Pandas continution

In [15]:
```
import numpy as np
import pandas as pd
a=pd.Series([1,2,3,4])
a
```

Out[15]:
```
0    1
1    2
2    3
3    4
dtype: int64
```

Data Frames

- Data is converted into tabular form

In [23]:
```
studentmarks={"names"  :['A','B','C','D'],
              "maths"  :[70,90,30,80],
              "english":[61,72,53,94],
              "science":[85,97,49,90]
             }
studentmarks
```

Out[23]:
```
{'names': ['A', 'B', 'C', 'D'],
 'maths': [70, 90, 30, 80],
 'english': [61, 72, 53, 94],
 'science': [85, 97, 49, 90]}
```

In [24]:
```
pd.DataFrame(studentmarks)
```

Out[24]:

	names	maths	english	science
0	A	70	61	85
1	B	90	72	97
2	C	30	53	49
3	D	80	94	90

In [ ]:
```

```

In [26]:
```
data=np.array([['a',10,20,30,40],['b',12,13,14,15]])
data
```

Out[26]:
```
array([['a', '10', '20', '30', '40'],
       ['b', '12', '13', '14', '15']], dtype='<U2')
```

In [27]:
```
pd.DataFrame(data)
```

Out[27]:

	0	1	2	3	4
0	a	10	20	30	40
1	b	12	13	14	15

In [28]:
```
pd.DataFrame(data,index=['str1','str2'])
```

Out[28]:

	0	1	2	3	4
str1	a	10	20	30	40
str2	b	12	13	14	15

In [29]:
```
pd.DataFrame(data,columns=['s1','s2','s3','s4','s5'])
```

Out[29]:

	s1	s2	s3	s4	s5
0	a	10	20	30	40
1	b	12	13	14	15

In [41]:
```
df=pd.read_csv('data.csv')
df
```

Out[41]:

	Name	Roll	Subject	Marks
0	Sri	659	Maths	90
1	Siri	661	English	89
2	Vani	663	Science	34
3	Rupa	665	D.S	67
4	Ruthu	864	C.C	96
5	Nandu	354	C.S	46

In [38]:
```
df.columns      #it prints the column names in a file
```

Out[38]:
```
Index(['Name   Roll   Subject   Marks'], dtype='object')
```

In [39]:
```
df.index        #it prints the index values from start stop and step size
```

Out[39]:
```
RangeIndex(start=0, stop=6, step=1)
```

In [42]:
```
df.head()      #head() works on to print from starting of csv file
```

Out[42]:

	Name	Roll	Subject	Marks
0	Sri	659	Maths	90
1	Siri	661	English	89
2	Vani	663	Science	34
3	Rupa	665	D.S	67
4	Ruthu	864	C.C	96

In [43]:
```
df.tail()     #tail() works on to print from ending of csv file
```

Out[43]:

	Name	Roll	Subject	Marks
1	Siri	661	English	89
2	Vani	663	Science	34
3	Rupa	665	D.S	67
4	Ruthu	864	C.C	96
5	Nandu	354	C.S	46

In [44]:
```
df.sample()     #it will generate a random value
```

Out[44]:

	Name	Roll	Subject	Marks
1	Siri	661	English	89

In [46]:
```
df.sample(3)   #it will generate a random of 3 values
```

Out[46]:

	Name	Roll	Subject	Marks
0	Sri	659	Maths	90
4	Ruthu	864	C.C	96
2	Vani	663	Science	34

In [53]:
```
df.values
```

Out[53]:
```
array([['Sri', 659, 'Maths', 90],
       ['Siri', 661, 'English', 89],
       ['Vani', 663, 'Science', 34],
       ['Rupa', 665, 'D.S', 67],
       ['Ruthu', 864, 'C.C', 96],
       ['Nandu', 354, 'C.S', 46]], dtype=object)
```

In [54]:
```
df.items
```

Out[54]:
```
<bound method DataFrame.items of     Name  Roll  Subject  Marks
0    Sri   659    Maths     90
1   Siri   661  English     89
2   Vani   663  Science     34
3   Rupa   665      D.S     67
4  Ruthu   864      C.C     96
5  Nandu   354      C.S     46>
```

In [55]:
```
df.describe
```

Out[55]:
```
<bound method NDFrame.describe of     Name  Roll  Subject  Marks
0    Sri   659    Maths     90
1   Siri   661  English     89
2   Vani   663  Science     34
3   Rupa   665      D.S     67
4  Ruthu   864      C.C     96
5  Nandu   354      C.S     46>
```

In [56]:
```
df.describe()
```

Out[56]:

	Roll	Marks
count	6.000000	6.000000
mean	644.333333	70.333333
std	163.594213	25.757847
min	354.000000	34.000000
25%	659.500000	51.250000
50%	662.000000	78.000000
75%	664.500000	89.750000
max	864.000000	96.000000

In [58]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6 entries, 0 to 5
Data columns (total 4 columns):
Name       6 non-null object
Roll       6 non-null int64
Subject    6 non-null object
Marks      6 non-null int64
dtypes: int64(2), object(2)
memory usage: 320.0+ bytes
```

In [59]:
```
df.info
```

Out[59]:
```
<bound method DataFrame.info of     Name  Roll  Subject  Marks
0    Sri   659    Maths     90
1   Siri   661  English     89
2   Vani   663  Science     34
3   Rupa   665      D.S     67
4  Ruthu   864      C.C     96
5  Nandu   354      C.S     46>
```

In [60]:
```
df.dtypes.value_counts()
```

Out[60]:
```
int64     2
object    2
dtype: int64
```

iloc[ ]

In [61]:
```
df.iloc[0]
```

Out[61]:
```
Name         Sri
Roll         659
Subject    Maths
Marks         90
Name: 0, dtype: object
```

In [66]:
```
df.iloc[[0,2]]
```

Out[66]:

	Name	Roll	Subject	Marks
0	Sri	659	Maths	90
2	Vani	663	Science	34

In [69]:
```
df.iloc[2:6]
```

Out[69]:

	Name	Roll	Subject	Marks
2	Vani	663	Science	34
3	Rupa	665	D.S	67
4	Ruthu	864	C.C	96
5	Nandu	354	C.S	46

In [70]:
```
df.iloc[1,:]
```

Out[70]:
```
Name          Siri
Roll           661
Subject    English
Marks           89
Name: 1, dtype: object
```

In [71]:
```
df.iloc[1:,]
```

Out[71]:

	Name	Roll	Subject	Marks
1	Siri	661	English	89
2	Vani	663	Science	34
3	Rupa	665	D.S	67
4	Ruthu	864	C.C	96
5	Nandu	354	C.S	46

In [72]:
```
df.iloc[[2,3,5],[1,2,3]]
```

Out[72]:

	Roll	Subject	Marks
2	663	Science	34
3	665	D.S	67
5	354	C.S	46

In [74]:
```
df.loc[1,'Roll':'Marks']
```

Out[74]:
```
Roll           661
Subject    English
Marks           89
Name: 1, dtype: object
```

In [78]:
```
df.loc[2:4,'Name':'Marks']
```

Out[78]:

	Name	Roll	Subject	Marks
2	Vani	663	Science	34
3	Rupa	665	D.S	67
4	Ruthu	864	C.C	96

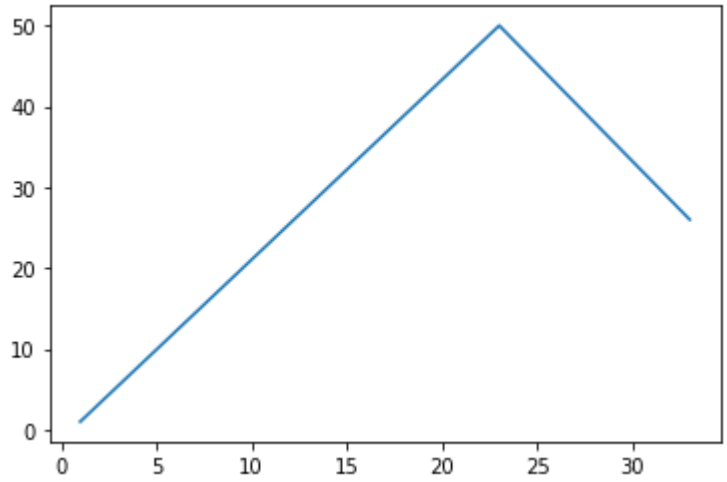
Matplotlib

It is a python library to visualize the 2D representation and complex data can be easily understand

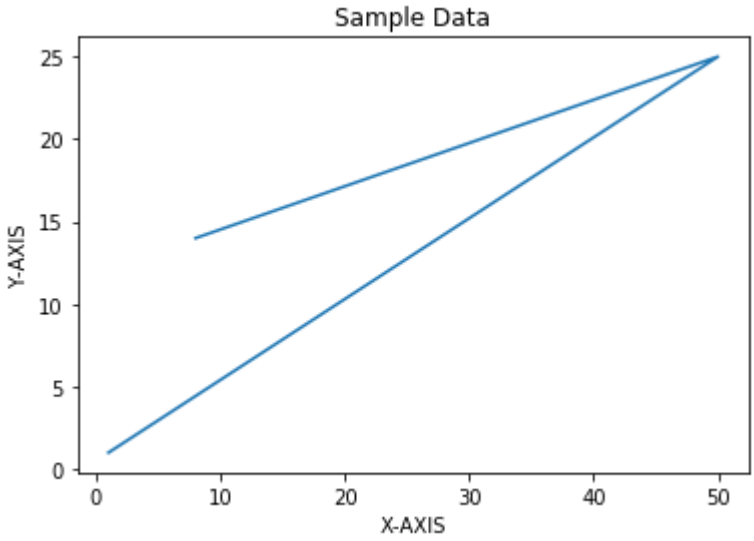
- Why we Use..??
- Types of Matplotlibs..??
  - 1.Plots
  - 2.Line Bar Graph
  - 3.Histogram
  - 4.Pie Charts
  - 5.Scatter
  - 6.Area Plots

In [79]:
```
import matplotlib
```

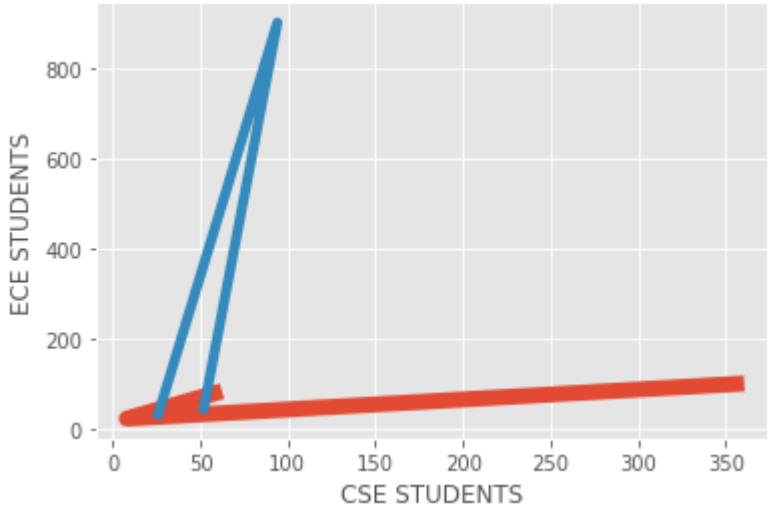
In [84]:
```
from matplotlib import pyplot as plt
x=[1,23,33]
y=[1,50,26]
plt.plot(x,y)
plt.show()
```



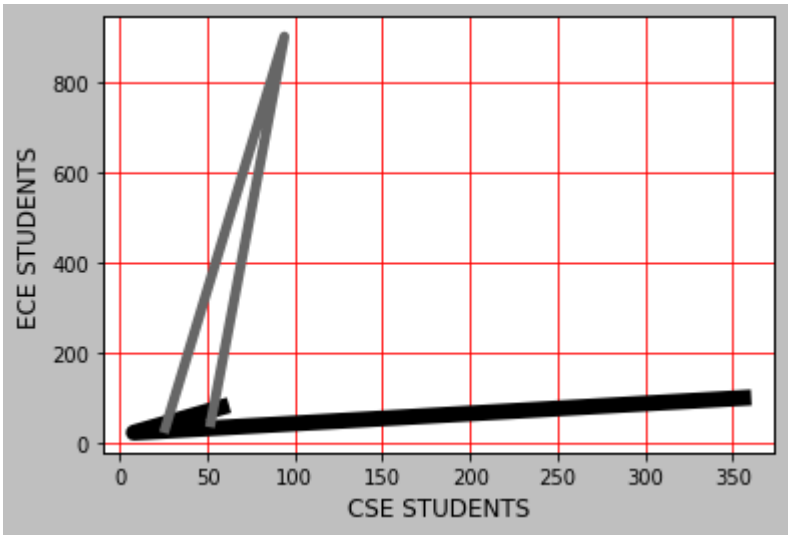
In [87]:
```
from matplotlib import pyplot as plt
x=[1,50,8]
y=[1,25,14]
plt.title("Sample Data")
plt.xlabel("X-AXIS")
plt.ylabel("Y-AXIS")
plt.plot(x,y)
plt.show()
```



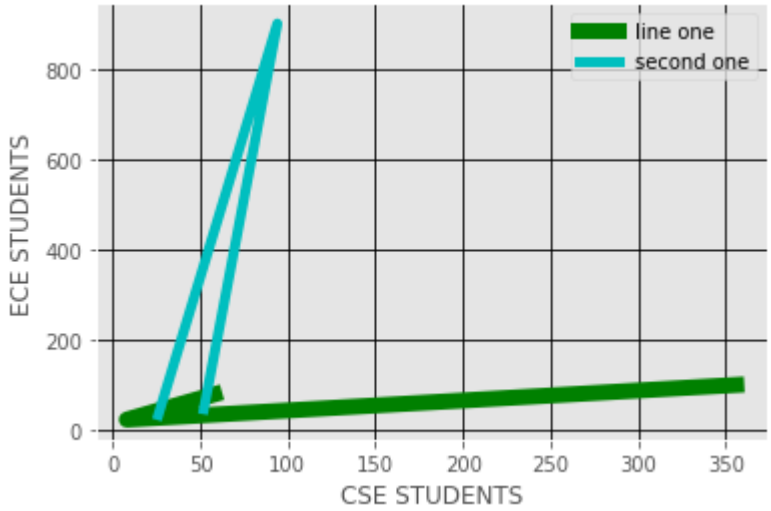
In [94]:
```
#matplotlib using styles:
from matplotlib import pyplot as plt
from matplotlib import style
style.use("ggplot")
x1=[356,8,58]
y1=[99,22,78]
x2=[26,94,52]
y2=[32,901,45]
plt.plot(x1,y1,linewidth=8)
plt.plot(x2,y2,linewidth=5)
plt.xlabel("CSE STUDENTS")
plt.ylabel("ECE STUDENTS")
plt.show()
```



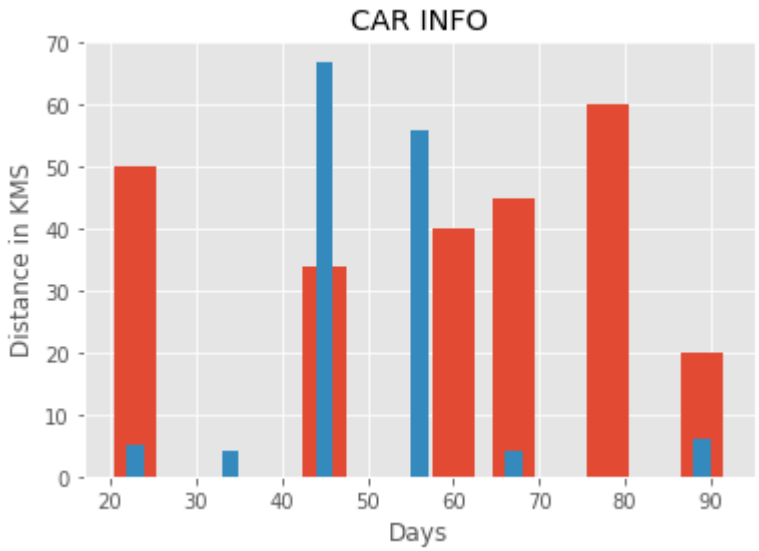
In [102]:
```
#matplotlib using styles:
from matplotlib import pyplot as plt
from matplotlib import style
style.use("grayscale")
x1=[356,8,58]
y1=[99,22,78]
x2=[26,94,52]
y2=[32,901,45]
plt.plot(x1,y1,linewidth=8)
plt.plot(x2,y2,linewidth=5)
plt.xlabel("CSE STUDENTS")
plt.ylabel("ECE STUDENTS")
plt.grid(True,color='r')
plt.show()
```



In [104]:
```
#matplotlib using styles:
from matplotlib import pyplot as plt
from matplotlib import style
style.use("ggplot")
x1=[356,8,58]
y1=[99,22,78]
x2=[26,94,52]
y2=[32,901,45]
plt.plot(x1,y1,'g',label='line one',linewidth=8)
plt.plot(x2,y2,'c',label='second one',linewidth=5)
plt.legend()
plt.xlabel("CSE STUDENTS")
plt.ylabel("ECE STUDENTS")
plt.grid(True,color='k')
plt.show()
```



In [108]:
```
from matplotlib import pyplot as plt
plt.bar([23,45,67,78,89,60,],[50,34,45,60,20,40],label="BMW Car Info",width=5)
plt.bar([45,56,67,23,89,34,],[67,56,4,5,6,4],label="AUDI Car Info",width=2)
plt.title("CAR INFO")
plt.xlabel("Days")
plt.ylabel("Distance in KMS")
plt.show()
```



In [ ]: