作業三
資料分析練習

READ EXCEL FILE

1. Read the excel file from the website (https://www.cs.nccu.edu.tw/~sichiu/11201_ppt/gas_prices.xlsx)
2. Use the read_excel function from pandas
   - Use sheet_name='gas_prices'

Q1

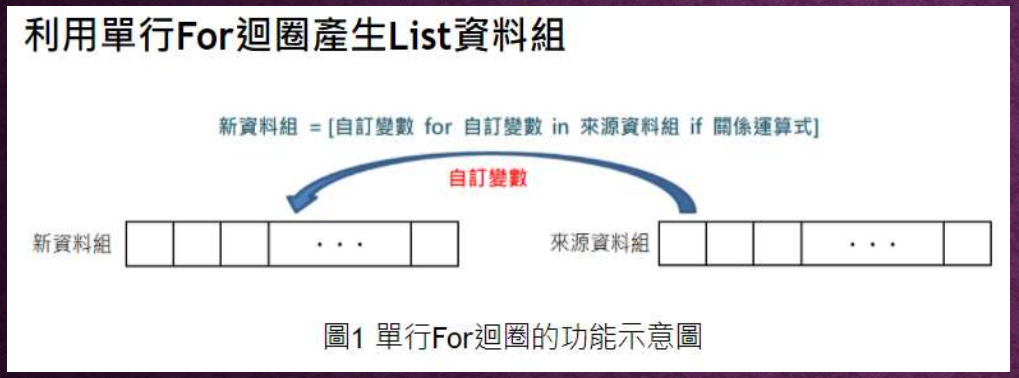
a. Find the gas prices of France and USA from 1990 to 2008
b. Plot graph to compare with the two countries by using line plot

Q2

1. Use the read_excel function from pandas
   - Use sheet_name='gas_prices'
2. Compute and plot the average prices of Asia and Europe from 1990 to 2008 using bar plot
   - Asia countries: Japan and South Korea
   - Europe countries: Italy, France, and UK

串列解析 (LIST COMPREHENSION)

串列解析(LIST COMPREHENSION): 提供一種更簡潔的方法建立一個新的串列的資料



Syntax of list comprehension:
[expression for item in list]
Ex: list_num=[letter for letter in 'human']

- list_name=[自訂變數 for 自訂變數 in 資料組 (if 關係運算式)]
- newlist=[*expression* for *item* in *iterable* (if *condition* == True)]

EXAMPLE:

GET 1 TO 10 INTEGERS AND SAVE TO NEW LIST

```
num_list=[]
for i in range(1,11)
    num_list +=[i]
```

=

```
num_list=[i for i in range(1,11)]
```

CONDITIONALS IN LIST COMPREHENSION

- Using if with list comprehension
  - listA= [x for x in range(20) if x % 2 ==0]
- Nested if with list comprehension
  - listB= [y for y in range(100) if y%2==0 if y%5==0]
- if…else with list comprehension
  - listC=[“Even” if i%2==0 else “Odd” for i in range(10)]

EXAMPLES

- list1=[i for i in range(10)]
- list2=[i*2 for i in range(10)]
- list3=[i for i in range(10) if i<8]
- lista=[-1,-5,-2,0,4,8]
- listb=[abs(i) for i in lista]
- listc=[i for i in lista if i>=0]
- listd=[i**2 for i in lista]

Q3: THE RESULTS STORED IN A NEW LIST

a. Convert Celsius temperature to Fahrenheit temperature

List1=[32,120,15,79,88] # The Celsius temperature is stored in List1

Fahrenheit temperature =(Celsius temperature *(9/5) +32)

b. Take the square root of the score, multiply by 10, and round the score to four decimal places (use round() function)

List3=[11,34,59,100, 60 , 36, 44] #scores

c. Generate a new list of values that are below 1000 (excluding it) from List6.

List6=[33,15,3100,4568,29,175,1000]

Q4: THE RESULTS STORED IN A NEW LIST

a. List4=[‘a1.jpg’,’b2.gif’,’c3.png’,’d4.tif’,’e5.jpg’,’a2.jpg’,’a3.png’], find the file names with “.jpg”.

b. List5=[‘a1.jpg’,’b2.gif’,’c3.png’,’d4.tif’,’e5.jpg’,’a2.jpg’,’a3.png’], find the file names starting with ’a’