The Engineering World #DataScience 7 & 8

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1 TITLE AND MARKERS IN PLOT ELEMENTS

1.0.1 Defining Elements of a Plot

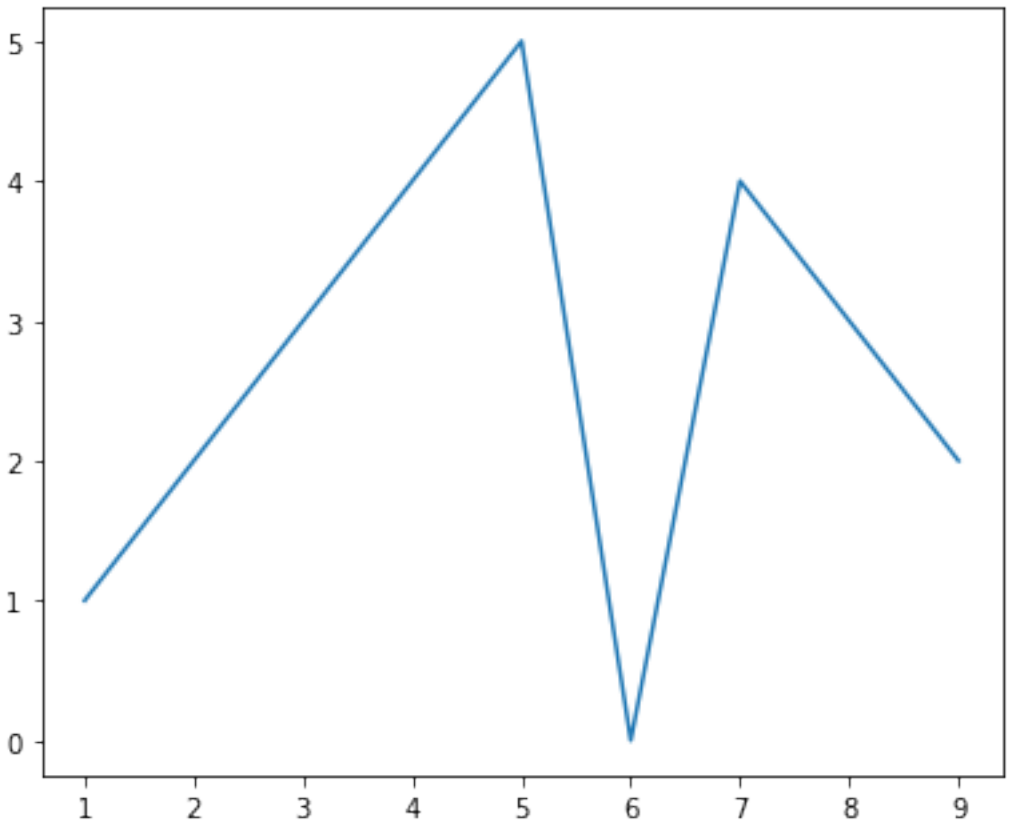
In [1]:
```
import numpy as np
from numpy.random import randn
import pandas as pd
from pandas import Series, DataFrame
import matplotlib.pyplot as plt
from matplotlib import rcParams
```

In [2]:
```
%matplotlib inline
rcParams ['figure.figsize'] = 5,4
```

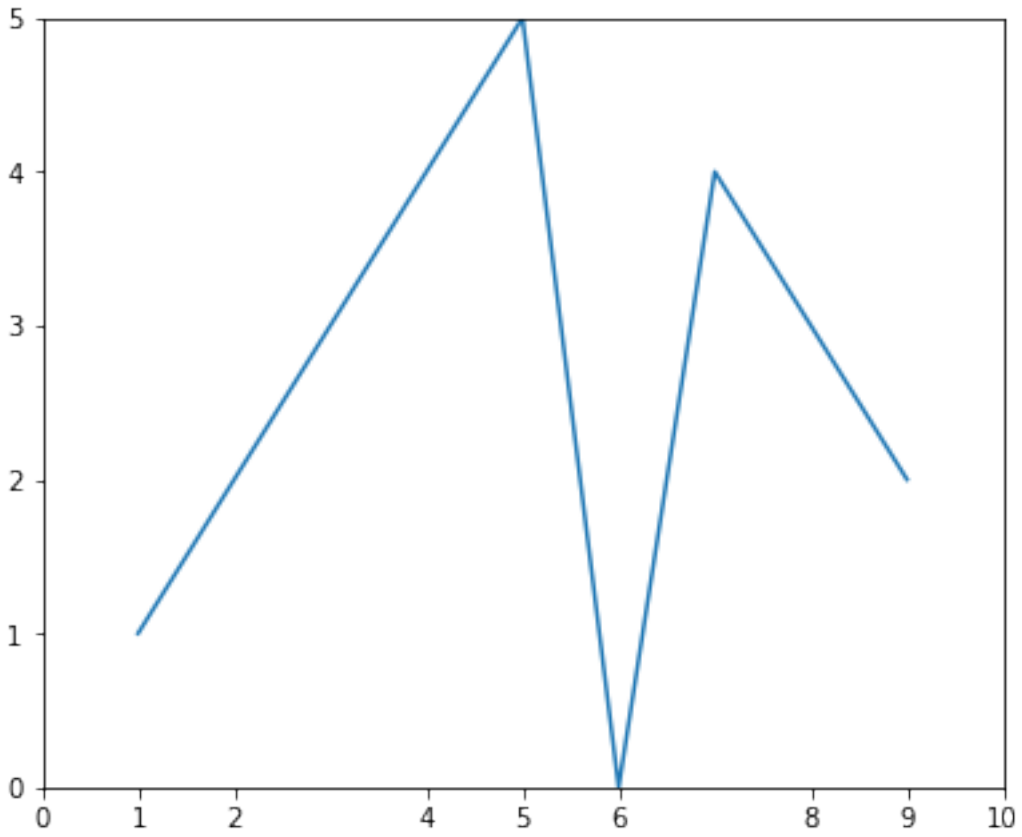
1.0.2 Defining Axes, Ticks, and Grids

In [3]:
```
x = range(1,10)
y = [1,2,3,4,5,0,4,3,2]
fig = plt.figure()
ax = fig.add_axes([.1, .1, 1, 1]) #add axes in plot
ax.plot(x,y)
```

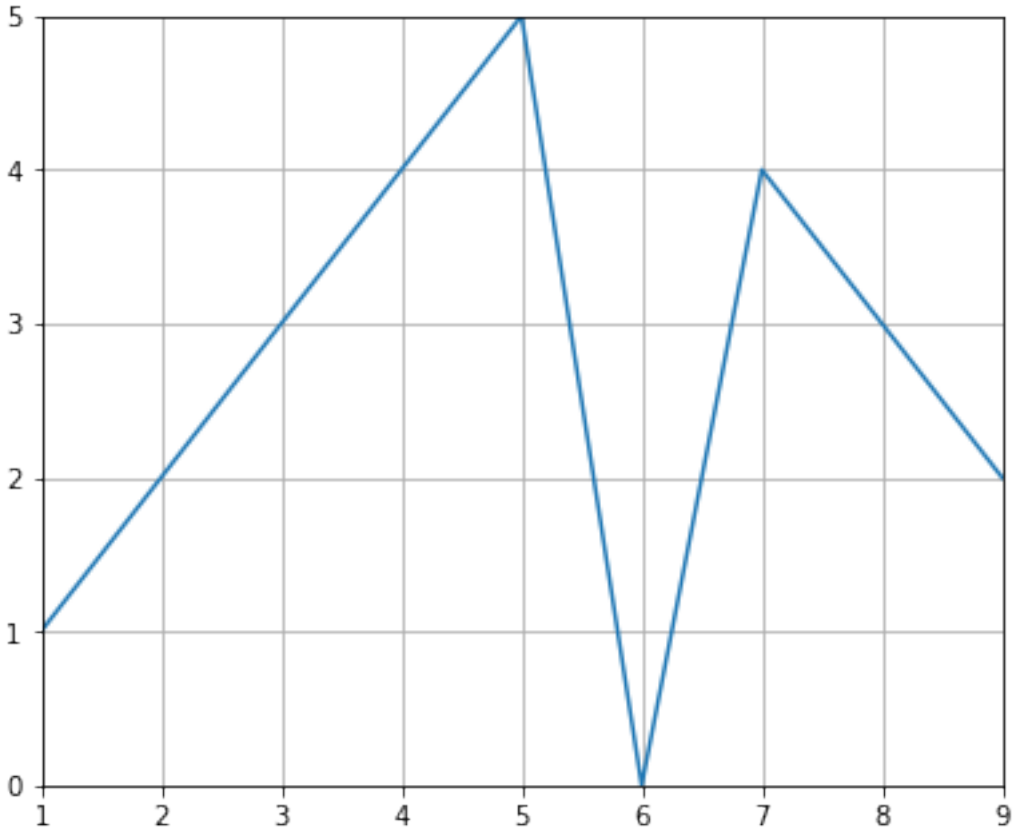
Out[3]:
```
[<matplotlib.lines.Line2D at 0x7f21f10ab0f0>]
```




```
In [4]: ax.plot(x,y)

Out[4]: [<matplotlib.lines.Line2D at 0x7f2206fa4940>]

In [5]: fig = plt.figure()
        ax = fig.add_axes([.1, .1, 1, 1])
        ax.set_xlim([1,9]) #define x,y limit in plot
        ax.set_ylim([0,5])
        ax.set_xticks([0,1,2,4,5,6,8,9,10])
        ax.set_yticks([0,1,2,3,4,5])
        ax.plot(x,y)

Out[5]: [<matplotlib.lines.Line2D at 0x7f21e6648940>]
```

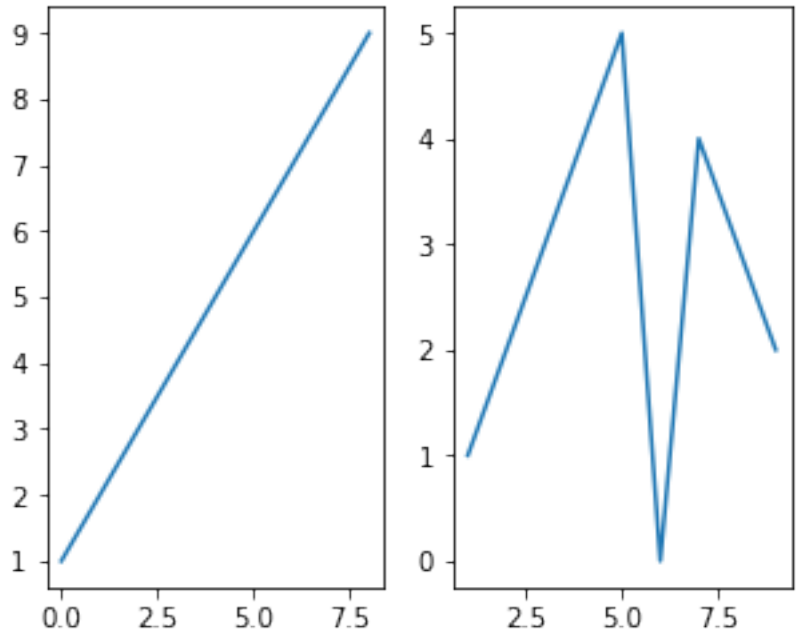



```
In [6]: fig = plt.figure()
        ax = fig.add_axes([.1, .1, 1, 1])
        ax.set_xlim([1,9])
        ax.set_ylim([0,5])
        ax.grid() #make a grid in plot
        ax.plot(x,y)

Out[6]: [<matplotlib.lines.Line2D at 0x7f21f109d630>]
```



1.0.3 Generate multiplots in one figure with subplots

```
In [7]: fig = plt.figure()
        fig, (ax1, ax2) = plt.subplots(1,2)
        ax1.plot(x)
        ax2.plot(x,y)

Out[7]: [<matplotlib.lines.Line2D at 0x7f21e6546400>]

<matplotlib.figure.Figure at 0x7f21e66e8978>
```



2 PLOT FORMATING

2.0.1 Plotformating

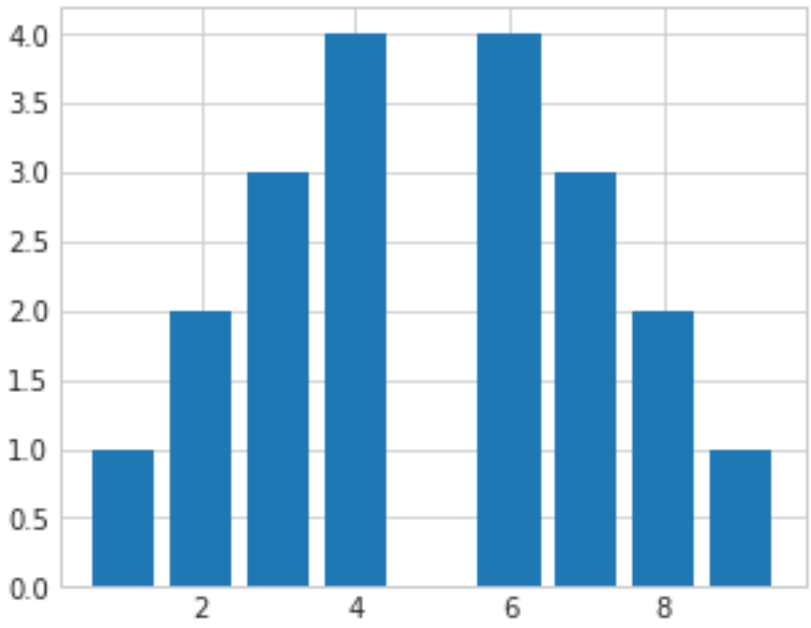
```
In [8]: import seaborn as sb
```

```
In [9]: %matplotlib inline
        rcParams['figure.figsize'] = 5,4
        sb.set_style('whitegrid')
```

2.0.2 Defining plot color

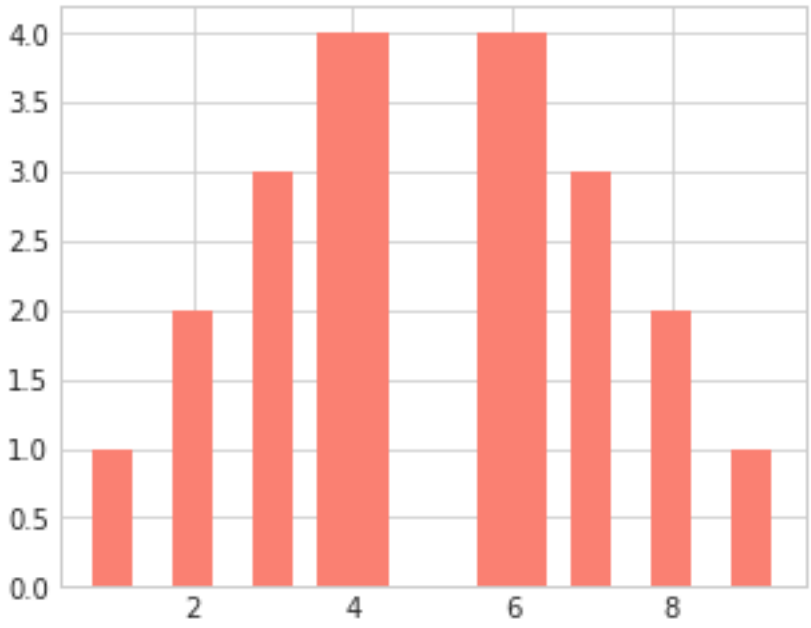
```
In [10]: x = range(1,10)
         y = [1,2,3,4,0,4,3,2,1]
         plt.bar(x,y)
```

```
Out[10]: <Container object of 9 artists>
```



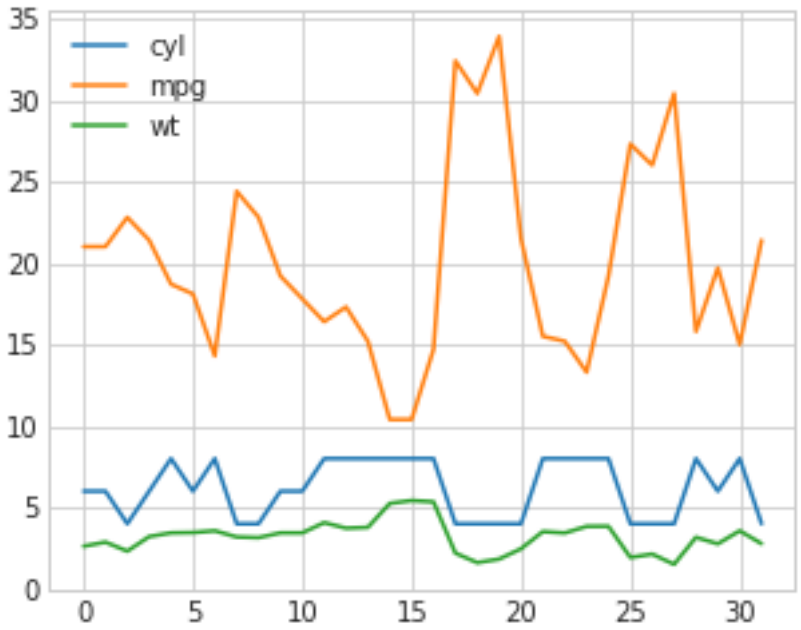
In [11]:
```
wide = [0.5, 0.5, 0.5, 0.9, 0.9, 0.9, 0.5, 0.5, 0.5]
color = ['salmon'] #costom color define
plt.bar(x,y, width = wide, color = color, align = 'center')
```

Out[11]: <Container object of 9 artists>



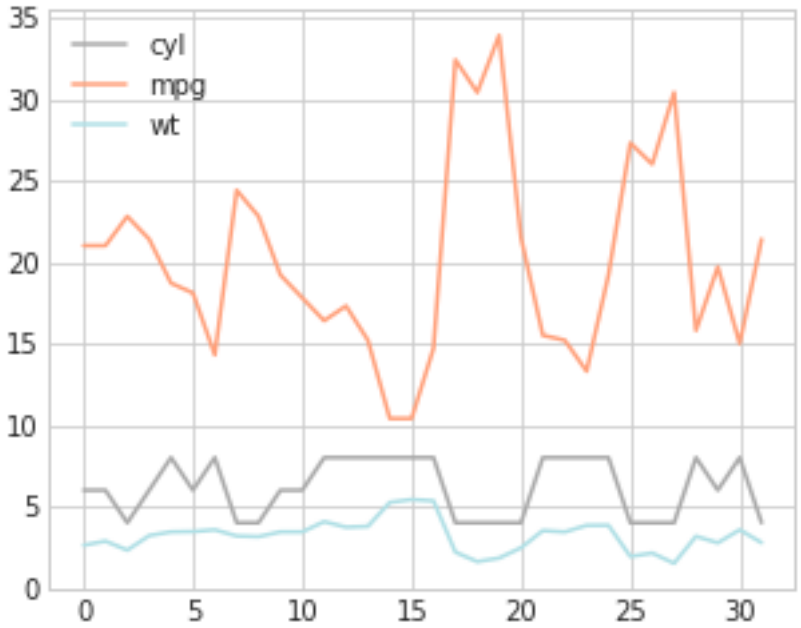
In [12]:
```
address = 'mtcars.csv'
cars = pd.read_csv(address)
cars.columns = ['car_name', 'mpg', 'cyl', 'disp', 'hp', 'drat', 'wt', 'qsec', 'vs', 'am
df = cars[['cyl', 'mpg', 'wt']]
df.plot()
```

Out[12]: <matplotlib.axes._subplots.AxesSubplot at 0x7f21dce82940>

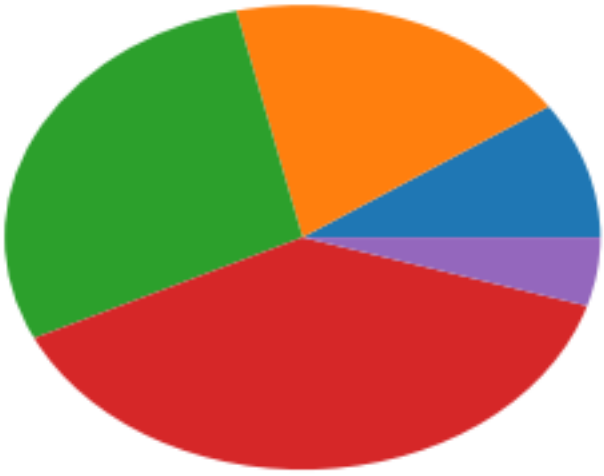


In [13]:
```
color_theme =['darkgray', 'lightsalmon', 'powderblue'] #define color type
df.plot(color = color_theme)
```

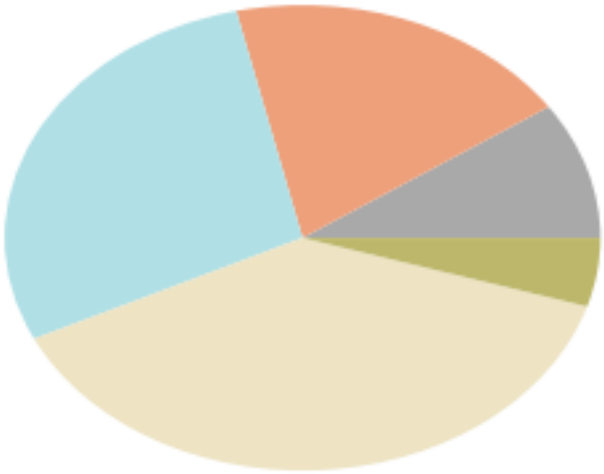
Out[13]: <matplotlib.axes._subplots.AxesSubplot at 0x7f21dceb94a8>



In [14]:
```
z = [1,2,3,4,0.5]
plt.pie(z)
plt.show()
```



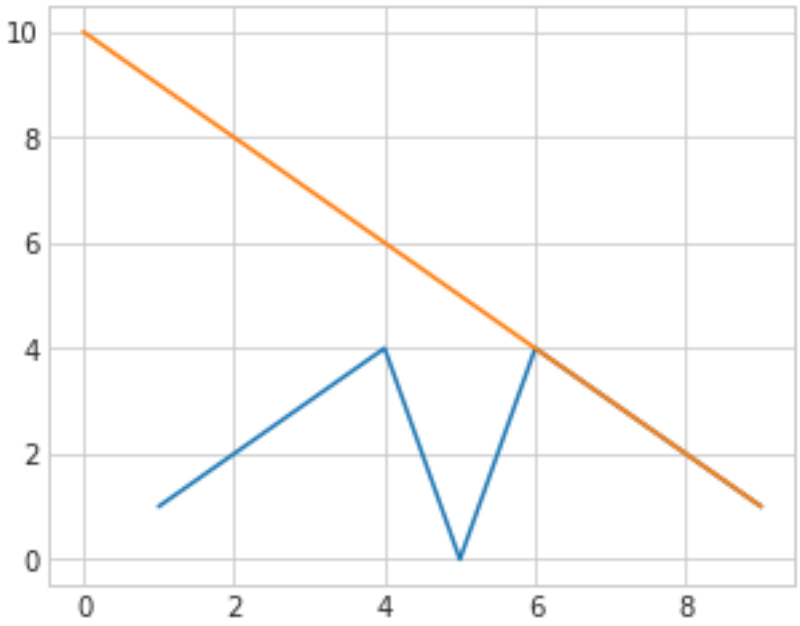
In [15]:
```
color_theme = ['#A9A9A9', '#EEA07A', '#B0E0E6', '#EEE4C4', '#BDB76B']
plt.pie(z, colors = color_theme)
plt.show()
```



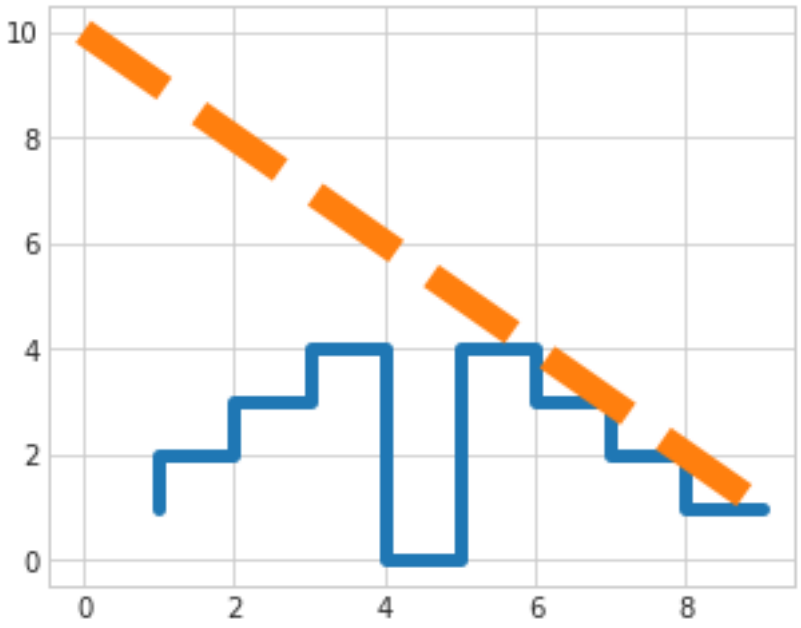
2.0.3 Costomizing line styles

```
In [16]: x1 = range(0,10)
         y1 = [10,9,8,7,6,5,4,3,2,1]

         plt.plot(x,y)
         plt.plot(x1,y1)
```

```
Out[16]: [<matplotlib.lines.Line2D at 0x7f21dcd0be80>]
```

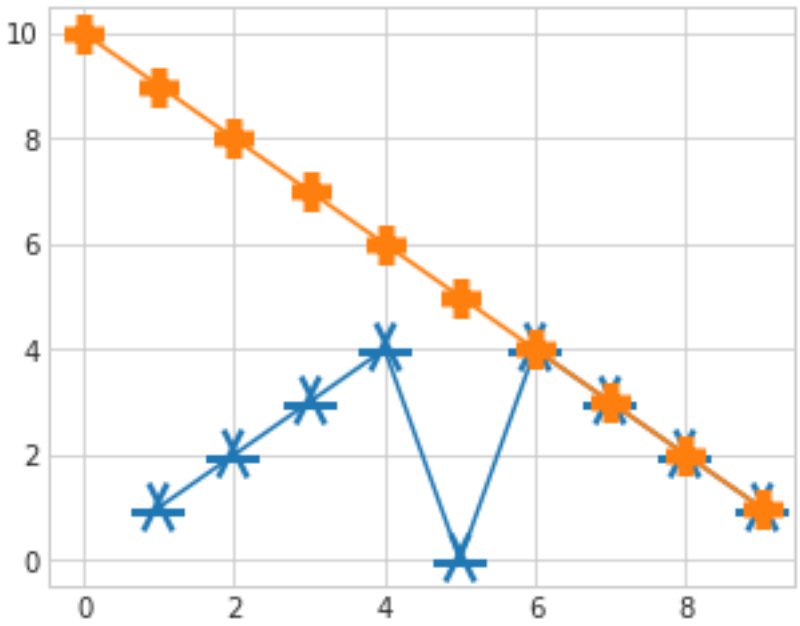


```
In [17]: x1 = range(0,10)
         y1 = [10,9,8,7,6,5,4,3,2,1]

         plt.plot(x,y, ls = 'steps', lw = 5) #line size
         plt.plot(x1,y1, ls ='--', lw = 10)

Out[17]: [<matplotlib.lines.Line2D at 0x7f21dcd49b38>]
```



2.0.4 Setting plot markers

```
In [18]: x1 = range(0,10)
         y1 = [10,9,8,7,6,5,4,3,2,1]

         plt.plot(x,y, marker = '1', mew = 20) #define marker points in plot
         plt.plot(x1,y1, marker = '+', mew = 15)

Out[18]: [<matplotlib.lines.Line2D at 0x7f21dcc5eb00>]
```




```
In [19]: x1 = range(0,10)
         y1 = [10,9,8,7,6,5,4,3,2,1]

         plt.plot(x,y, marker = '1', mew = 10)
         plt.plot(x1,y1, marker = '+', mew = 5)
```

```
Out[19]: [<matplotlib.lines.Line2D at 0x7f21dcc7a4a8>]
```