

202001555 지은미

```
In [17]: import matplotlib.pyplot as plt
%pylab inline

from collections import Counter

import matplotlib
matplotlib.rc('font', family='NanumGothic') # 폰트 설정

def make_simple_line_chart():

    year=[1950,1960,1970,1980,1990,2000,2010]
    gdp=[300.2,543.3,1075.9,2862.5,5979.6,10289.7,14958.3]

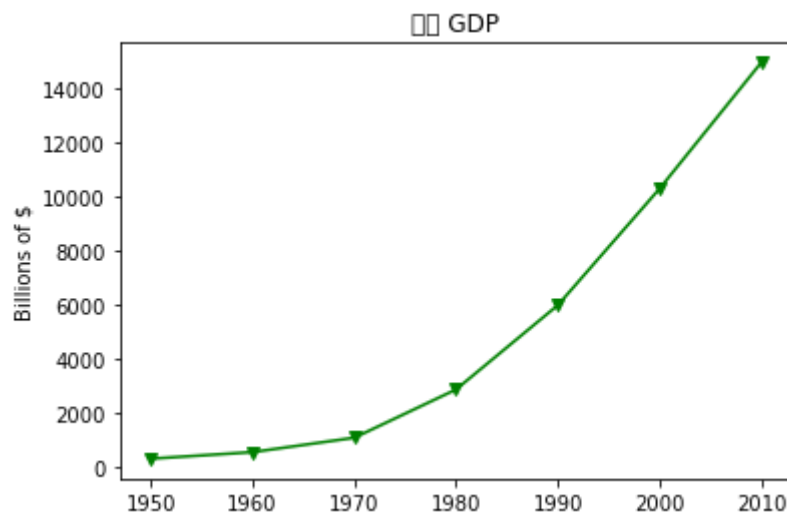
    plt.plot(year,gdp,color='green',marker='v',linestyle='solid')

    plt.title("명목 GDP")

    plt.ylabel("Billions of $")
    plt.show()

make_simple_line_chart()
```

Populating the interactive namespace from numpy and matplotlib



```
In [18]: def make_simple_bar_chart():

    movies=["Annie Hall","Ben_Hur","Casablanca","Gandhi","West Side Story"]
    num_oscars=[5,11,3,8,10]

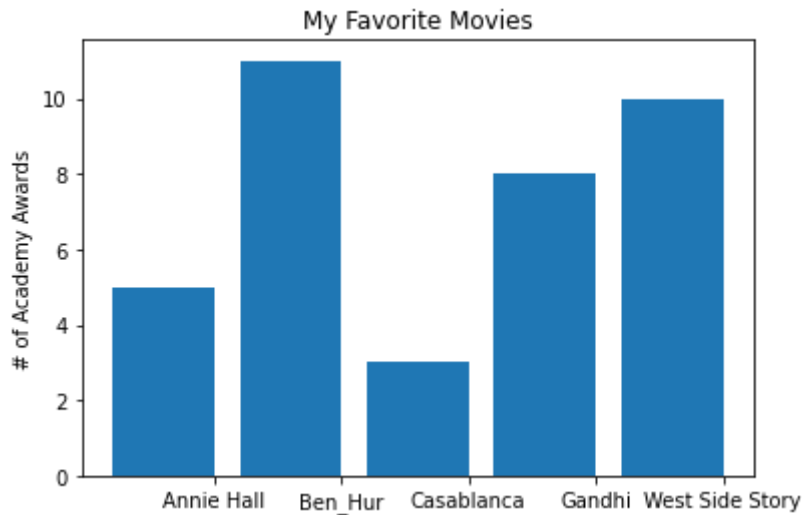
    xs=[i + 0.1 for i, _ in enumerate(movies)]

    plt.bar(xs,num_oscars)
    plt.ylabel("# of Academy Awards")
    plt.title("My Favorite Movies")

    plt.xticks([i + 0.5 for i, _ in enumerate(movies)], movies)

    plt.show()

make_simple_bar_chart()
```

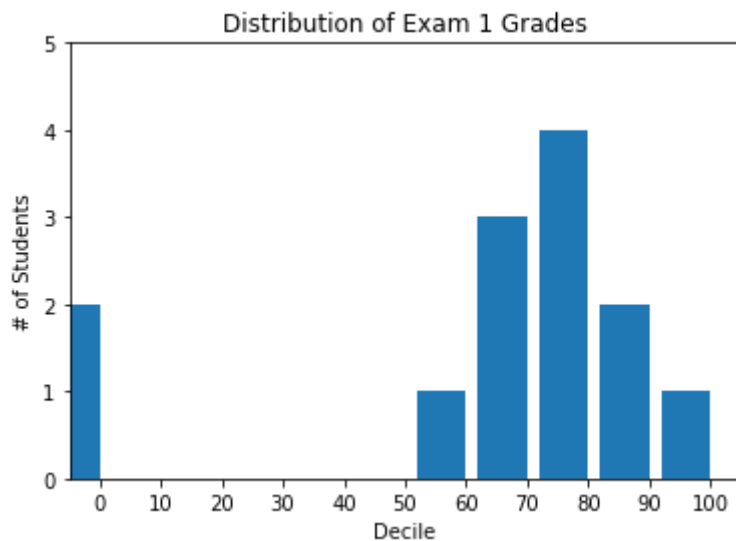


```
In [19]: def make_histogram():

    grades=[83,95,91,87,70,0,85,82,100,67,73,77,0]
    decile=lambda grade: grade//10*10
    histogram=Counter(decile(grade) for grade in grades)

    plt.bar([x-4 for x in histogram.keys()], histogram.values(), 8)
    plt.axis([-5,105,0,5]) #x축 범위 , y축 범위
    plt.xticks([10*i for i in range(11)]) #x축 0,10,20,...,100
    plt.xlabel("Decile")
    plt.ylabel("# of Students")
    plt.title("Distribution of Exam 1 Grades")
    plt.show()

make_histogram()
```



```
In [20]: def make_several_line_charts():
    variance=[1,2,4,8,16,32,64,128,256]
    bias_squared=[256,128,64,32,16,8,4,2,1]
    total_error=[x+y for x,y in zip(variance, bias_squared)]

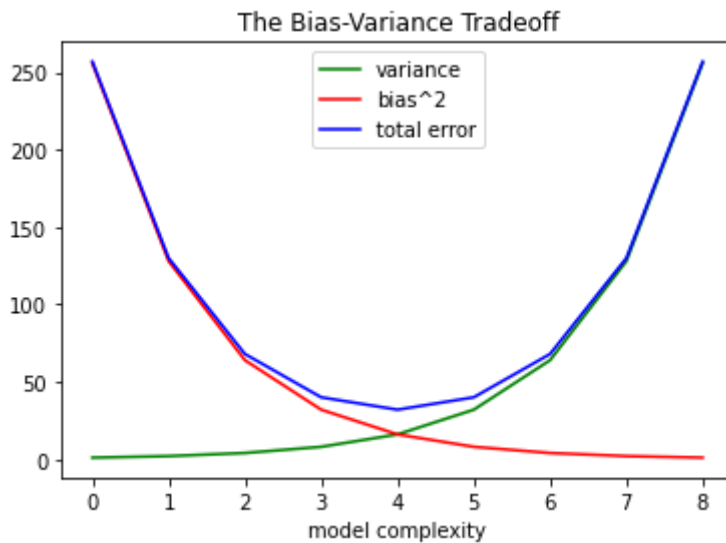
    xs=range(len(variance))

    plt.plot(xs,variance,'g-', label='variance')
    plt.plot(xs, bias_squared,'r-', label='bias^2')
    plt.plot(xs, total_error,'b-', label='total error')

    plt.legend(loc=9)
    plt.xlabel("model complexity")
```

```
plt.title("The Bias-Variance Tradeoff")
plt.show()
```

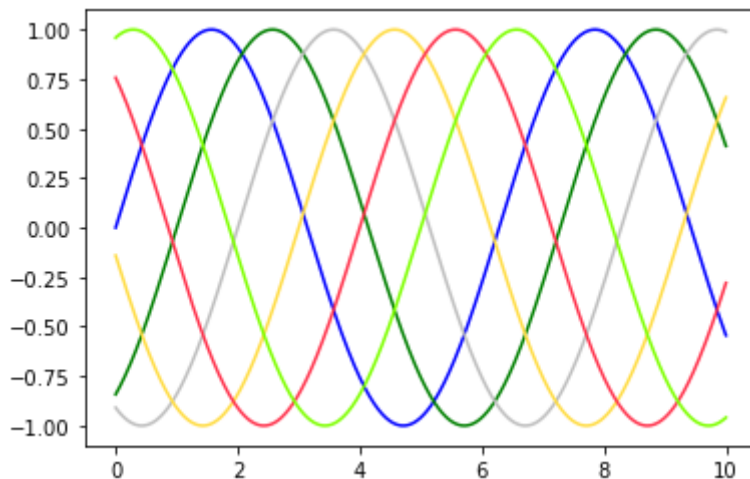
```
make_several_line_charts()
```



```
In [21]: x = np.linspace(0, 10, 1000)

plt.plot(x, np.sin(x - 0), color='blue')
plt.plot(x, np.sin(x - 1), color='g')
plt.plot(x, np.sin(x - 2), color='0.75')
plt.plot(x, np.sin(x - 3), color='#FFDD44')
plt.plot(x, np.sin(x - 4), color=(1.0,0.2,0.3))
plt.plot(x, np.sin(x - 5), color='chartreuse')
```

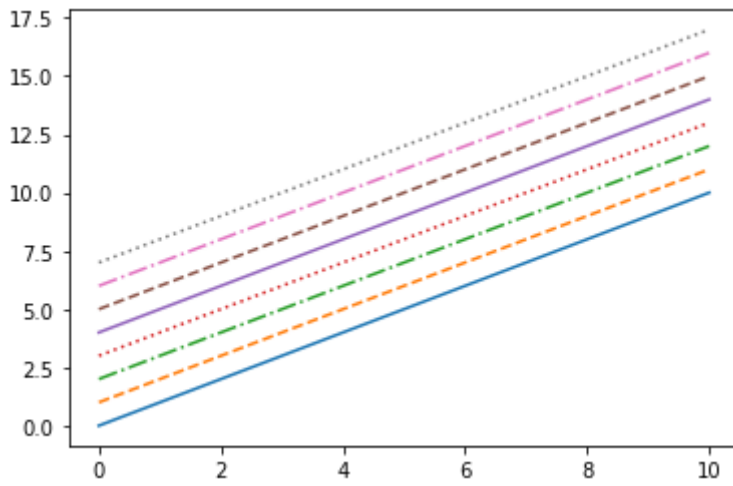
```
Out[21]: [<matplotlib.lines.Line2D at 0x19eac8505e0>]
```



```
In [22]: plt.plot(x, x + 0, linestyle='solid')
plt.plot(x, x + 1, linestyle='dashed')
plt.plot(x, x + 2, linestyle='dashdot')
plt.plot(x, x + 3, linestyle='dotted');

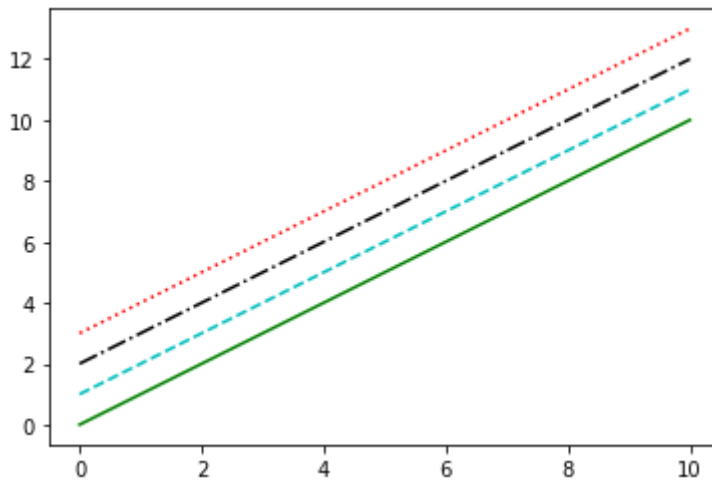
plt.plot(x, x + 4, linestyle='-')
plt.plot(x, x + 5, linestyle='--')
plt.plot(x, x + 6, linestyle='-.')
plt.plot(x, x + 7, linestyle=':')
```

```
Out[22]: [<matplotlib.lines.Line2D at 0x19eac3b6250>]
```



```
In [23]: plt.plot(x, x + 0, '-g')
plt.plot(x, x + 1, '--c')
plt.plot(x, x + 2, '-.k')
plt.plot(x, x + 3, ':r')
```

Out[23]: [<matplotlib.lines.Line2D at 0x19eac620e80>]



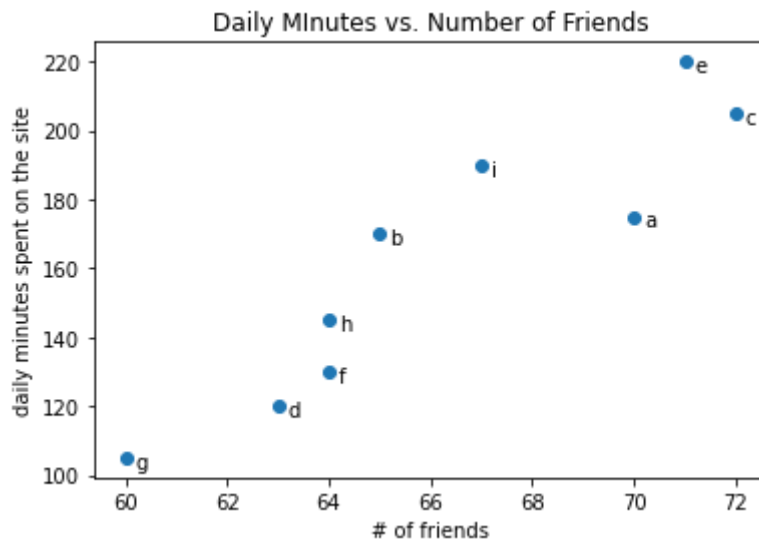
```
In [24]: def make_scatter_plot():
friends=[70,65,72,63,71,64,60,64,67]
minutes=[175,170,205,120,220,130,105,145,190]
labels=['a','b','c','d','e','f','g','h','i']

plt.scatter(friends,minutes)

for label, friend_count,minute_count in zip(labels,friends,minutes):
    plt.annotate(label, xy=(friend_count,minute_count), xytext=(5,-5),textcoords=

plt.title("Daily Minutes vs. Number of Friends")
plt.xlabel("# of friends")
plt.ylabel("daily minutes spent on the site")
plt.show()

make_scatter_plot()
```



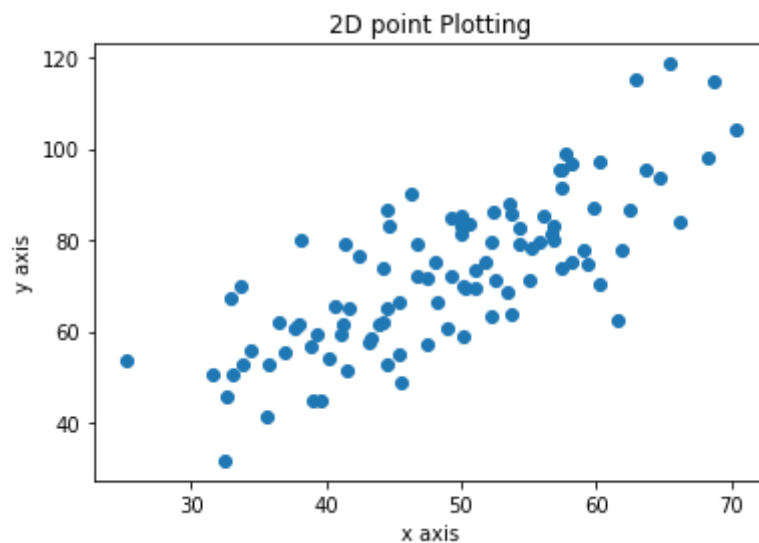
```
In [25]: #csv파일 열기
fout=open('data.csv','r')
line=fout.readline()
xdata=list()
ydata=list()
while line:
    x,y=map(float,line.split(','))
    xdata.append(x)
    ydata.append(y)
    line = fout.readline()
fout.close()
```

```
In [26]: #2-1
def make_scatter_chart1():
    plt.scatter(xdata,ydata) # 그래프에 점찍기

    plt.title("2D point Plotting")
    plt.xlabel("x axis")
    plt.ylabel("y axis")

    plt.show()

make_scatter_chart1()
```



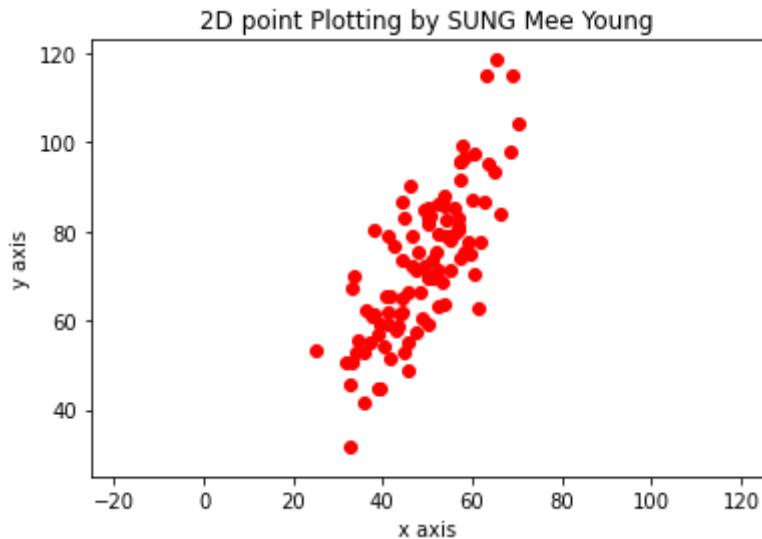
```
In [27]: #2-2
def make_scatter_chart2():
    plt.axis([-25,125,25,123]) #x축 범위 , y축 범위
```

```
plt.scatter(xdata,ydata, color='r') # 그래프에 점찍기

plt.title("2D point Plotting by SUNG Mee Young")
plt.xlabel("x axis")
plt.ylabel("y axis")

plt.show()

make_scatter_chart2()
```

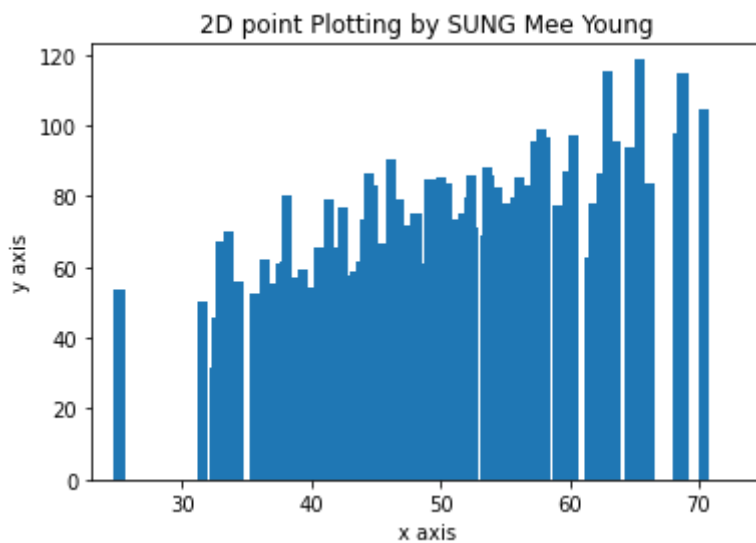


```
In [28]: #2-3
def make_bar_chart1():
    plt.axis([23,75,0,123]) #x축 범위 , y축 범위

    plt.bar(xdata,ydata)

    plt.title("2D point Plotting by SUNG Mee Young")
    plt.xlabel("x axis")
    plt.ylabel("y axis")

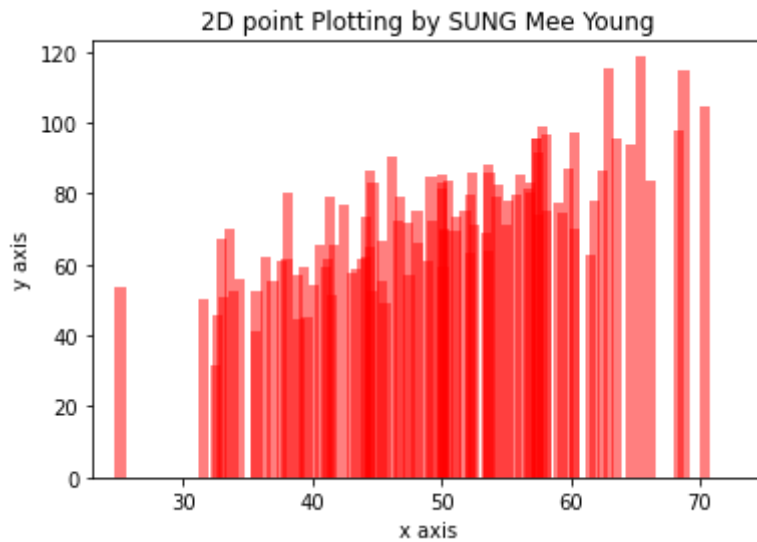
    plt.show()
make_bar_chart1()
```



```
In [29]: #2-4
def make_bar_chart2():
    plt.axis([23,75,0,123]) #x축 범위 , y축 범위
```

```
plt.bar(xdata,ydata,color='r',alpha=0.5)
plt.title("2D point Plotting by SUNG Mee Young")
plt.xlabel("x axis")
plt.ylabel("y axis")

plt.show()
make_bar_chart2()
```

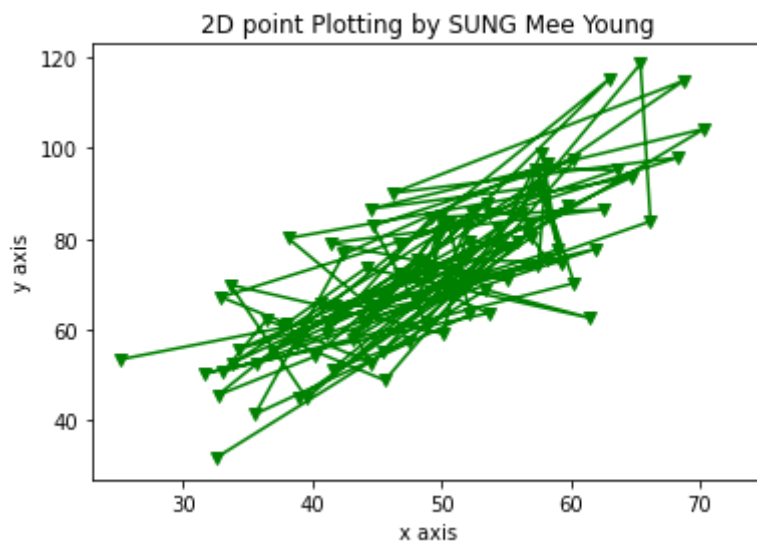


```
In [30]: #2-5
def make_line_chart1():
    plt.axis([23,75,27,123]) #x축 범위 , y축 범위

    plt.plot(xdata,ydata,color='green',marker='v',linestyle='solid')

    plt.title("2D point Plotting by SUNG Mee Young")
    plt.xlabel("x axis")
    plt.ylabel("y axis")

    plt.show()
make_line_chart1()
```

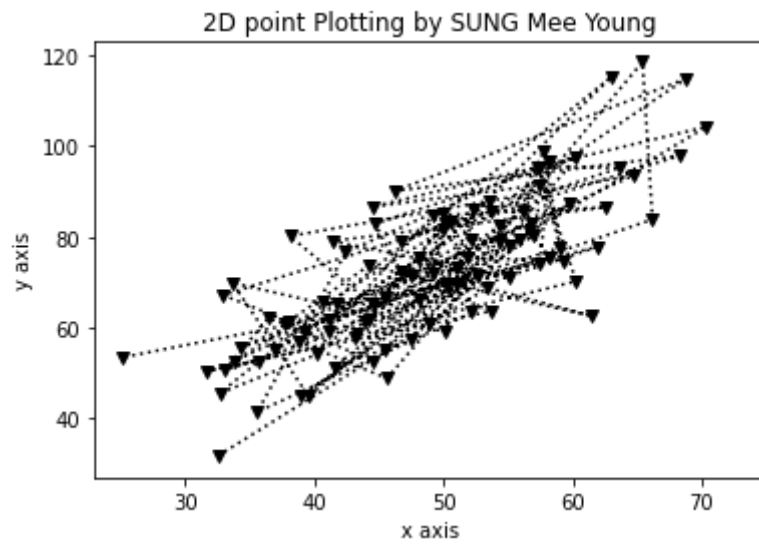


```
In [31]: #2-6
def make_line_chart2():
    plt.axis([23,75,27,123]) #x축 범위 , y축 범위

    plt.plot(xdata,ydata,color='black',marker='v',linestyle=':')

    plt.title("2D point Plotting by SUNG Mee Young")
```

```
plt.xlabel("x axis")  
plt.ylabel("y axis")  
  
plt.show()  
make_line_chart2()
```



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