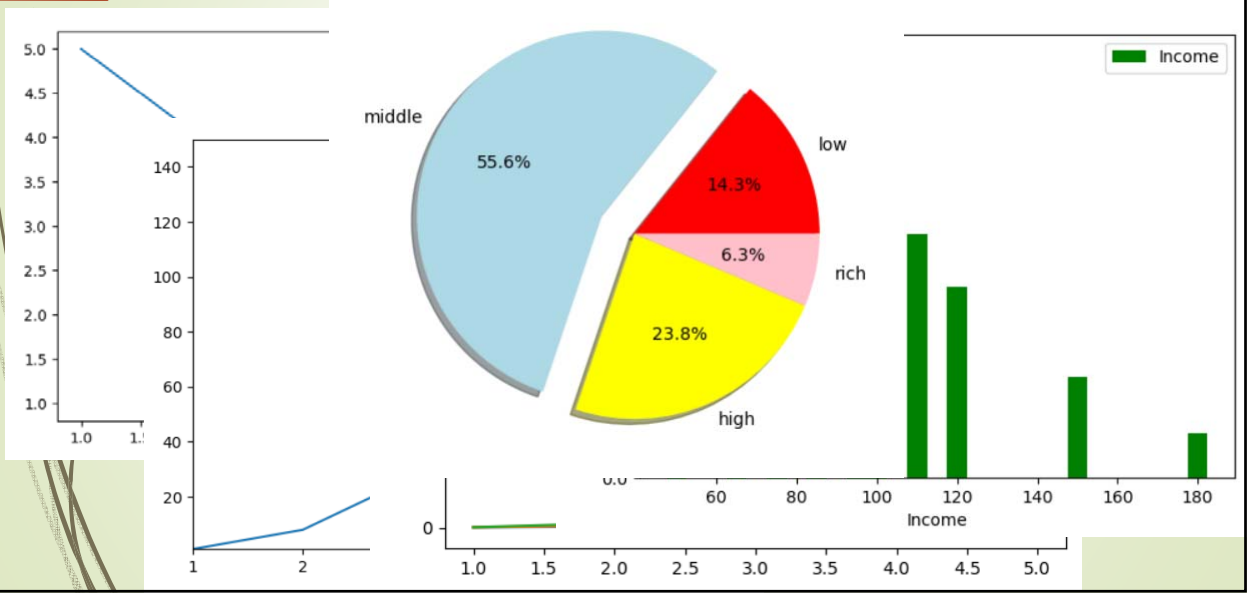
Week 14

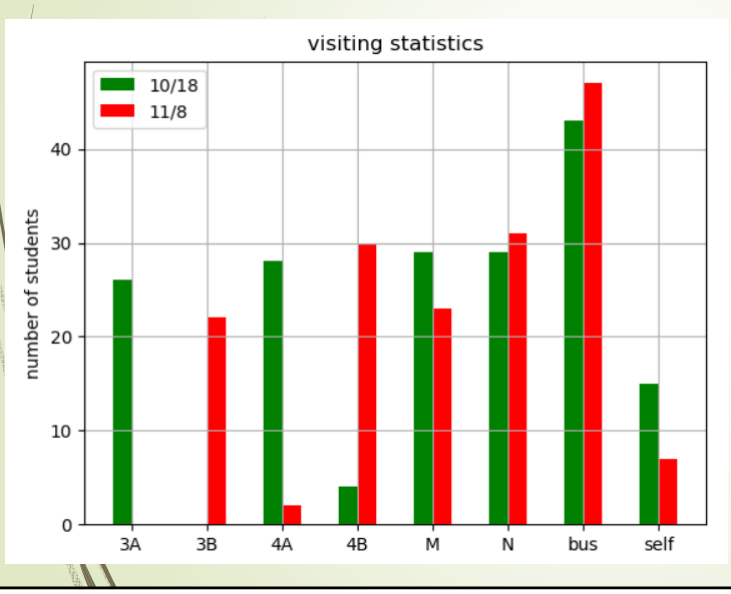
圖表繪製加強

Matplotlib簡介

- matplotlib主要用於2-D，是一個跨平台、可以搭配Pandas與NumPy的Python資料視覺化套件。
  matplotlib主要的參考網站如下：
  - https://matplotlib.org/

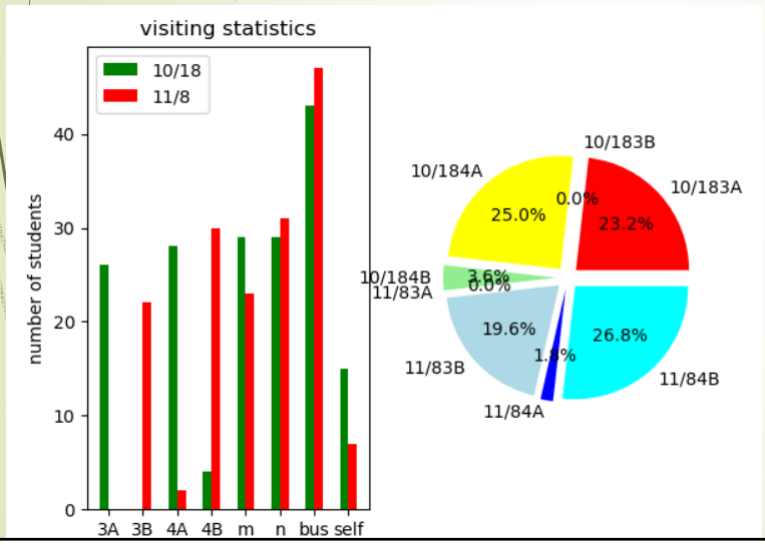
除了這些還有甚麼圖?





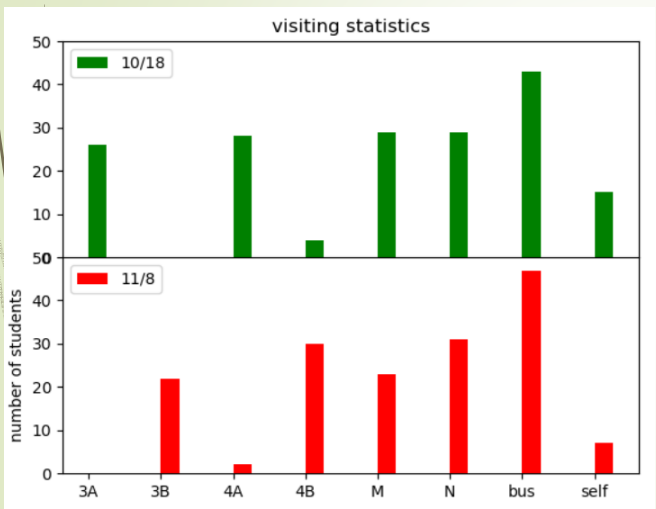

```
import matplotlib.pyplot as plt
incol1=np.array([1,3,5,7,9,11,13,15])
incol2=incol1 + 0.5
incol=incol1+0.25

xshow=["3A","3B","4A","4B","M","N","bus","self"]
plt.bar(x=incol1, height=y1, width=.5, color='green',label='10/18')
plt.bar(x=incol2, height=y2, width=.5, color='red',label='1178')
plt.xticks(incol,xshow)
plt.legend()
plt.grid(True)
plt.title('visiting statistics')
plt.ylabel('number of students')
plt.show()
```

圖的變化型(多張)



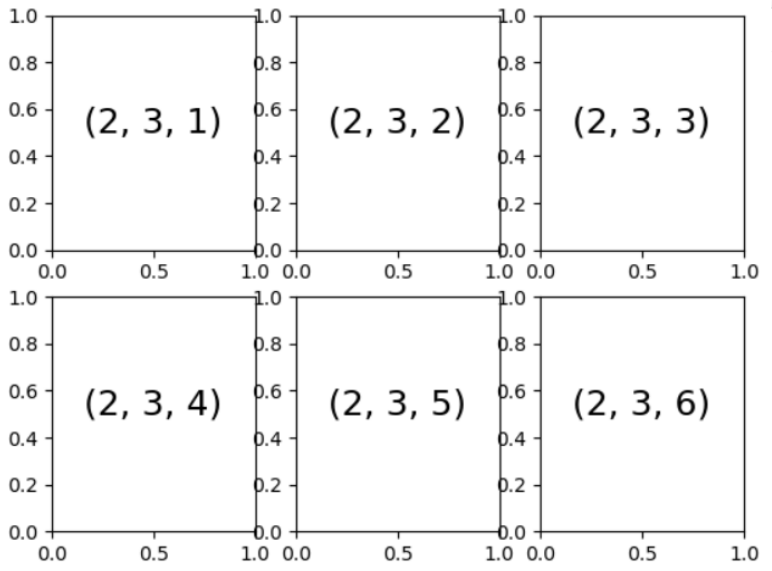

```
plt.subplot(1,2,1)
xshow=["3A","3B","4A","4B","M","N","bus","self"]
plt.bar(x=incol1, height=y1, width=.5, color='green',label='10/18')
plt.bar(x=incol2, height=y2, width=.5, color='red',label='11/8')
plt.xticks(incol,xshow)
plt.legend()
plt.title('visiting statistics')
plt.ylabel('number of students')

plt.subplot(1,2,2)
colors1=['red','pink','yellow','lightgreen','green','lightblue','blue','cyan']
plt.axis('equal')
plt.pie(number,labels=lable1,colors=colors1, shadow=False,explode=(0.1, 0.1, 0.1, 0.1, 0.1, 0.1, 0.1, 0.1), autopct='%1.1f%%')
plt.show()
```

圖的變化型(多張)

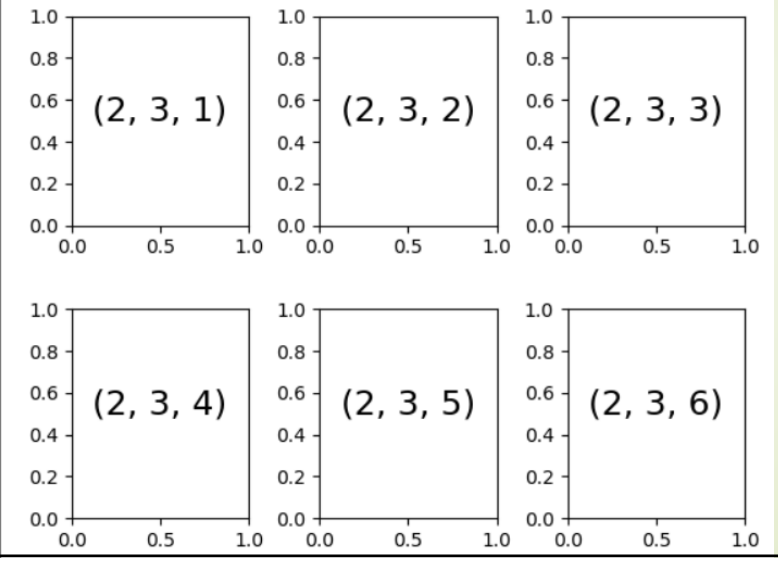



```
xshow=["3A","3B","4A","4B","M","N","bus","self"]
ax1=plt.axes([0.1,0.5,0.8,0.4],xticklabels=[], ylim=(0,50))
plt.bar(x=incol1, height=y1, width=.5, color='green',label='10/18')
plt.legend()
plt.title('visiting statistics')
ax2=plt.axes([0.1,0.1,0.8,0.4],xticklabels=xshow, ylim=(0,50))
plt.bar(x=incol2, height=y2, width=.5, color='red',label='11/8')
plt.xticks(incol,xshow)
plt.legend()
plt.ylabel('number of students')
plt.show()
```

```
import matplotlib.pyplot as plt
for i in range(1,7):
    plt.subplot(2,3,i)
    plt.text(0.5,0.5,str((2,3,i)),fontsize=18,ha='center')
plt.show()
```




```
import matplotlib.pyplot as plt
plt.subplots_adjust(hspace=0.4,wspace=0.4)
for i in range(1,7):
    plt.subplot(2,3,i)
    plt.text(0.5,0.5,str((2,3,i)),fontsize=18,ha='center')
plt.show()
```



要用到機器學習??: 記得要安裝 scikit-learn

```
C:\Users\Li-Ling\AppData\Local\Programs\Python\Python38-32>cd scripts

C:\Users\Li-Ling\AppData\Local\Programs\Python\Python38-32\Scripts>pip install scikit-learn
Collecting scikit-learn
  Downloading scikit_learn-0.23.1-cp38-cp38-win32.whl (6.0 MB)
     |████████████████████████████████| 6.0 MB 595 kB/s
Collecting threadpoolctl>=2.0.0
  Downloading threadpoolctl-2.0.0-py3-none-any.whl (34 kB)
Collecting joblib>=0.11
  Downloading joblib-0.15.1-py3-none-any.whl (298 kB)
     |████████████████████████████████| 298 kB 273 kB/s
Requirement already satisfied: numpy>=1.13.3 in c:\users\li-ling\appdata\local\programs\python\python38-32
ages (from scikit-learn) (1.18.2)
Collecting scipy>=0.19.1
  Downloading scipy-1.4.1-cp38-cp38-win32.whl (27.9 MB)
     |████████████████████████████████| 27.9 MB 939 kB/s
Installing collected packages: threadpoolctl, joblib, scipy, scikit-learn

>>> from sklearn import datasets
>>>
```

小專題簡介

- 請各組說明想做的主題及目標
- 討論可能會用到的套件及問題