데이터 분석을 위한 라이브러리

05 Matplotlib 데이터 시각화 그래프

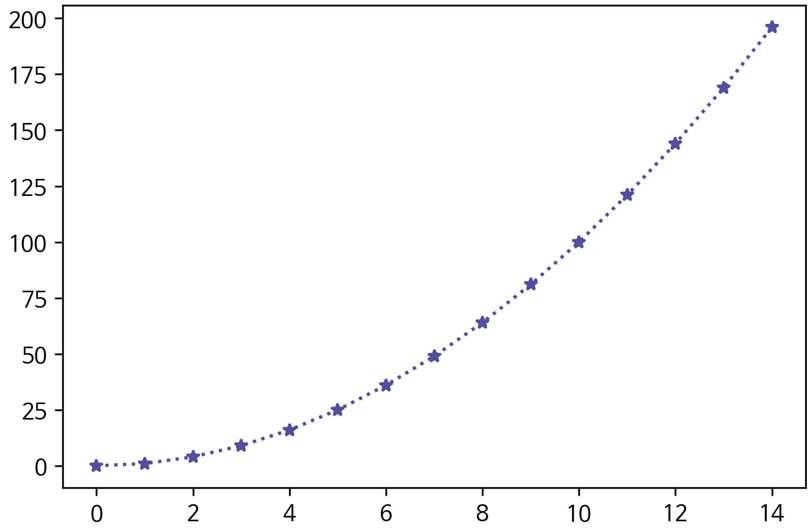
01

Matplotlib 그래프

Line plot

```
fig, ax = plt.subplots()
x = np.arange(15)
y = x ** 2
ax.plot(
    x, y,
    linestyle=":",
    marker="*",
    color="#524FA1"
)
```

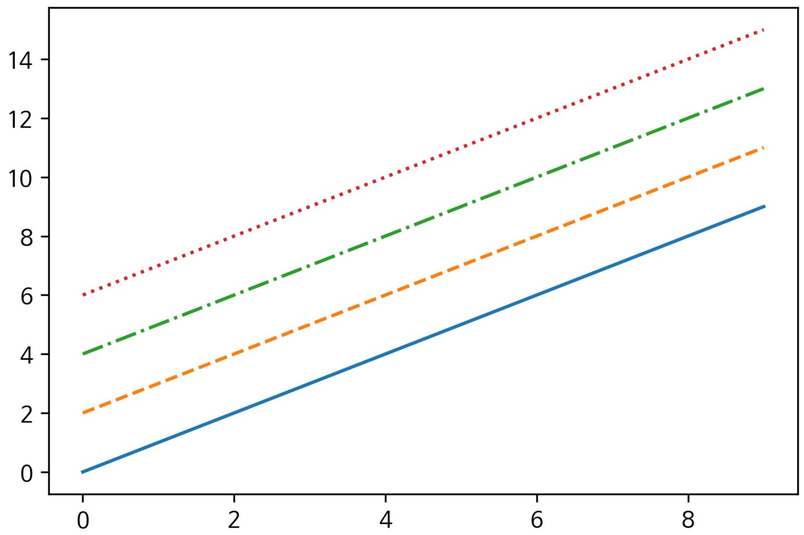
*matplotlib 라이브러리는 이미 import 해둔 것으로 가정



Line style

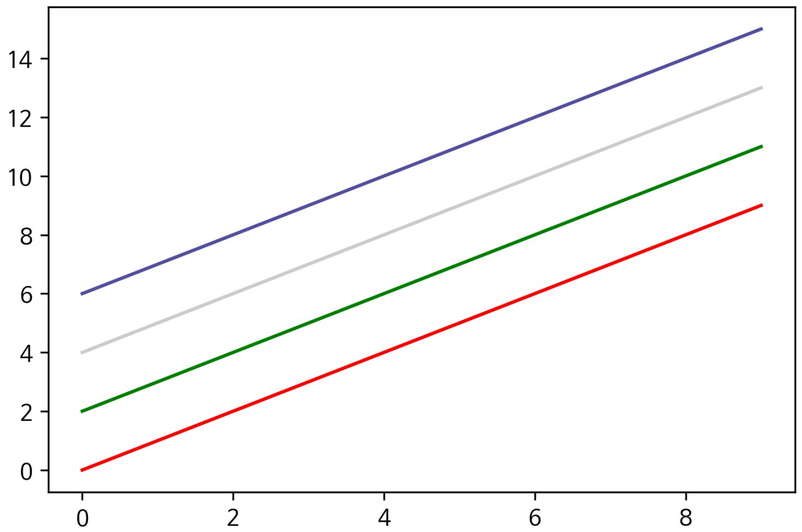
```
x = np.arange(10)
fig, ax = plt.subplots()
ax.plot(x, x, linestyle="-")
# solid
ax.plot(x, x+2, linestyle="--")
# dashed
ax.plot(x, x+4, linestyle="-.")
# dashdot
ax.plot(x, x+6, linestyle=":")
# dotted
```

*matplotlib 라이브러리는 이미 import 해둔 것으로 가정



Color

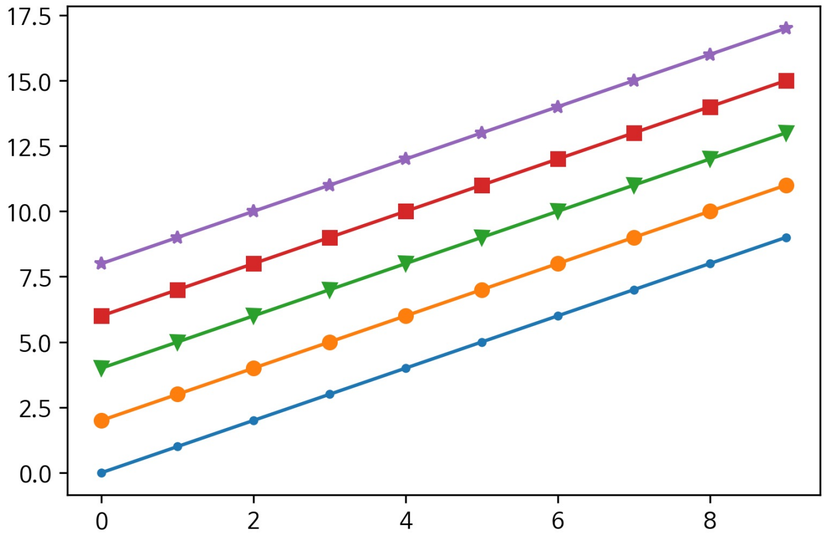
```
x = np.arange(10)
fig, ax = plt.subplots()
ax.plot(x, x, color="r")
ax.plot(x, x+2, color="green")
ax.plot(x, x+4, color="0.8")
ax.plot(x, x+6, color="#524FA1")
```



*matplotlib 라이브러리는 이미 import 해둔 것으로 가정

Marker

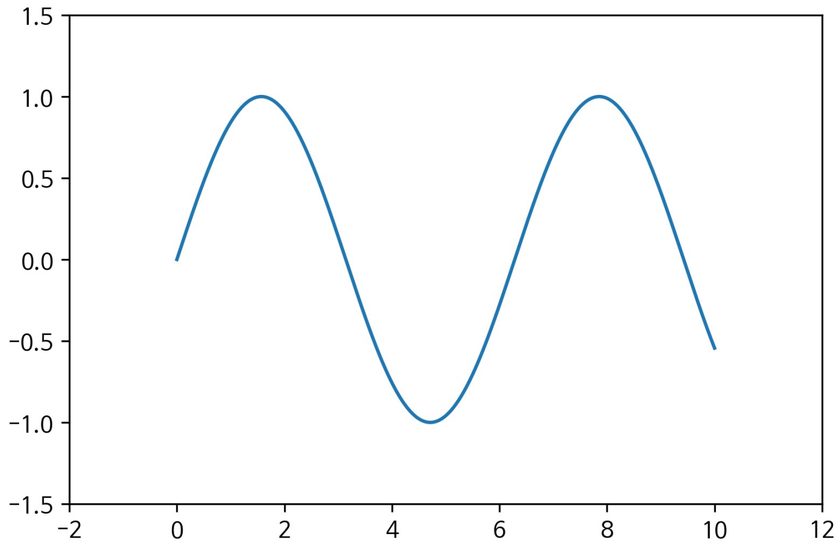
```
x = np.arange(10)
fig, ax = plt.subplots()
ax.plot(x, x, marker=".")
ax.plot(x, x+2, marker="o")
ax.plot(x, x+4, marker="v")
ax.plot(x, x+6, marker="s")
ax.plot(x, x+8, marker="*")
```



*matplotlib 라이브러리는 이미 import 해둔 것으로 가정

축 경계 조정하기

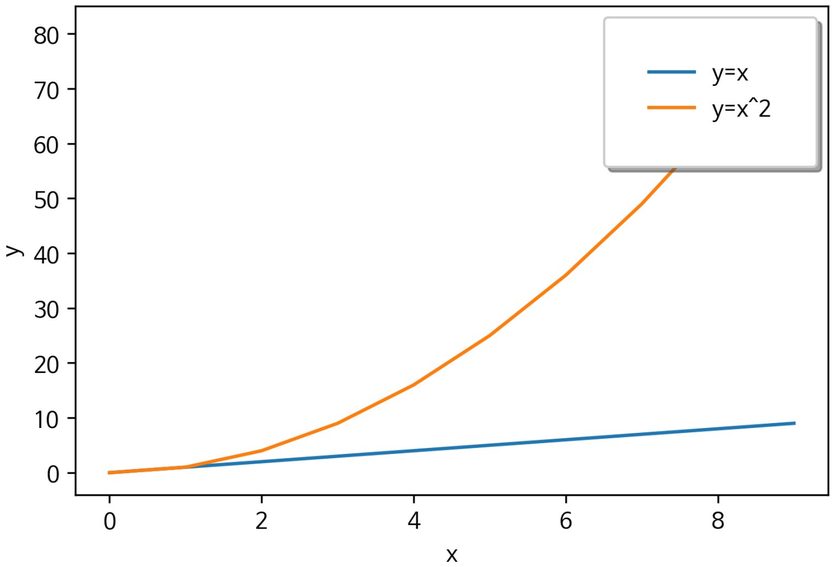
```
x = np.linspace(0, 10, 1000)
fig, ax = plt.subplots()
ax.plot(x, np.sin(x))
ax.set_xlim(-2, 12)
ax.set_ylim(-1.5, 1.5)
```



*matplotlib 라이브러리는 이미 import 해둔 것으로 가정

범례

```
x = np.arange(10)
fig, ax = plt.subplots()
ax.plot(x, x, label='y=x')
ax.plot(x, x**2, label='y=x^2')
ax.set_xlabel("x")
ax.set_ylabel("y")
ax.legend(loc='upper right',
          shadow=True,
          fancybox=True,
          borderpad=2)
```



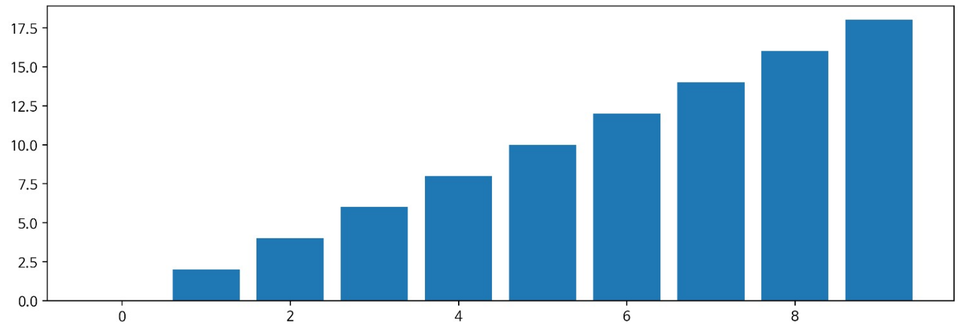
*matplotlib, numpy 라이브러리는 이미 import 해둔 것으로 가정

02

Bar & Histogram

Bar plot

```
# bar
x = np.arange(10)
fig, ax = plt.subplots(figsize=(12, 4))
ax.bar(x, x*2)
```



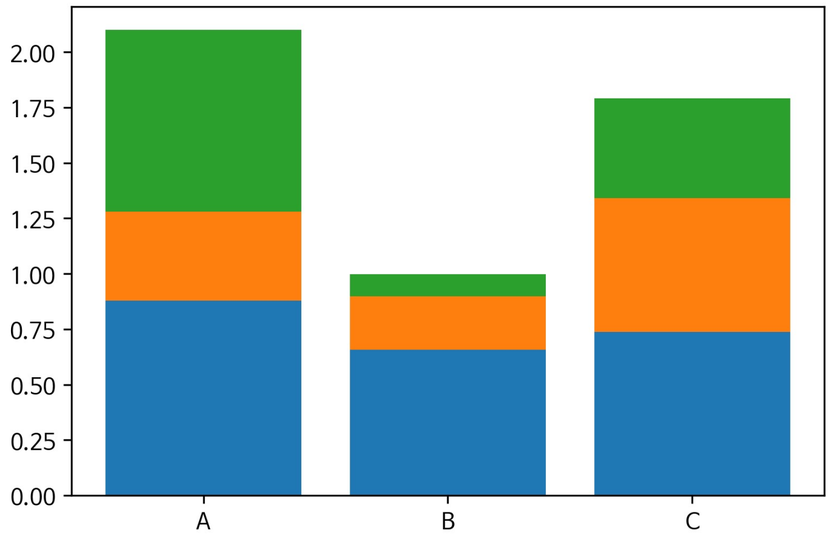
*matplotlib 라이브러리는 이미 import 해둔 것으로 가정

Bar plot

```
x = np.random.rand(3)
y = np.random.rand(3)
z = np.random.rand(3)
data = [x, y, z]
fig, ax = plt.subplots()
x_ax = np.arange(3)
for i in x_ax:
    ax.bar(x_ax, data[i],
    bottom=np.sum(data[:i], axis=0))
```

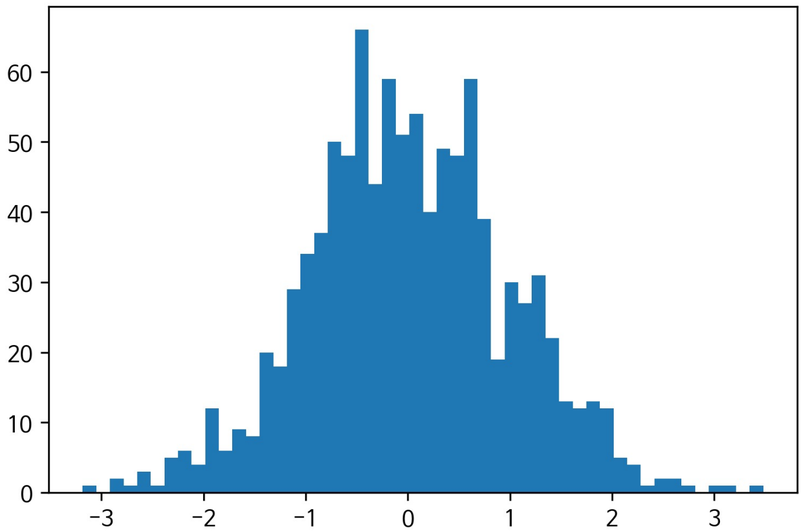
*matplotlib 라이브러리는 이미 import 해둔 것으로 가정

```
ax.set_xticks(x_ax)
ax.set_xticklabels(["A", "B", "C"])
```



Histogram

```
fig, ax = plt.subplots()
data = np.random.randn(1000)
ax.hist(data, bins=50)
```



*matplotlib 라이브러리는 이미 import 해둔 것으로 가정

03

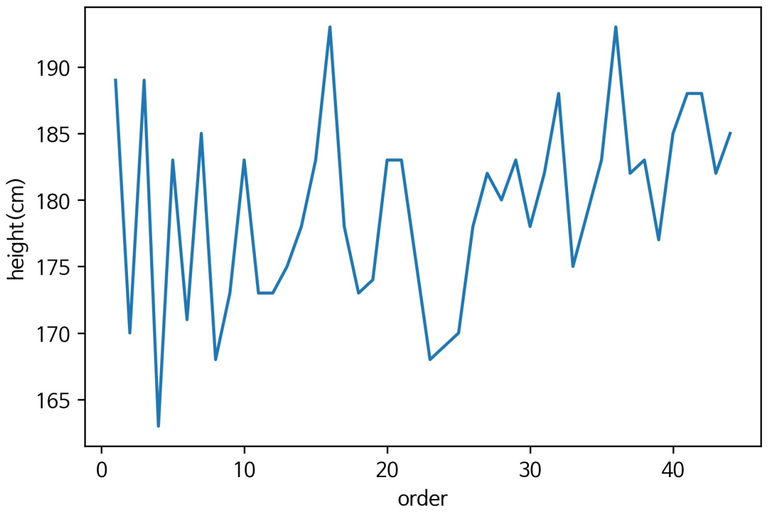
Matplotlib with Pandas

Matplotlib with pandas

```
df = pd.read_csv("./president_heights.csv")
fig, ax = plt.subplots()
ax.plot(df["order"], df["height(cm)"], label="height")
ax.set_xlabel("order")
ax.set_ylabel("height(cm)")
```

*matplotlib 라이브러리는 이미 import 해둔 것으로 가정

	order	name	height(cm)
0	1	George Washington	189
1	2	John Adams	170
2	3	Thomas Jefferson	189
3	4	James Madison	163
4	5	James Monroe	183



Matplotlib with pandas

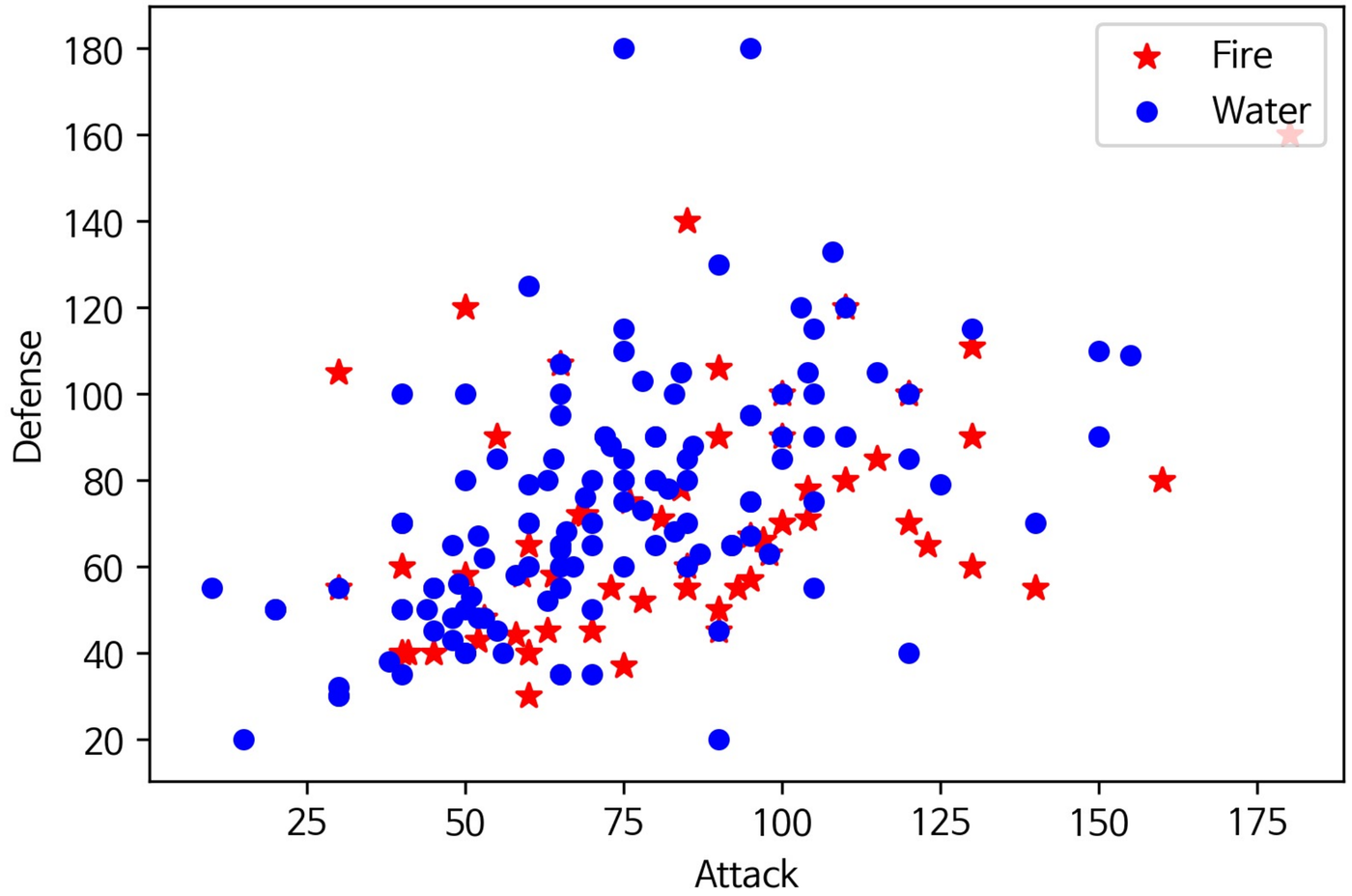
	#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Atk	Sp. Def	Speed	Generation	Legendary
0	1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	1	False
1	2	Ivysaur	Grass	Poison	405	60	62	63	80	80	60	1	False
2	3	Venusaur	Grass	Poison	525	80	82	83	100	100	80	1	False
3	3	VenusaurMega Venusaur	Grass	Poison	625	80	100	123	122	120	80	1	False
4	4	Charmander	Fire	NaN	309	39	52	43	60	50	65	1	False
5	5	Charmeleon	Fire	NaN	405	58	64	58	80	65	80	1	False
6	6	Charizard	Fire	Flying	534	78	84	78	109	85	100	1	False
7	6	CharizardMega Charizard X	Fire	Dragon	634	78	130	111	130	85	100	1	False

Matplotlib with pandas

```
df = pd.read_csv("./data/pokemon.csv")
fire = df[(df['Type 1']=='Fire') | ((df['Type 2'])=="Fire")]
water = df[(df['Type 1']=='Water') | ((df['Type 2'])=="Water")]
fig, ax = plt.subplots()
ax.scatter(fire['Attack'], fire['Defense’], color='R', label='Fire', marker="*", s=50)
ax.scatter(water['Attack'], water['Defense’], color='B', label="Water", s=25)
ax.set_xlabel("Attack")
ax.set_ylabel("Defense")
ax.legend(loc="upper right")
```

*matplotlib 라이브러리는 이미 import 해둔 것으로 가정

Matplotlib with pandas



크레딧

/* elice */

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