

Lab111 : Normal Distribution

常態分佈

(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

.....

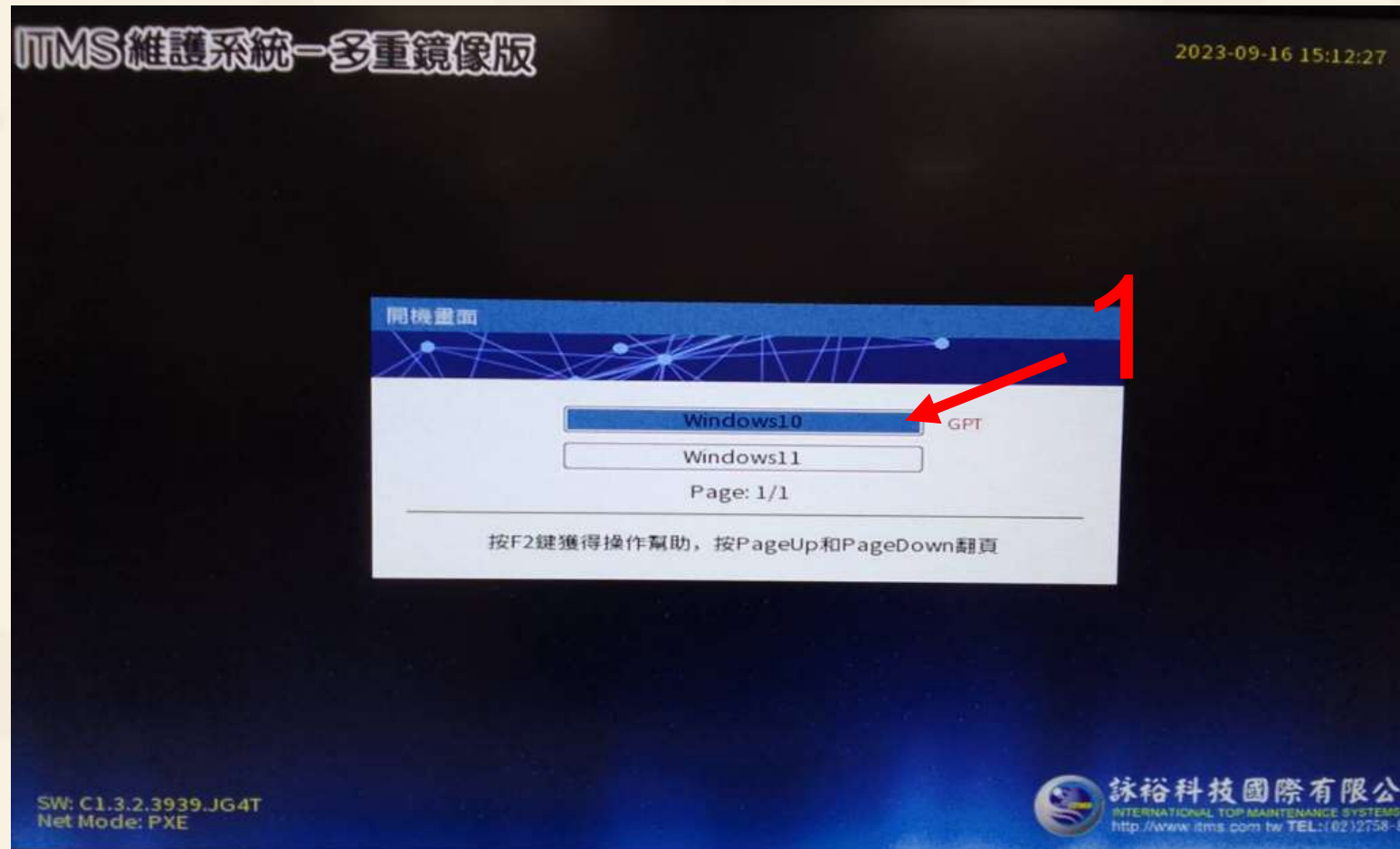
1 2 3 4 5 6 7 8 9 10

金字塔念書法



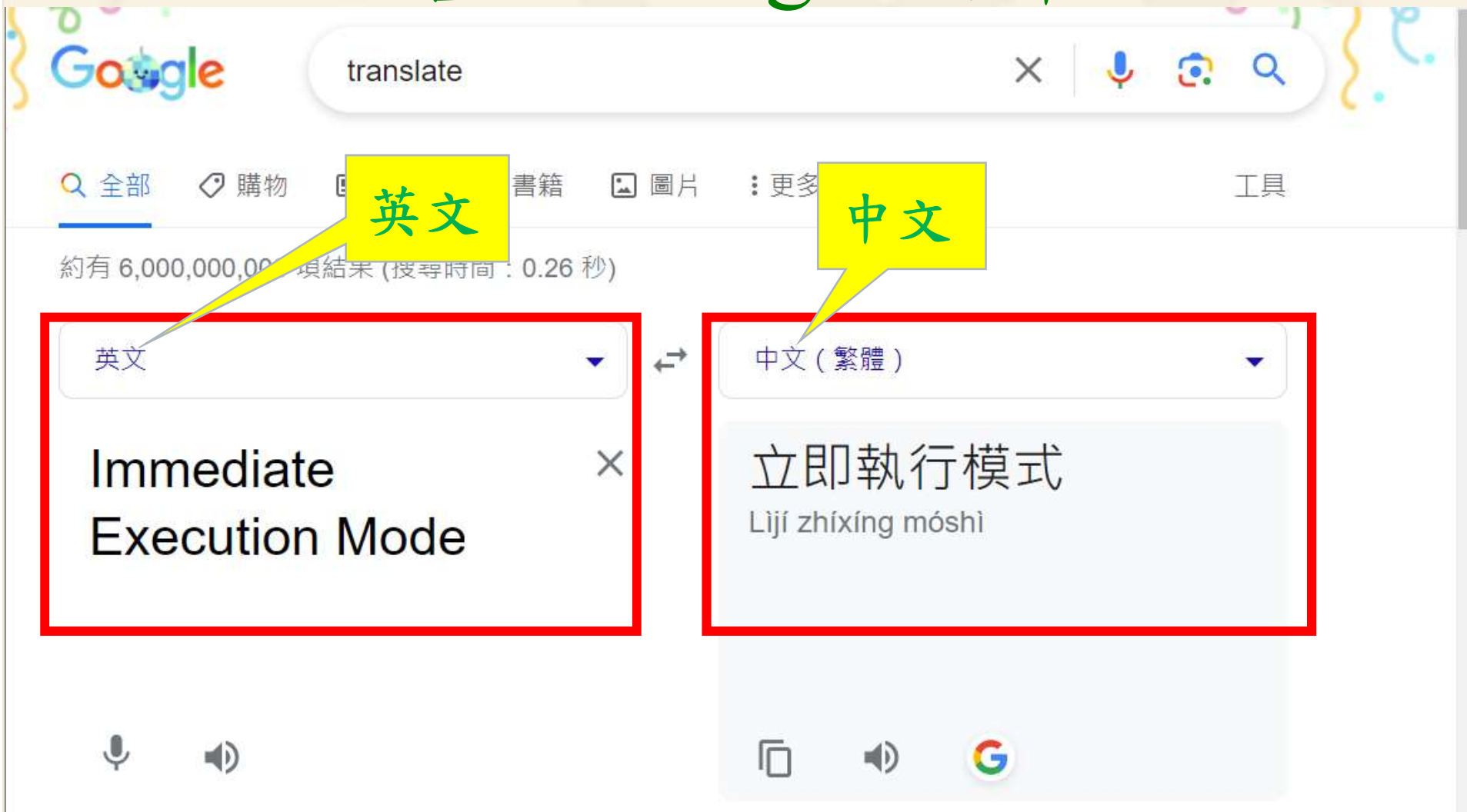
如果一本書有10個章節！先看第1章，在看第2章之前再把第1章看一遍，在看第3章之前再把第1, 2章看一遍，.....，等看到第10章的時候，第1, 2, 3, 4章恐怕已經背起來了！我稱這種念書法為金字塔念書法，今天開始照著做，明年的妳/你肯定不一樣！

請使用 Windows 10



1. 選用 Windows 10.

善用 Google 翻譯



請先開啟網頁閱讀

Normal (Gaussian) Distribution

translate - Google 搜尋

w3schools.com/python/numpy/numpy_random_normal.asp

請用善用Google翻譯讀懂網頁內容

Normal Distribution

The Normal Distribution is one of the most important distributions.

It is also called the Gaussian Distribution after the German mathematician Carl Friedrich Gauss.

It fits the probability distribution of many events, eg. IQ Scores, Heartbeat etc.

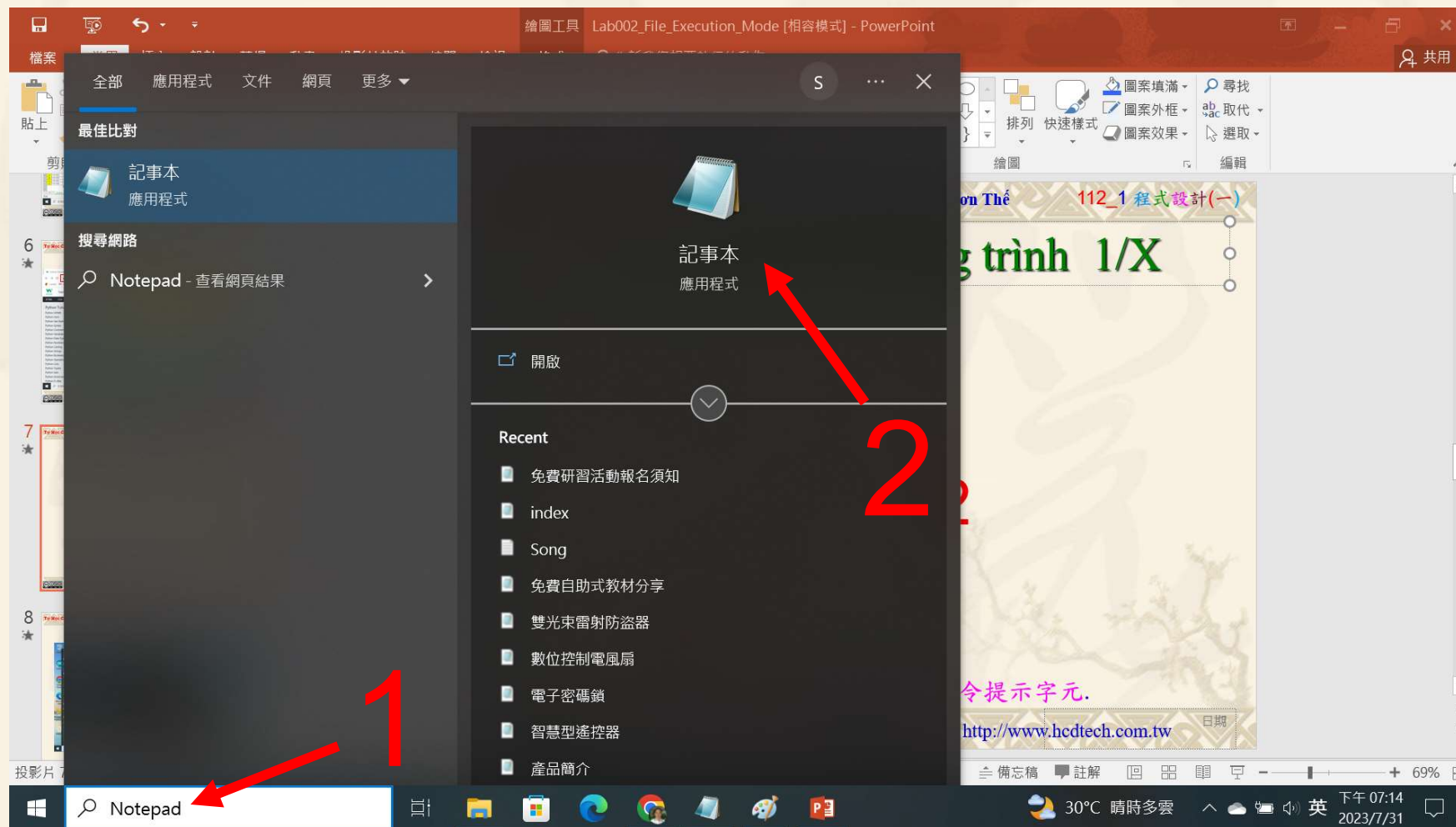
Use the `random.normal()` method to get a Normal Data Distribution.

It has three parameters:

`loc` - (Mean) where the peak of the bell exists.

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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

*未命名 - 記事本

檔案(F) 編輯(E) 格式(O) 檢視(V) 說明

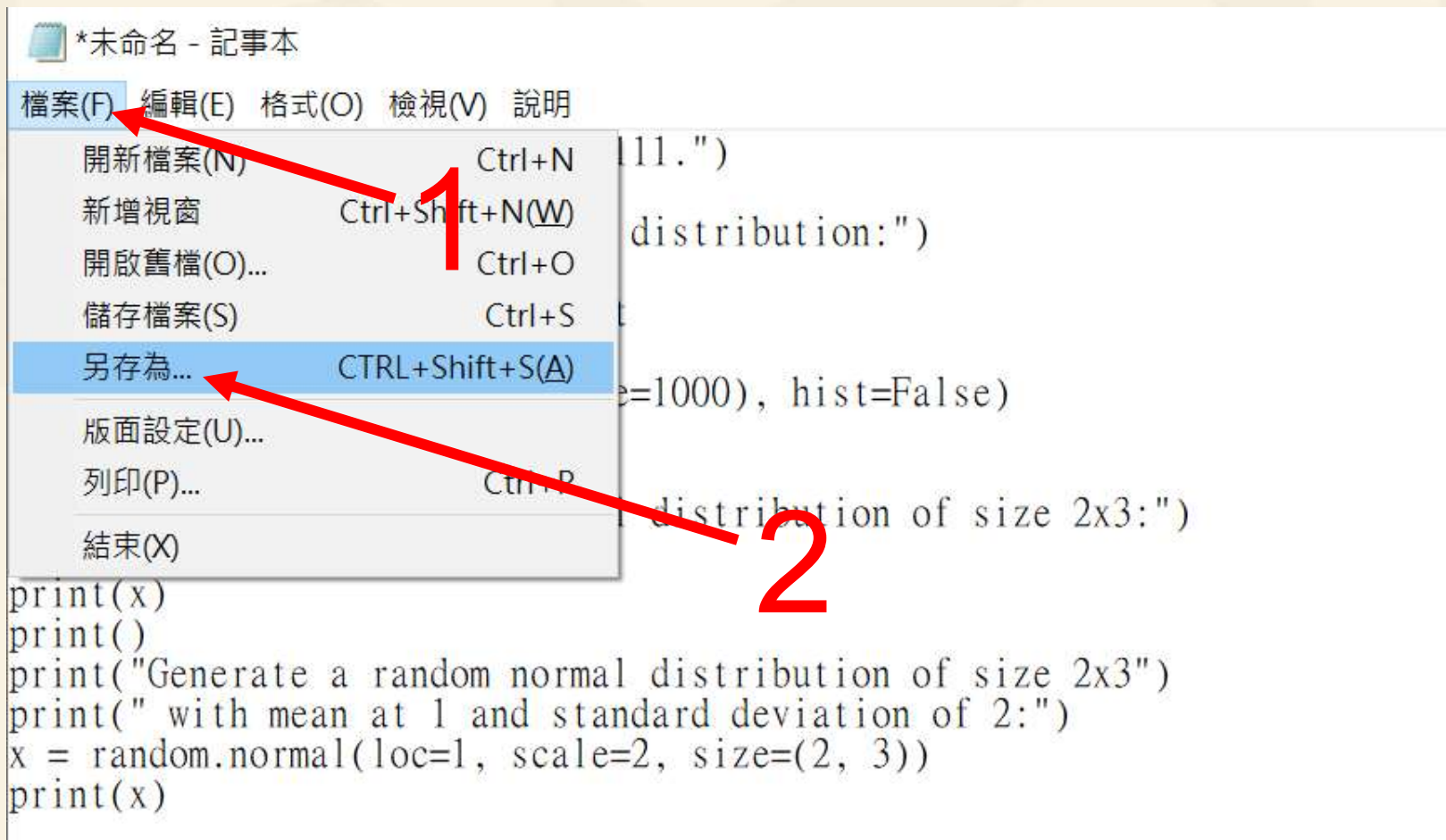
```
print("P11211XXX practices Lab11.")

print("Visualization of normal distribution:")
from numpy import random
import matplotlib.pyplot as plt
import seaborn as sns
sns.distplot(random.normal(size=1000), hist=False)
plt.show()
print()
print("Generate a random normal distribution of size 2x3:")
x = random.normal(size=(2, 3))
print(x)
print()
print("Generate a random normal distribution of size 2x3")
print(" with mean at 1 and standard deviation of 2:")
x = random.normal(loc=1, scale=2, size=(2, 3))
print(x)
```

Replace P11211XXX with your student ID

1. 用鍵盤輸入程式代碼.

建立程式文件 3/4



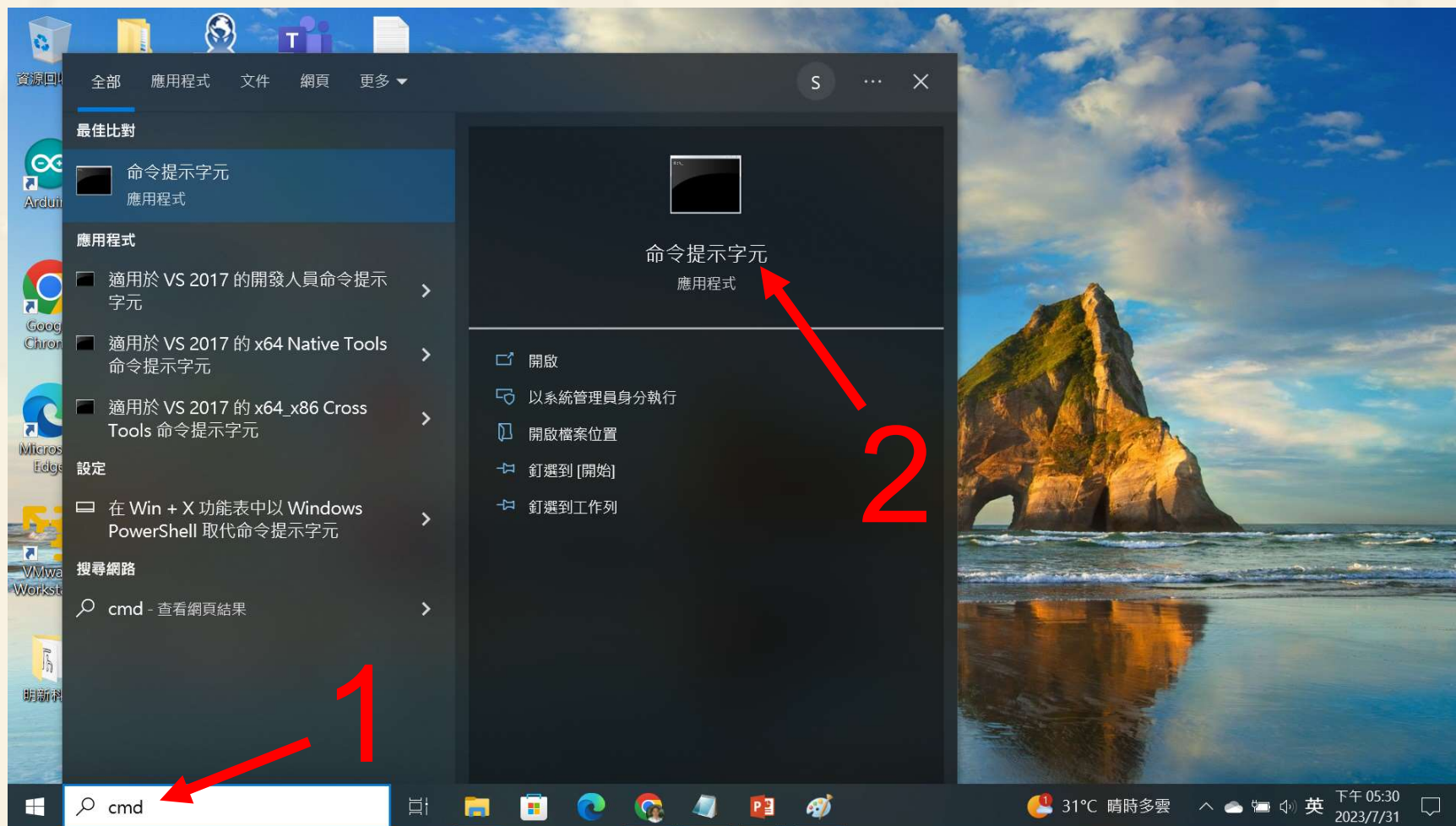
1. 用滑鼠點選檔案. 2. 用滑鼠點選另存為....

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 1/5



1. 鍵盤輸入cmd.
2. 用滑鼠點選命令提示字元.

檔案執行模式 2/5

```
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 3/5

```
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
```



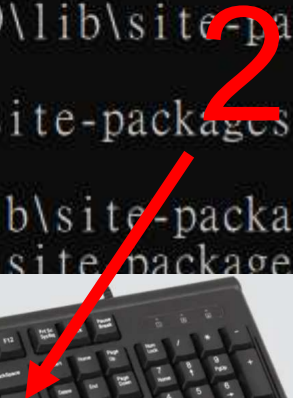
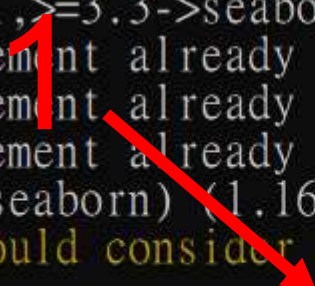
1. 用鍵盤輸入pip install seaborn.
2. 按一下Enter.

檔案執行模式 4/5

```
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



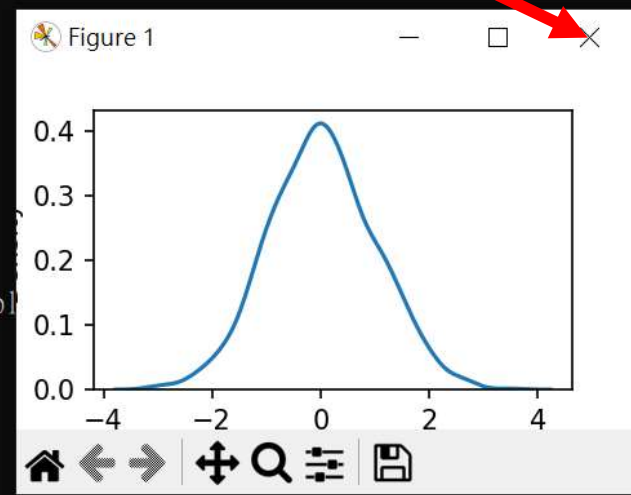
- 1. 用鍵盤輸入Python P11211XXX.py .
- 2. 按一下Enter.

檔案執行模式 5/5



```
sns.distplot([3, 4, 5, 6, 7, 8], hist = False)
```

```
C:\Users\盧樹台>Python P11211XXX.py
P11211XXX practices Lab111.
Visualization of normal 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 `kdeplot` (an axes-level function for kernel density pl
For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751
sns.distplot(random.normal(size=1000), hist=False)
```



1. 用滑鼠點選 X.

Verification Criteria of Lab111

(Lab111的驗收規範)常態分佈

**P11211XXX 必需
更換為您的學號**

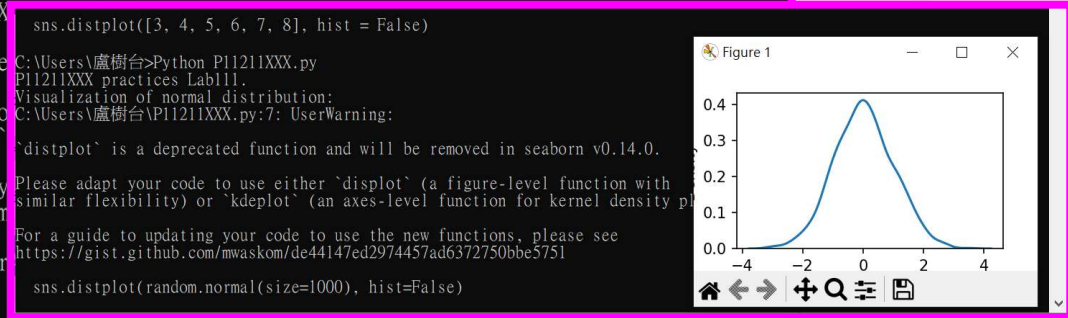
Ask the teacher to give you points after completing the illustrated results.

(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)

```

C:\Users\盧樹台>Python P11211XXX.py
P11211XXX practices Lab111.
Visualization of normal distribution:
C:\Users\盧樹台\Python>Python P11211XXX.py
P11211XXX practices Lab111.
Visualization of normal distribution:
C:\Users\盧樹台\Python>Python P11211XXX.py:7: UserWarning:
`sns.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
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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
C:\Users\盧樹台>
Generate a random normal distribution of size 2x3 with mean at 1 and standard deviation of 2:
[[ -0.42577777 -1.77368019  2.00705659]
 [  0.35496153 -0.45194878 -2.4128349 ]]
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>

```



```

P11211XXX - 記事本
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明
print("P11211XXX practices Lab111.")
print("Visualization of normal distribution:")
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print(x)
print()
print("Generate a random normal distribution of size 2x3")
print(" with mean at 1 and standard deviation of 2:")
x = random.normal(loc=1, scale=2, size=(2, 3))
print(x)

```

Every student must do Lab111 once!

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。

