Python入門與行銷資料科學(行銷四合)[0767]

期中考試

2022.11.11.

Note:

1. 請將答案寫在同一隻Python程式中，使用註解隔開，內容如以下範例所示：(Put all answer in one program, use comment to separate them)

```
#exam 1
Your code for exam #1
…
#exam 2
Your code for exam #2
…
#exam 3
Your code for exam #3
…
```

2. 自行下載考試需要的CSV file
Download the CSV file required for the exam by yourself

3. 檔案的命名原則為 ‘學號.py’ (e.g. T08171.py)，
上傳時只要將 ‘學號.py’ 上傳到iLearn2。*.CSV, *.tff 等不需要上傳！
*** 請勿上傳 *.doc, *.pdf, jupiter notebook file, …etc ***
Use ‘your id.py’ (e.g. T08171.py) as uploaded file format. Only ‘*.py’ need to be uploaded, for the other files, please do not upload to iLearn2.

期中考試 #1

寫一個Python程式，計算1..10之間每個數字的平方(square)

Write a Python program that calculates the square of each number between 1 and 10

提示：不要只印出結果，要有文字說明
Hint : Don't just print the results, there must have a description.

20分

期中考試 #2

寫一個函式，可以獲取串列(List)中的前 n 個最小的元素(element)

Write a function to get the first n smallest elements in a list

提醒：一定要使用function，否則就算結果正確還是會扣分。

Note：Be sure to use function, otherwise points will be deducted even if the result is correct

```
#function
def n_smallest(n, lst):
    ..
    ..

#main program
n=5
scores = [45, 39, 65, 88, 91, 76, 25, 49, 35, 80]
small_n=n_smallest(n, scores) #5 is example, you can freely assign any number
print(small_n)
```

參考範例：

```
scores = [45, 39, 65, 88, 91, 76, 25, 49, 35, 80]
=> [25, 35, 39, 45, 49] (ex1. when n=5)
=> [25, 35, 39] (ex2. when n=3)
```

20分

期中考試 #3

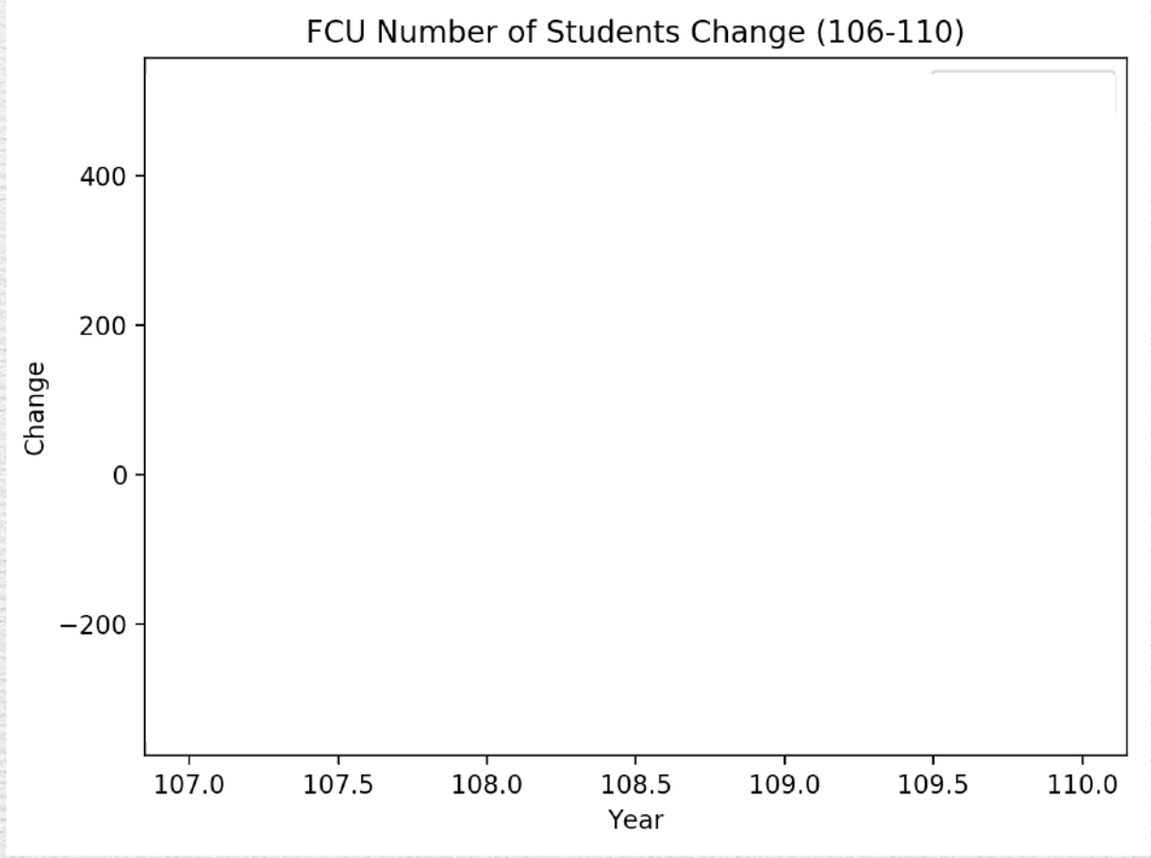
統計逢甲大學106-110學年度，學生總人數變化(增減)，並繪製趨勢圖(Line chart)

Statistics on the change (increase or decrease) of the total number of students in Feng-Chia University between 106-110 academic year, and plot the trend chart. (Line chart)

hint: series diff(), pandas plot

參考輸出範例如右： 要有 `x label, y label, title…`

The reference output example is on the right: there should be x label, y label, title…



20分

自行從iLeanr2下載 fcu.csv

期中考試 #4

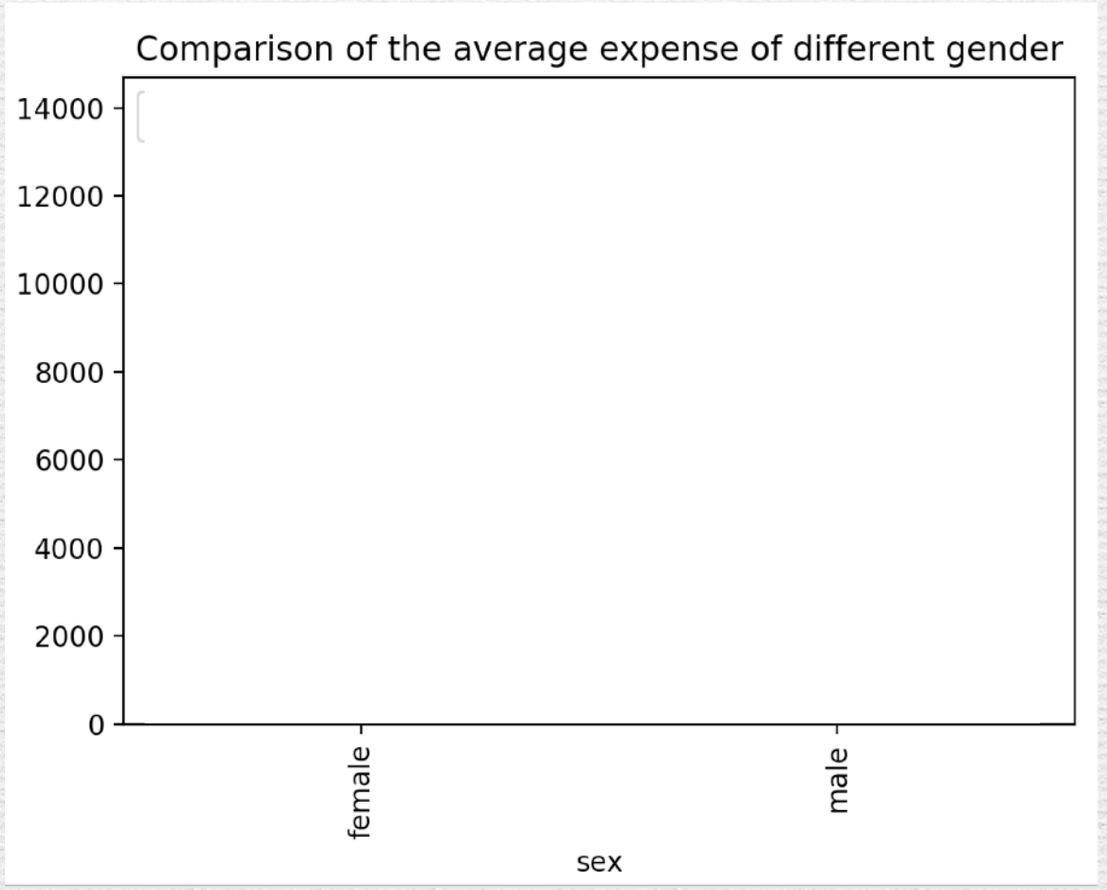
使用`insurance.csv`，處理並分析不同性別的平均醫療保險費用，並繪製柱狀圖(bar chart)作比較

Use 'insurance.csv' to process and analyze the average health insurance costs by gender and plot a bar chart for comparison

hint: 使用 groupby(), pandas plot

參考輸出範例

Reference output example



20分

請自行從iLeanr2下載 insurance.csv

期中考試 #5

使用`online retail.csv`，處理並分析所有交易紀錄，產生每個月的營收變化圖

Use “online retail.csv” to process and analyze all transaction records to generate monthly report of revenue changes.

hint: series diff(), matplotlib plot

參考輸出範例: 正成長使用綠色柱狀，負成長使用紅色柱狀，並加註變化量

Reference output example: use green bars for positive growth, red bars for negative growth, and add text description for the changes

20分

自行從iLeanr2下載 online retail.csv