Starting with learing linear regression:-

Adding Libraries

In [ ]:
```
from sklearn.linear_model import LinearRegression # Regression formulaes
```

In [ ]:
```
import numpy as np # Numerical formulae
import pandas as pd # Numerical formates
import matplotlib.pyplot as plt # For graph ploting from data sets
```

In [ ]:
```
#df = pd.read_csv('homeprices_1.csv')
df = pd.read_csv('homeprices_2.csv')
```

df -> data framework

In [ ]:
```
df
```

Out[ ]:

	area	price
0	2600	550000
1	3000	565000
2	3200	610000
3	3600	680000
4	4000	725000

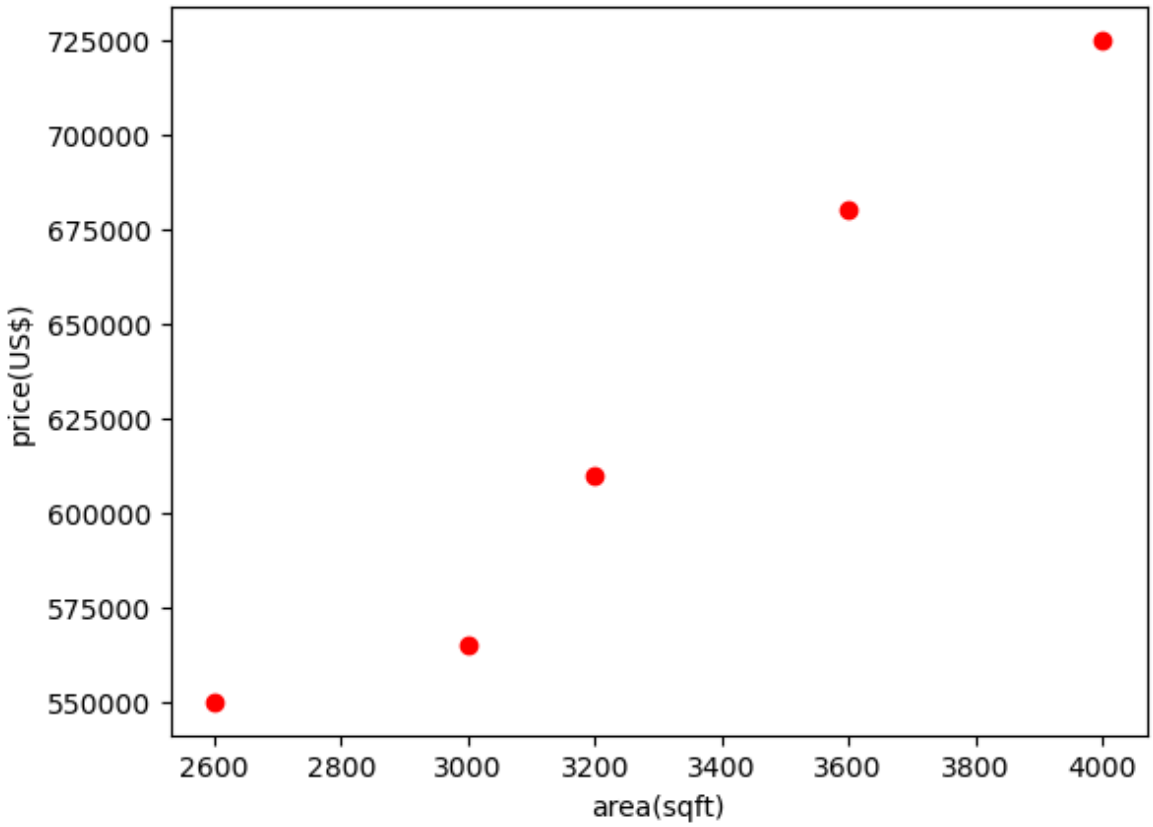
Running sample code for checking module's functionality:

In [ ]:
```
X = np.array([[1, 1], [1, 2], [2, 2], [2, 3]])
# y = 1 * x_0 + 2 * x_1 + 3
y = np.dot(X, np.array([1, 2])) + 3
reg = LinearRegression().fit(X, y)
reg.score(X, y)# must give value 1.0
```

Out[ ]:
```
1.0
```

In [ ]:
```
plt.xlabel('area(sqft)')
plt.ylabel('price(US$)')
plt.scatter(df.area,df.price,color='red')
```

Out[ ]:
```
<matplotlib.collections.PathCollection at 0x1de38f806d0>
```



In [ ]:
```
reg = LinearRegression()
reg.fit(df[['area']] , df.price)
```

Out[ ]:
```
LinearRegression()
```

Testing

In [ ]:
```
newArea = 3300
reg.predict([[newArea]])
```

```
C:\Users\HP\anaconda3\lib\site-packages\sklearn\base.py:450: UserWarning: X does not have valid feature names, but LinearRegression was fitted with feature names
  warnings.warn(
```

Out[ ]:
```
array([628715.75342466])
```

In [ ]:
```
cof = reg.coef_
cof
```

Out[ ]:
```
array([135.78767123])
```

In [ ]:
```
inte = reg.intercept_
inte
```

Out[ ]:
```
180616.43835616432
```

Checking for predicted value :-

In [ ]:
```
cof * newArea + inte
```

Out[ ]:
```
array([628715.75342466])
```

Marking slop line for prediction:

In [ ]:
```
plt.xlabel('area(sqft)')
plt.ylabel('price(US$)')
plt.scatter(df.area,df.price,color='red')
plt.plot(df.area , reg.predict(df[['area']]) , color='blue')
```

Out[ ]:
```
[<matplotlib.lines.Line2D at 0x1de39005fd0>]
```