병아리 데이터 chick001 chick002로 그래프 그려보기
1. chick001.csv 데이터 읽어와서 기본통계량 점검하기

```
import pandas as pd
import seaborn as sns

hat = pd.read_csv('data/chick001.csv')
print(hat)
print(" ")
#------------------------------------------------------------
```

	hatchery	chick
0	A	30
1	B	30
2	C	29
3	D	26
4	E	24
5	F	28
6	G	27

--> 부화장 7개의 닭들 자료이다.

2. 기술 통계량

```
print(hat['chick'].sum())
print(hat['chick'].mean())
print(hat['chick'].std())
print(hat['chick'].median())
print(hat['chick'].min())
print(hat['chick'].max())
print(" ")
```

```
194
27.714285714285715
2.2146697055682827
28.0
24
30
```

3. 데이터 내용

```
print(hat.describe())
```

```
              chick
count     7.000000
mean     27.714286
std       2.214670
min      24.000000
25%      26.500000
50%      28.000000
75%      29.500000
max      30.000000
```

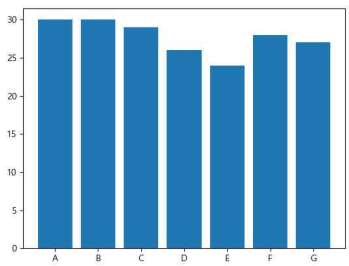
4. 내림차순으로 정렬

```
hat1 = hat.sort_values(by=['chick'], ascending=True)
hat1 = hat.sort_values(by=['chick'], ascending=False)
print(hat1)
```

```
  hatchery  chick
0        A     30
1        B     30
2        C     29
5        F     28
6        G     27
3        D     26
4        E     24
```

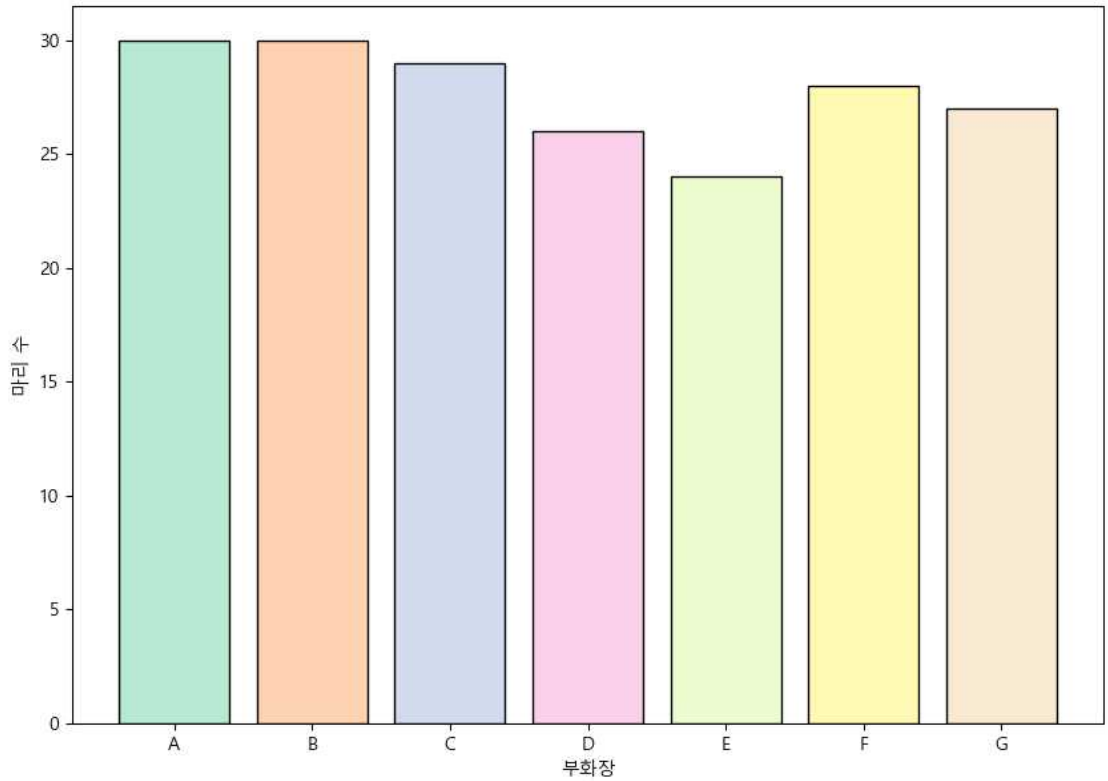
5. 막대그래프 그리기

```
import matplotlib.pyplot as plt
print(" ")
plt.rc('font', family='Malgun Gothic')
plt.rcParams['axes.unicode_minus'] = False  # 축의 음수 기호 표시
plt.bar(hat['hatchery'], hat['chick'])
plt.show()
print("------------------------------------------------------------")
```



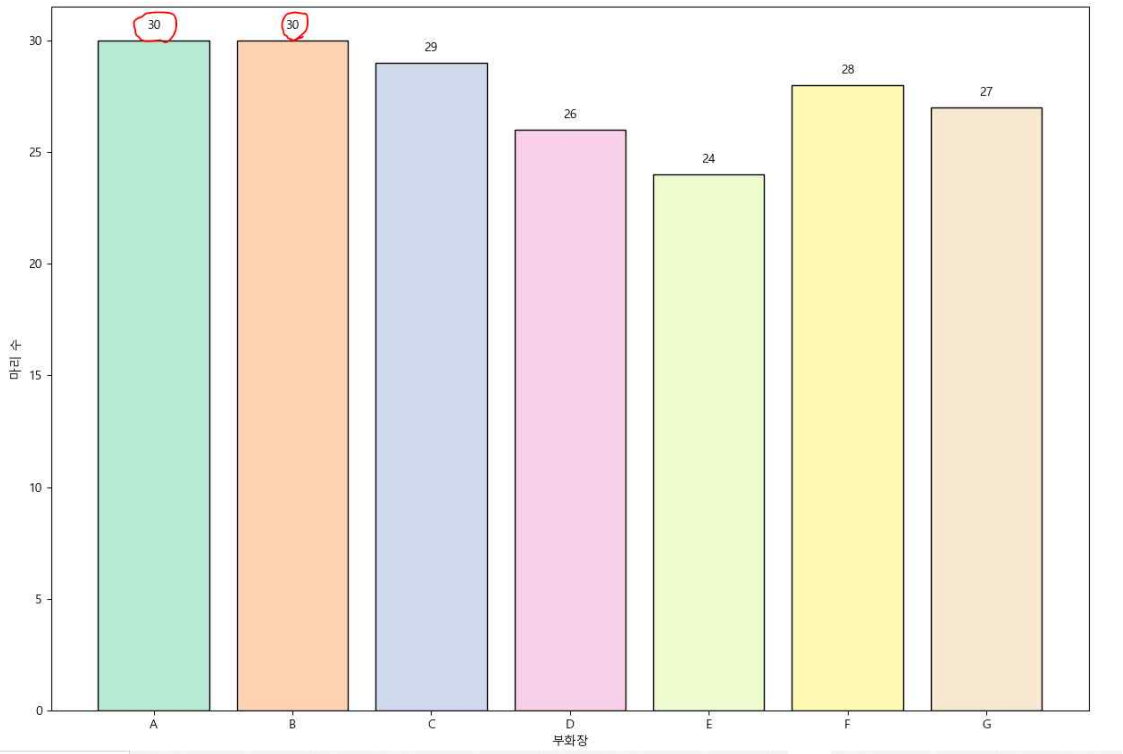
6. seaborn으로 색을 넣어서 바차트 그리기

```
import seaborn as sns
col7 = sns.color_palette('Pastel2', 7)
plt.figure(figsize=(10, 7))
plt.bar(hat['hatchery'], hat['chick'], color=col7, edgecolor='black')
plt.xlabel('부화장')
plt.ylabel('마리 수')
plt.show()
print("------------------------------------------------------------")
```



7. 바차트에 숫자 넣기

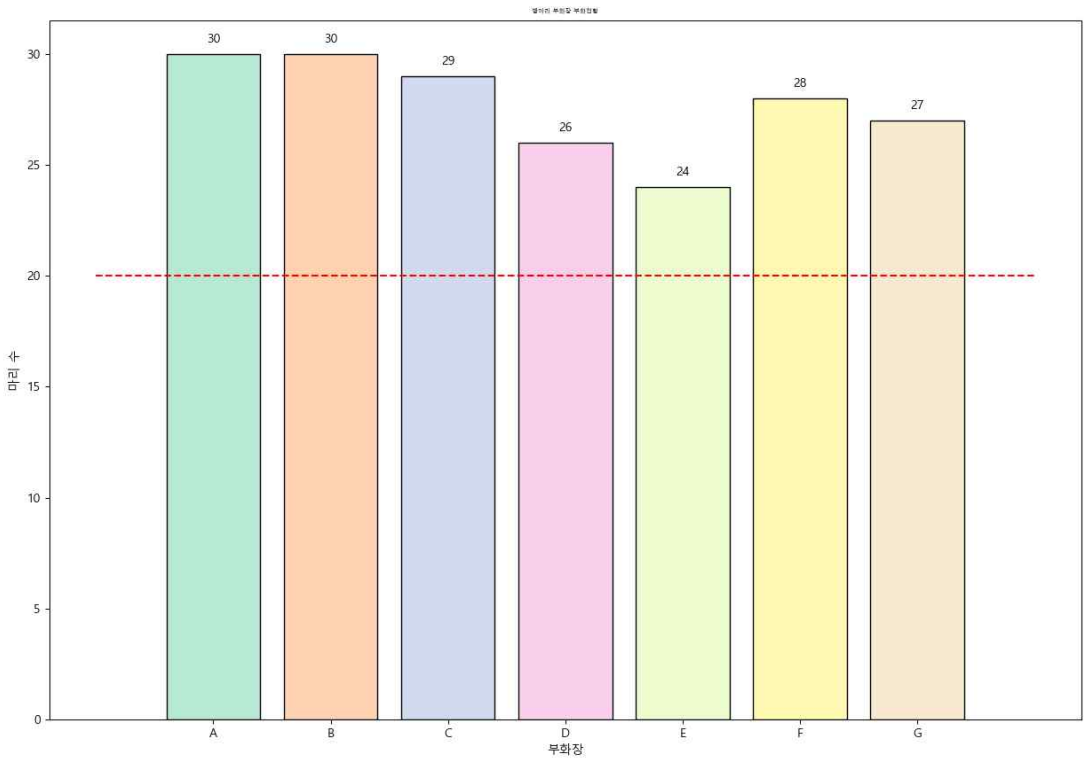
```
def addtext(x, y):
    for i in range(len(x)):
        plt.text(i, y[i] + 0.5, y[i], ha='center')
col7 = sns.color_palette('Pastel2', 7)
plt.figure(figsize=(15, 12))
plt.bar(hat['hatchery'], hat['chick'], color=col7, edgecolor='black')
addtext(hat['hatchery'], hat['chick'])
plt.xlabel('부화장')
plt.ylabel('마리 수')
plt.show()
print("------------------------------------------------------------")
```



--> y[i] + 0.5를 변경하면 숫자의 위치가 달라진다.
--> y[i] - 0.5 기둥안으로 들어가고
--> y[i]/2 로 하면 기둥 중간에 숫자가 들어간다.

8. 기둥그래프에 가로선 그어주기

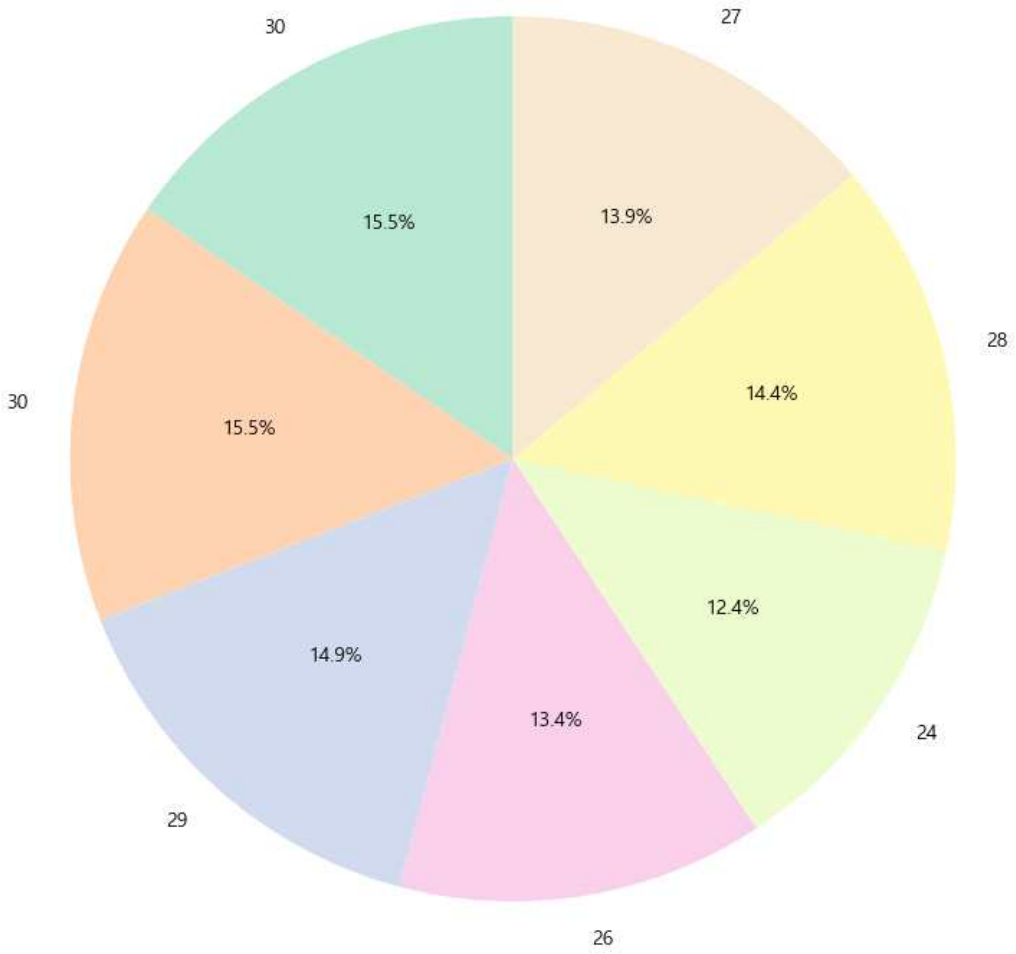
```
def addtext(x, y):
    for i in range(len(x)):
        plt.text(i, y[i] + 0.5, y[i], ha='center')


col7 = sns.color_palette('Pastel2', 7)
plt.figure(figsize=(15, 12))
plt.bar(hat['hatchery'], hat['chick'], color=col7, edgecolor='black')
addtext(hat['hatchery'], hat['chick'])

plt.hlines(20, -1, 7, colors='red', linestyle='dashed')
plt.title('병아리 부화장 부화현황', fontsize=5)
plt.xlabel('부화장')
plt.ylabel('마리 수')
plt.show()
print("------------------------------------------------------------")
```



--> plt.hlines(20, -1, 7을 변경하면 선의 위치 (20->30), 시작점(0->1) 끝점(7->6)

9. 파이차트 그리기

```
col7 = sns.color_palette('Pastel2', 7)
plt.figure(figsize=(10, 10))
plt.pie(hat['chick'], labels=hat['chick'], colors=col7, autopct='%.1f%%', startangle=90)
plt.show()
print("------------------------------------------------------------")
```

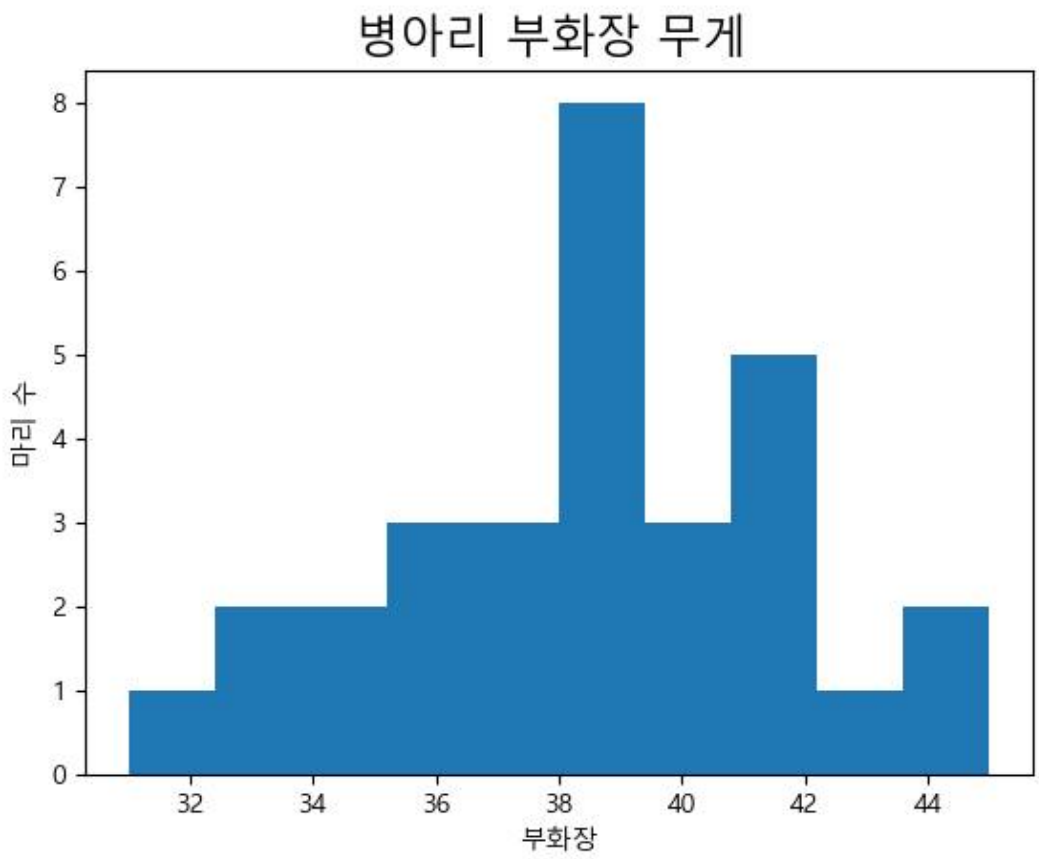


autopct='%.1f%%', 차트내의 숫자 소숫점 자리 수
startangle=90 --> 글자의 각도를 틀어준다.

10. chick002.csv 히스토그램 그리기

	chick_nm	weight
0	b01	37
1	b02	39
2	b03	41
3	b04	45
4	b05	37

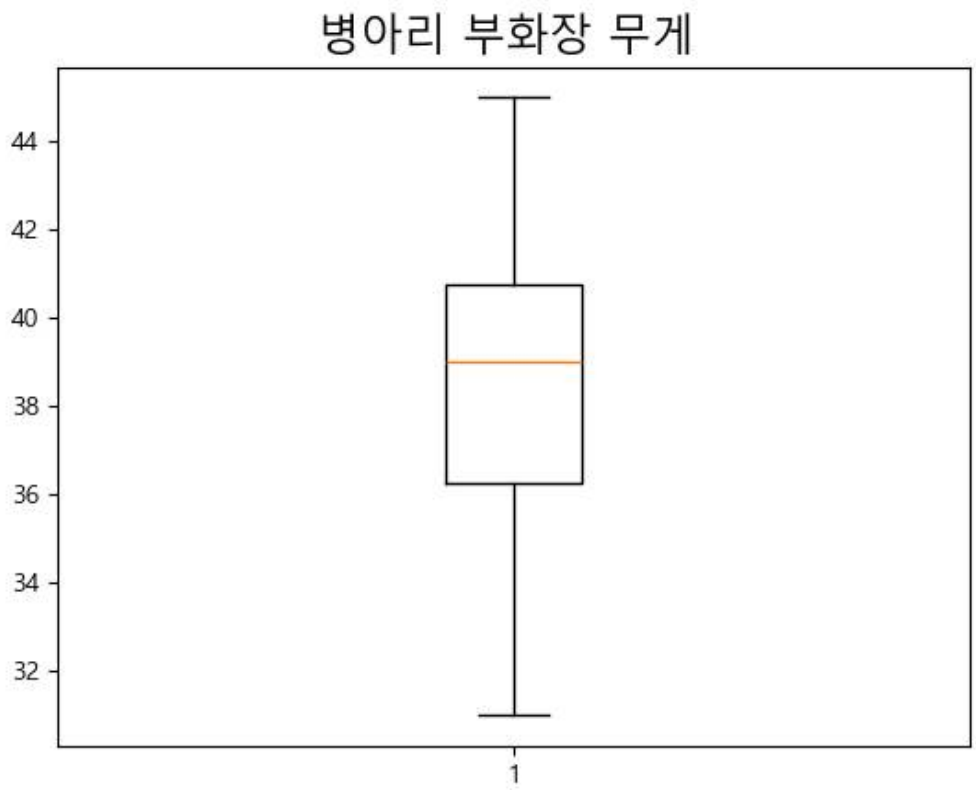
```
b = pd.read_csv('data/chick002.csv')  # b 변수에 데이터셋 입력
print(b)
print(b.describe())

plt.hist(b.weight)
plt.title('병아리 부화장 무게 ', fontsize=17)
plt.xlabel('부화장')
plt.ylabel('마리 수')
plt.show()
print("------------------------------------------------------------")
```



--> 정규분포의 윤곽을 알 수 있다.

11. 상자 그림 chick004.csv

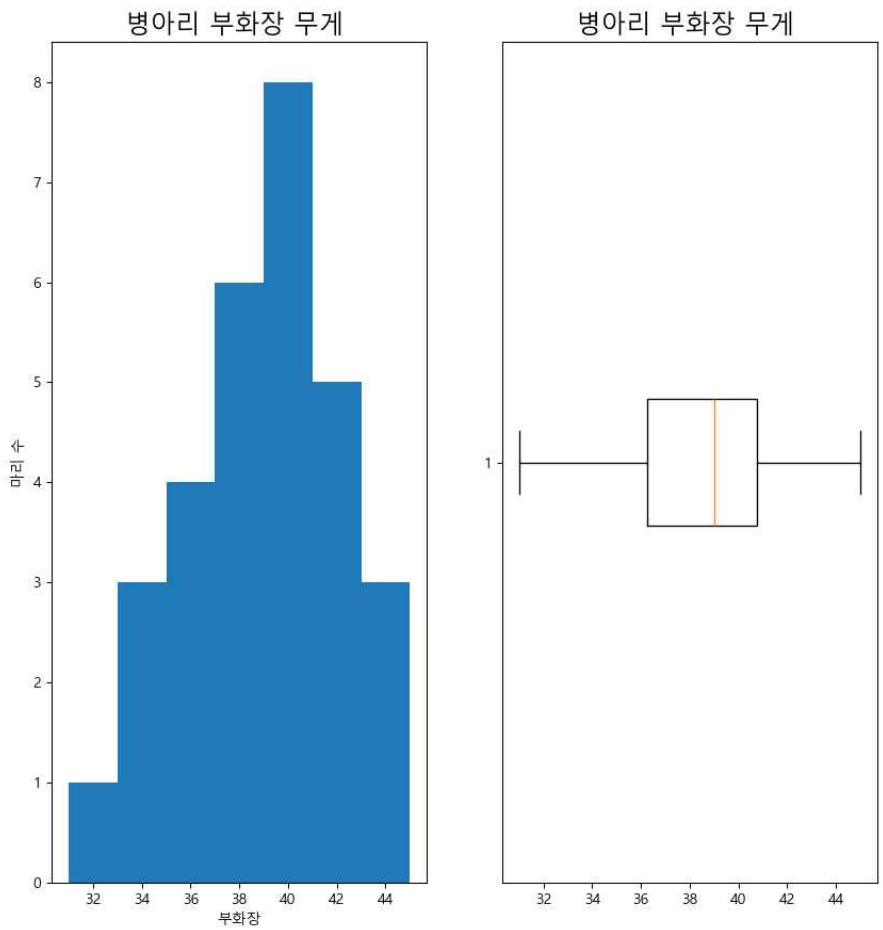
```
plt.boxplot(b.weight)
plt.title('병아리 부화장 무게 ', fontsize=17)
plt.show()
print("------------------------------------------------------------")
```



--> 주황색선이 중간치 (median)
--> 사각형 밑이 1사분위 위가 3사분위 그 차이가 IQR
--> 아랫수염=Q1-1.5*IQR 윗수염=Q3+1.5*IQR
--> 수염 위아래로 이상치 : 없음

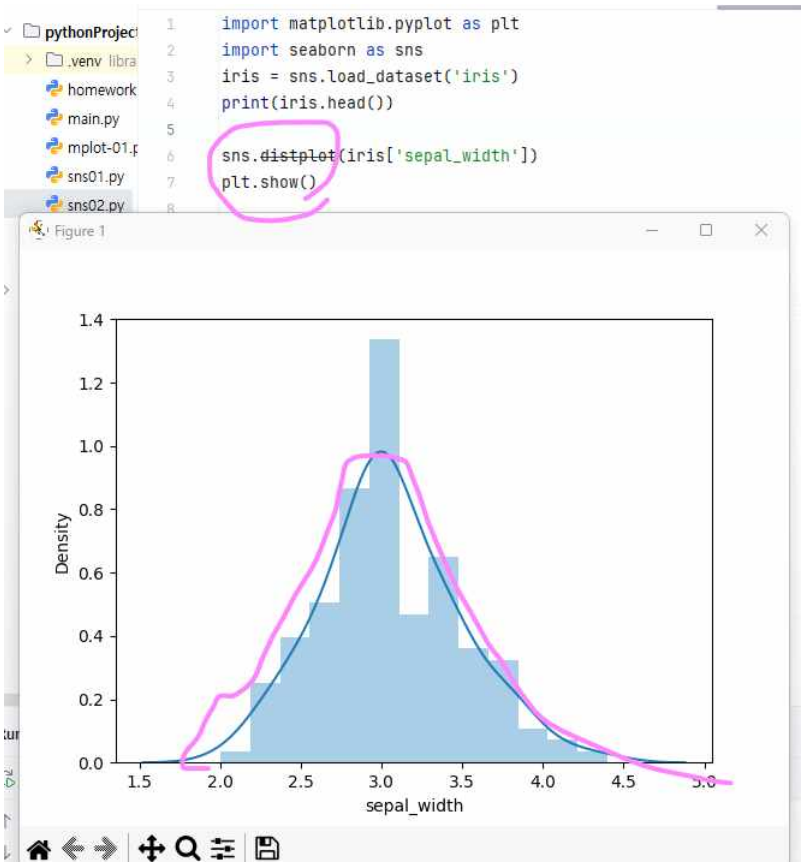
12. 히스토그램과 상자그림을 같은 화면에 그리기

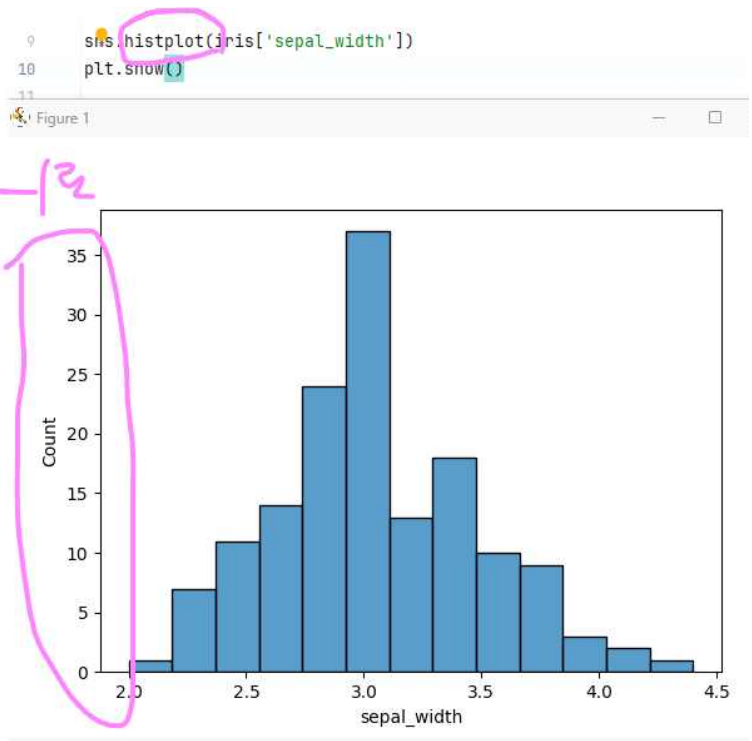
```
plt.figure(figsize=(10, 12))
plt.subplot(1, 2, 1)
plt.hist(b.weight, bins=7)
plt.title('병아리 부화장 무게 ', fontsize=17)
plt.xlabel('부화장')
plt.ylabel('마리 수')

plt.subplot(1, 2, 2)
plt.boxplot(b.weight, vert=False)  # 가로로 그리기
plt.title('병아리 부화장 무게 ', fontsize=17)
plt.show()
```

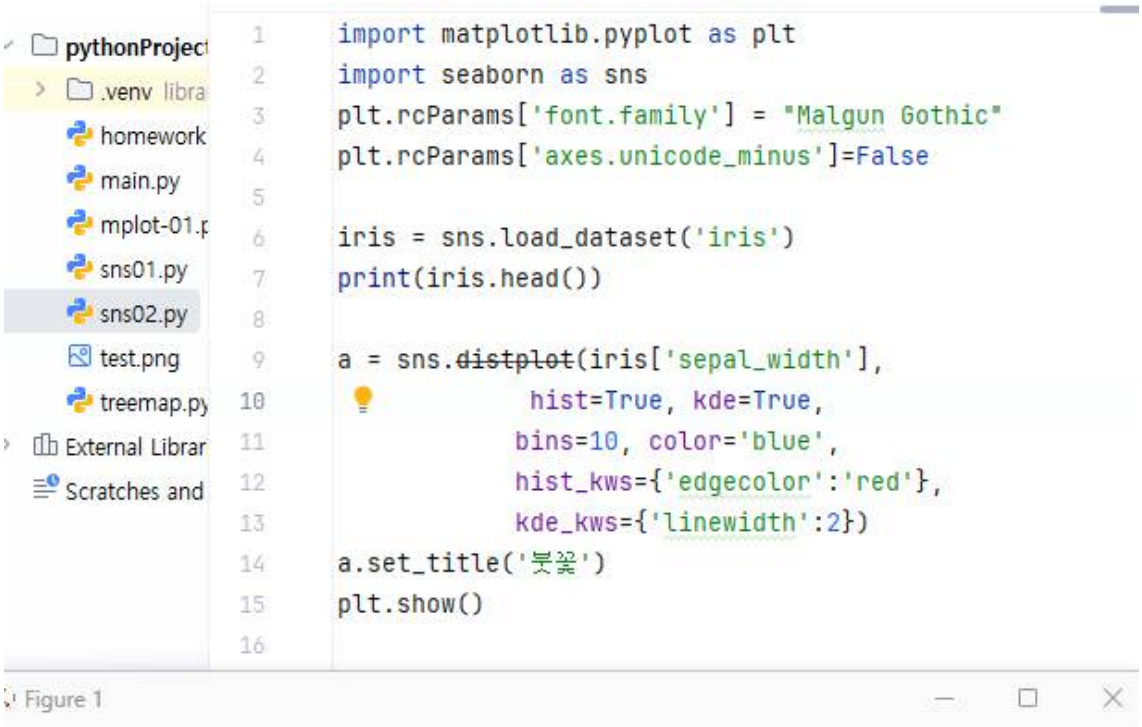


참고 자료

matplotlib 2024-10-24






pythonProject
.venv libra
homework
main.py
mplot-01.p
sns01.py
sns02.py
test.png
treemap.py
External Librar
Scratches and
import matplotlib.pyplot as plt
import seaborn as sns
plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False
iris = sns.load_dataset('iris')
print(iris.head())
a = sns.distplot(iris['sepal_width'],
hist=True, kde=True,
bins=10, color='blue',
hist_kws={'edgecolor':'red'},
kde_kws={'linewidth':2})
a.set_title('붓꽃')
plt.show()

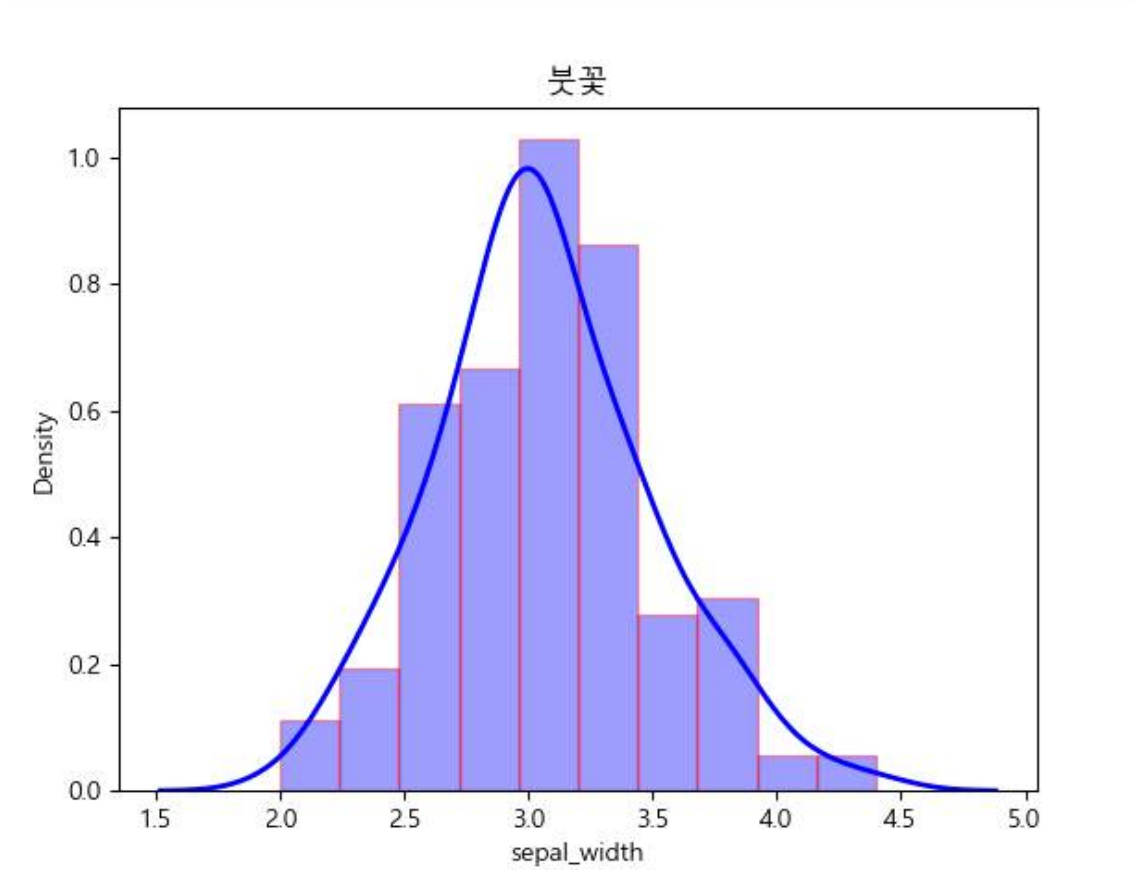
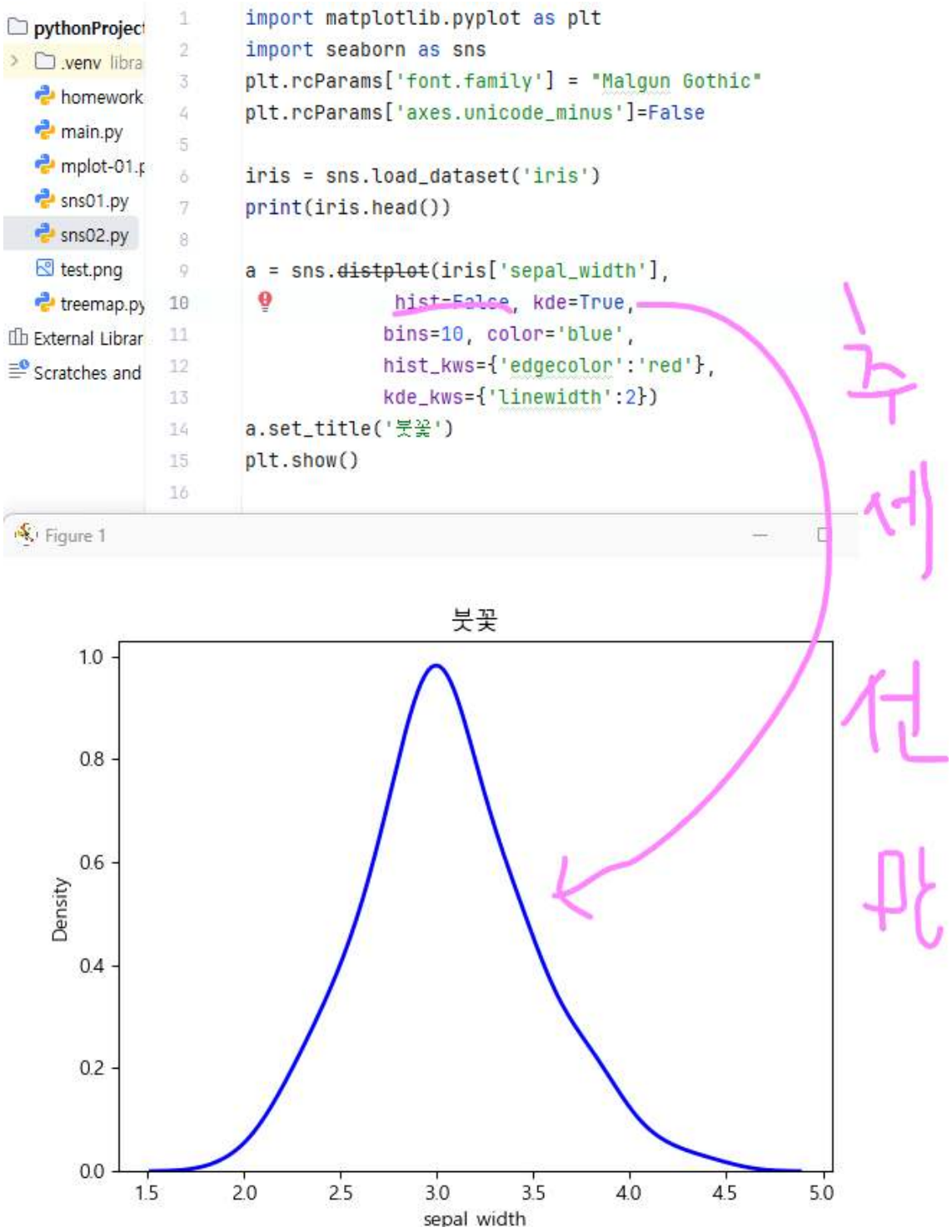


Figure 1
붓꽃
Density
1.0
0.8
0.6
0.4
0.2
0.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
sepal_width


pythonProject
.venv libra
homework
main.py
mplot-01.p
sns01.py
sns02.py
test.png
treemap.py
External Librar
Scratches and
1 import matplotlib.pyplot as plt
2 import seaborn as sns
3 plt.rcParams['font.family'] = "Malgun Gothic"
4 plt.rcParams['axes.unicode_minus']=False
5
6 iris = sns.load_dataset('iris')
7 print(iris.head())
8
9 a = sns.distplot(iris['sepal_width'],
10 hist=False, kde=True,
11 bins=10, color='blue',
12 hist_kws={'edgecolor':'red'},
13 kde_ws={'linewidth':2})
14 a.set_title('붓꽃')
15 plt.show()
16
Figure 1
붓꽃
1.0
0.8
0.6
0.4
0.2
0.0
Density
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
sepal width
이 세 선 만

Seaborn 히스토그램 그리기

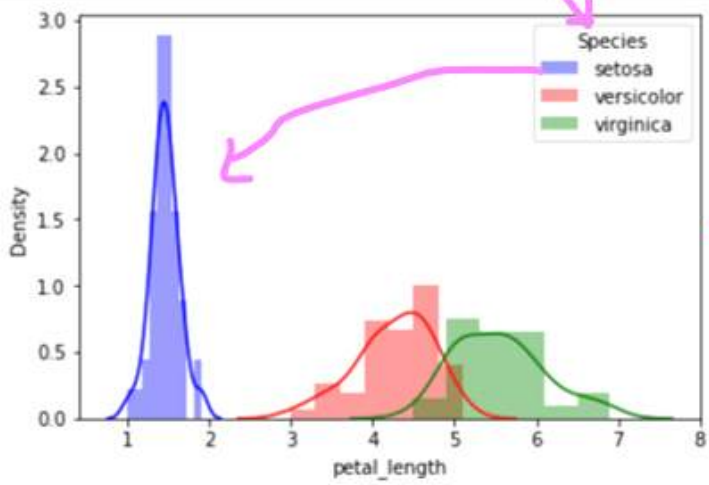
distplot에는 설정시에 다양한 속성들이 존재함
hist는 히스토그램 표시 여부, kde는 추세선(kernel density curve) 표시 여부
bins는 막대의 개수, color는 그래프의 색상을 의미
hist_kws는 히스토그램의 옵션을 설정하며, 예제에서는 히스토그램의 테두리를 빨간색으로 설정
kde_kws는 추세선의 옵션을 설정하며, 예제에서는 선 두께를 2로 설정
set_title은 그래프 제목 설정, set_xlabel, set_ylabel은 x축과 y축의 제목을 설정

```
a = sns.distplot(iris['sepal_width'],
                 hist=True, kde=True,
                 bins=10, color='blue',
                 hist_kws={'edgecolor': 'red'},
                 kde_kws={'linewidth': 2})

a.set_title('sepal width histogram')
a.set_xlabel('sepal width')
a.set_ylabel('density')
plt.show()
```

https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

seaborn 매뉴얼 참고하면 좋다.

```
sns.distplot(iris[iris.species=='setosa']['petal_length'],
             color='blue', label='setosa')
sns.distplot(iris[iris.species=='versicolor']['petal_length'],
             color='red', label='versicolor')
sns.distplot(iris[iris.species=='virginica']['petal_length'],
             color='green', label='virginica')

plt.legend(title='Species')
plt.show()
```



```
tips = sns.load_dataset('tips')
print(tips.shape)
print(tips.head())
print(tips.tail())
print(tips.describe())
```

```
(244, 7)
   total_bill   tip     sex smoker  day    time  size
0       16.99  1.01  Female     No  Sun  Dinner     2
1       10.34  1.66    Male     No  Sun  Dinner     3
2       21.01  3.50    Male     No  Sun  Dinner     3
3       23.68  3.31    Male     No  Sun  Dinner     2
4       24.59  3.61  Female     No  Sun  Dinner     4
     total_bill   tip     sex smoker   day    time  size
239       29.03  5.92    Male     No   Sat  Dinner     3
240       27.18  2.00  Female    Yes   Sat  Dinner     2
241       22.67  2.00    Male    Yes   Sat  Dinner     2
242       17.82  1.75    Male     No   Sat  Dinner     2
243       18.78  3.00  Female     No  Thur  Dinner     2
       total_bill         tip        size
count  244.000000  244.000000  244.000000
mean    19.785943    2.998279    2.569672
std      8.902412    1.383638    0.951100
min      3.070000    1.000000    1.000000
25%     13.347500    2.000000    2.000000
50%     17.795000    2.900000    2.000000
75%     24.127500    3.562500    3.000000
max     50.810000   10.000000    6.000000
```

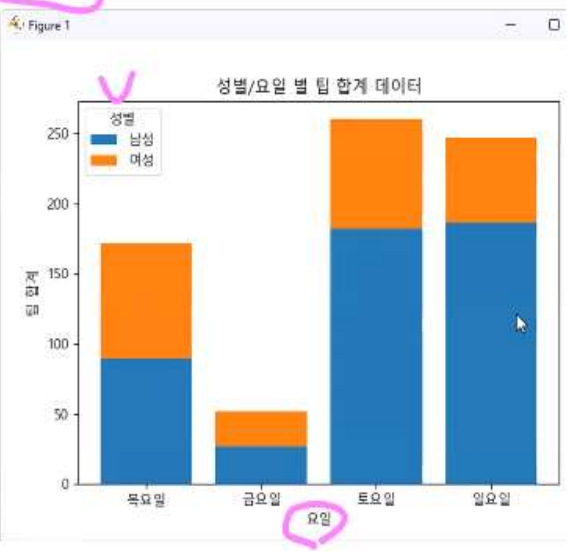
```
tips = sns.load_dataset('tips')
print(tips.shape)
print(tips.head())
print(tips.tail())
print(tips.describe())
```

```
(244, 7)
   total_bill   tip     sex smoker  day    time  size
0       16.99  1.01  Female     No  Sun  Dinner     2
1       10.34  1.66    Male     No  Sun  Dinner     3
2       21.01  3.50    Male     No  Sun  Dinner     3
3       23.68  3.31    Male     No  Sun  Dinner     2
4       24.59  3.61  Female     No  Sun  Dinner     4
     total_bill   tip     sex smoker   day    time  size
239       29.03  5.92    Male     No   Sat  Dinner     3
240       27.18  2.00  Female    Yes   Sat  Dinner     2
241       22.67  2.00    Male    Yes   Sat  Dinner     2
242       17.82  1.75    Male     No   Sat  Dinner     2
243       18.78  3.00  Female     No  Thur  Dinner     2
       total_bill         tip        size
count  244.000000  244.000000  244.000000
mean    19.785943    2.998279    2.569672
std      8.902412    1.383638    0.951100
min      3.070000    1.000000    1.000000
25%     13.347500    2.000000    2.000000
50%     17.795000    2.900000    2.000000
75%     24.127500    3.562500    3.000000
max     50.810000   10.000000    6.000000
```

```
tips_day = tips.groupby('day').tip.sum()
tips_day
```

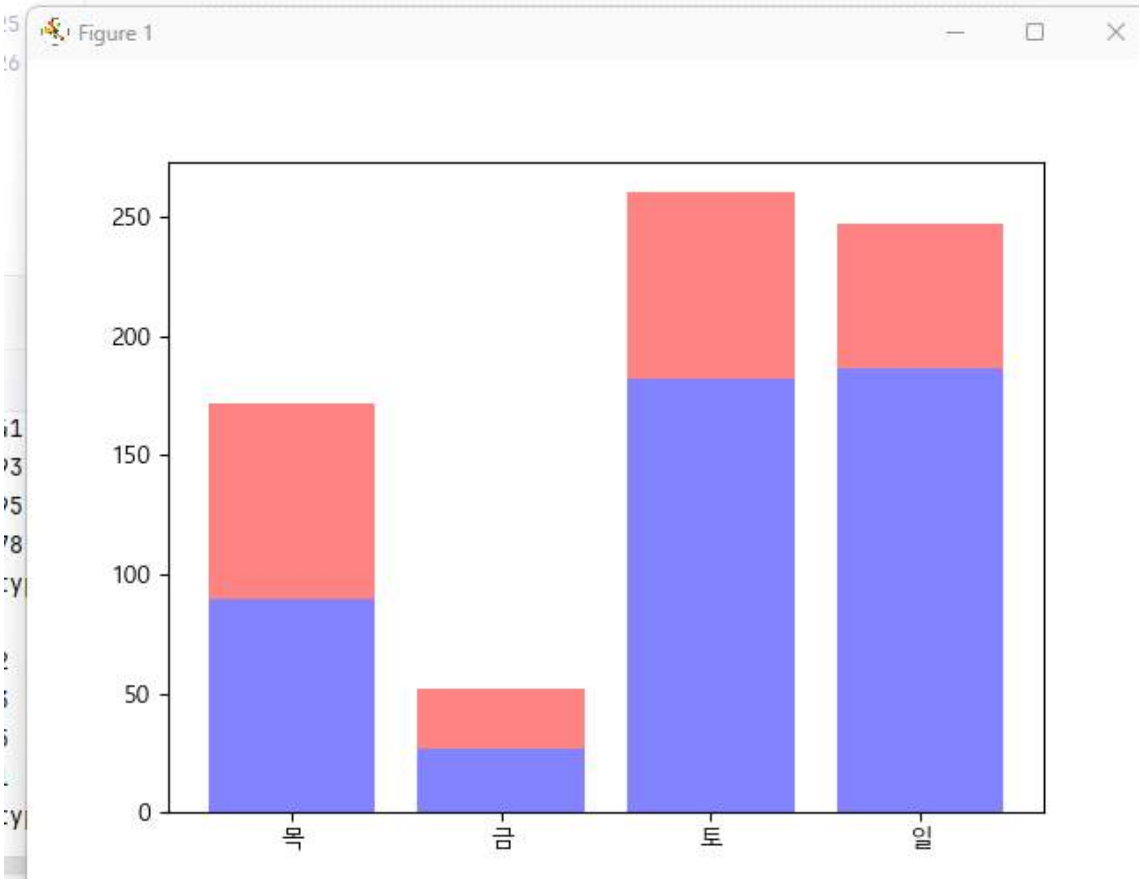
```
day
Thur    171.83
Fri      51.96
Sat     260.40
Sun     247.39
Name: tip, dtype: float64
```

```python
xtick = ["목요일","금요일","토요일","일요일"]
xIndex = [1, 2, 3, 4]

tips_day = tips.groupby("day").tip.sum()

male_tip = tips[tips["sex"] == "Male"].groupby("day").tip.sum()
# 요일별 남성의 팁 합계
female_tip = tips[tips["sex"] == "Female"].groupby("day").tip.sum()
# 요일별 여성의 팁 합계

p1 = plt.bar(xIndex, male_tip, label="남성")
p2 = plt.bar(xIndex, female_tip, bottom=male_tip, label="여성")

plt.title("성별/요일 별 팁 합계 데이터")
plt.ylabel("팁 합계")
plt.xlabel("요일")
plt.xticks(xIndex, xtick)
plt.legend(title="성별")

plt.show()
```

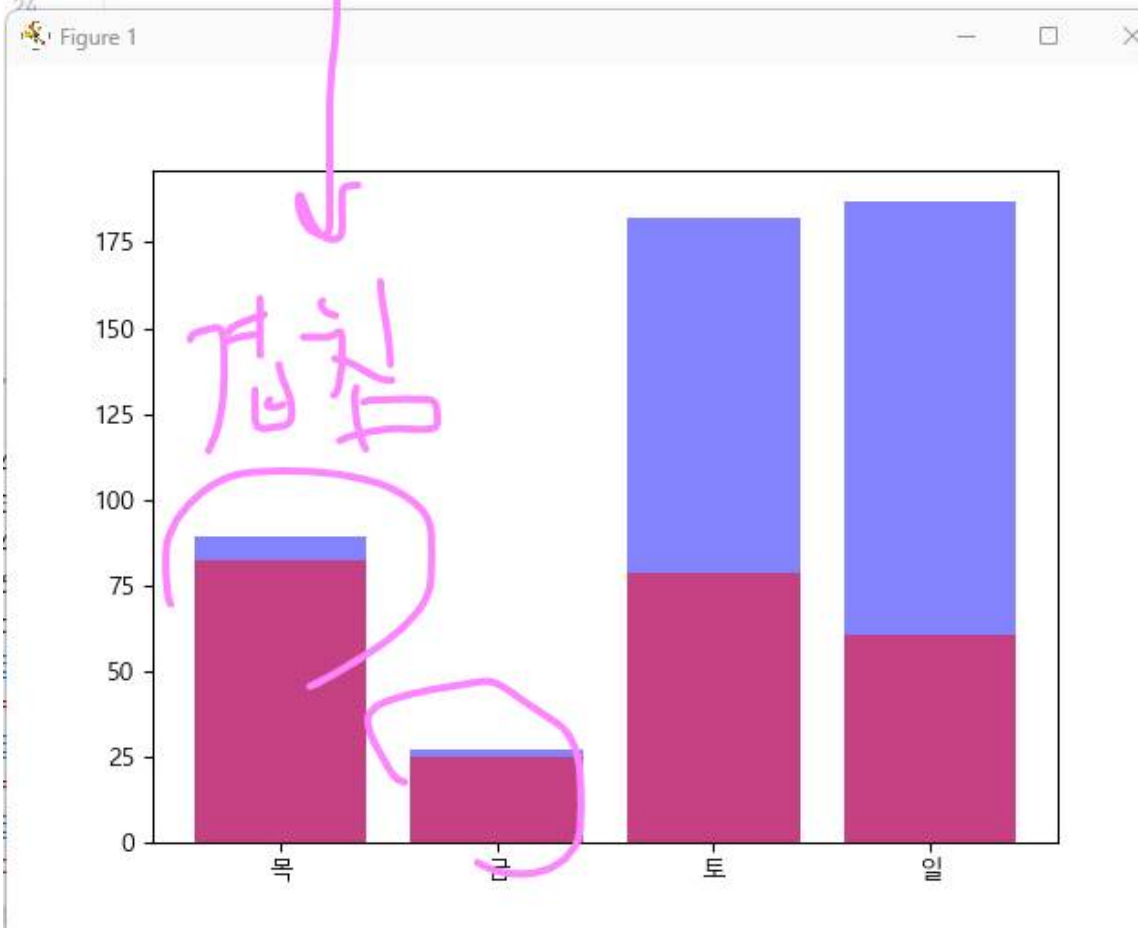


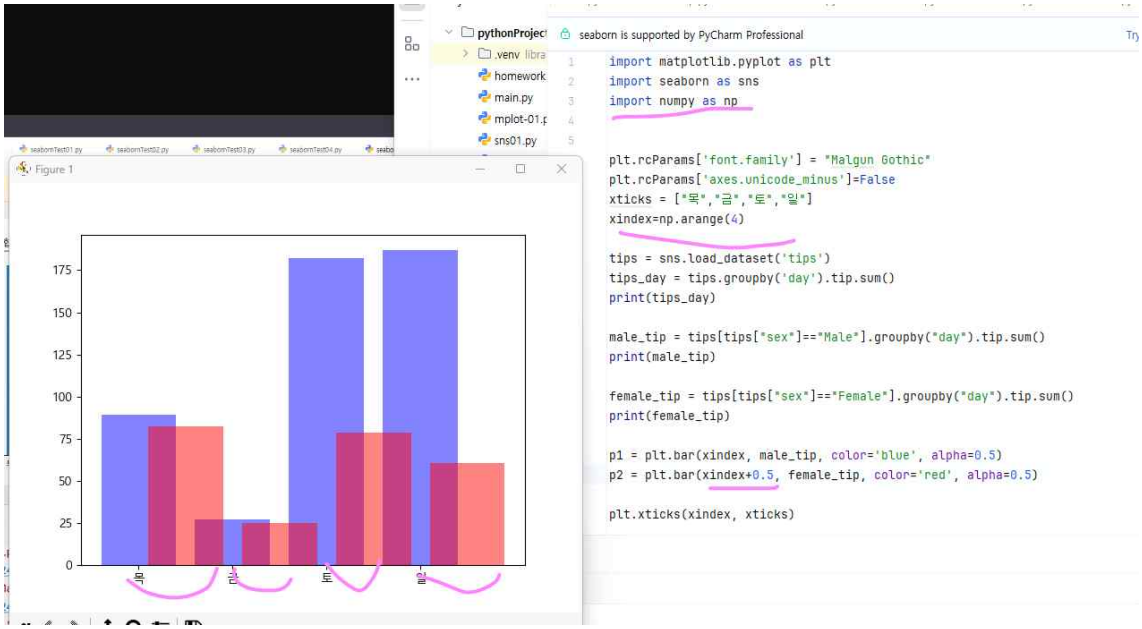
bottom 아래쪽 그림이다.

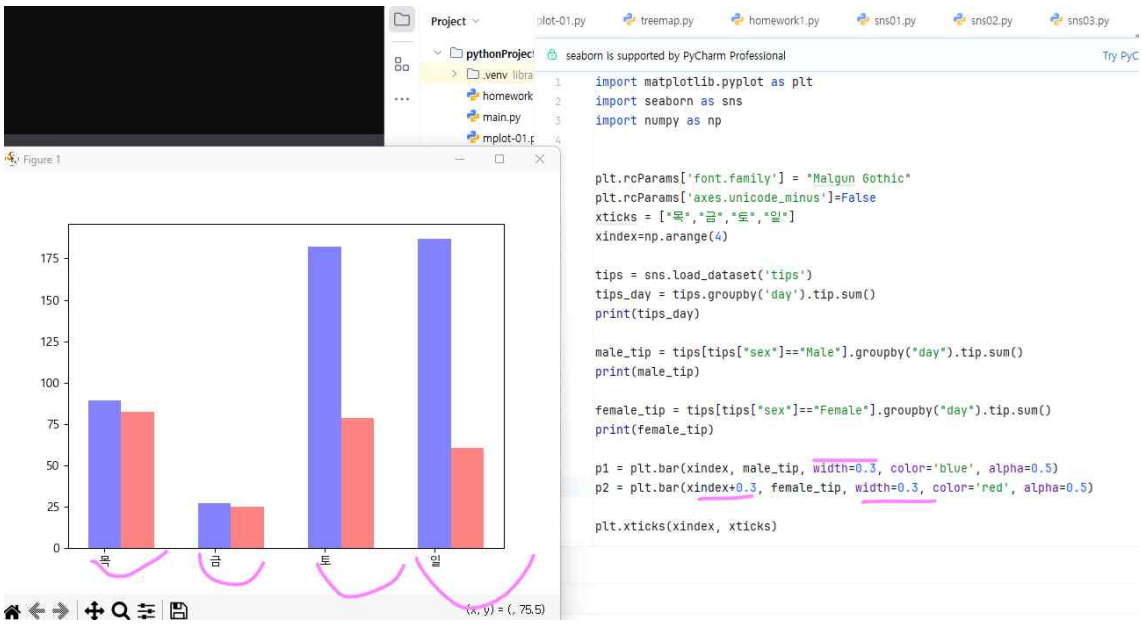
```
tips = sns.load_dataset('tips')
tips_day = tips.groupby('day').tip.sum()
print(tips_day)

male_tip = tips[tips["sex"]=="Male"].groupby("day").tip.sum()
print(male_tip)

female_tip = tips[tips["sex"]=="Female"].groupby("day").tip.sum()
print(female_tip)

p1 = plt.bar(xindex, male_tip, color='blue', alpha=0.5)
p2 = plt.bar(xindex, female_tip, color='red', alpha=0.5, bottom=male_tip)

plt.xticks(xindex, xticks)

plt.show()
```



```
tips = sns.load_dataset('tips')
tips_day = tips.groupby('day').tip.sum()
print(tips_day)

male_tip = tips[tips["sex"]=="Male"].groupby("day").tip.sum()
print(male_tip)

female_tip = tips[tips["sex"]=="Female"].groupby("day").tip.sum()
print(female_tip)

p1 = plt.bar(xindex, male_tip, color='blue', alpha=0.5)
p2 = plt.bar(xindex, female_tip, color='red', alpha=0.5)

plt.xticks(xindex, xticks)

plt.show()
```

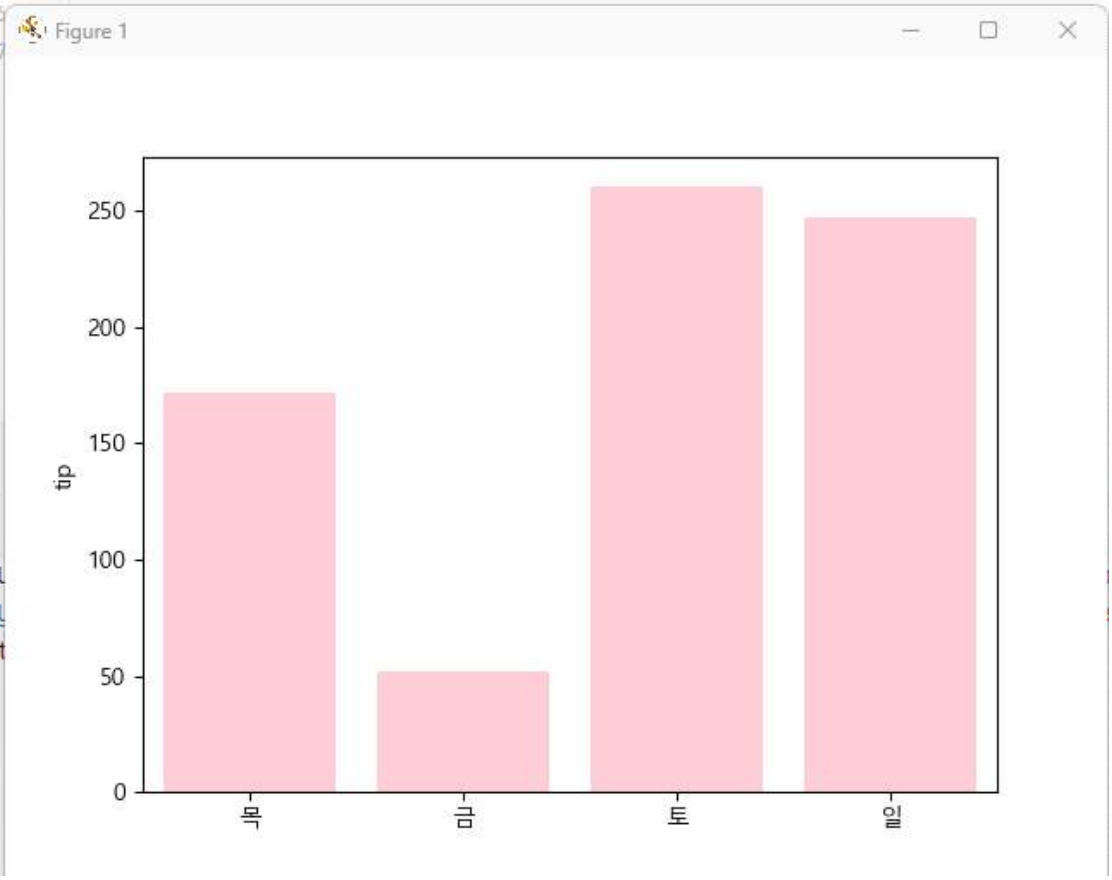


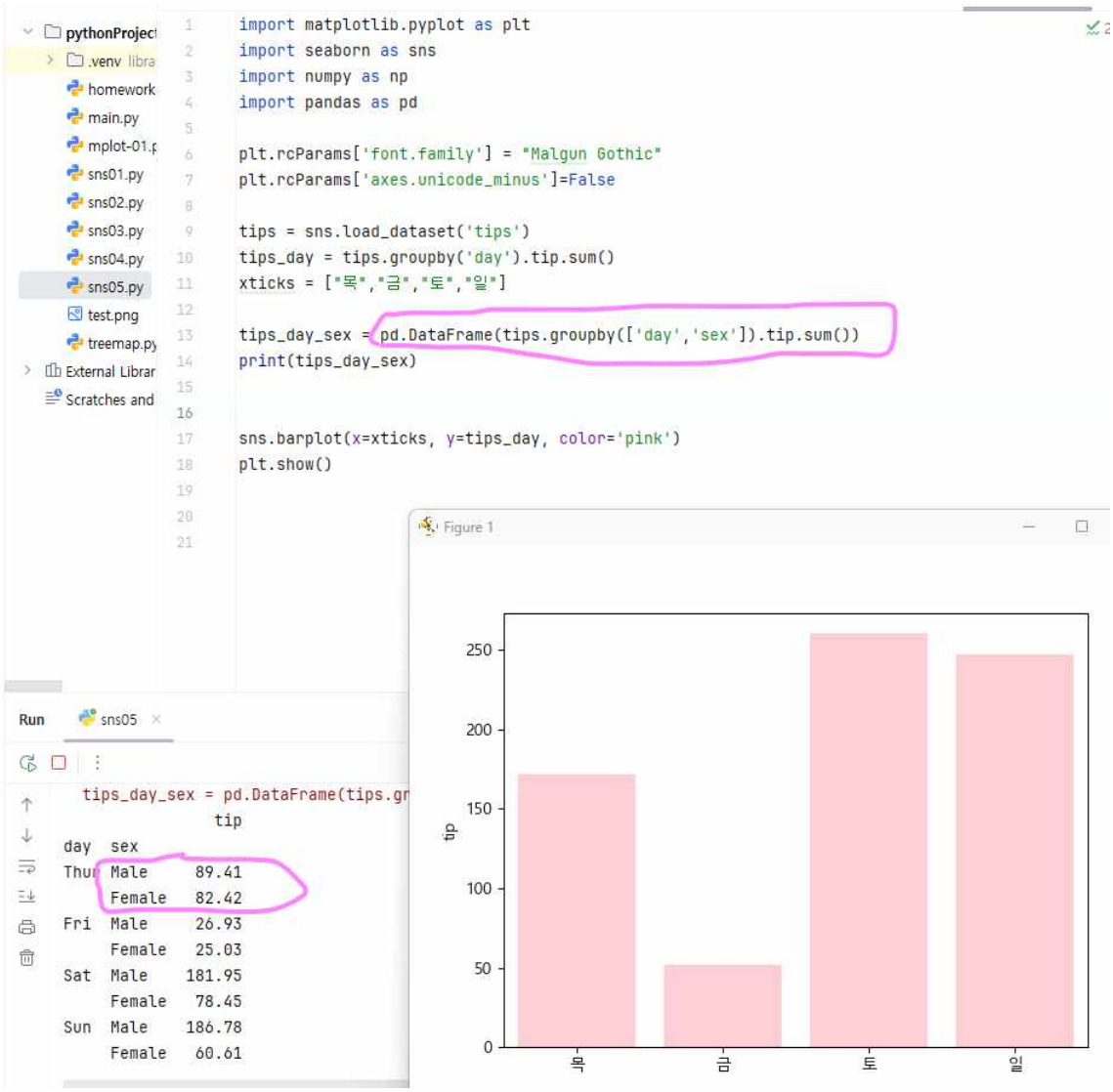




위는 matplotlib로 그린 것이다
이것을 seaborn으로그려보자.

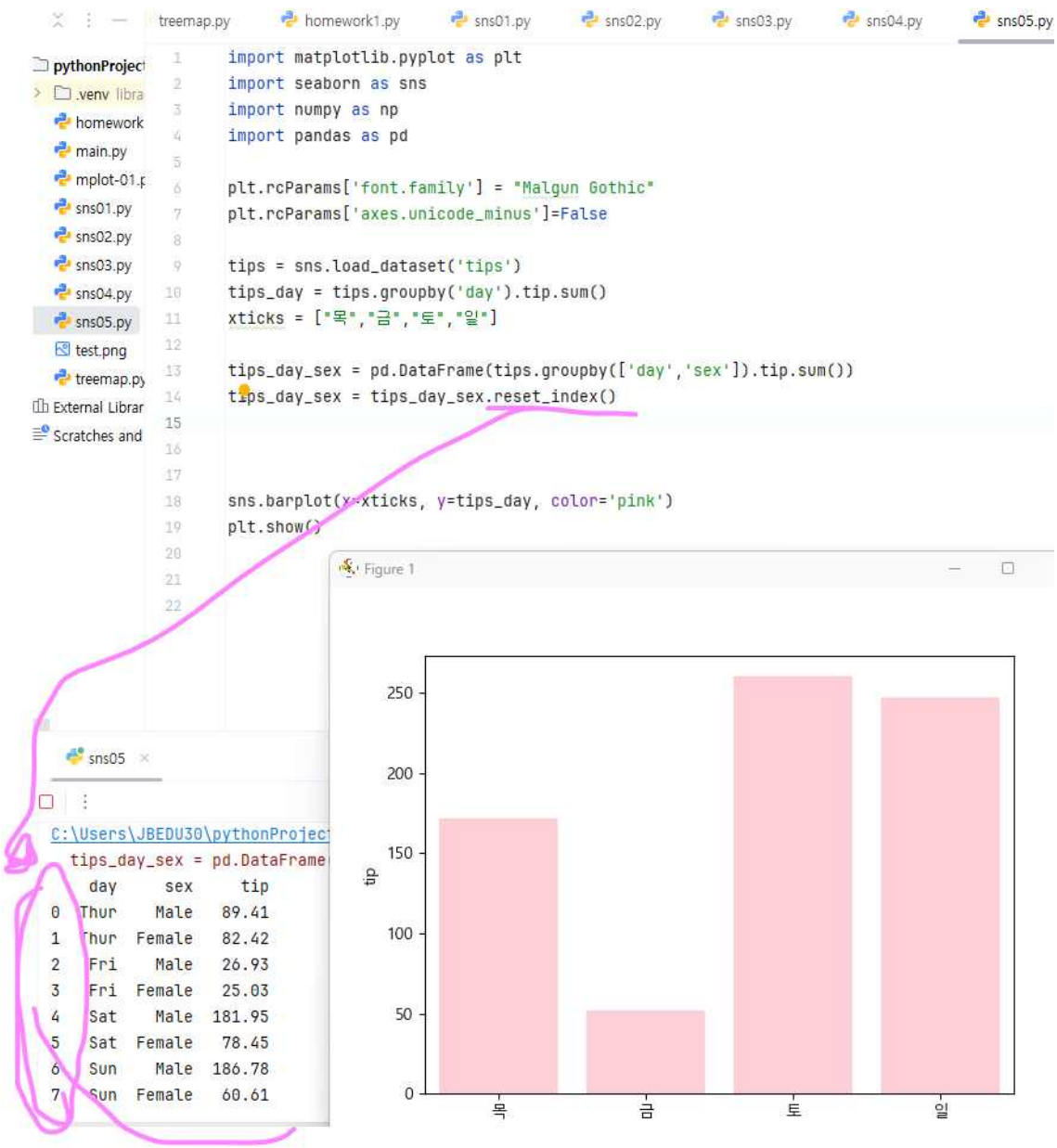
```python
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np


plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False

tips = sns.load_dataset('tips')
tips_day = tips.groupby('day').tip.sum()
xticks = ["목","금","토","일"]

sns.barplot(x=xticks, y=tips_day, color='pink')
plt.show()
```

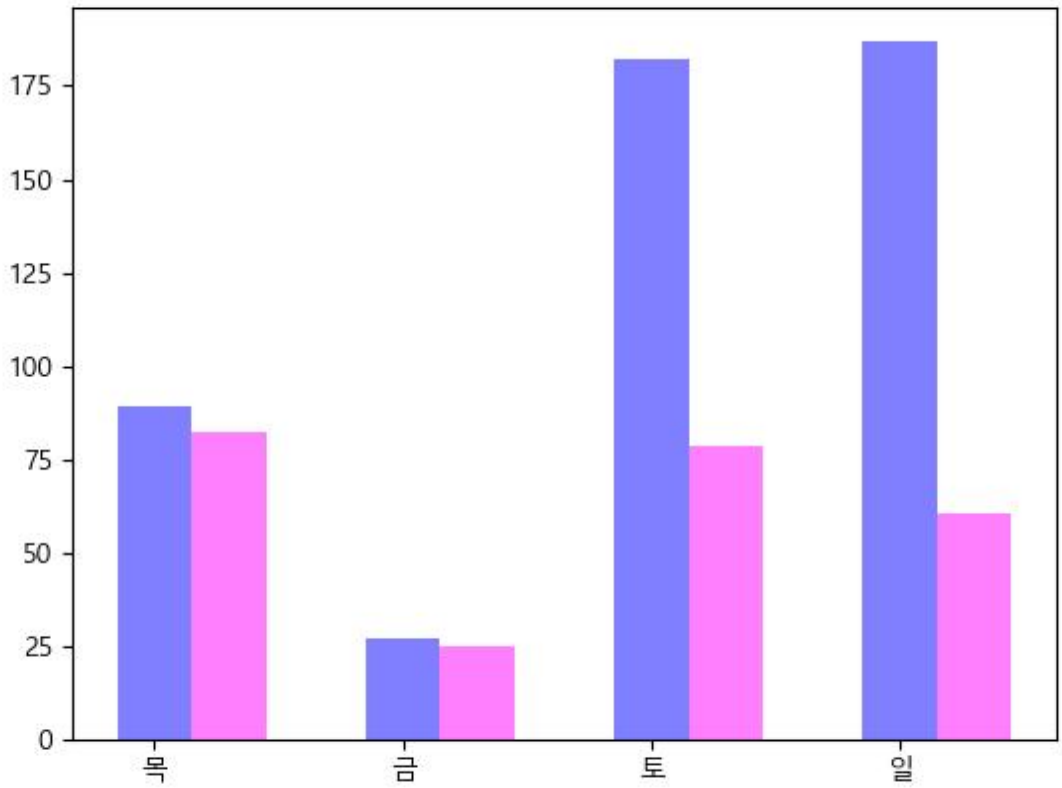




맛이 쓴다.

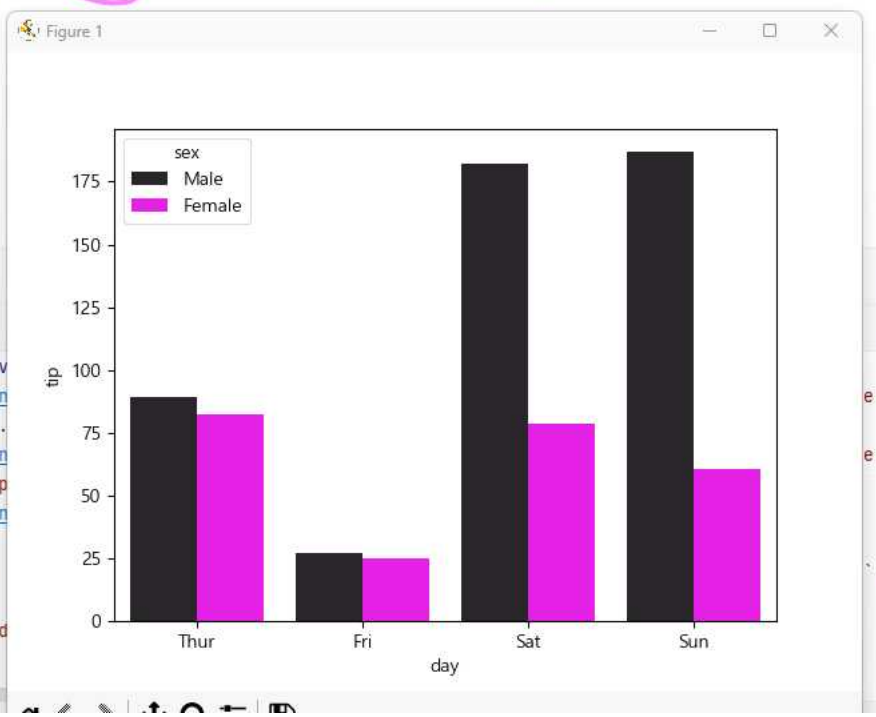
```
pd.DataFrame(tips.groupby(["day","sex"]).tip.sum())
```


treemap.py
homework1.py
sns01.py
sns02.py
sns03.py
sns04.py
sns05.py
pythonProject
.venv libra
homework
main.py
mplot-01.p
sns01.py
sns02.py
sns03.py
sns04.py
sns05.py
test.png
treemap.py
External Librar
Scratches and
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import pandas as pd
plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False
tips = sns.load_dataset('tips')
tips_day = tips.groupby('day').tip.sum()
xticks = ["목","금","토","일"]
tips_day_sex = pd.DataFrame(tips.groupby(['day','sex']).tip.sum())
tips_day_sex = tips_day_sex.reset_index()
sns.barplot(x=xticks, y=tips_day, color='pink')
plt.show()
sns05
C:\Users\JBEDU30\pythonProject
tips_day_sex = pd.DataFrame
day sex tip
0 Thur Male 89.41
1 Thur Female 82.42
2 Fri Male 26.93
3 Fri Female 25.03
4 Sat Male 181.95
5 Sat Female 78.45
6 Sun Male 186.78
7 Sun Female 60.61
Figure 1
250
200
150
100
50
0
tip
목
금
토
일



plt.rcParams['font.family'] ='Malgun Gothic'
plt.rcParams['axes.unicode_minus'] =False

```
import seaborn as sns
import numpy as np
import pandas as pd

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False

tips = sns.load_dataset('tips')
tips_day = tips.groupby('day').tip.sum()
xticks = ["목","금","토","일"]

tips_day_sex = pd.DataFrame(tips.groupby(['day','sex']).tip.sum())
tips_day_sex = tips_day_sex.reset_index()

#sns.barplot(x="day", y="tips_day_sex", data = tips_day_sex, hue="sex", dodge=False, color='FF1493')

sns.barplot(x="day", y="tip", data = tips_day_sex, hue="sex", dodge=True, color='magenta')

plt.show()
```

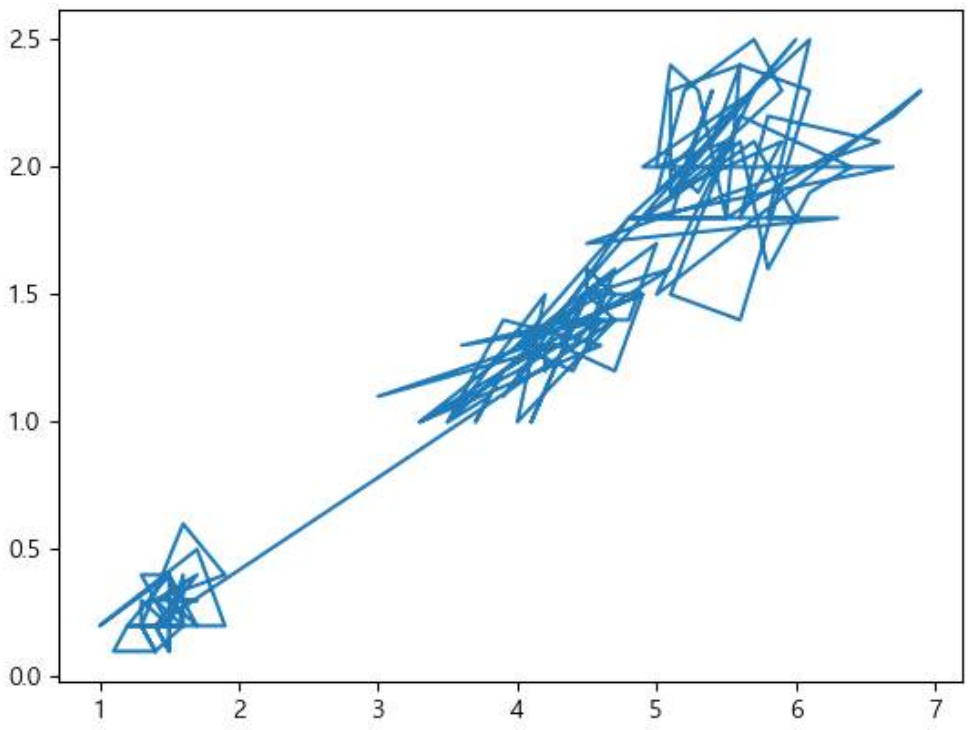


hue 범례
넣어야만 그래프가 나온다
seaborn은 복잡하구나
산점도는 좋단다.

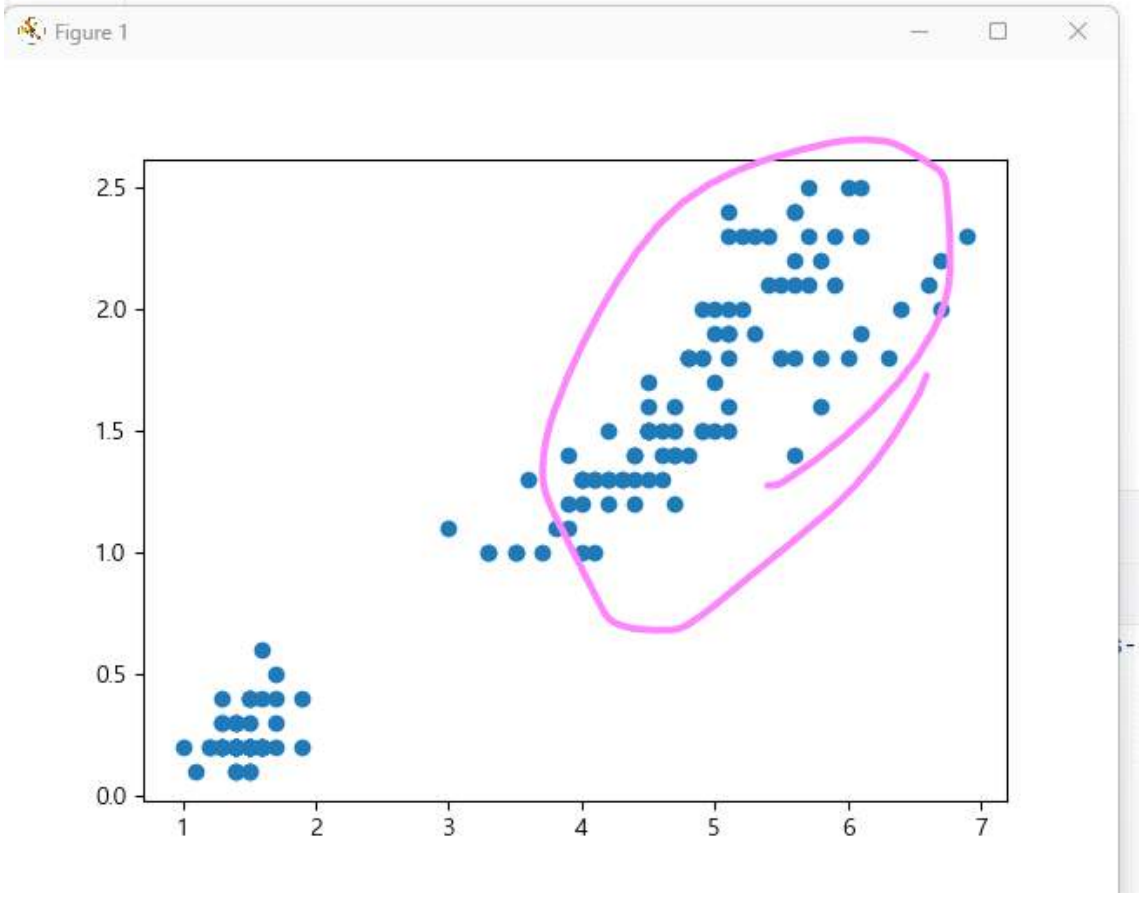
seaborn으로 산점도그리기

```python
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import pandas as pd

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False


iris = sns.load_dataset('iris')
plt.plot( *args: 'petal_length','petal_width',data=iris)
plt.show()
```

Figure 1

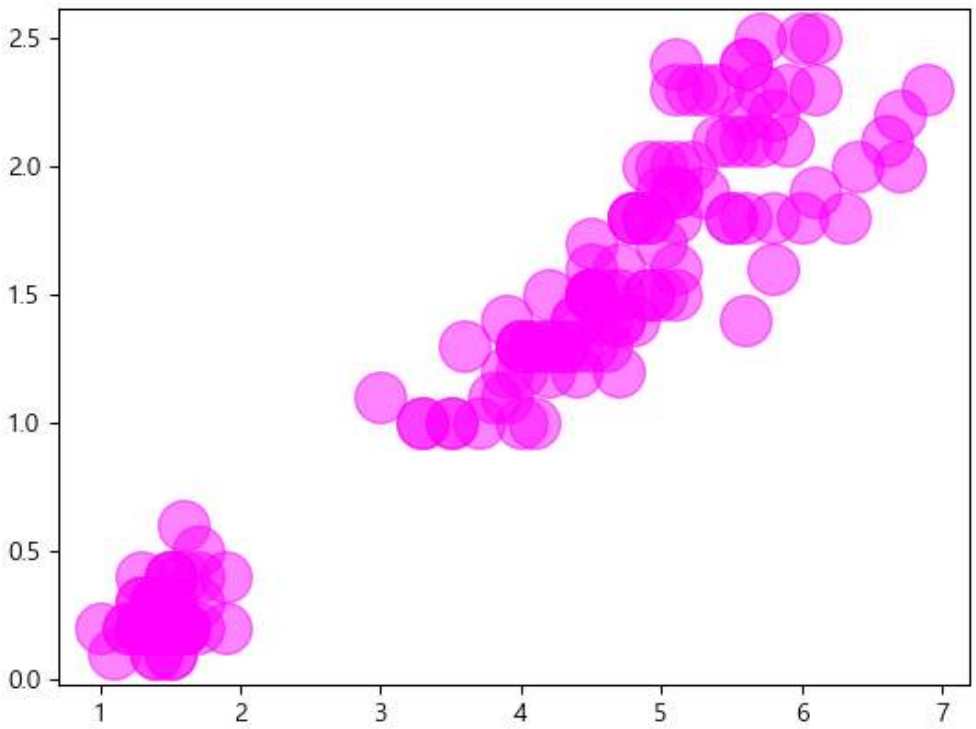


```python
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import pandas as pd

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False


iris = sns.load_dataset('iris')
plt.plot( *args: 'petal_length','petal_width',data=iris,
         linestyle='none', marker='o')
plt.show()
```

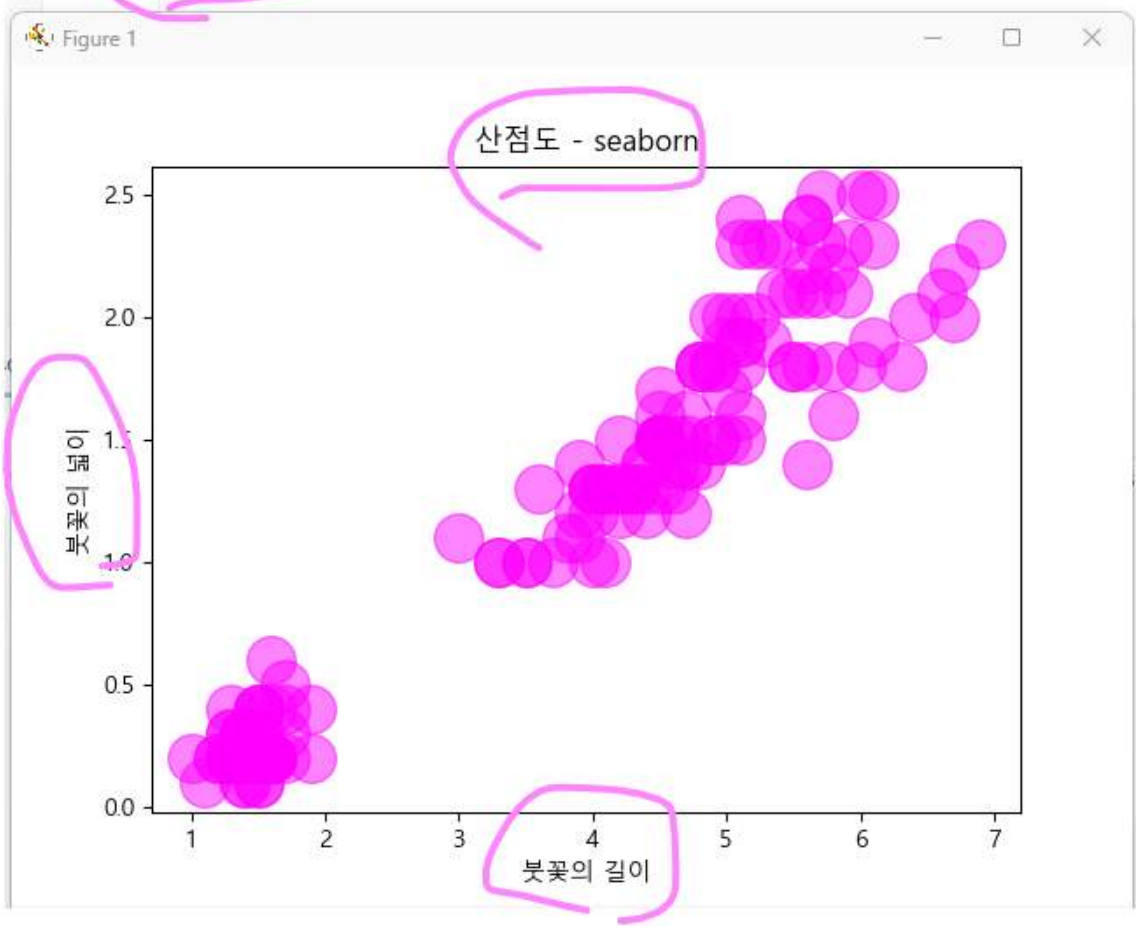


```python
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import pandas as pd

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False


iris = sns.load_dataset('iris')
plt.plot( *args: 'petal_length','petal_width',data=iris,
         linestyle='none', marker='o',
         markersize=20, color="magenta", alpha=0.5)
plt.show()
```

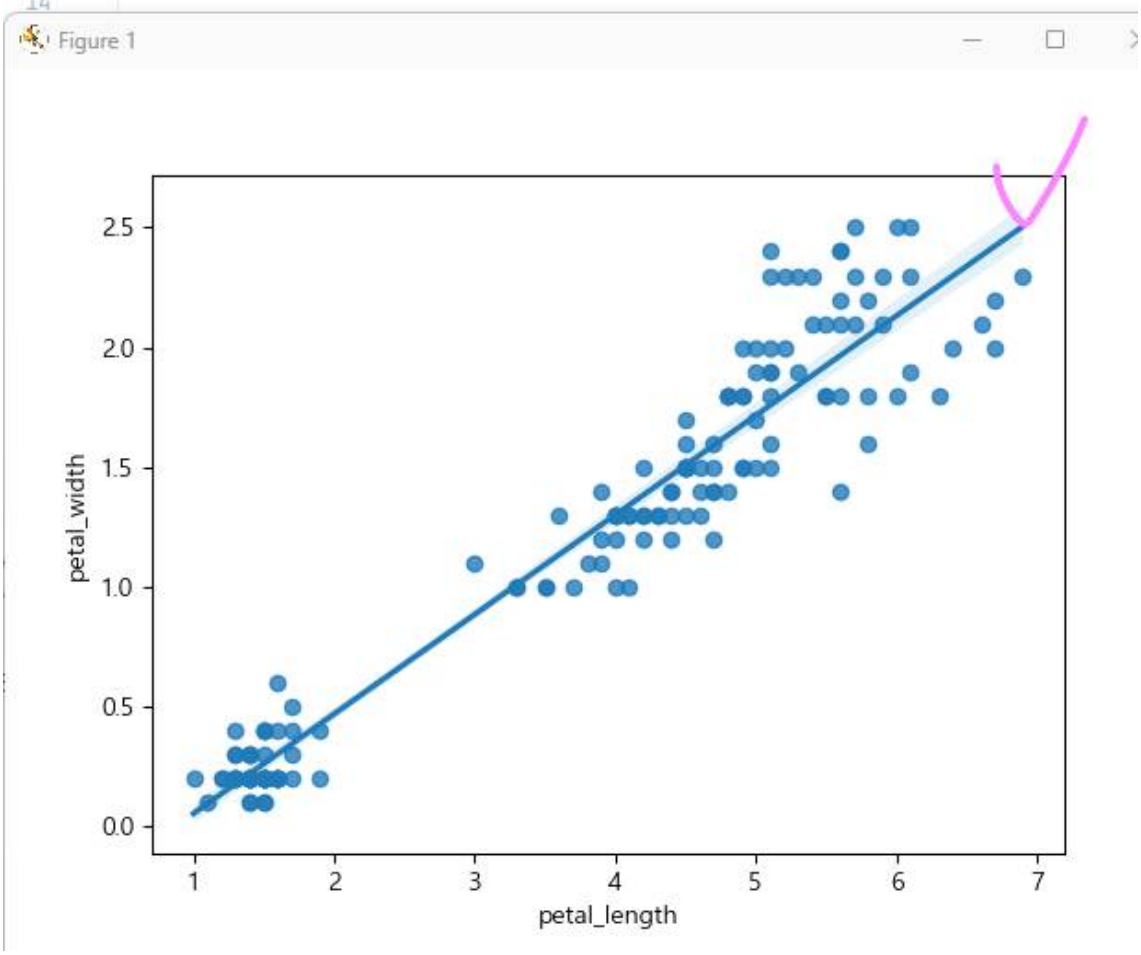
Figure 1



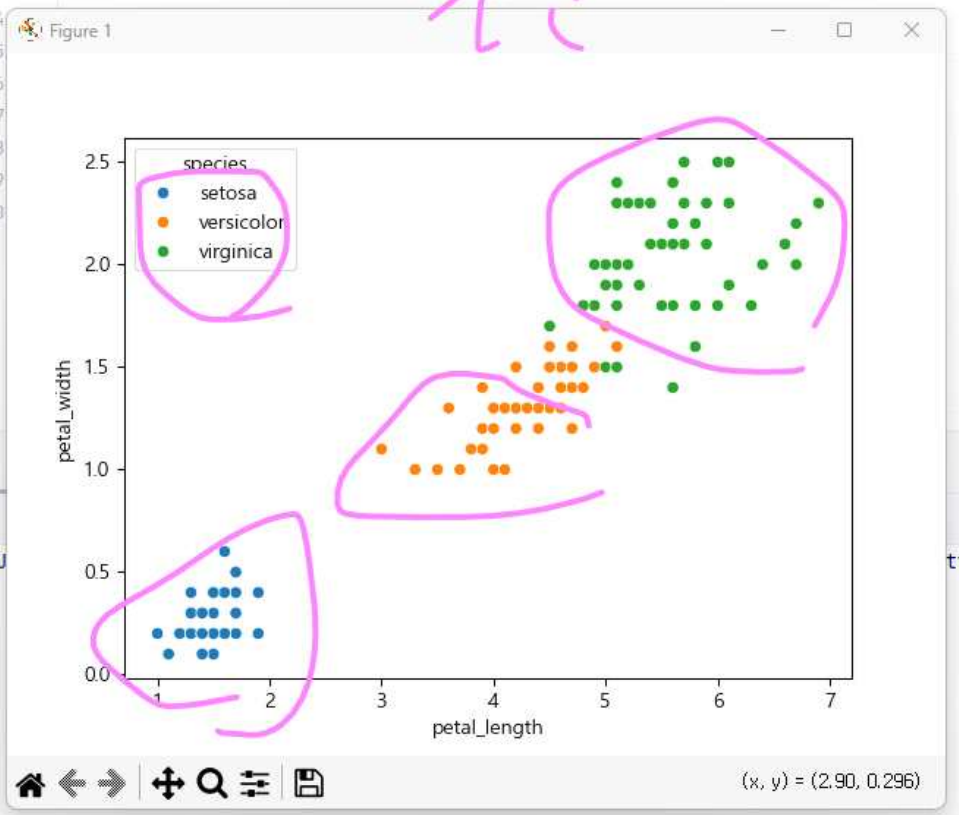
```python
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import pandas as pd

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False


iris = sns.load_dataset('iris')
plt.plot( *args: 'petal_length','petal_width',data=iris,
         linestyle='none', marker='o',
         markersize=20, color="magenta", alpha=0.5)

plt.title('산점도 - seaborn')
plt.xlabel('붓꽃의 길이')
plt.ylabel('붓꽃의 넓이')
plt.show()
```



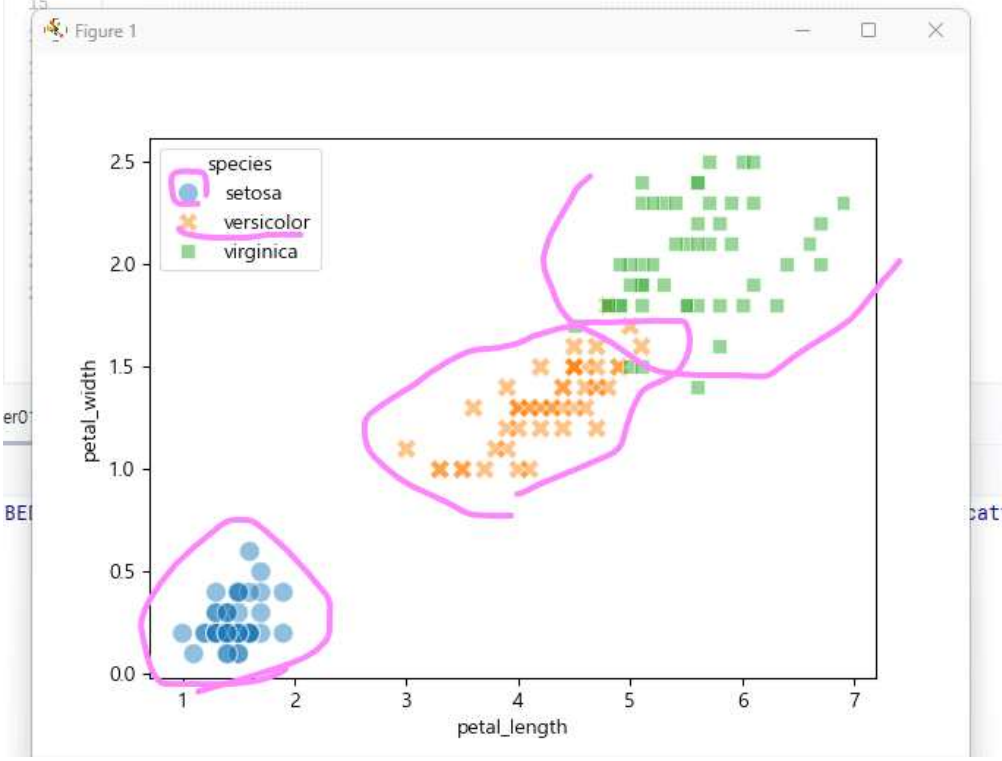
```python
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import pandas as pd

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False


iris = sns.load_dataset('iris')
sns.regplot(x=iris['petal_length'],y=iris['petal_width'])
plt.show()

```

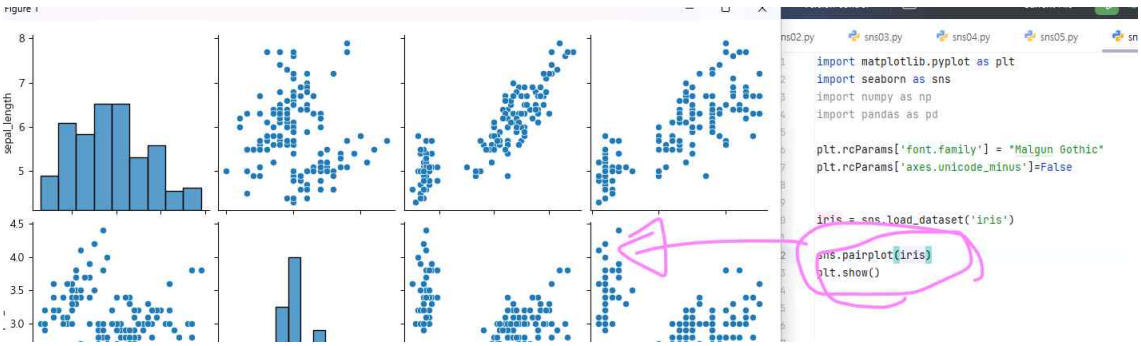


```python
iris = sns.load_dataset('iris')
sns.scatterplot(x=iris['petal_length'],y=iris['petal_width'], data=iris, hue="species")
plt.show()
```

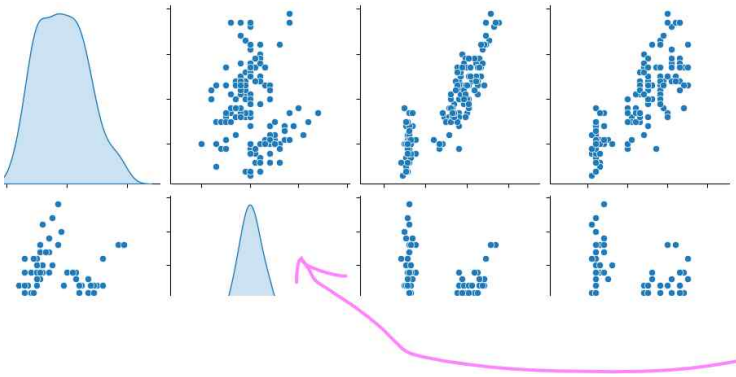


```
iris = sns.load_dataset('iris')
sns.scatterplot(x=iris['petal_length'],y=iris['petal_width'], data=iris, hue="species",
                style="species", s=100, alpha=0.5)
plt.show()
```

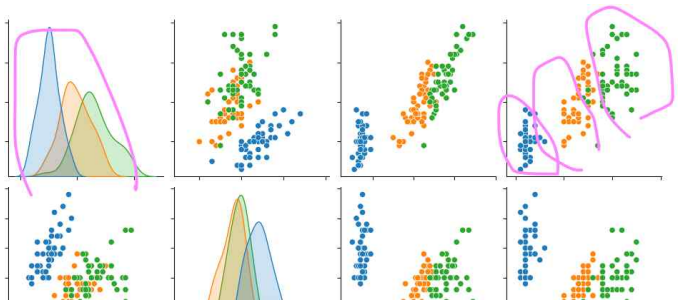




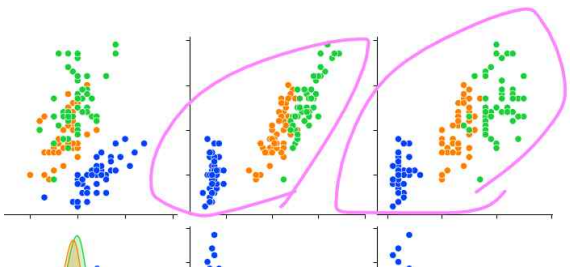

```
sns.pairplot(iris)
plt.show()
```



```python
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import pandas as pd

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False


iris = sns.load_dataset('iris')

sns.pairplot(iris, diag_kind='kde')
plt.show()
```



```python
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import pandas as pd

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False


iris = sns.load_dataset('iris')

sns.pairplot(iris, diag_kind='kde', hue='species')
plt.show()
```



```python
import numpy as np
import pandas as pd

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False


iris = sns.load_dataset('iris')

sns.pairplot(iris, diag_kind='kde', hue='species', palette='bright')
plt.show()
```

https://www.geeksforgeeks.org/how-to-make-a-mosaic-plot-in-matplotlib/

print(sns.get_dataset_names())
seaborn에 들어있는 데이터세트의 종류

['anagrams', 'anscombe', 'attention', 'brain_networks', 'car_crashes', 'diamonds', 'dots', 'dowjones', 'exercise', 'flights', 'fmri', 'geyser', 'glue', 'healthexp', 'iris', 'mpg', 'penguins', 'planets', 'seaice', 'taxis', 'tips', 'titanic']

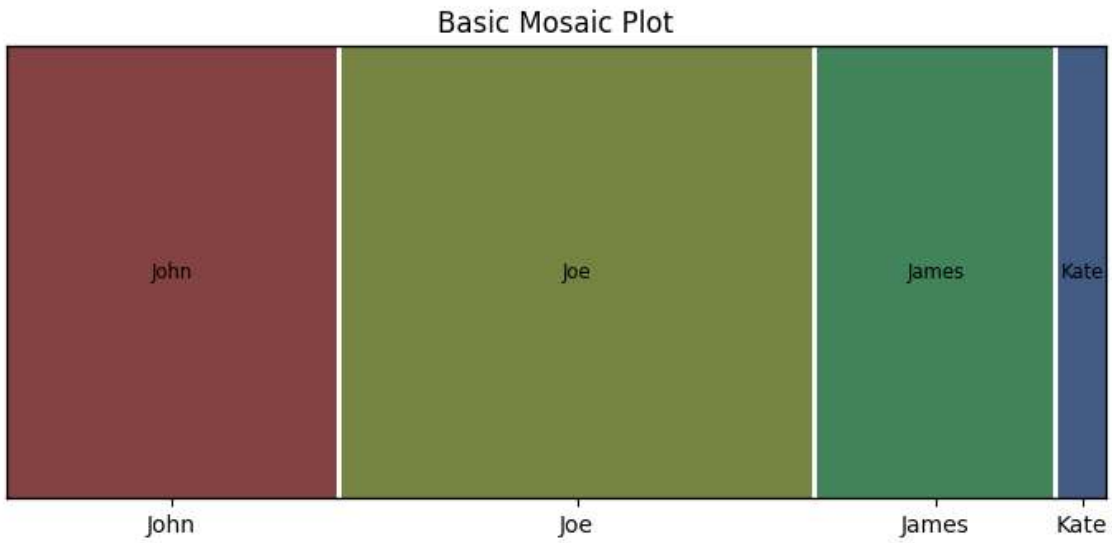
```
pip install matplotlib
pip install statsmodels
```

1) Example 1: Basic Mosaic Plot

Python

```
import matplotlib.pyplot as plt
from statsmodels.graphics.mosaicplot import mosaic

plt.rcParams["figure.figsize"] = [7.00, 3.50]
plt.rcParams["figure.autolayout"] = True

# Dictionary for mosaic plot data
data = {'John': 7, 'Joe': 10, 'James': 5, 'Kate': 1}

# Create mosaic plot
mosaic(data, title='Basic Mosaic Plot')
plt.show()
```

Output:



Basic Mosaic Plot

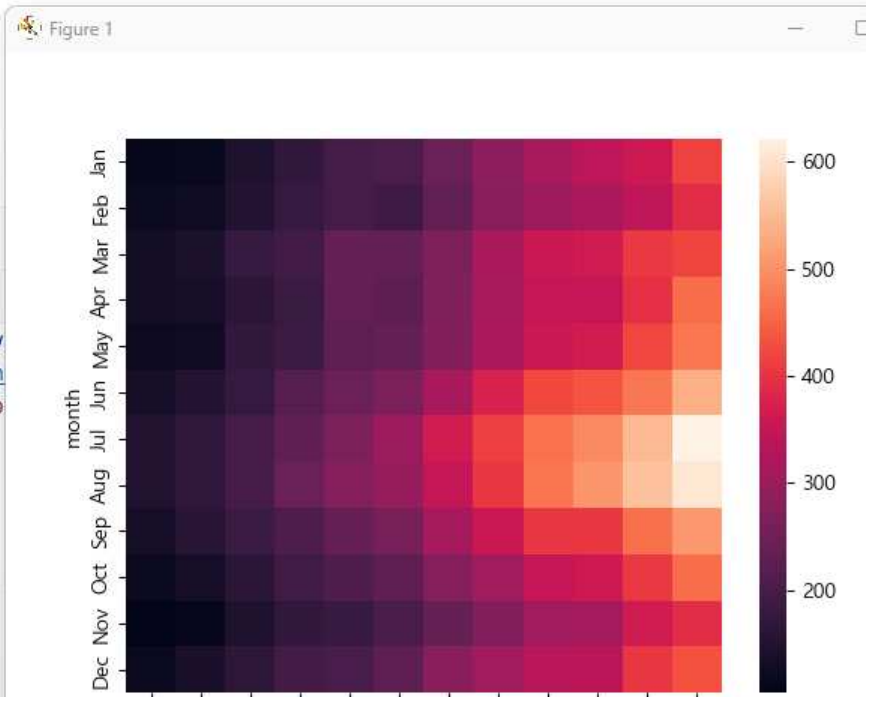
In this example, we create a simple mosaic plot from a dictionary of data. The mosaic function from the

statsmodels.graphics.mosaicplot module is used to create the plot, and plt.show() is used to display it.

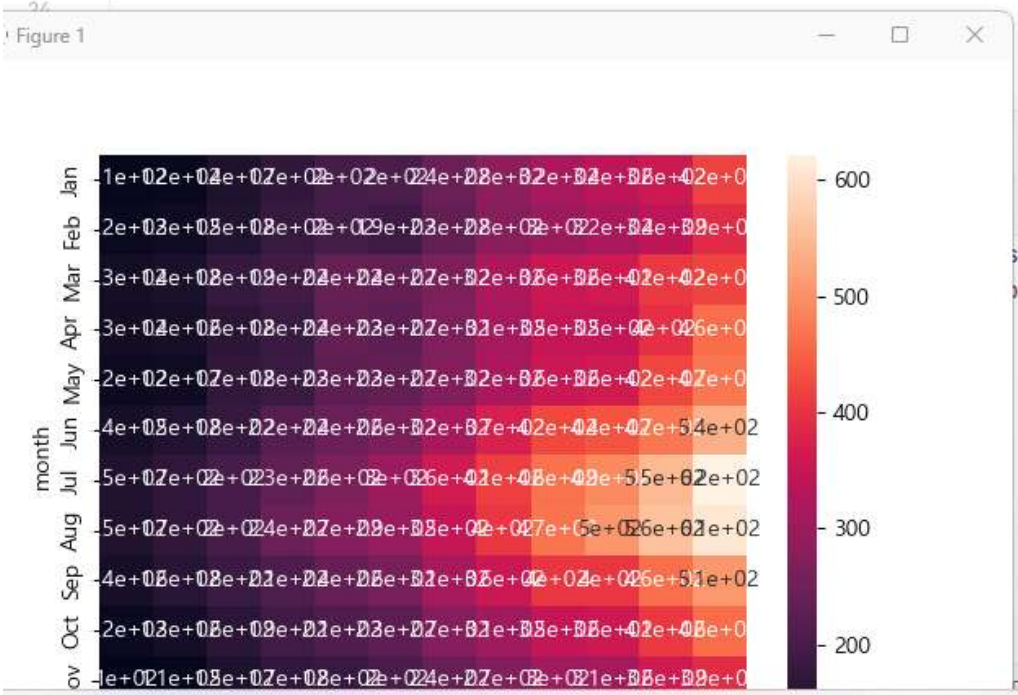
```
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import pandas as pd

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False

import matplotlib.pyplot as plt
from statsmodels.graphics.mosaicplot import mosaic

plt.rcParams["figure.figsize"] = [7.00, 3.50]
plt.rcParams["figure.autolayout"] = True

# Dictionary for mosaic plot data
data = {'John': 7, 'Joe': 10, 'James': 5, 'Kate': 1}

# Create mosaic plot
mosaic(data, title='Basic Mosaic Plot')
plt.show()

```

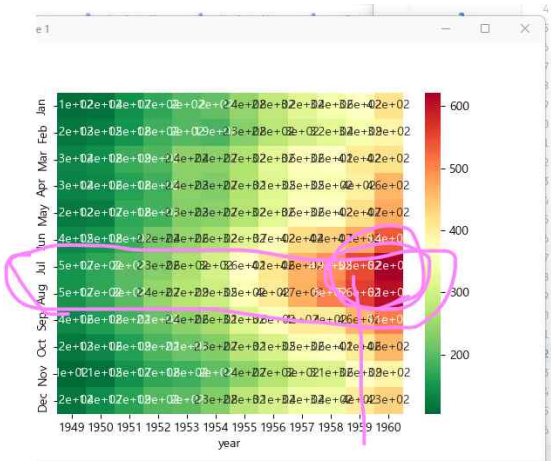
```python
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import pandas as pd

import matplotlib.pyplot as plt
from statsmodels.graphics.mosaicplot import mosaic

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False

flights = sns.load_dataset("flights")
#print(flights.shape)
#print(flights.head())
#print(flights.tail())
#print(flights.describe())

#df = flights.pivot("month","year","passenger")
df = flights.pivot_table(index="month", columns="year", values="passengers")
#print(df)

sns.heatmap(df)
plt.show()
```

```
U30\pythonProject\.venv
U30\pythonProject\sns-h
s.pivot_table(index="mo
```

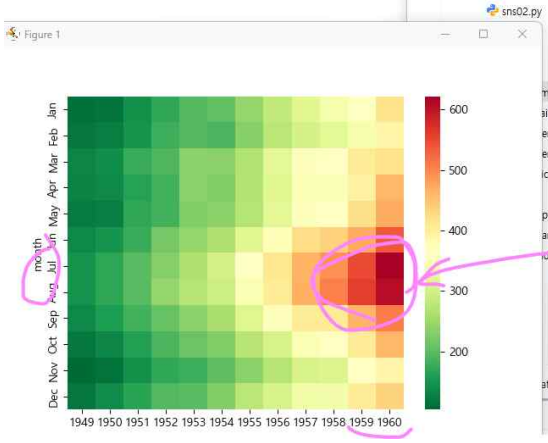


```python
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import pandas as pd

import matplotlib.pyplot as plt
from statsmodels.graphics.mosaicplot import mosaic

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False

flights = sns.load_dataset("flights")
#print(flights.shape)
#print(flights.head())
#print(flights.tail())
#print(flights.describe())

#df = flights.pivot("month","year","passenger")
df = flights.pivot_table(index="month", columns="year", values="passengers")
#print(df)

sns.heatmap(df, annot=True)
plt.show()
```






```python
import pandas as pd

import matplotlib.pyplot as plt
from statsmodels.graphics.mosaicplot import mosaic

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False

flights = sns.load_dataset("flights")
#print(flights.shape)
#print(flights.head())
#print(flights.tail())
#print(flights.describe())

#df = flights.pivot("month","year","passenger")
df = flights.pivot_table(index="month", columns="year", values="passengers")
#print(df)

sns.heatmap(df, annot=True, cmap="RdYlGn_r")
plt.show()
```




```python
import matplotlib.pyplot as plt
from statsmodels.graphics.mosaicplot import mosaic

plt.rcParams['font.family'] = "Malgun Gothic"
plt.rcParams['axes.unicode_minus']=False

flights = sns.load_dataset("flights")
#print(flights.shape)
#print(flights.head())
#print(flights.tail())
#print(flights.describe())

#df = flights.pivot("month","year","passenger")
df = flights.pivot_table(index="month", columns="year", values="passengers")
#print(df)

sns.heatmap(df, cmap="RdYlGn_r")
plt.show()
```