

Lab099 : Array Iterating

陣列疊代

(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

.....

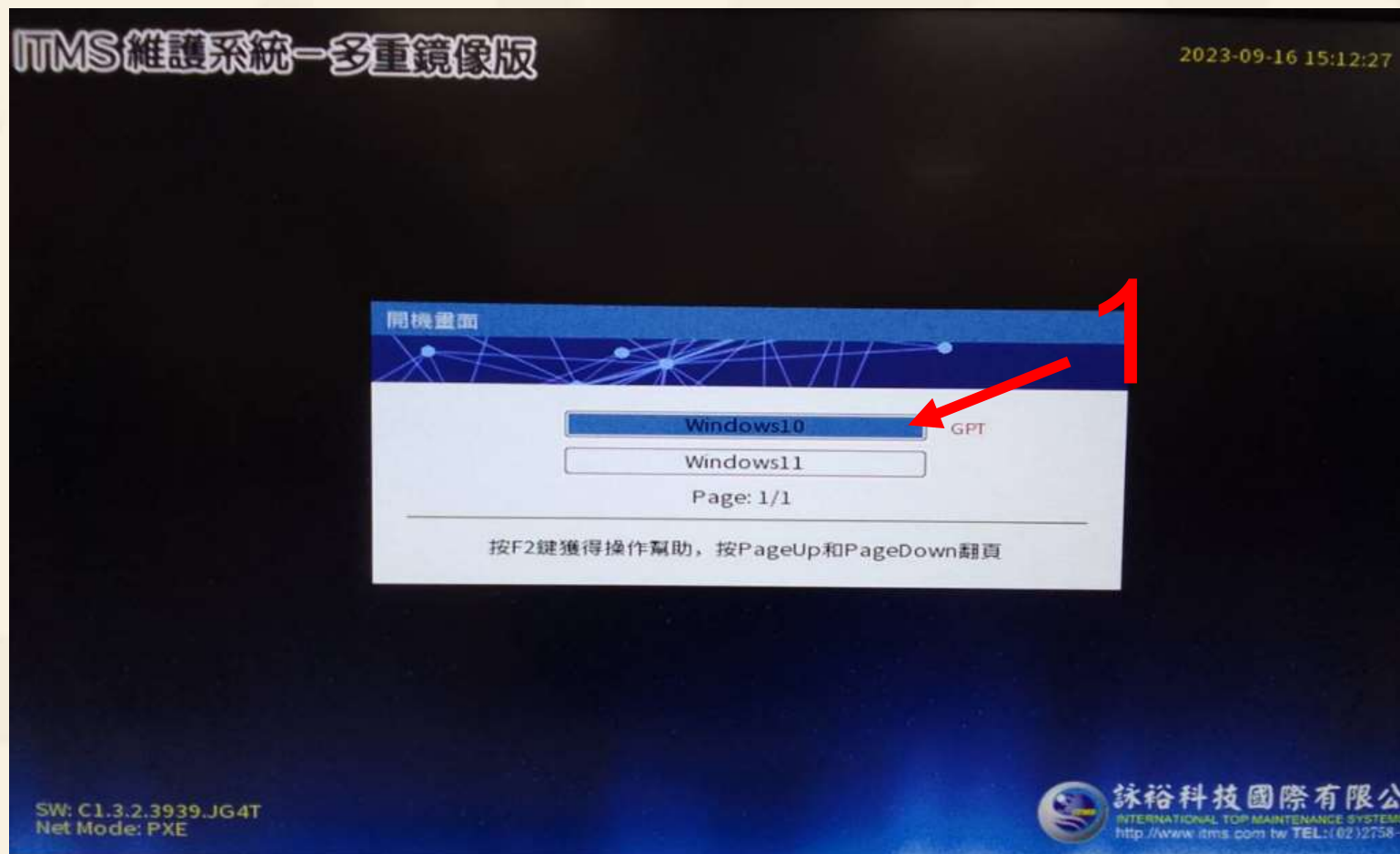
1 2 3 4 5 6 7 8 9 10

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

NumPy Array Iterating

w3schools.com/python/numpy/numpy_array_iterating.asp

請用善用Google翻譯讀懂網頁內容

NumPy Tutorial

- NumPy HOME
- NumPy Intro
- NumPy Getting Started
- NumPy Creating Arrays
- NumPy Array Indexing
- NumPy Array Slicing
- NumPy Data Types
- NumPy Copy vs View
- NumPy Array Shape
- NumPy Array Reshape
- NumPy Array Iterating**
- NumPy Array Join
- NumPy Array Split
- NumPy Array Search
- NumPy Array Sort
- NumPy Array Filter

NumPy Array Iterating

< Previous

Next >

Iterating Arrays

Iterating means going through elements one by one.

As we deal with multi-dimensional arrays in numpy, we can do this using basic `for` loop of python.

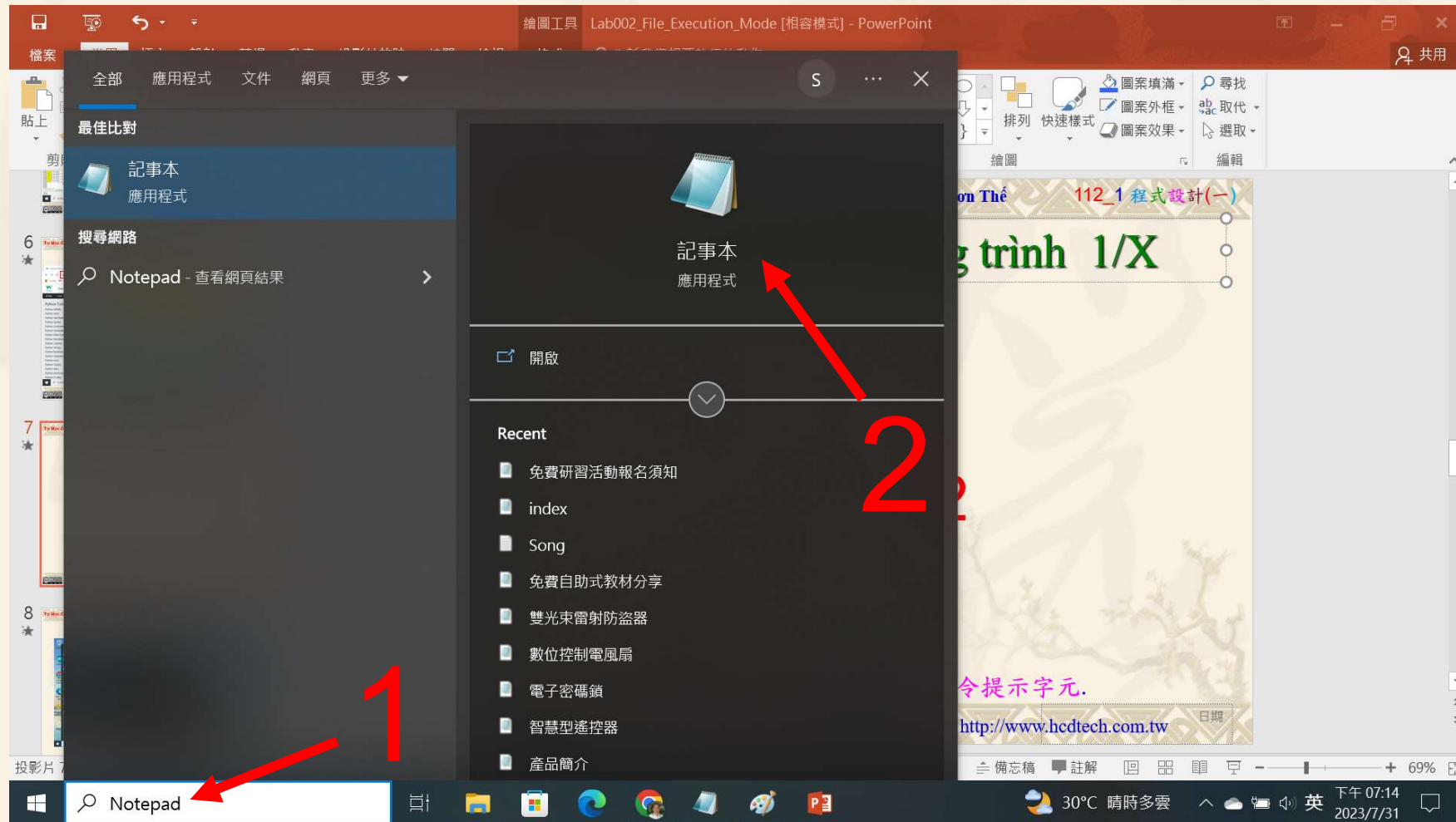
If we iterate on a 1-D array it will go through each element one by one.

Example

Iterate on the elements of the following 1-D array:

Get your own Python Server

建立程式文件 1/4



1. 鍵盤輸入Notepad. 2. 用滑鼠點選記事本.

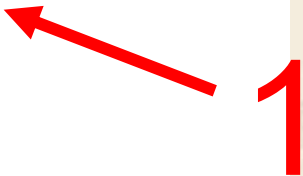
建立程式文件 2/4

```

*未命名 - 記事本
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明
print("P11211XXX practices Lab099.")

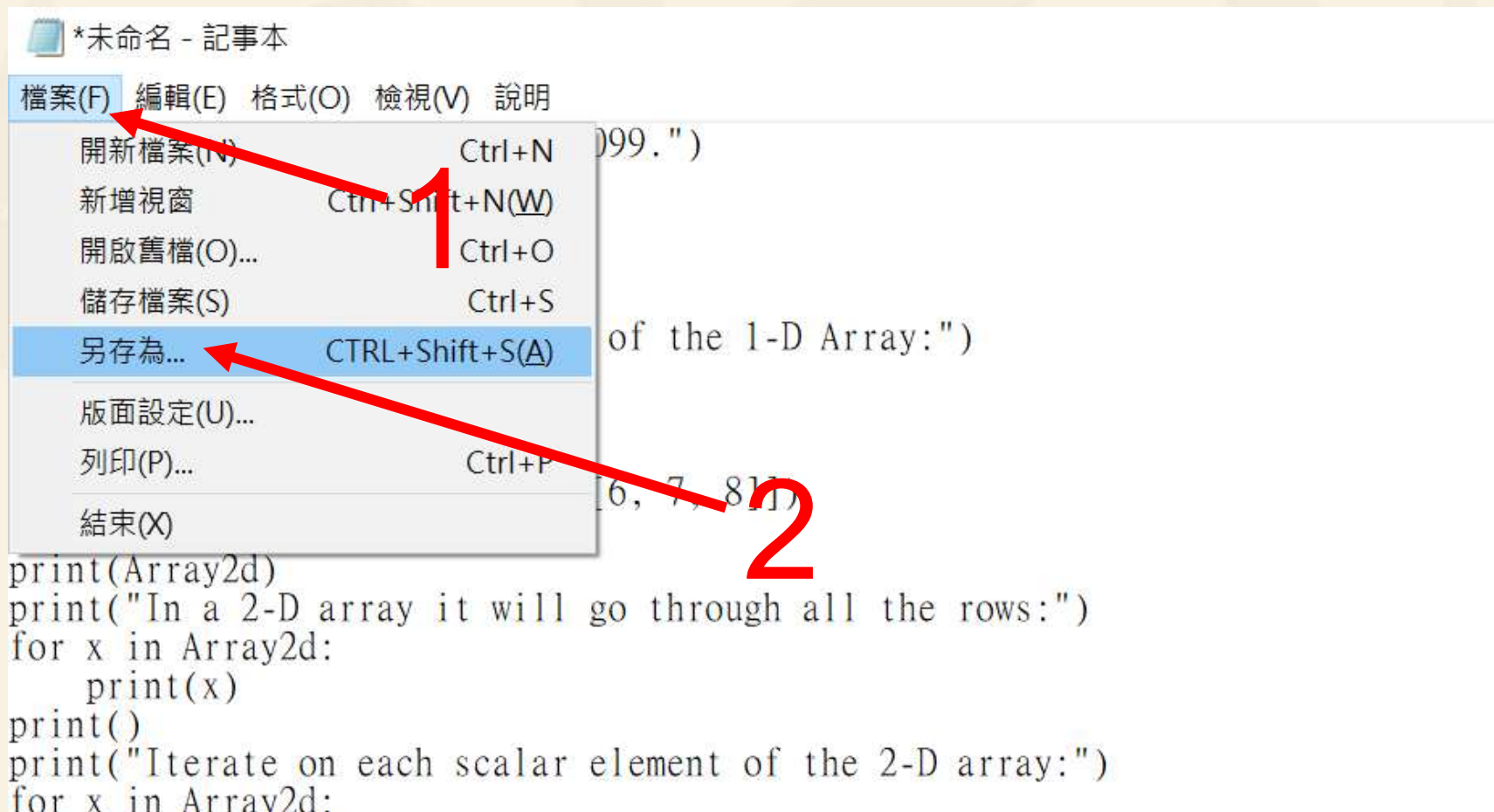
import numpy as np
Array1d = np.array([3, 4, 5])
print("Array1d = ", Array1d)
print("Iterate on the elements of the 1-D Array:")
for x in Array1d:
    print(x)
print()
Array2d = np.array([[3, 4, 5],[6, 7, 8]])
print("Array2d = ")
print(Array2d)
print("In a 2-D array it will go through all the rows:")
for x in Array2d:
    print(x)
print()
print("Iterate on each scalar element of the 2-D array:")
for x in Array2d:
    for y in x:
        print(y)
print()
Array3d = np.array([[[1, 2, 3], [4, 5, 6]], [[7, 8, 9], [10, 11, 12]]])
print("Array3d = ")
print(Array3d)
print("In a 3-D array it will go through all the 2-D arrays:")
for x in Array3d:
    print(x)
print()
print("Iterate on each scalar element of the 3-D array:")
for x in Array3d:
    for y in x:
        for z in y:
            print(z)
    
```

Replace P11211XXX with your student ID



1. 用鍵盤輸入程式代碼.

建立程式文件 3/4



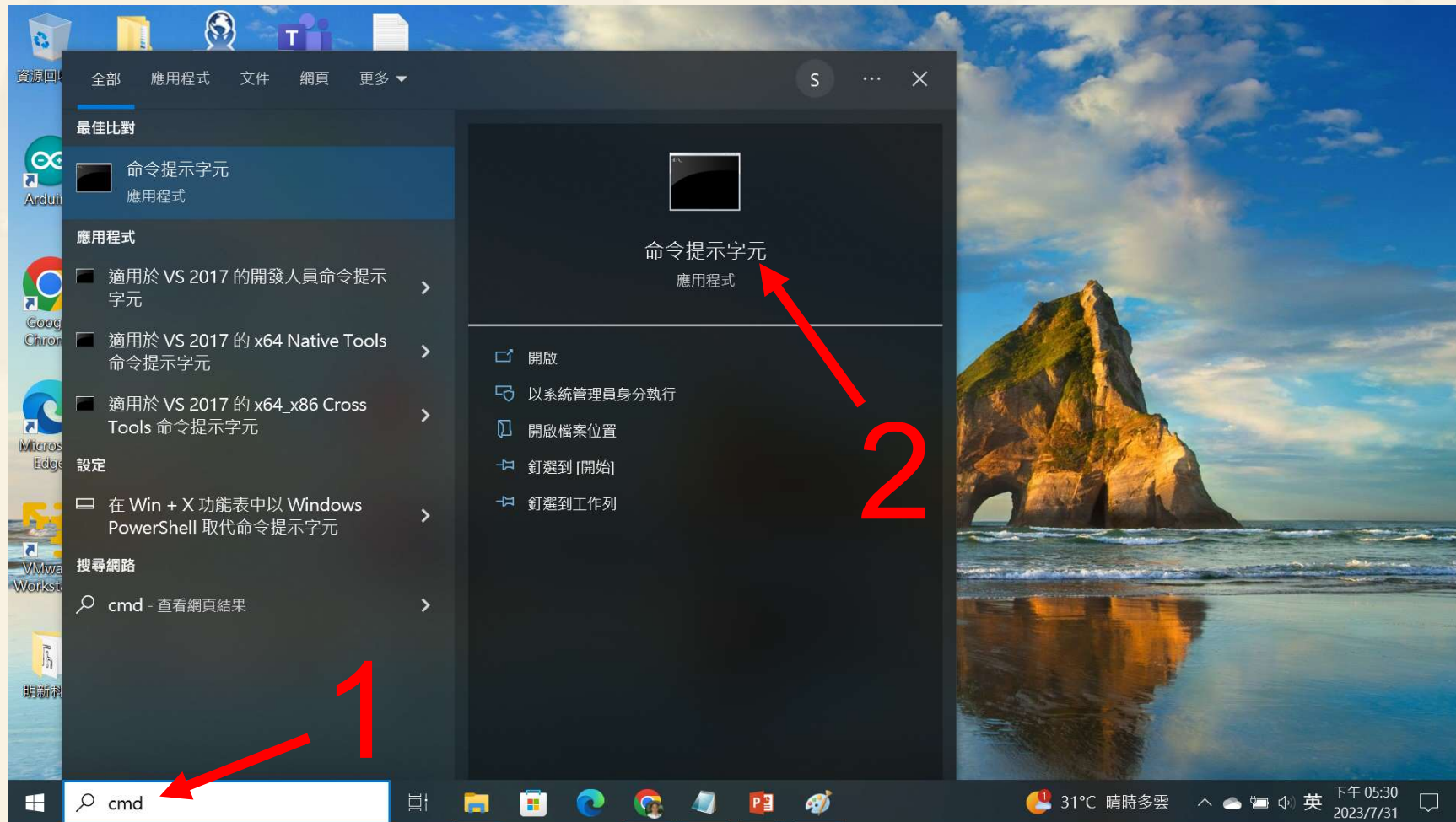
1. 用滑鼠點選檔案. 2. 用滑鼠點選另存為....

建立程式文件 4/4



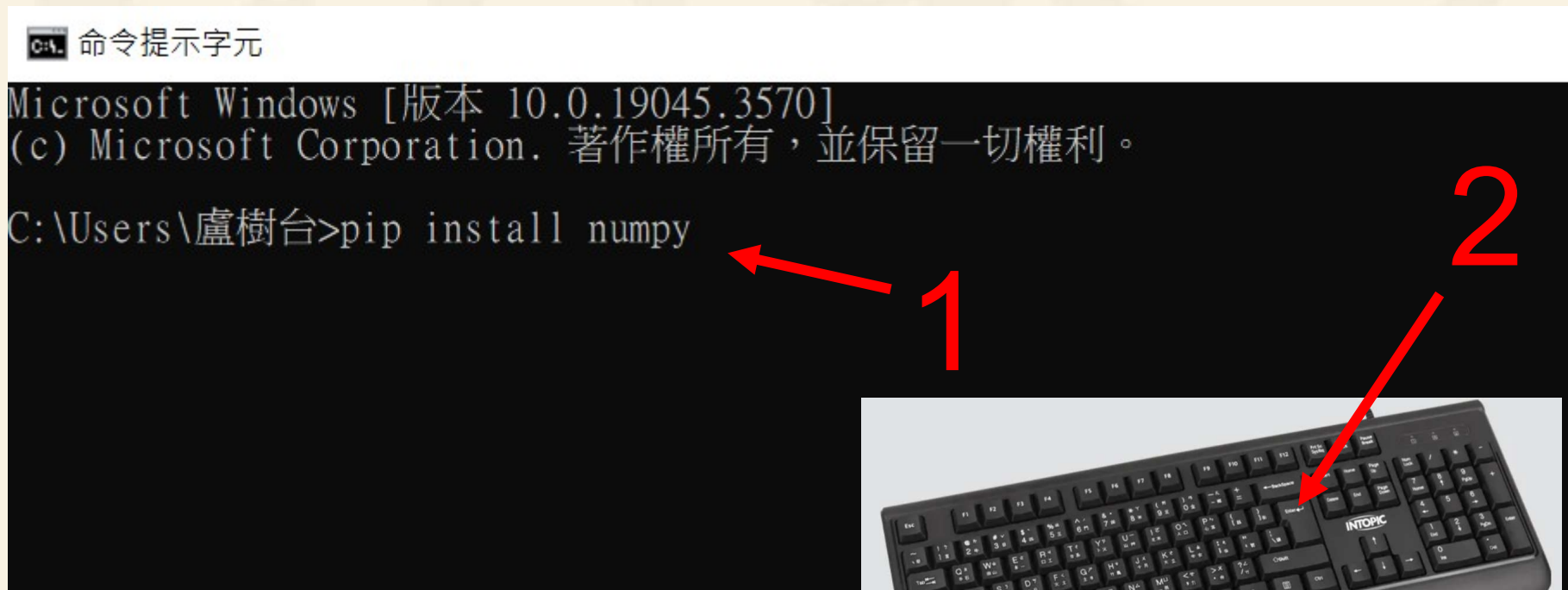
- 1. 資料夾 = C:\使用者>User>.
- 2. 檔案名稱 = P11211XXX.py .
- 3. 存檔類型(T) = 所有檔案.
- 4. 用滑鼠點選存檔.

檔案執行模式 1/3



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



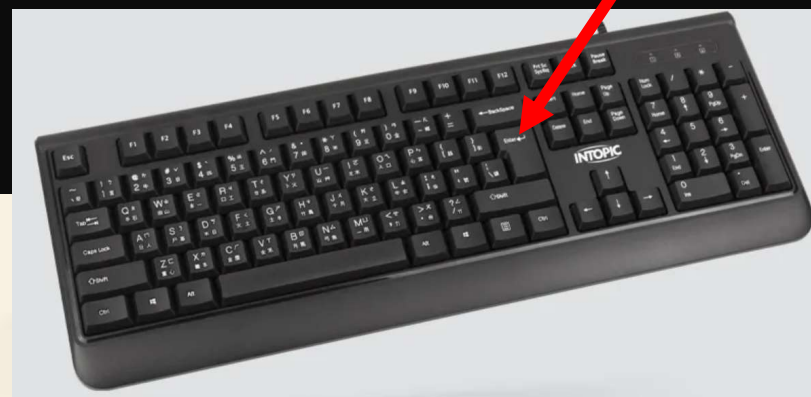
1. 用鍵盤輸入pip install numpy.
2. 按一下Enter.

檔案執行模式 3/3

C:\> 命令提示字元

```
Microsoft Windows [版本 10.0.19045.3570]  
(c) Microsoft Corporation. 著作權所有，並保留一切權利。  
C:\Users\盧樹台>pip install numpy  
Requirement already satisfied: numpy in c:\python39\lib\site-packages (1.26.1)  
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.

Verification Criteria of Lab099

(Lab099的驗收規範)陣列疊代

**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)

```

命令提示字元
Microsoft Windows [版本 10.0.19045.3570]
(c) Microsoft Corporation. 著作權所有，並保留一切權利。
C:\Users\User>Python P11211XXX.py
P11211XXX practices Lab099.
Array1d = [3 4 5]
Iterate on the elements of the 1-D Array:
3
4
5
Array2d =
[[3 4 5]
 [6 7 8]]
In a 2-D array it will go through all the rows:
[3 4 5]
[6 7 8]
Iterate on each scalar element of the 2-D array:
3
4
5
6
7
8
Array3d =
[[[ 1  2  3]
 [ 4  5  6]]
 [[ 7  8  9]
 [10 11 12]]]
In a 3-D array it will go through all the 2-D arrays:
[[1 2 3]
 [4 5 6]]
[[ 7  8  9]
 [10 11 12]]
Iterate on each scalar element of the 3-D array:
1
2
3
4
5
6
7
8
9
10
11
12
C:\Users\User>

```

```

P11211XXX - 記事本
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明
print("P11211XXX practices Lab099.")

import numpy as np
Array1d = np.array([3, 4, 5])
print("Array1d = ", Array1d)
print("Iterate on the elements of the 1-D Array:")
for x in Array1d:
    print(x)
print()
Array2d = np.array([[3, 4, 5],[6, 7, 8]])
print("Array2d = ")
print(Array2d)
print("In a 2-D array it will go through all the rows:")
for x in Array2d:
    print(x)
print()
print("Iterate on each scalar element of the 2-D array:")
for x in Array2d:
    for y in x:
        print(y)
print()
Array3d = np.array([[[1, 2, 3], [4, 5, 6]], [[7, 8, 9], [10, 11, 12]]])
print("Array3d = ")
print(Array3d)
print("In a 3-D array it will go through all the 2-D arrays:")
for x in Array3d:
    print(x)
print()
print("Iterate on each scalar element of the 3-D array:")
for x in Array3d:
    for y in x:
        for z in y:
            print(z)

```

Every student must do Lab099 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。

