In [1]:
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##Author: panthadeep_b; Time: 12.09 IST
##WAP to implement linear regression

import sys
import numpy as np
import pandas as pd
import math
import matplotlib.pyplot as plt
from array import *
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn import datasets

data_set = pd.read_csv("housing.csv");
print("The loaded dataset is:\n", data_set);

##Select the features for model-fit
x = data_set.iloc[:,0];
print("Dim 1:\n", x);

y = data_set.iloc[:,5];
print("Dim 2:\n", y);

##***Convert data to suit the scikit-learn***
x = x.to_numpy().reshape(len(x),1);
y = y.to_numpy().reshape(len(y),1);

##Splitting the dataset into training and test set
x_train, x_test, y_train, y_test= train_test_split(x, y, test_size= 0.3, rando

##Fit-train the model
model = LinearRegression();
model.fit(x_train,y_train);

##Model predicted value
y_pred = model.predict(x_test);

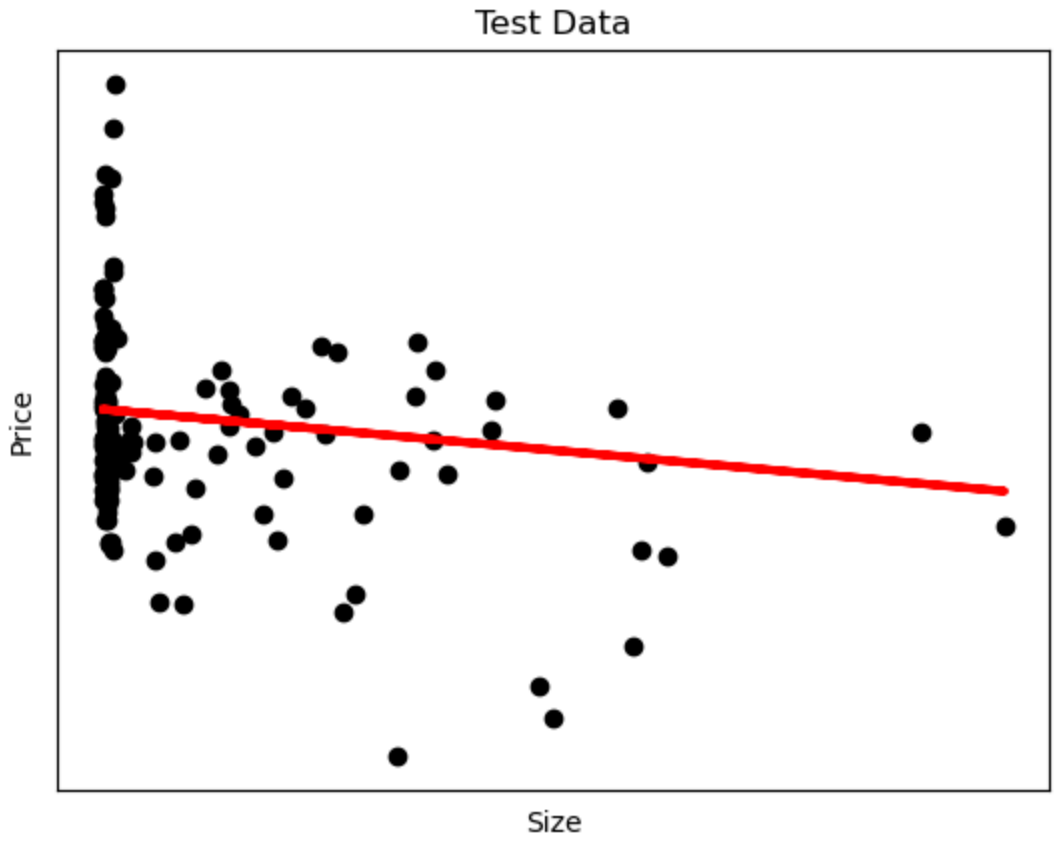
# Plot the test data
plt.scatter(x_test, y_test, color='black');
plt.title('Test Data');
plt.xlabel('Size');
plt.ylabel('Price');
plt.xticks(());
plt.yticks(());

# Plot predictions
plt.plot(x_test, y_pred, color='red', linewidth=3);
plt.show();
```

```
The loaded dataset is:
      0.00632   18   2.31  0  0.538  6.575  65.2    4.09  1  296  15.3   396.9
\
0    0.02731  0.0   7.07  0  0.469  6.421  78.9  4.9671  2  242  17.8  396.90
1    0.02729  0.0   7.07  0  0.469  7.185  61.1  4.9671  2  242  17.8  392.83
2    0.03237  0.0   2.18  0  0.458  6.998  45.8  6.0622  3  222  18.7  394.63
3    0.06905  0.0   2.18  0  0.458  7.147  54.2  6.0622  3  222  18.7  396.90
4    0.02985  0.0   2.18  0  0.458  6.430  58.7  6.0622  3  222  18.7  394.12
..       ...  ...    ... ..    ...    ...   ...     ... ..  ...   ...     ...
500  0.06263  0.0  11.93  0  0.573  6.593  69.1  2.4786  1  273  21.0  391.99
501  0.04527  0.0  11.93  0  0.573  6.120  76.7  2.2875  1  273  21.0  396.90
502  0.06076  0.0  11.93  0  0.573  6.976  91.0  2.1675  1  273  21.0  396.90
503  0.10959  0.0  11.93  0  0.573  6.794  89.3  2.3889  1  273  21.0  393.45
504  0.04741  0.0  11.93  0  0.573  6.030  80.8  2.5050  1  273  21.0  396.90

     4.98    24
0    9.14  21.6
1    4.03  34.7
2    2.94  33.4
3    5.33  36.2
4    5.21  28.7
..    ...   ...
500  9.67  22.4
501  9.08  20.6
502  5.64  23.9
503  6.48  22.0
504  7.88  11.9

[505 rows x 14 columns]
Dim 1:
 0      0.02731
1      0.02729
2      0.03237
3      0.06905
4      0.02985
        ...
500    0.06263
501    0.04527
502    0.06076
503    0.10959
504    0.04741
Name: 0.00632, Length: 505, dtype: float64
Dim 2:
 0      6.421
1      7.185
2      6.998
3      7.147
4      6.430
       ...
500    6.593
501    6.120
502    6.976
503    6.794
504    6.030
Name: 6.575, Length: 505, dtype: float64
```



In [ ]: