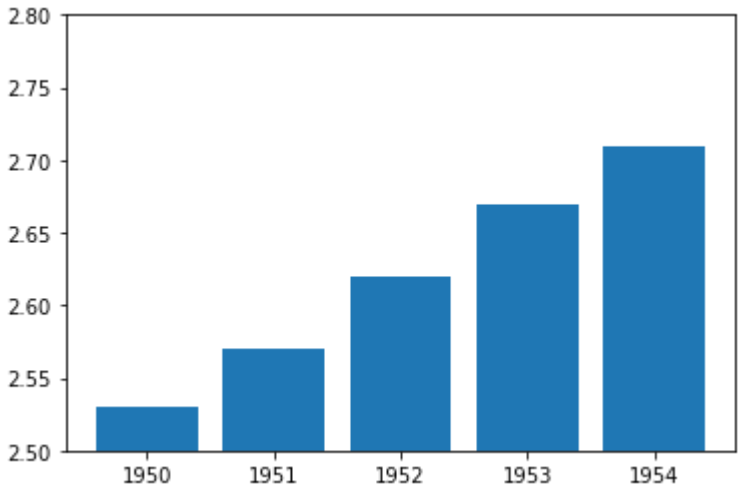
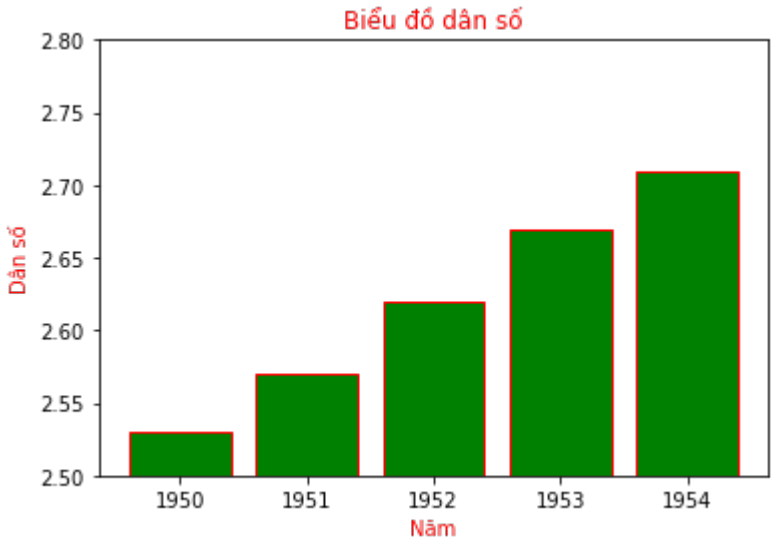
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

```
year = [1950,1951,1952,1953,1954]
pop = [2.53, 2.57, 2.62, 2.67, 2.71]
```

```
plt.bar(year,pop)
plt.ylim(2.5,2.8)
plt.show()
```

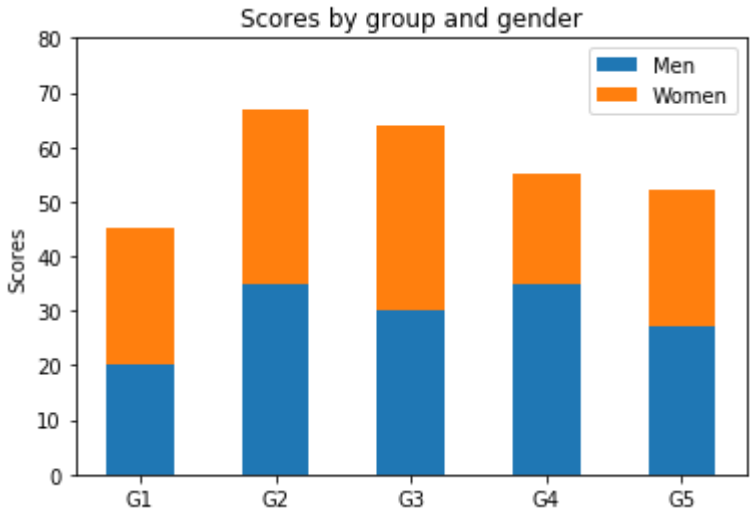



```
#align edge
plt.bar(year, pop, color='g', align='center', edgecolor='red')
plt.title('Biểu đồ dân số', color='red')
plt.ylabel('Dân số',color='red')
plt.xlabel('Năm',color='red')
plt.ylim(2.5,2.8)
plt.show()
```



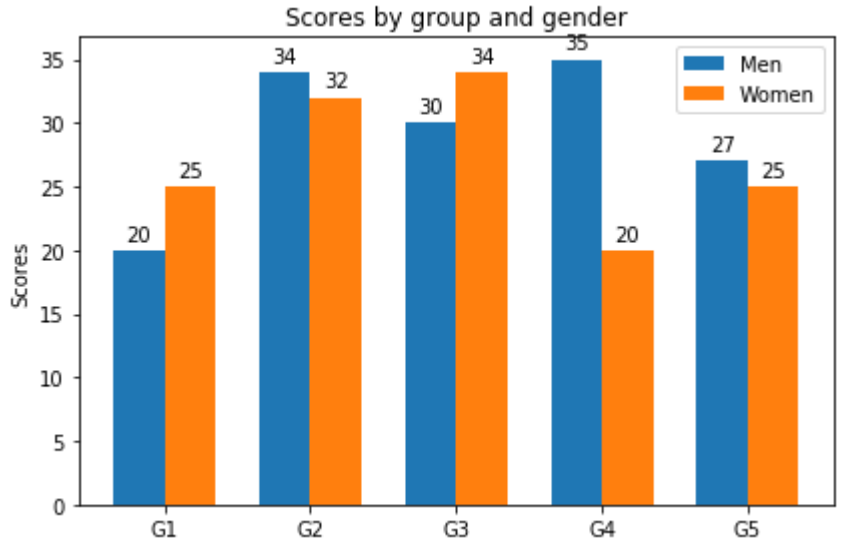

```
# stacked bar chart
```

```
p1 = plt.bar(ind,menMeans, width,label='Men')
p2 = plt.bar(ind,womenMeans, width,bottom=menMeans,label='Women')



plt.ylabel('Scores')
plt.title('Scores by group and gender')
plt.xticks(ind,('G1','G2','G3','G4','G5'))
plt.yticks(np.arange(0,81,10))
plt.legend()
plt.show()
```

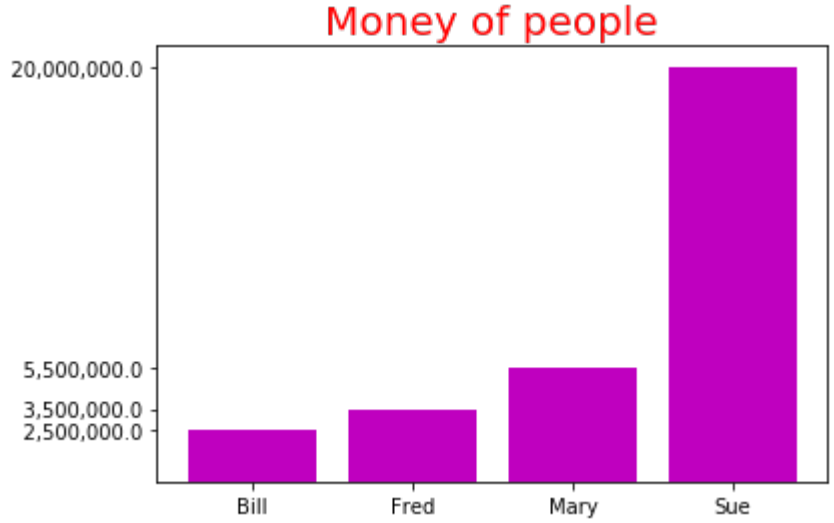



```
labels = ['G1', 'G2', 'G3', 'G4', 'G5']
men_means = [20, 34, 30, 35, 27]
women_means = [25, 32, 34, 20, 25]

x = np.arange(len(labels))  # the label locations
width = 0.35  # the width of the bars

fig, ax = plt.subplots()
rects1 = ax.bar(x - width/2, men_means, width, label='Men')
rects2 = ax.bar(x + width/2, women_means, width, label='Women')

# Add some text for labels, title and custom x-axis tick labels, etc.
ax.set_ylabel('Scores')
ax.set_title('Scores by group and gender')
ax.set_xticks(x)
ax.set_xticklabels(labels)
ax.legend()
```

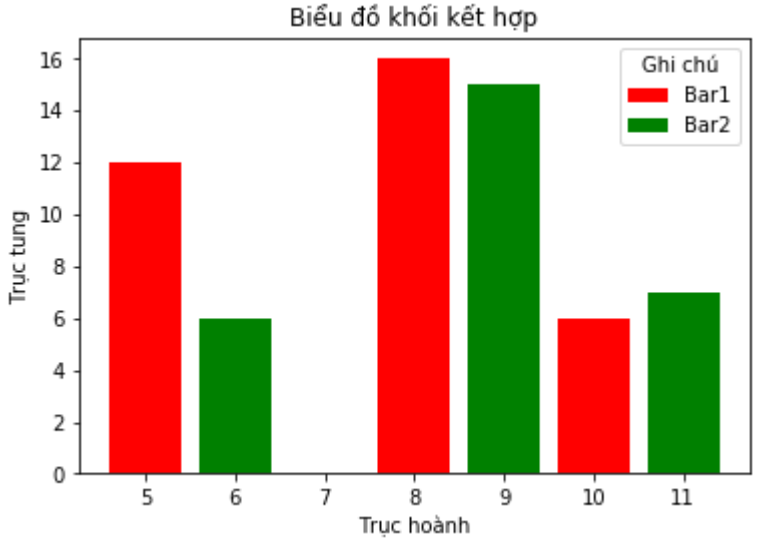
```
autolabel(rects2)

fig.tight_layout()

plt.show()
```



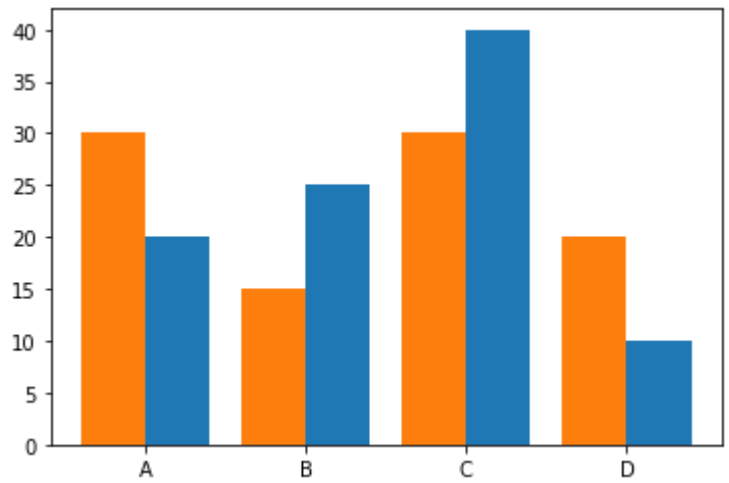

```
#dinh dang tien te

name=['Bill','Fred','Mary','Sue']
money = pd.Series([2.5e6,3.5e6,5.5e6,2.0e7])

plt.bar(name,money,color='m')
plt.xticks(name)
plt.yticks(money,money.map(lambda x: '{:15,.1f}'.format(x)))
plt.title('Money of people',color='red',fontsize=20)

#plt.text(1.0,1.05,"Biểu đồ cột",fontsize=20,color='blue',alpha=0.5)
#plt.text(1.5, 0.05,"Biểu đồ cột" , bbox=dict(facecolor='red', alpha=0.5),ha='to
plt.show()
```

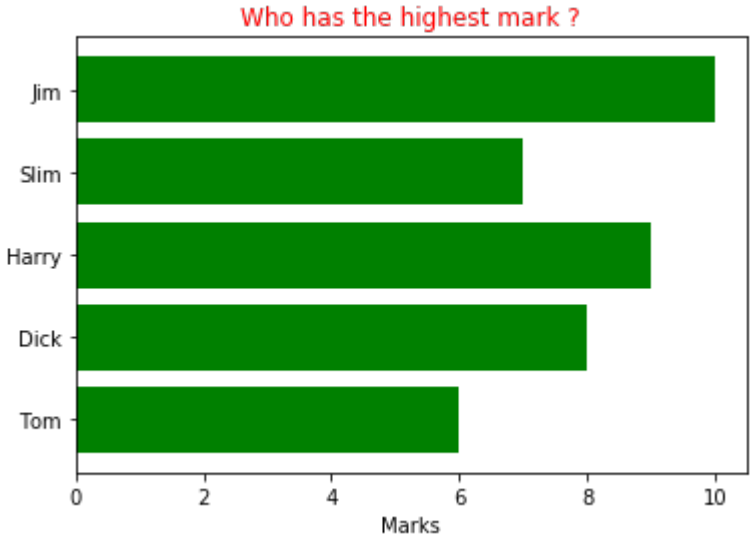


```
plt.title('Biểu đồ khối kết hợp')
plt.xlabel('Trục hoành')
plt.ylabel('Trục tung')
plt.legend(['Bar1','Bar2'],loc=1,title='Ghi chú')
plt.show()
```




```
# Biểu đồ cạnh nhau

labels= ['A','B','C','D']
x = np.arange(len(labels))

width = 0.4

plt.bar(x + width/2, [20,25,40,10],width=width)
plt.bar(x - width/2, [30,15,30,20],width=width)
plt.xticks(x,labels)
plt.show()
```






```
# Biểu đồ khối ngang
people = ['Tom','Dick','Harry','Slim','Jim']
marks = [6,8,9,7,10]

r = pd.DataFrame({'name':people,'mark':marks},index=np.arange(len(people)))
r = r.sort_values(by='mark')

y_pos = np.arange(len(people))
plt.barh('name','mark',data=r,color='g',ecolor='black')
plt.yticks(y_pos,people)
plt.xlabel("Marks")
plt.title('Who has the highest mark ?',color='red')
plt.show()
```