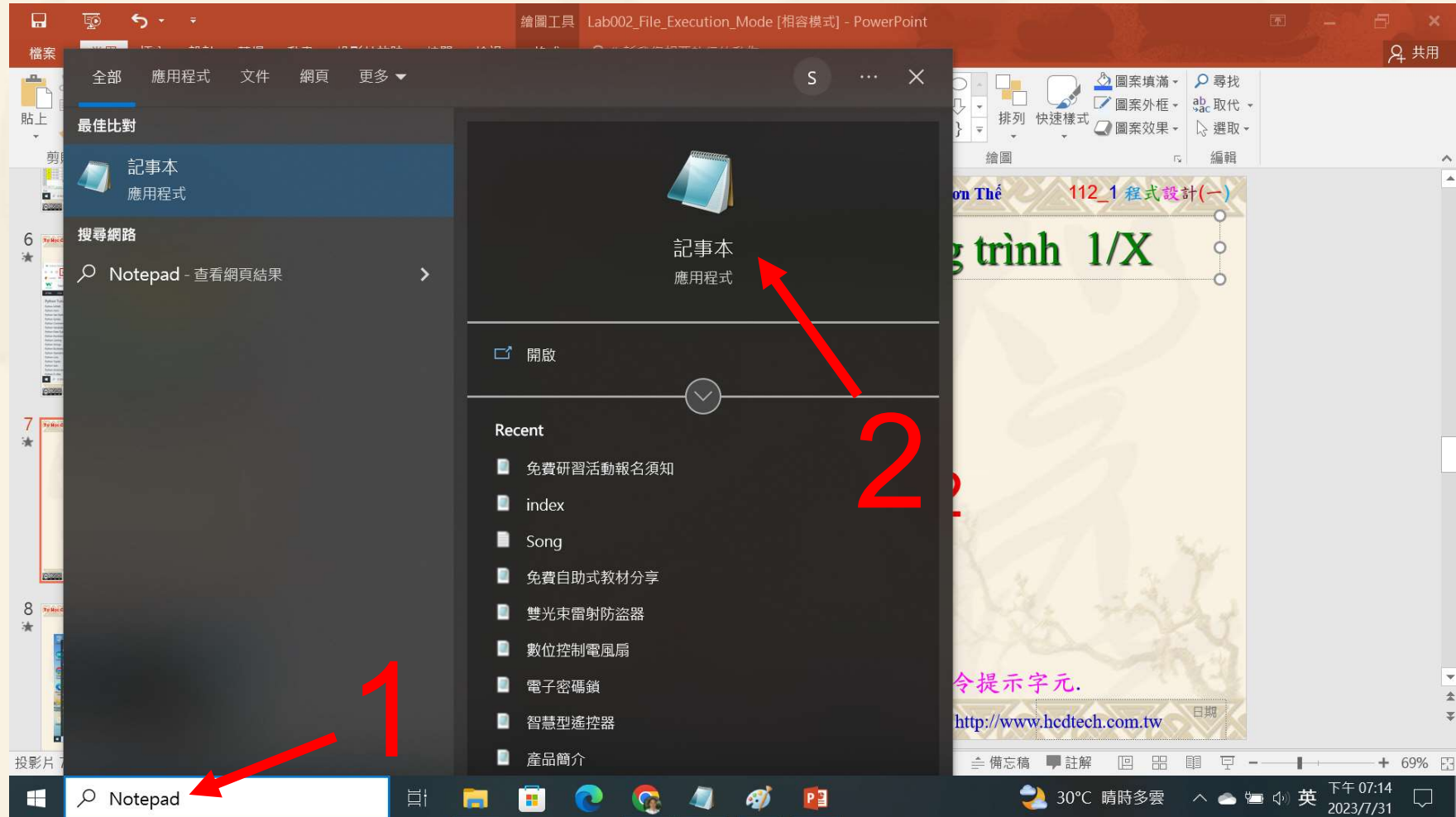
It describes the outcome of binary scenarios, e.g. toss of a coin, it will either be head or tails.

It has three parameters:

- `n` - number of trials.
- `p` - probability of occurrence of each trial (e.g. for toss of a coin 0.5 each).
- `size` - The shape of the returned array.

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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

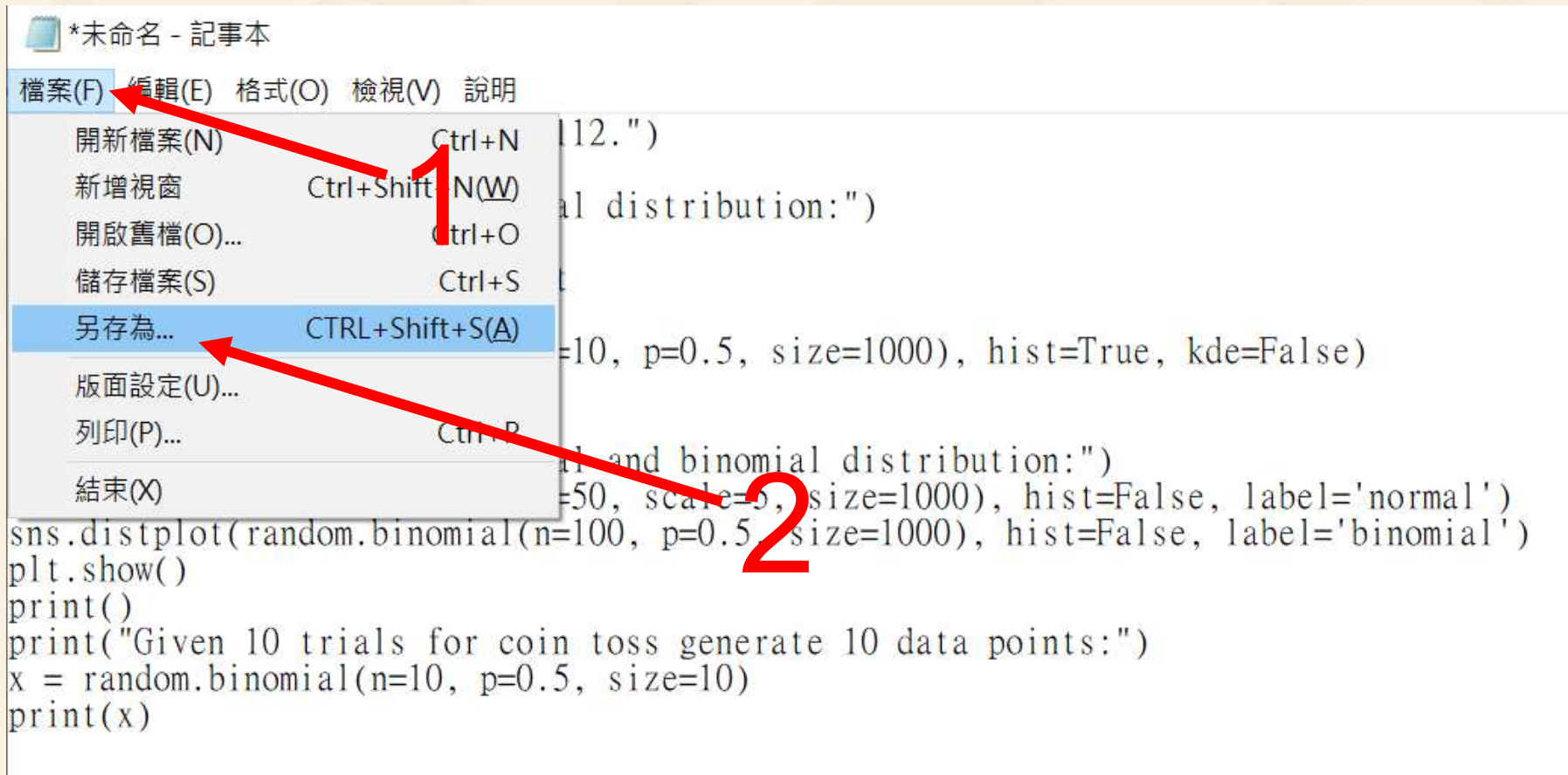
Replace P11211XXX with your student ID

```
*未命名 - 記事本
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明
print("P11211XXX practices Lab112.")

print("Visualization of binomial distribution:")
from numpy import random
import matplotlib.pyplot as plt
import seaborn as sns
sns.distplot(random.binomial(n=10, p=0.5, size=1000), hist=True, kde=False)
plt.show()
print()
print("Difference between normal and binomial distribution:")
sns.distplot(random.normal(loc=50, scale=5, size=1000), hist=False, label='normal')
sns.distplot(random.binomial(n=100, p=0.5, size=1000), hist=False, label='binomial')
plt.show()
print()
print("Given 10 trials for coin toss generate 10 data points:")
x = random.binomial(n=10, p=0.5, size=10)
print(x)
```

1. 用鍵盤輸入程式代碼.

Tạo một tệp chương trình 3/4



1. 用滑鼠點選檔案. 2. 用滑鼠點選另存為....

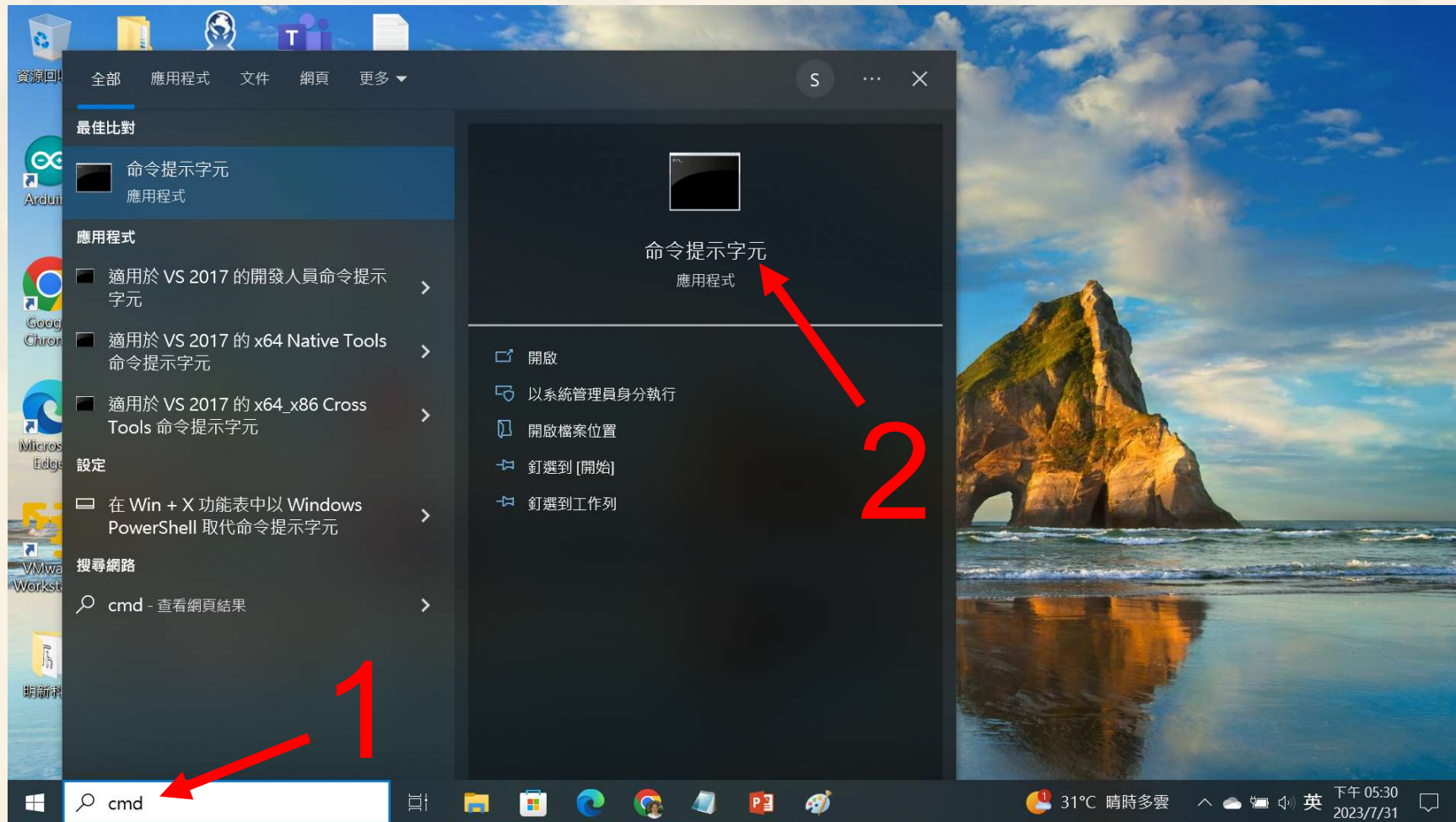
建立程式文件 4/4



Replace P11211XXX with your student ID

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 1/6



1. 鍵盤輸入cmd.
2. 用滑鼠點選命令提示字元.

檔案執行模式 2/6

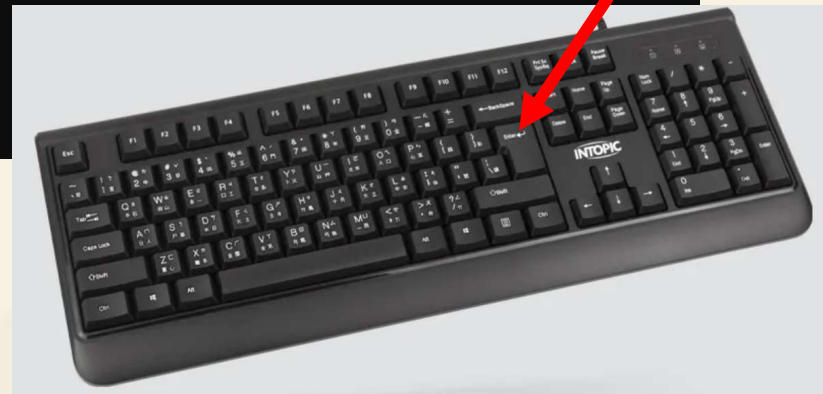
```
命令提示字元
Microsoft Windows [版本 10.0.19045.3693]
(c) Microsoft Corporation. 著作權所有，並保留一切權利。
C:\Users\盧樹台>pip install numpy
```



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

檔案執行模式 3/6

```
C:\> 命令提示字元  
Microsoft Windows [版本 10.0.19045.3693]  
(c) Microsoft Corporation. 著作權所有，並保留一切權利。  
C:\Users\盧樹台>pip install numpy  
WARNING: Ignoring invalid distribution -ip (c:\python39\lib\site-packag  
WARNING: Ignoring invalid distribution - (c:\python39\lib\site-packag  
Requirement already satisfied: numpy in c:\python39\lib\site-packages  
You should consider upgrading via the 'c:\python39\python.exe -m pip  
C:\Users\盧樹台>pip install seaborn
```



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

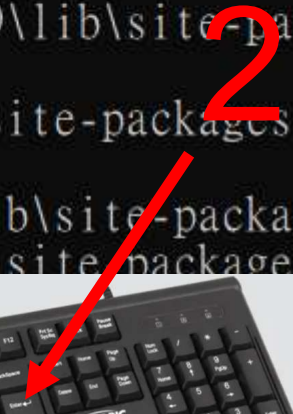
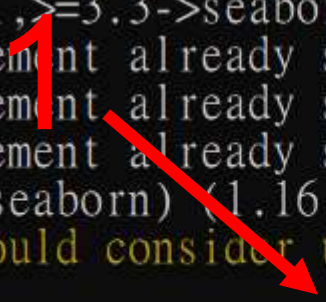
檔案執行模式 4/6

```

C:\> 命令提示字元
Requirement already satisfied: pyparsing>=2.3.1 in c:\python39\lib\site-package
(3.1.1)
Requirement already satisfied: cyclor>=0.10 in c:\python39\lib\site-packages (f
10.1)
Requirement already satisfied: ... 1.3.1 in c:\python39\lib\site-packag
) (1.4.5)
Requirement already satisf... >=3.1.0 in c:\python39\lib\site-packages (fr
!=3.6.1, >=3.3->seaborn) (3
Requirement already satisf... data>=2022.1 in c:\python39\lib\site-packages
Requirement already satisf... pytz>=2020.1 in c:\python39\lib\site-packages (f
Requirement already satisf... six>=1.5 in
=3.3->seaborn) (1.16.0)
You should consider upgrading via the 'c:\p
C:\Users\盧樹台>Python P11211XXX.py

```

Replace P11211XXX with your student ID



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

檔案執行模式 5/6

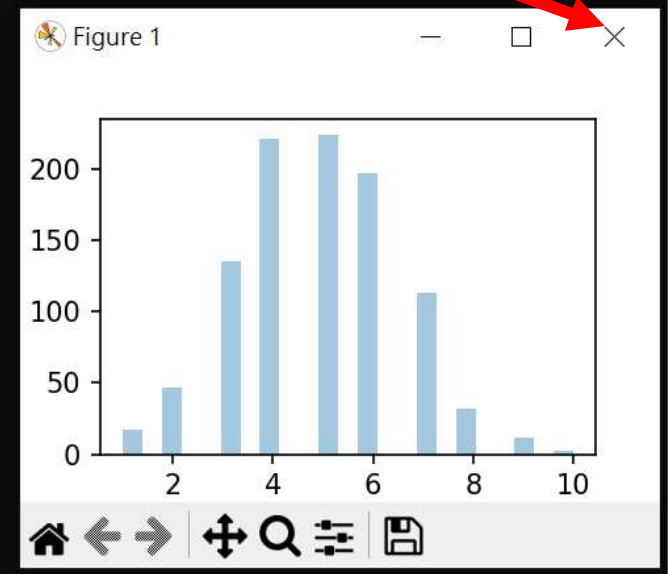
1

```
generate a random normal distribution of size 2x3
with mean at 1 and standard deviation of 2:
[[ 1.31300623  3.74005918 -0.07064265]
 [ 1.37878668  1.6884323  1.95991203]]

C:\Users\盧樹台>Python P11211XXX.py
P11211XXX practices Lab112.
Visualization of binomial distribution:
C:\Users\盧樹台\P11211XXX.py:7: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.
Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).
For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

sns.distplot(random.binomial(n=10, p=0.5, size=1000), hist=True, kde=False)
```



1. 用滑鼠點選 X.

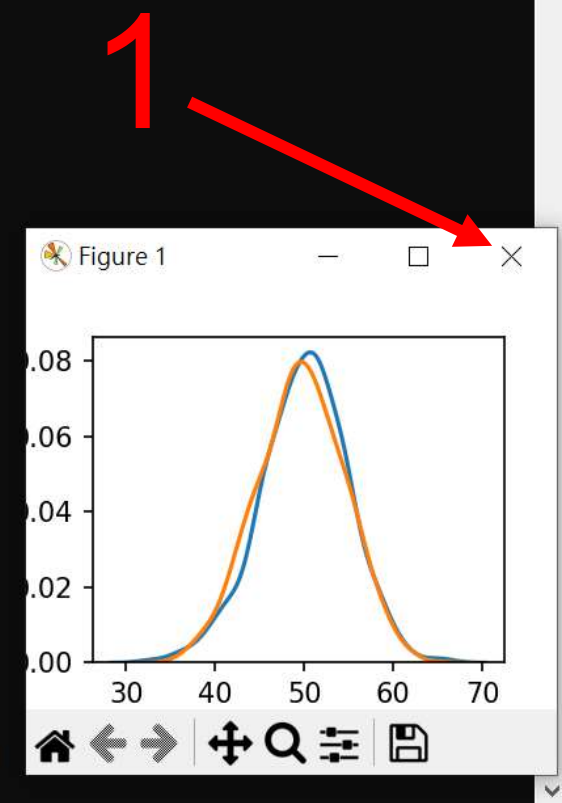
檔案執行模式 6/6

```
sns.distplot(random.binomial(n=10, p=0.5, size=1000), hist=True, kde=False)

Difference between normal and binomial distribution:
C:\Users\盧樹台\P11211XXX.py:11: UserWarning:
`distplot` is a deprecated function and will be removed in seaborn v0.14.0.
Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `kdeplot` (an axes-level function for kernel density plots).
For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

sns.distplot(random.normal(loc=50, scale=5, size=1000), hist=False, label='normal')
C:\Users\盧樹台\P11211XXX.py:12: UserWarning:
`distplot` is a deprecated function and will be removed in seaborn v0.14.0.
Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `kdeplot` (an axes-level function for kernel density plots).
For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

sns.distplot(random.binomial(n=100, p=0.5, size=1000), hist=False, label='binomial')
```



1. 用滑鼠點選 X.

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。

