seaborn 라이브러리

1. 환경준비

- 라이브러리 불러오기

In [ ]:

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

- 데이터 불러오기 : 다음의 예제 데이터를 사용합니다.

> ① 타이타닉 생존자
> ② 보스톤 시, 타운별 집값
> ③ 아이리스 꽃 분류

In [ ]:

```
# 타이타닉 데이터
titanic = pd.read_csv('https://bit.ly/3FsgwkJ')
titanic.head()
```

Out[2]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	C
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	

In [ ]:

```
# 아이리스 꽃 분류
iris = pd.read_csv('https://bit.ly/3JiY7ZZ')
iris.head()
```

Out[3]:

	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa

In [ ]:

```
# 보스톤 집값 데이터
boston = pd.read_csv('https://bit.ly/3EuWvZw')
boston.head()
```

Out[4]:

	crim	indus	chas	nox	rm	age	dis	rad	tax	ptratio	black	lstat	medv	zn2
0	0.00632	2.31	0	0.538	6.575	65.2	4.0900	1	296	15.3	396.90	4.98	24.0	1
1	0.02731	7.07	0	0.469	6.421	78.9	4.9671	2	242	17.8	396.90	9.14	21.6	0
2	0.02729	7.07	0	0.469	7.185	61.1	4.9671	2	242	17.8	392.83	4.03	34.7	0
3	0.03237	2.18	0	0.458	6.998	45.8	6.0622	3	222	18.7	394.63	2.94	33.4	0
4	0.06905	2.18	0	0.458	7.147	54.2	6.0622	3	222	18.7	396.90	5.33	36.2	0

In [ ]:

```
# 뉴욕시 공기 오염도 데이터
air = pd.read_csv('https://bit.ly/3qmthqZ')
air['Date'] = pd.to_datetime(air['Date'])
air['Month'] = air.Date.dt.month
air['Weekday'] = air.Date.dt.weekday
air.head()
```

Out[32]:

	Ozone	Solar.R	Wind	Temp	Date	Month	Weekday
0	41	190.0	7.4	67	1973-05-01	5	1
1	36	118.0	8.0	72	1973-05-02	5	2
2	12	149.0	12.6	74	1973-05-03	5	3
3	18	313.0	11.5	62	1973-05-04	5	4
4	19	NaN	14.3	56	1973-05-05	5	5

In [ ]:

```
# 코스피 지수
stock = pd.read_csv('https://raw.githubusercontent.com/DA4BAM/dataset/master/KOSPI.csv'
stock['Date'] = pd.to_datetime(stock['Date'])
stock['Year'] = stock.Date.dt.year
stock['Month'] = stock.Date.dt.month
stock['Weekday'] = stock.Date.dt.weekday
stock.head()
```

Out[8]:

	Date	Open	High	Low	Close	Volume	DataSplit	Year	Month	Weekday
0	2014-09-30	2023.18	2029.17	2007.30	2020.09	322812	0	2014	9	1
1	2014-10-01	2013.47	2013.47	1989.84	1991.54	351581	0	2014	10	2
2	2014-10-02	1984.43	1985.06	1966.17	1976.16	322656	0	2014	10	3
3	2014-10-06	1987.89	1988.39	1968.30	1968.39	325078	0	2014	10	0
4	2014-10-07	1979.83	1982.96	1966.22	1972.91	328234	0	2014	10	1

2. seaborn 다양한 차트들

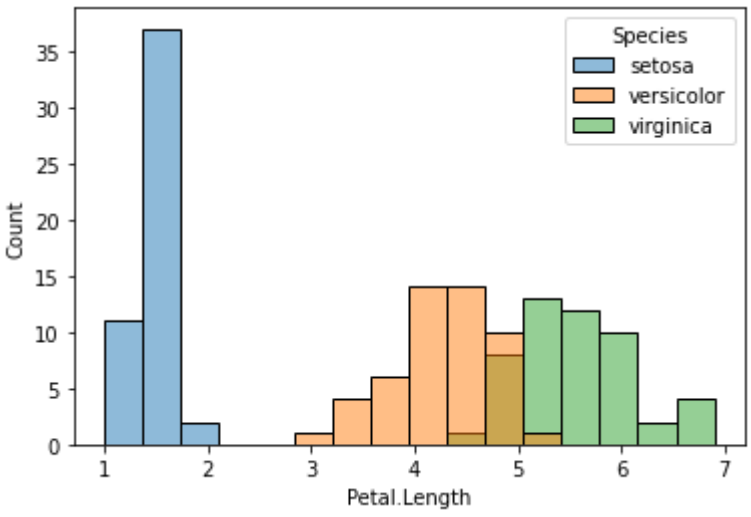
1) 기본 차트들

① iris의 Petal.Length 에 대해서, Species 별로 비교하는 차트를 그려봅시다. * histplot() * kdeplot() * boxplot()

- histogram : sns.histplot

In [ ]:

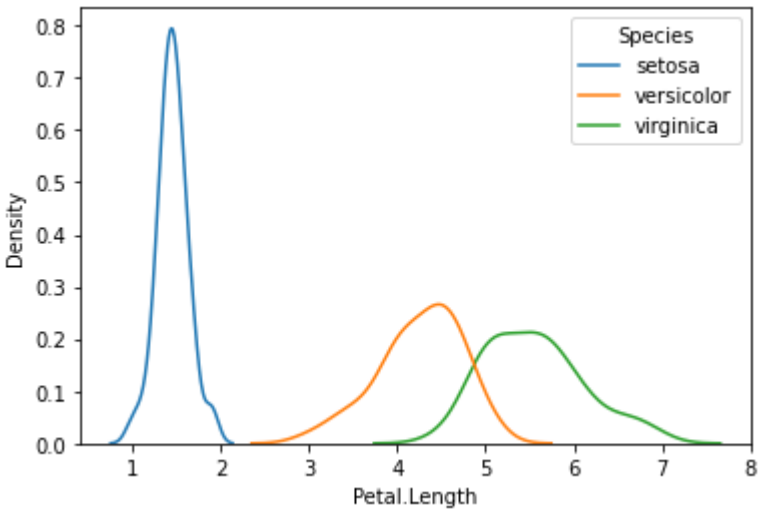
```
sns.histplot(data = iris, x='Petal.Length', bins = 16, hue = 'Species')
plt.show()
```



- densityplot : sns.kdeplot

In [ ]:

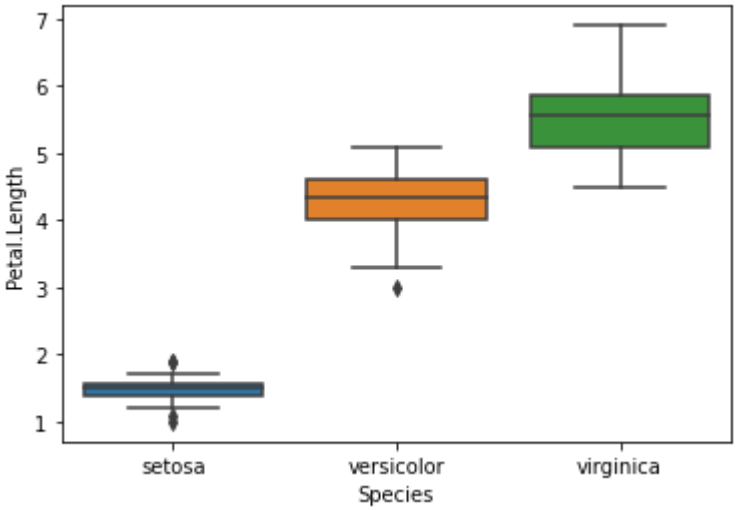
```
sns.kdeplot(data = iris, x='Petal.Length', hue = 'Species')
plt.show()
```



- boxplot

In [ ]:

```
sns.boxplot(data = iris, y = 'Petal.Length', x = 'Species')
plt.show()
```



2) distplot : histogram + density plot

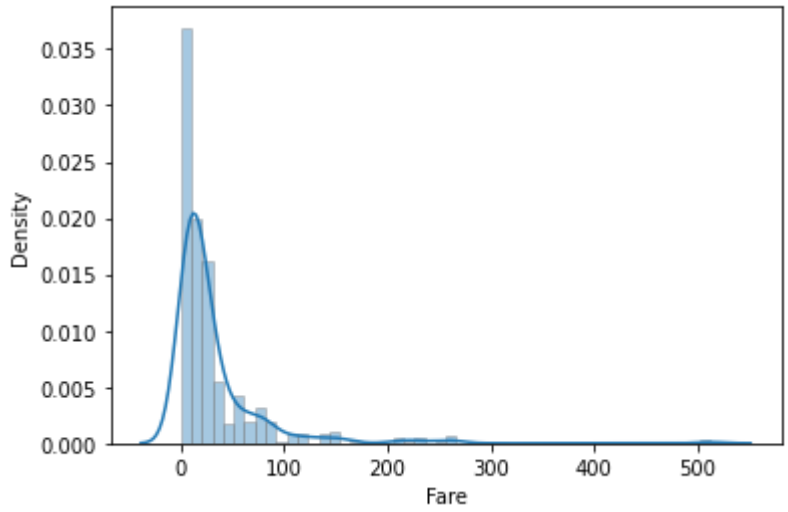
① titanic['Fare'] 에 대해서 distplot을 그려 봅시다.

- bin의 개수를 10 ~ 50 사이에서 조절해 봅시다.
- 히스토그램을 꾸며 봅시다. hist_kws = {'edgecolor':'grey'}

In [ ]:

```
sns.distplot(titanic['Fare'], bins = 50, hist_kws = {'edgecolor':'grey'})
plt.show()
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py:2619: Future
Warning: `distplot` is a deprecated function and will be removed in a future
version. Please adapt your code to use either `displot` (a figure-level func
tion with similar flexibility) or `histplot` (an axes-level function for his
tograms).
  warnings.warn(msg, FutureWarning)
```



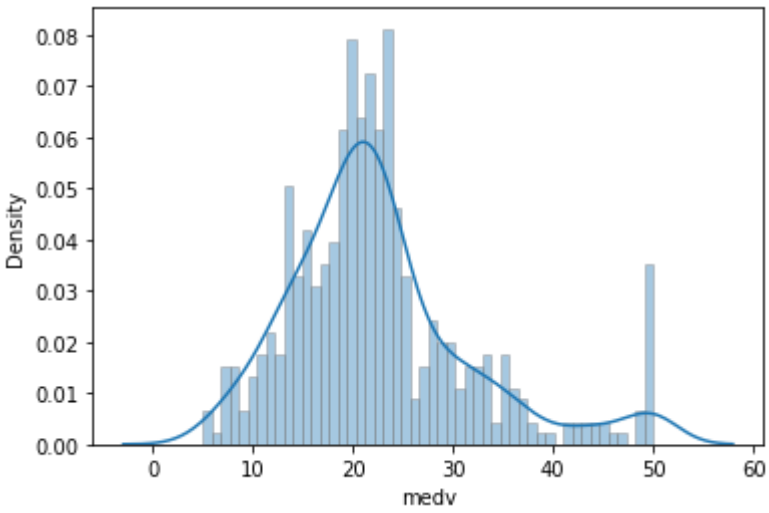
② boston['medv'] 에 대해서 distplot을 그려 봅시다.

- bin의 개수를 10 ~ 50 사이에서 조절해 봅시다.
- 히스토그램을 꾸며 봅시다. hist_kws = {'edgecolor':'grey'}

In [ ]:

```
1 sns.distplot(boston['medv'], bins = 50, hist_kws = {'edgecolor':'grey'})
2 plt.show()
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/distributions.py:2619: Future
Warning: `distplot` is a deprecated function and will be removed in a future
version. Please adapt your code to use either `displot` (a figure-level func
tion with similar flexibility) or `histplot` (an axes-level function for his
tograms).
  warnings.warn(msg, FutureWarning)
```

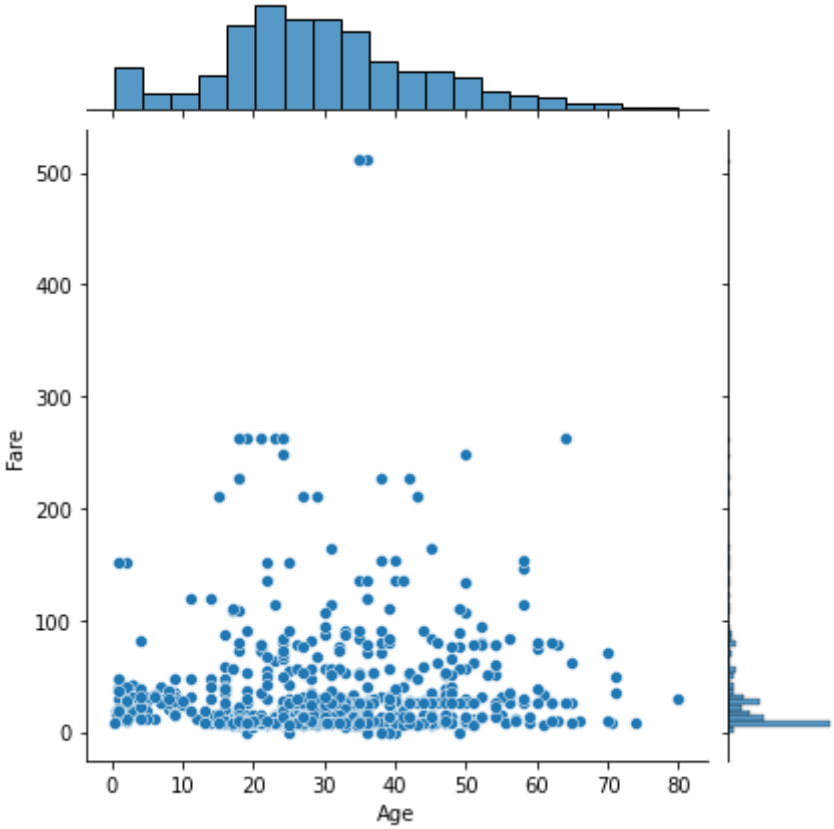


3) joinplot : scatter + histogram(혹은 density plot)

① titanin['Age']와 titanic['Fare']에 대해 join plot을 그려봅시다.

In [ ]:

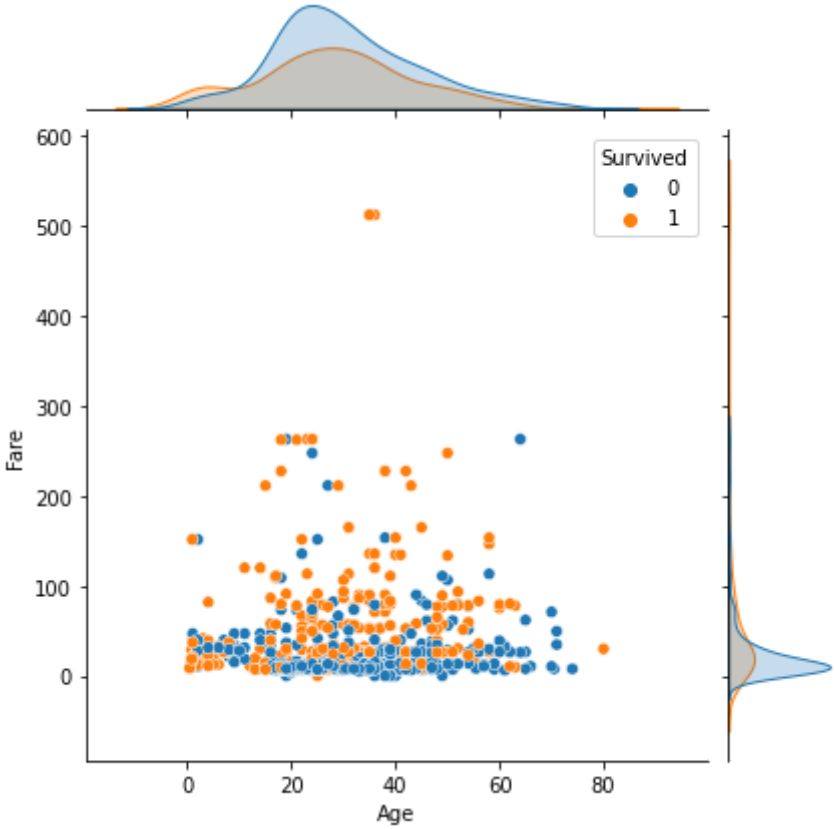
```
1 sns.jointplot(x='Age', y='Fare', data = titanic)
2 plt.show()
```



② titanin['Age']와 titanic['Fare']에 대해 join plot을 그려봅시다. 단, 생존여부(Survived) 별로 구분.

In [ ]:

```
1 sns.jointplot(x='Age', y='Fare', hue = 'Survived', data = titanic)
2 plt.show()
```

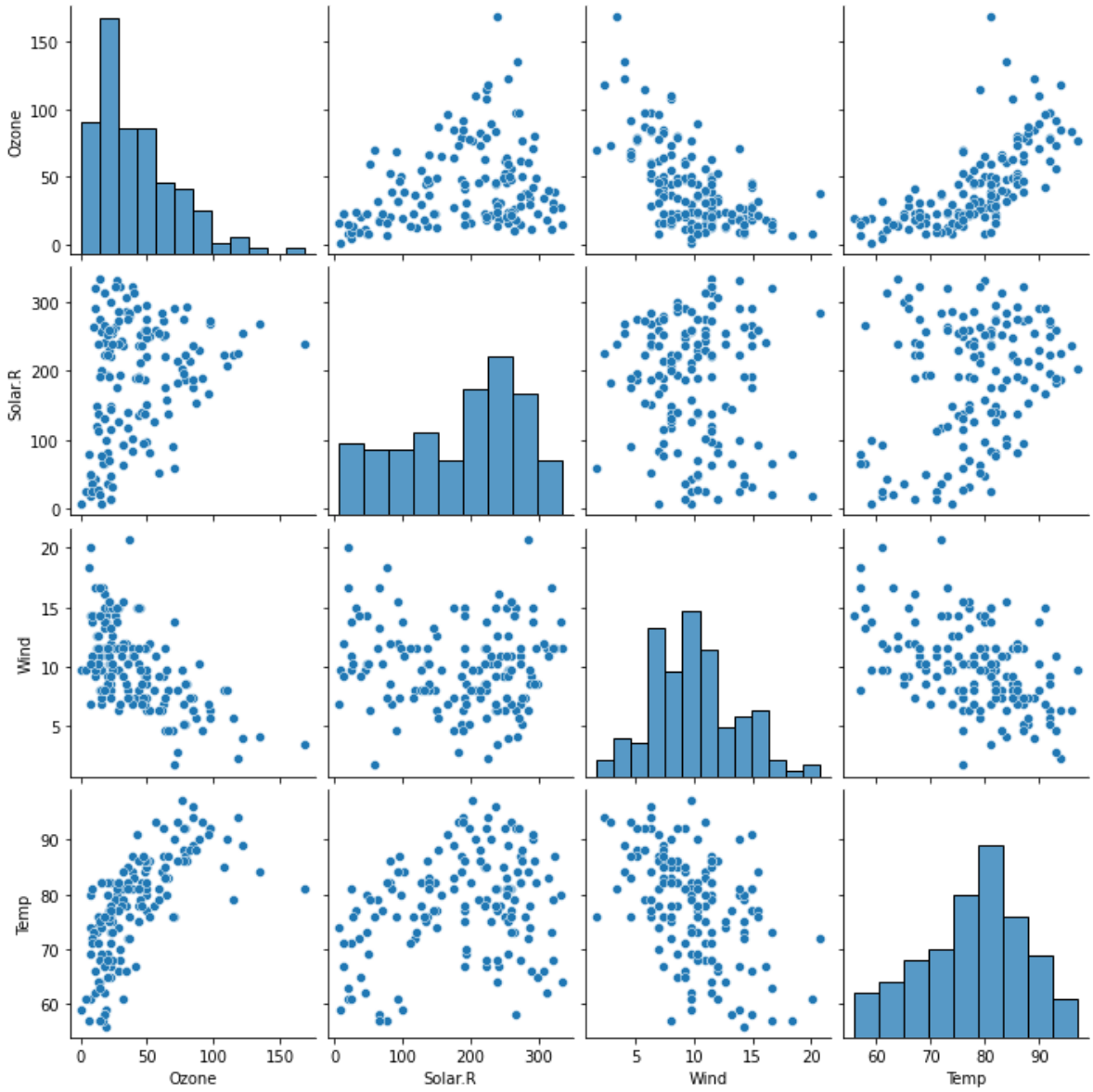


4) pairplot : scatter + histogram(혹은 density plot) 확장

① air 데이터셋에 대해서 pairplot을 그려 봅시다.

In [ ]:

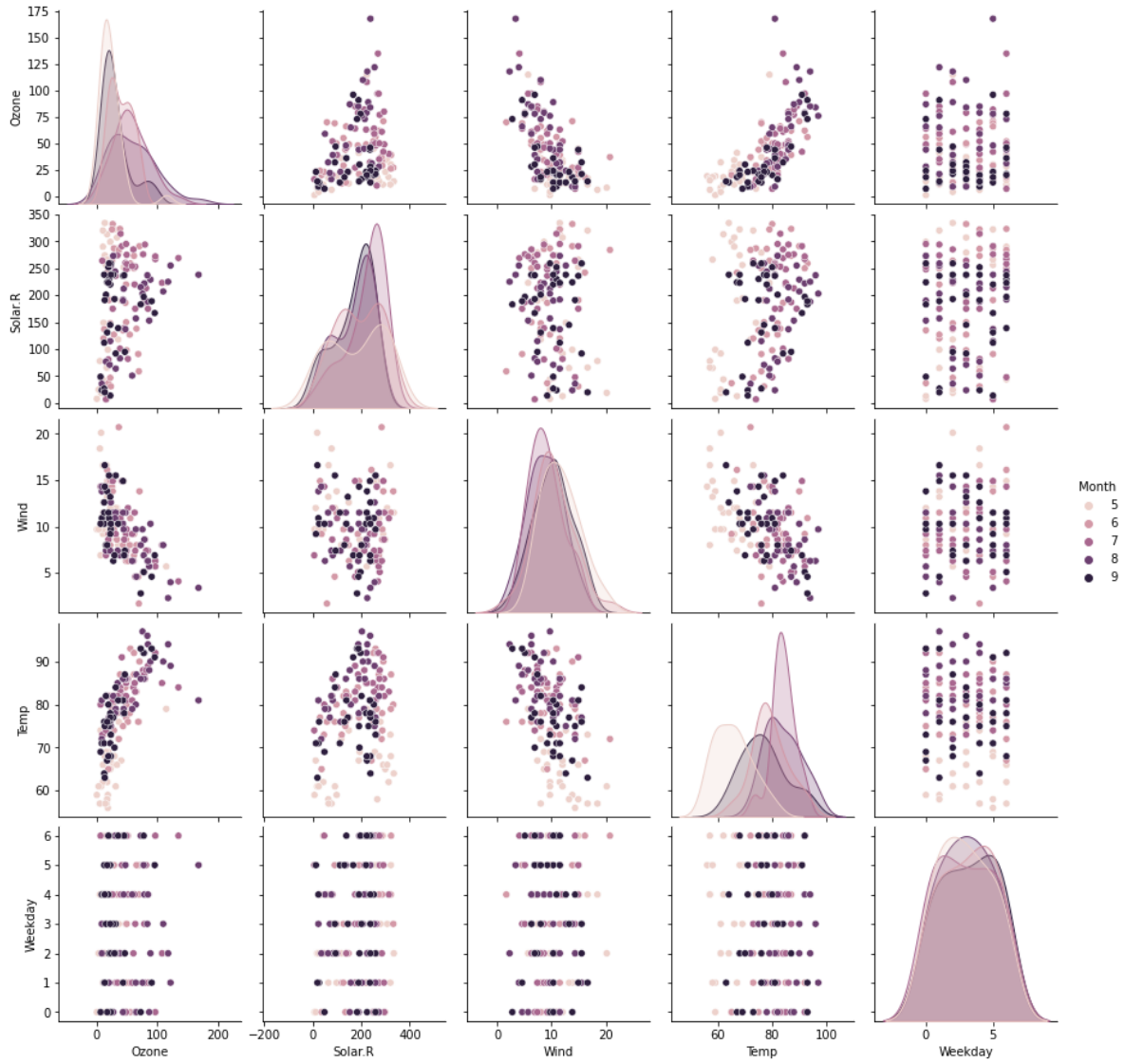
```
1 sns.pairplot(air)
2 plt.show()
```



② air 데이터셋에 대해서 pairplot을 그릴 때, 월별로 구분해서)

In [ ]:

```
1 sns.pairplot(air, hue = 'Month')
2 plt.show()
```

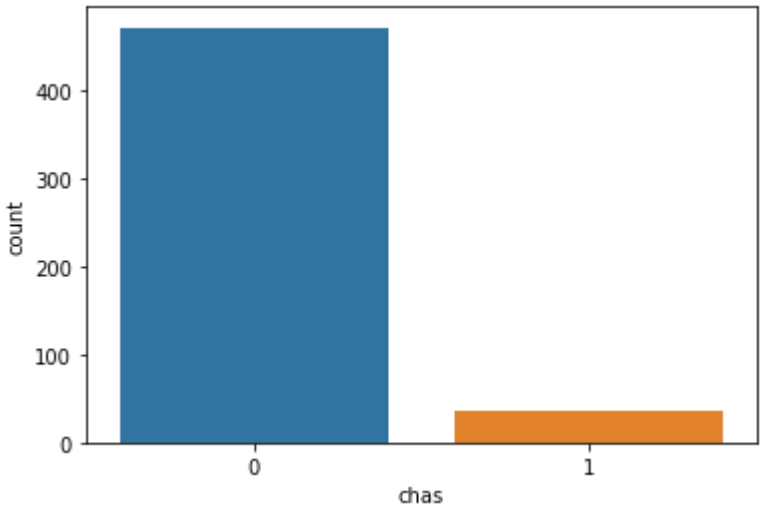


5) countplot : 집계 + bar plot

① boston['chas'] 에 대해 countplot을 그려 봅시다.

In [ ]:

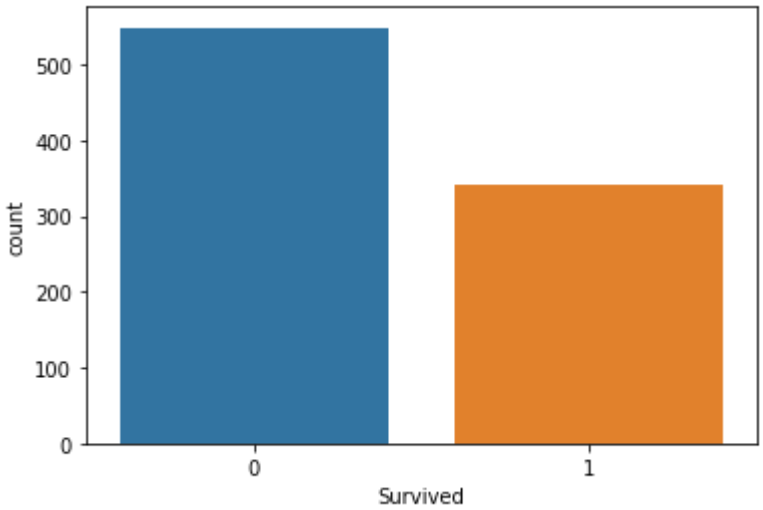
```
sns.countplot(x="chas", data=boston)
plt.show()
```



② titanic['Survived']에 대해 countplot을 그려 봅시다.

In [ ]:

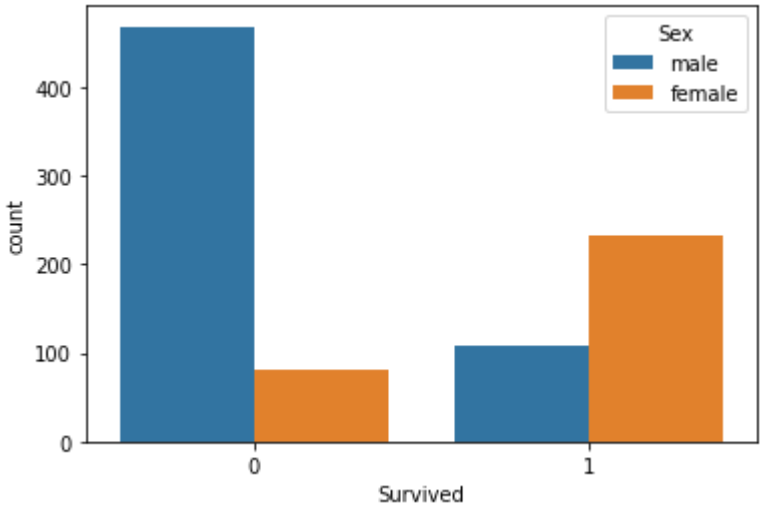
```
sns.countplot(x="Survived", data=titanic)
plt.show()
```



③ titanic['Survived']에 대해 성별 별로 구분하여 countplot을 그려 봅시다.

In [ ]:

```
sns.countplot(x="Survived", hue = 'Sex', data=titanic)
plt.show()
```

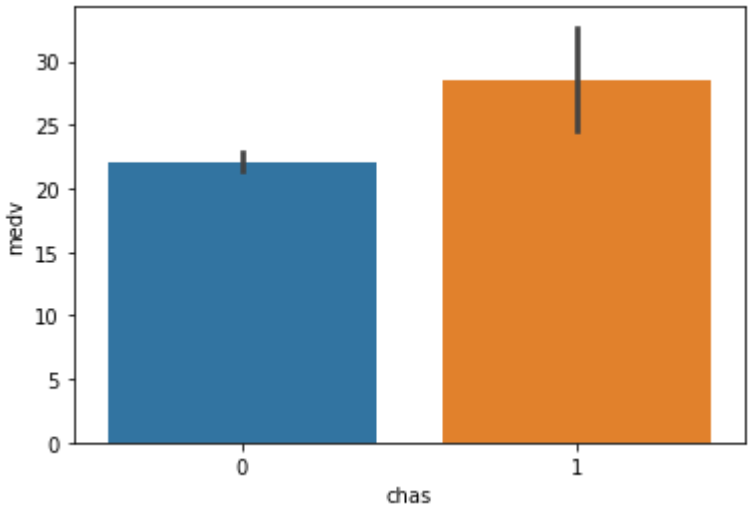


6) barplot : 평균비교 bar plot + error bar

① boston['chas'] 별 boston['medv']의 평균을 비교해 봅시다.

In [ ]:

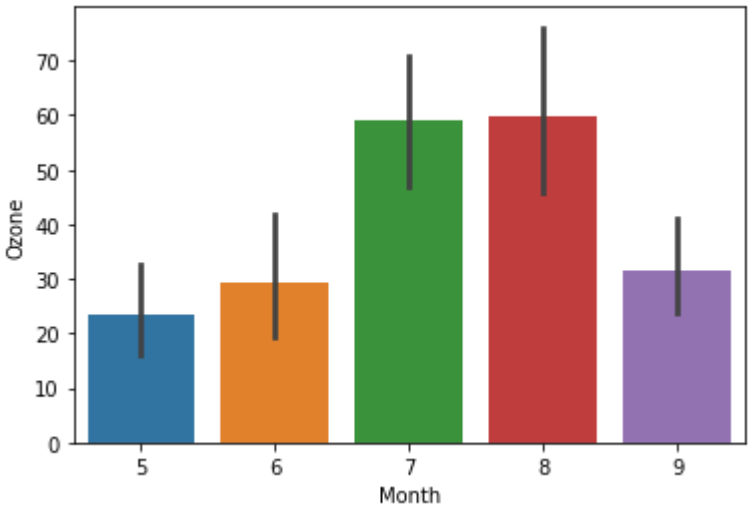
```
sns.barplot(x="chas", y="medv", data = boston)
plt.show()
```



② air['Month'] 별 air['Ozone']의 평균을 비교해 봅시다.

In [ ]:

```
sns.barplot(x="Month", y="Ozone", data = air)
plt.show()
```



7) heatmap : 두 범주 집계 시각화

① [groupby] stock 데이터를 이용하여 year별, month별 평균 주가(close)를 집계하시오.

In [ ]:

```
temp1 = stock.groupby(['Year','Month'], as_index = False)['Close'].mean()
```

② [pivot] 'Year','Month', 'Close' 으로 피봇시키시오.

In [ ]:

```
temp2 = temp1.pivot( 'Year','Month', 'Close')
temp2
```

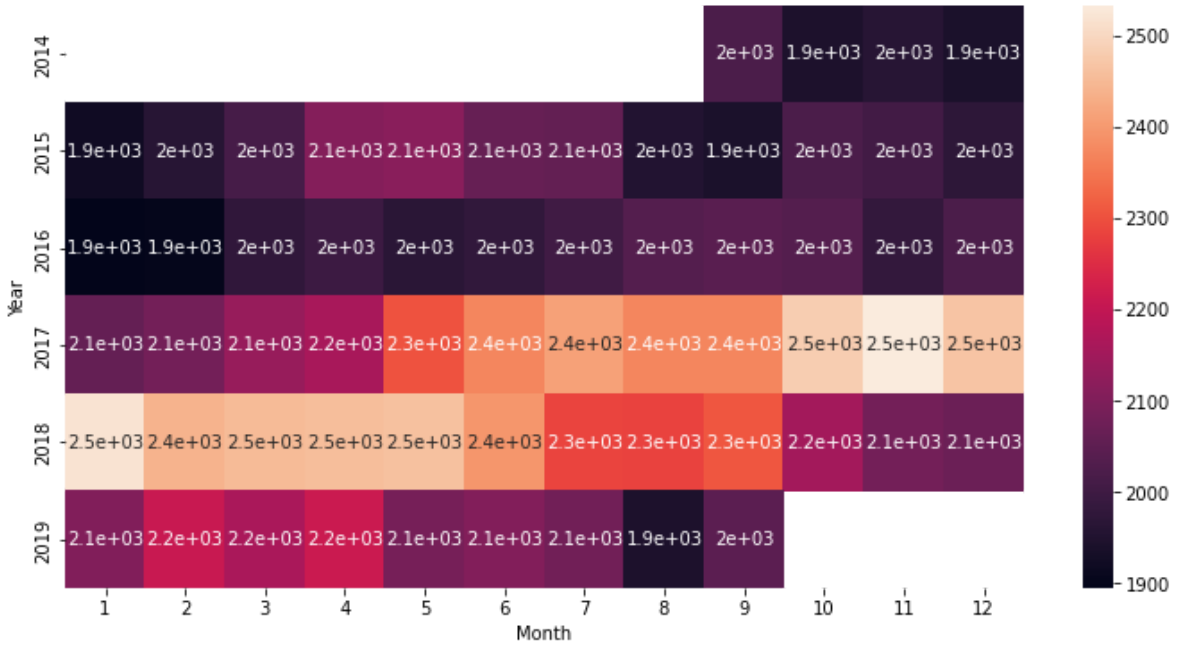
Out[10]:

Month	1	2	3	4	5	6	
Year							
2014	NaN	NaN	NaN	NaN	NaN	NaN	
2015	1920.992857	1961.001176	2012.619091	2107.268182	2114.898889	2063.685909	2058.03
2016	1894.651000	1900.610000	1976.502727	1996.170500	1966.675500	1977.029524	2002.48
2017	2061.733500	2082.795000	2136.174545	2160.182500	2301.890000	2372.204286	2412.89
2018	2520.937727	2439.104444	2451.570000	2458.224762	2461.300500	2394.507895	2284.25
2019	2101.984091	2210.198824	2161.914500	2212.120455	2086.898095	2105.303158	2079.48

③ heatmap을 그리시오.

In [ ]:

```
plt.figure(figsize = (12,6))
sns.heatmap(temp2, annot = True)
plt.show()
```



In [ ]:

```

```