

## Assignment 3

### Build the Regression model

Assignment date	30 September 2022
Student Name	E. Mahalakshmi
Student Roll. No	962719106017
Maximum marks	2 marks

#### 1.Download the Dataset

solution:

```
from google.colab import files
Upload=files.upload()
```

**abalone.csv**(text/csv) - 191962 bytes, last modified: 10/4/2022 - 100% done  
Saving abalone.csv to abalone.csv

#### 2.Load the dataset into the tool

solution:

```
df=pd.read_csv("/content/abalone.csv")
print(df)
df.info()
df.describe()
import matplotlib.pyplot as plt
import seaborn as sns
import math
df.isna().sum()
df.isnull().sum()
```

My Drive - Google Drive x abalone.csv - Google Drive x Untitled0.ipynb - Colaboratory x Untitled document - Google Doc x +

colab.research.google.com/drive/13EdhjsA-olEYmGn7zw\_EB9EU05X8WSJ#scrollTo=0k04\_PA0Acz8

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Files

abalone.csv

abalone.csv (text/csv) - 191962 bytes, last modified: 10/4/2022 - 100% done  
Saving abalone.csv to abalone.csv

2. Load the dataset into the tool

```
[6] df=pd.read_csv("/content/abalone.csv")
print(df)
```

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	\
0	M	0.455	0.365	0.095	0.5140	0.2245	
1	M	0.350	0.265	0.090	0.2255	0.0995	
2	F	0.530	0.420	0.135	0.6770	0.2565	
3	M	0.440	0.365	0.125	0.5160	0.2155	
4	I	0.330	0.255	0.080	0.2050	0.0895	
...	...	...	...	...	...	...	
4172	F	0.565	0.450	0.165	0.8870	0.3700	
4173	M	0.590	0.440	0.135	0.9660	0.4390	
4174	M	0.600	0.475	0.205	1.1760	0.5255	
4175	F	0.625	0.485	0.150	1.0945	0.5310	
4176	M	0.710	0.555	0.195	1.9485	0.9455	
	Viscera weight	Shell weight	Rings				
0	0.1010	0.1500	15				
1	0.0485	0.0700	7				
2	0.1415	0.2100	9				

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abalone.csv

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Files

abalone.csv

```
[6] 0 M 0.455 0.365 0.095 0.5140 0.2245
1 M 0.350 0.265 0.090 0.2255 0.0995
2 F 0.530 0.420 0.135 0.6770 0.2565
3 M 0.440 0.365 0.125 0.5160 0.2155
4 I 0.330 0.255 0.080 0.2050 0.0895
...
4172 F 0.565 0.450 0.165 0.8870 0.3700
4173 M 0.590 0.440 0.135 0.9660 0.4390
4174 M 0.600 0.475 0.205 1.1760 0.5255
4175 F 0.625 0.485 0.150 1.0945 0.5310
4176 M 0.710 0.555 0.195 1.9485 0.9455

Viscera weight Shell weight Rings
0 0.1010 0.1500 15
1 0.0485 0.0700 7
2 0.1415 0.2100 9
3 0.1140 0.1550 10
4 0.0395 0.0550 7
...
4172 0.2390 0.2490 11
4173 0.2145 0.2605 10
4174 0.2875 0.3080 9
4175 0.2610 0.2960 10
4176 0.3765 0.4950 12

[4177 rows x 9 columns]
```

Double-click (or enter) to edit

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abalone.csv

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My Drive - Google Drive x abalone.csv - Google Drive x Untitled0.ipynb - Colaboratory x Untitled document - Google Docs x +

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Files

sample\_data  
abalone.csv

+ Code + Text

[4177 rows x 9 columns]

Double-click (or enter) to edit

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>  
RangeIndex: 4177 entries, 0 to 4176  
Data columns (total 9 columns):  
#   Column             Non-Null Count  Dtype  
---  ---             -  
0   Sex                 4177 non-null   object  
1   Length              4177 non-null   float64  
2   Diameter            4177 non-null   float64  
3   Height              4177 non-null   float64  
4   Whole weight        4177 non-null   float64  
5   Shucked weight      4177 non-null   float64  
6   Viscera weight       4177 non-null   float64  
7   Shell weight        4177 non-null   float64  
8   Rings               4177 non-null   int64  
dtypes: float64(7), int64(1), object(1)  
memory usage: 293.8+ KB
```

```
[8] df.describe()
```

	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
count	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000
mean	0.523992	0.407881	0.139516	0.828742	0.359367	0.180594	0.238831	9.933684
std	0.120093	0.099240	0.041827	0.490389	0.221963	0.109614	0.139203	3.224169
min	0.075000	0.055000	0.000000	0.002000	0.001000	0.000500	0.001500	1.000000
25%	0.450000	0.350000	0.115000	0.441500	0.186000	0.093500	0.130000	8.000000
50%	0.545000	0.425000	0.140000	0.799500	0.336000	0.171000	0.234000	9.000000
75%	0.615000	0.480000	0.165000	1.153000	0.502000	0.253000	0.329000	11.000000
max	0.815000	0.650000	1.130000	2.825500	1.488000	0.760000	1.005000	29.000000

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abalone.csv

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16:53 04-10-2022

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YouTube Maps Gmail News Translate

Files

sample\_data  
abalone.csv

+ Code + Text

```
[8] df.describe()
```

	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
count	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000
mean	0.523992	0.407881	0.139516	0.828742	0.359367	0.180594	0.238831	9.933684
std	0.120093	0.099240	0.041827	0.490389	0.221963	0.109614	0.139203	3.224169
min	0.075000	0.055000	0.000000	0.002000	0.001000	0.000500	0.001500	1.000000
25%	0.450000	0.350000	0.115000	0.441500	0.186000	0.093500	0.130000	8.000000
50%	0.545000	0.425000	0.140000	0.799500	0.336000	0.171000	0.234000	9.000000
75%	0.615000	0.480000	0.165000	1.153000	0.502000	0.253000	0.329000	11.000000
max	0.815000	0.650000	1.130000	2.825500	1.488000	0.760000	1.005000	29.000000

```
[ ] import matplotlib.pyplot as plt  
import seaborn as sns  
import math
```

```
[9] df.isna().sum()
```

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
count	4177	4177	4177	4177	4177	4177	4177	4177	4177
mean	0.523992	0.407881	0.139516	0.828742	0.359367	0.180594	0.238831	9.933684	9.933684
std	0.120093	0.099240	0.041827	0.490389	0.221963	0.109614	0.139203	3.224169	3.224169
min	0.075000	0.055000	0.000000	0.002000	0.001000	0.000500	0.001500	1.000000	1.000000
25%	0.450000	0.350000	0.115000	0.441500	0.186000	0.093500	0.130000	8.000000	8.000000
50%	0.545000	0.425000	0.140000	0.799500	0.336000	0.171000	0.234000	9.000000	9.000000
75%	0.615000	0.480000	0.165000	1.153000	0.502000	0.253000	0.329000	11.000000	11.000000
max	0.815000	0.650000	1.130000	2.825500	1.488000	0.760000	1.005000	29.000000	29.000000

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abalone.csv

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16:53 04-10-2022

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Files

sample\_data  
abalone.csv

Code + Text

```
[9] df.isna().sum()

Sex      0
Length   0
Diameter 0
Height   0
Whole weight 0
Shucked weight 0
Viscera weight 0
Shell weight 0
Rings    0
dtype: int64
```

```
df.isnull().sum()

Sex      0
Length   0
Diameter 0
Height   0
Whole weight 0
Shucked weight 0
Viscera weight 0
Shell weight 0
Rings    0
dtype: int64
```

3.Perform below Visualizations. Univariate Analysis

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abalone.csv

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16:53 04-10-2022

### 3.Perform below Visualizations. Univariate Analysis

```
sns.histplot(df.Diameter,kde=True)
```

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Files

sample\_data  
abalone.csv

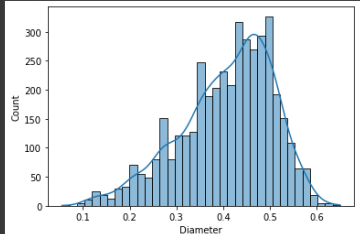
Code + Text

```
kings
dtype: int64
```

3.Perform below Visualizations. Univariate Analysis

```
sns.histplot(df.Diameter,kde=True)
```

<matplotlib.axes.\_subplots.AxesSubplot at 0x7f432102aa10>



Bi-Variate Analysis

0s completed at 4:41 PM

abalone.csv

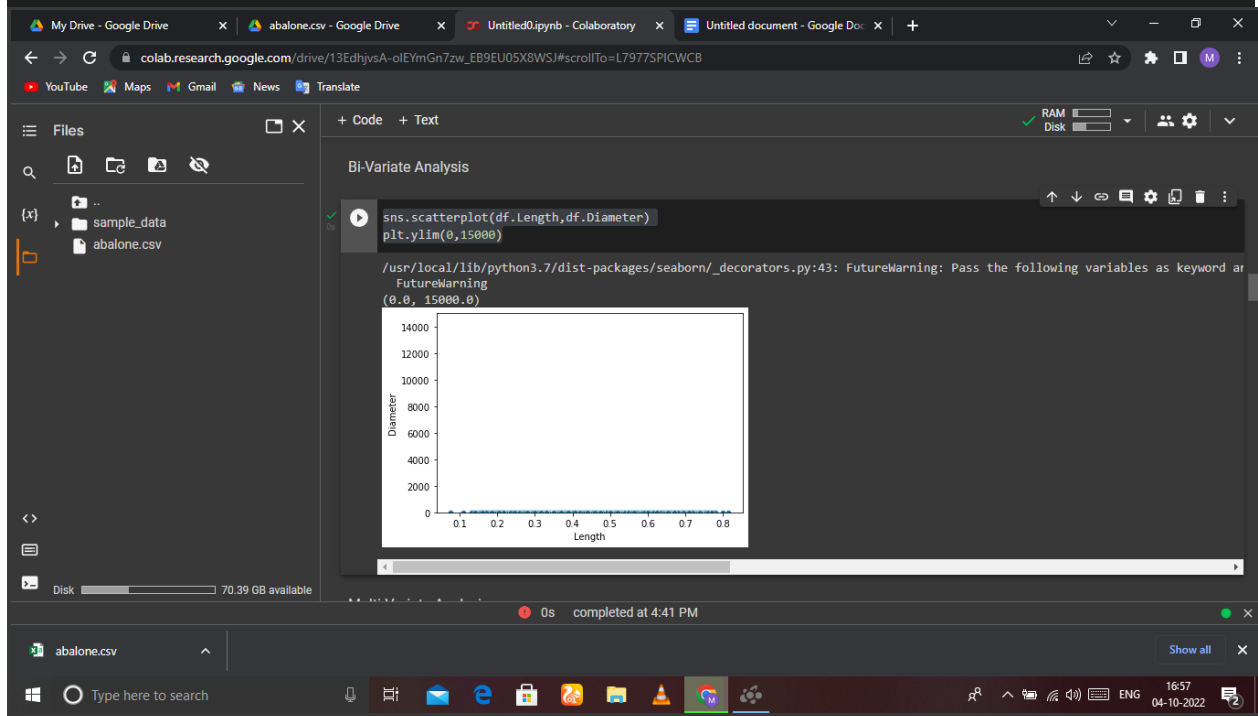
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16:55 04-10-2022

## Bi-Variate Analysis

solution:

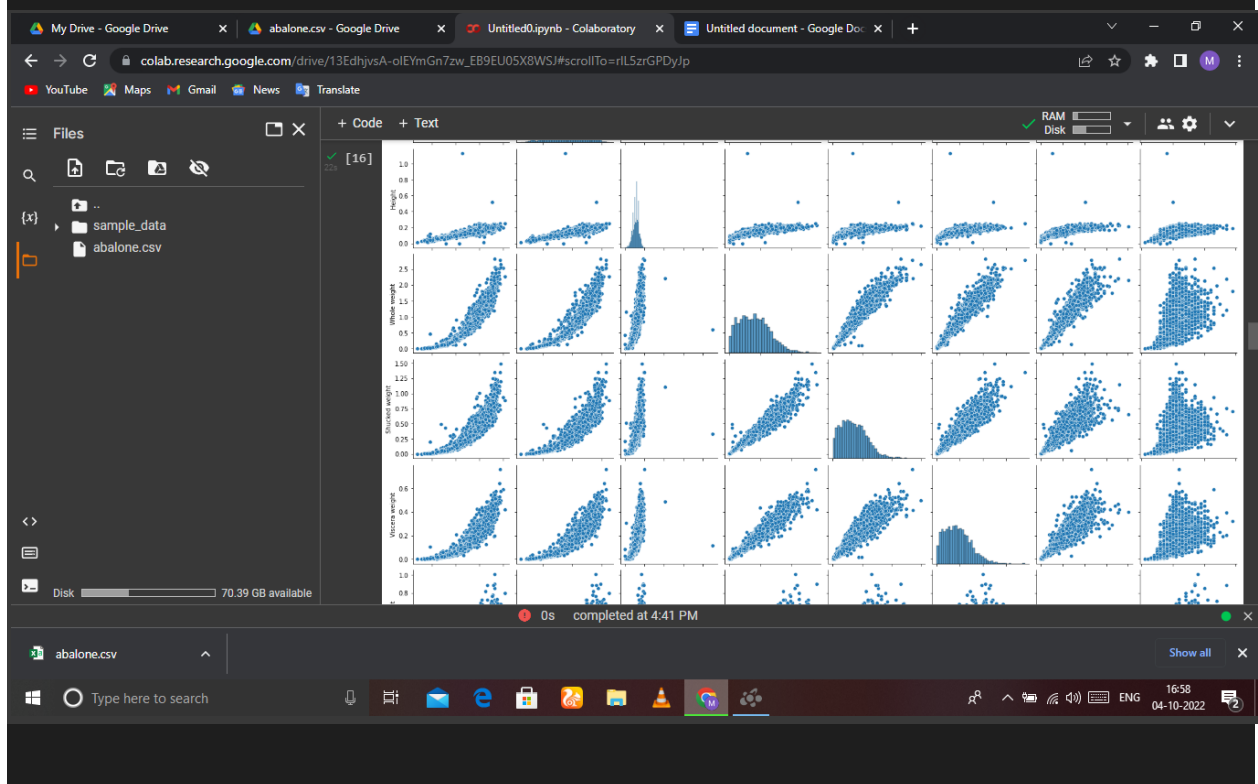
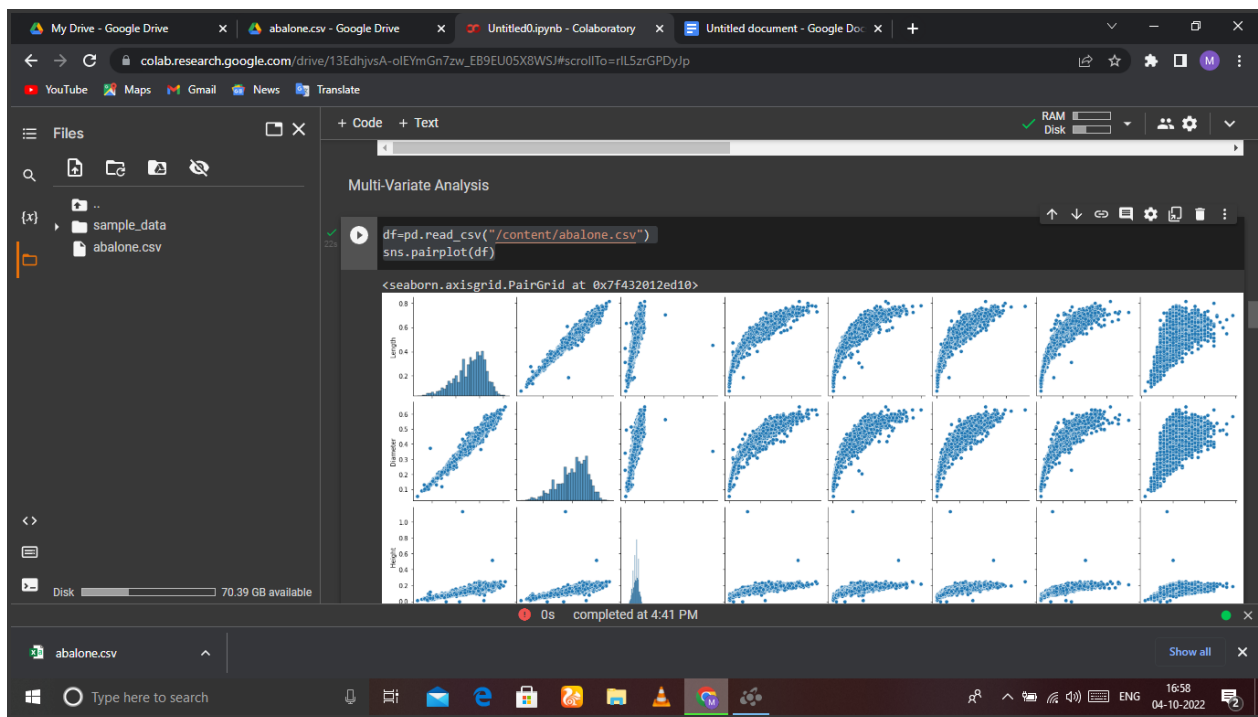
```
sns.scatterplot(df.Length,df.Diameter)
plt.ylim(0,15000)
```

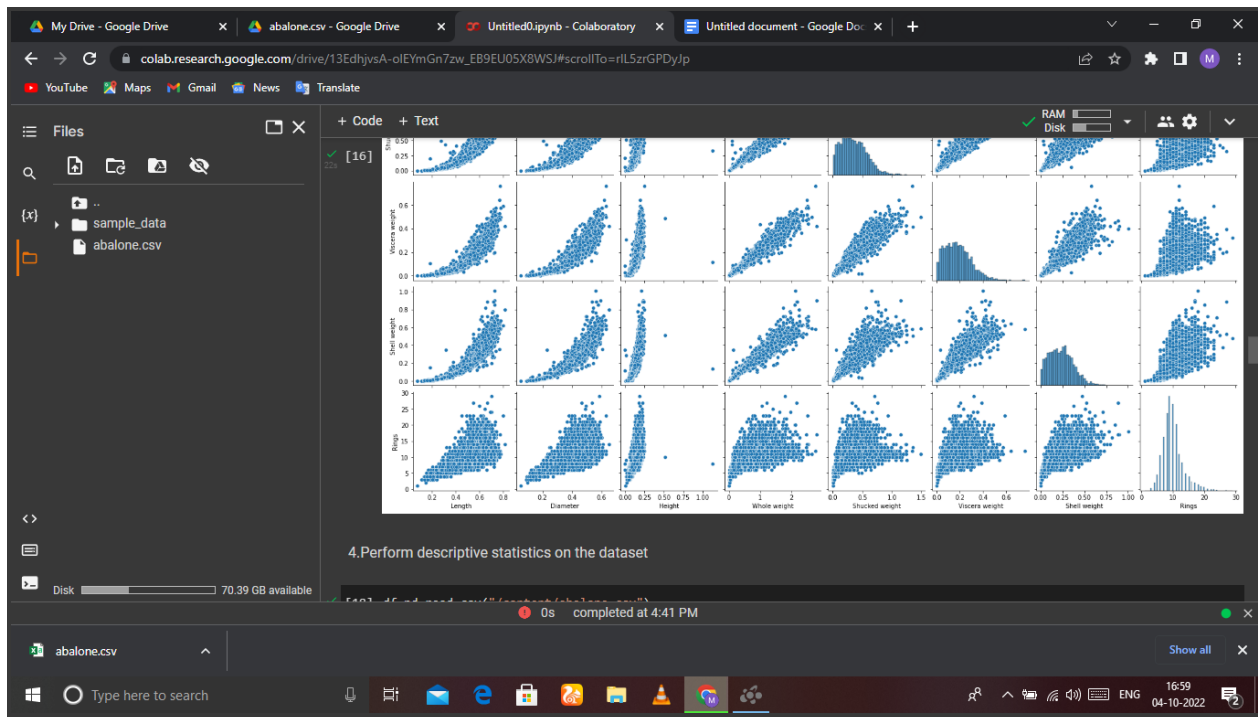


## Multi-Variate Analysis

solution:

```
df=pd.read_csv("/content/abalone.csv")
sns.pairplot(df)
```





4.Perform descriptive statistics on the dataset

solution:

```
df=pd.read_csv("/content/abalone.csv")
df.describe(include='all')
```

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Files

sample\_data  
abalone.csv

+ Code + Text

```
df=pd.read_csv("/content/abalone.csv")  
df.describe(include='all')
```

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
count	4177	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000	4177.000000
unique	3	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
top	M	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
freq	1528	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
mean	NaN	0.523992	0.407881	0.139516	0.828742	0.359367	0.180594	0.238831	9.933684
std	NaN	0.120093	0.099240	0.041827	0.490389	0.221963	0.109614	0.139203	3.224169
min	NaN	0.075000	0.055000	0.000000	0.002000	0.001000	0.000500	0.001500	1.000000
25%	NaN	0.450000	0.350000	0.115000	0.441500	0.186000	0.093500	0.130000	8.000000
50%	NaN	0.545000	0.425000	0.140000	0.799500	0.336000	0.171000	0.234000	9.000000
75%	NaN	0.615000	0.480000	0.165000	1.153000	0.502000	0.253000	0.329000	11.000000
max	NaN	0.815000	0.650000	1.130000	2.825500	1.488000	0.760000	1.005000	29.000000

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abalone.csv

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17:00 04-10-2022

## 5.Check for Missing values and Deal with them

solution:

```
from ast import increment_lineno  
import pandas as pd  
import numpy as np  
import seaborn as sns  
import matplotlib.pyplot as plt  
%matplotlib inline  
sns.set(color_codes=True)  
df=pd.read_csv("/content/abalone.csv")  
df.head()
```



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Files

sample\_data  
abalone.csv

5. Check for Missing values and Deal with them

```
from ast import increment_lineno
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
sns.set(color_codes=True)
df=pd.read_csv("/content/abalone.csv")
df.head()
```

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
0	M	0.455	0.365	0.095	0.5140	0.2245	0.1010	0.150	15
1	M	0.350	0.265	0.090	0.2255	0.0995	0.0485	0.070	7
2	F	0.530	0.420	0.135	0.6770	0.2565	0.1415	0.210	9
3	M	0.440	0.365	0.125	0.5160	0.2155	0.1140	0.155	10
4	I	0.330	0.255	0.080	0.2050	0.0895	0.0395	0.055	7

0s completed at 4:41 PM

abalone.csv

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17:02 04-10-2022

## 6. Find the Outliers and Replace with them

### solution

```
import pandas as pd
import matplotlib
from matplotlib import pyplot as pyplot
%matplotlib inline
matplotlib.rcParams['figure.figsize']=(10,6)
df=pd.read_csv("/content/abalone.csv")
df.sample(5)
```

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Files

sample\_data  
abalone.csv

4 | 0.330 0.255 0.080 0.2050 0.0895 0.0395 0.055 7

6. Find the Outliers and Replace with them

```
import pandas as pd
import matplotlib
from matplotlib import pyplot as pyplot
%matplotlib inline
matplotlib.rcParams['figure.figsize']=(10,6)
df=pd.read_csv("/content/abalone.csv")
df.sample(5)
```

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
2750	I	0.510	0.385	0.145	0.7665	0.3985	0.1400	0.1805	8
508	M	0.560	0.435	0.180	0.8890	0.3600	0.2040	0.2500	11
3241	M	0.650	0.525	0.190	1.4995	0.6265	0.4005	0.3950	14
2652	I	0.515	0.400	0.125	0.5925	0.2650	0.1175	0.1680	9
1050	F	0.715	0.525	0.185	1.5600	0.6655	0.3830	0.4050	11

7. Check Categorical Columns and perform encoding

0s completed at 4:41 PM

abalone.csv

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ENG 17:03 04-10-2022

## 7. Check Categorical Columns and perform encoding

solution:

```
df=pd.read_csv("/content/abalone.csv")
df.columns
import pandas as pd
import numpy as np
headers=['Sex','Length','Diameter','Height','Whole weight','Shucked
weight','Viscera weight','Shell weight','Rings']
df=pd.read_csv("/content/abalone.csv",header=None,names=headers,na_values=
"?")
df.head()
```

My Drive - Google Drive x abalone.csv - Google Drive x Untitled0.ipynb - Colaboratory x Untitled document - Google Docs x +

colab.research.google.com/drive/13EdhjvsA-oIEYmGn7zw\_EB9EU05X8WSJ#scrollTo=laBFJCMaKAuK

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Files

sample\_data  
abalone.csv

+ Code + Text

7. Check Categorical Columns and perform encoding

```
df=pd.read_csv("/content/abalone.csv")
df.columns
import pandas as pd
import numpy as np
headers=['Sex','Length','Diameter','Height','Whole weight','Shucked weight','Viscera weight','Shell weight','Rings']
df=pd.read_csv("/content/abalone.csv",header=None,names=headers,na_values="?")
df.head()
```

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
0	Sex	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
1	M	0.455	0.365	0.095	0.514	0.2245	0.101	0.15	15
2	M	0.35	0.265	0.09	0.2255	0.0995	0.0485	0.07	7
3	F	0.53	0.42	0.135	0.677	0.2565	0.1415	0.21	9
4	M	0.44	0.365	0.125	0.516	0.2155	0.114	0.155	10

8. Split the Data into dependent and independent variables

0s completed at 4:41 PM

abalone.csv

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ENG 17:04 04-10-2022

## 8. Split the Data into dependent and independent variables

solution:

```
x=df.iloc[:, :-1].values
print(x)
y=df.iloc[:, -1].values
print(y)
```

The screenshot shows a Google Colaboratory notebook with the following components:

- Browser Tabs:** My Drive - Google Drive, abalone.csv - Google Drive, Untitled0.ipynb - Colaboratory, and Untitled document - Google Docs.
- Address Bar:** colab.research.google.com/drive/13EdhjvsA-olEYmGn7zw\_EB9EU05X8WSJ#scrollTo=vrUDXSovMV9C
- File Explorer:** Shows a folder named 'sample\_data' containing 'abalone.csv'.
- Code Editor:**
  - Cell [21]:** Displays a table of data with columns: Sex, Length, Diameter, Shucked weight, Viscera weight, Shell weight, and Rings. The table has 4 rows of data.
  - Cell [22]:** Contains the following code:

```
8.Split the Data into dependent and independent variables

x=df.iloc[:, :-1].values
print(x)
y=df.iloc[:, -1].values
print(y)
```

The output shows the values of 'x' and 'y' as lists of lists.
  - Cell [26]:** Contains the following code:

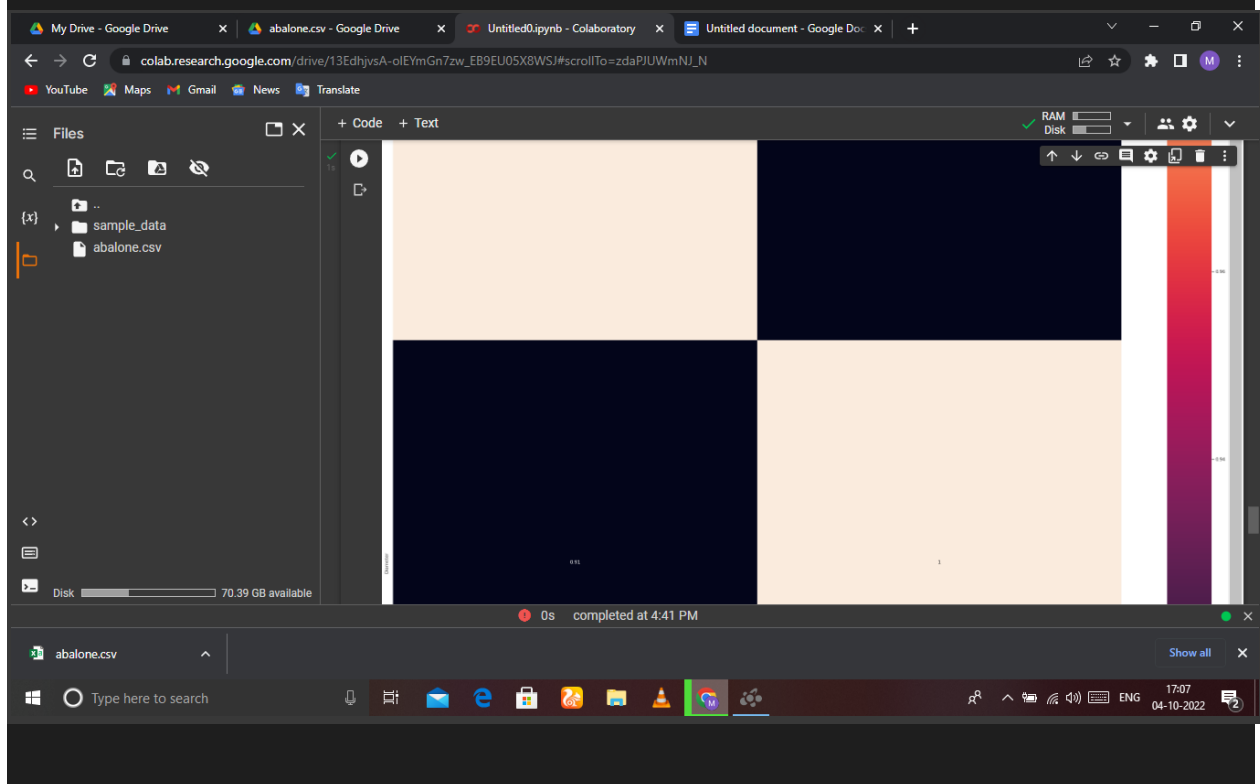
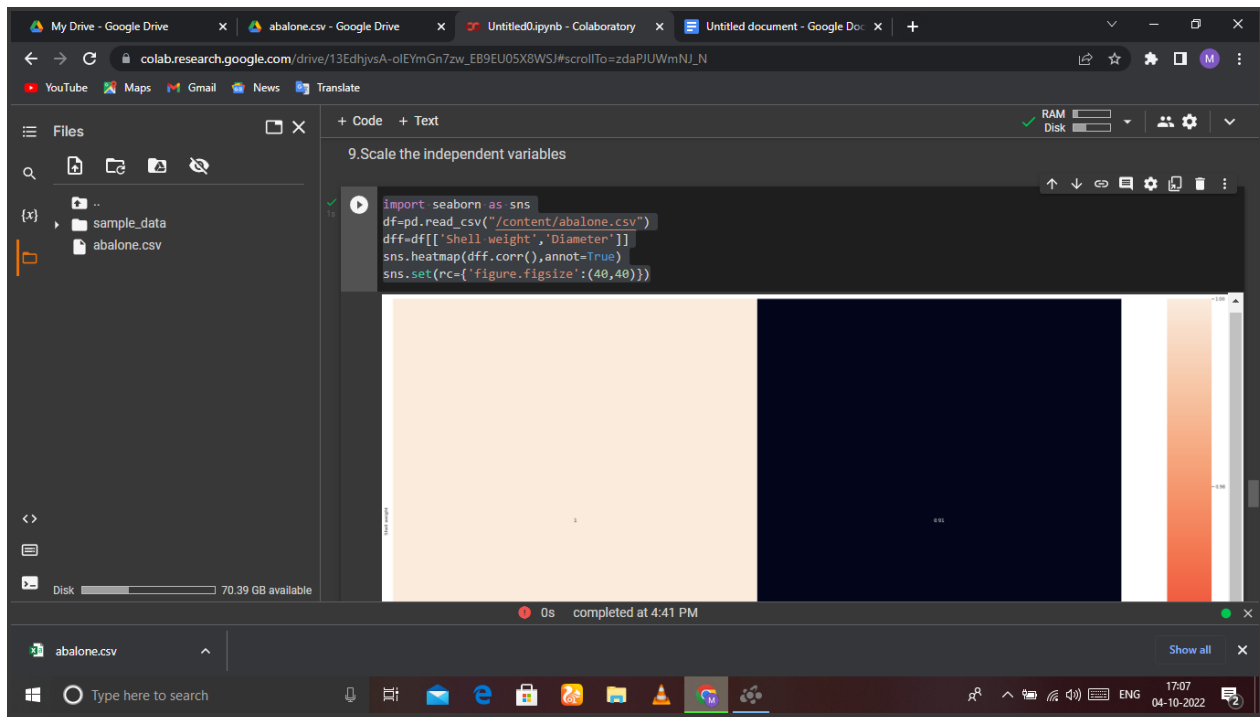
```
9.Scale the independent variables

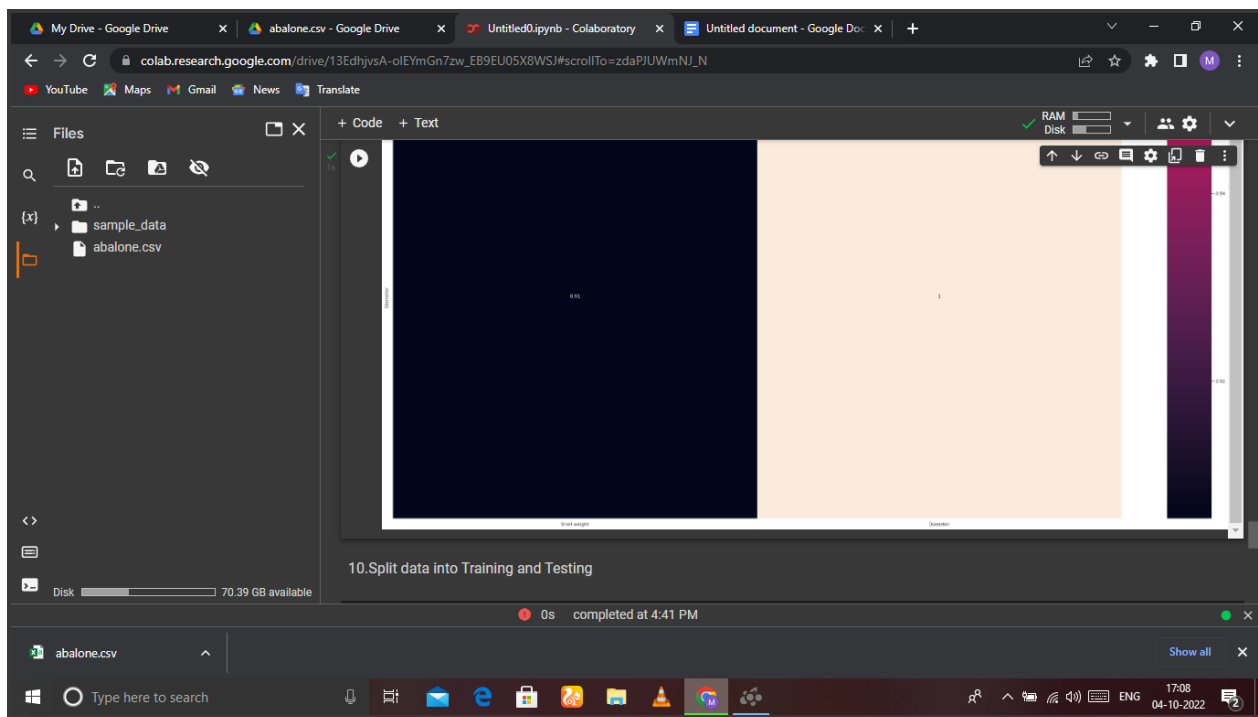
import seaborn as sns
```
- Status Bar:** Shows '0s' and 'completed at 4:41 PM'.

## 9.Scale the independent variables

solution:

```
import seaborn as sns
df=pd.read_csv("/content/abalone.csv")
dff=df[['Shell weight','Diameter']]
sns.heatmap(dff.corr(),annot=True)
sns.set(rc={'figure.figsize':(40,40)})
```





## 10.Split data into Training and Testing

### Solution:

```
x=df.iloc[:,1:2].values
y=df.iloc[:,2].values
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2,random_state=0)

print('Row count of x_train table'+ '-' +str(f"{len(x_train):,}"))
print('Row count of y_train table'+ '-' +str(f"{len(y_train):,}"))
print('Row count of x_test table'+ '-' +str(f"{len(x_test):,}"))
print('Row count of y_test table'+ '-' +str(f"{len(y_test):,}"))
```

The screenshot shows a Google Colab notebook interface. The top bar includes tabs for 'My Drive - Google Drive', 'abalone.csv - Google Drive', 'Untitled0.ipynb - Colaboratory', and 'Untitled document - Google Docs'. The browser address bar shows the Colab URL. The left sidebar displays the file explorer with 'sample\_data' and 'abalone.csv'. The main area shows a code cell titled '10. Split data into Training and Testing' with the following Python code:

```
x=df.iloc[:,1:2].values
y=df.iloc[:,2].values
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2,random_state=0)
print('Row count of x_train table'+str(len(x_train)))
print('Row count of y_train table'+str(len(y_train)))
print('Row count of x_test table'+str(len(x_test)))
print('Row count of y_test table'+str(len(y_test)))
```

The output of the code cell shows the row counts for the training and testing sets:

```
Row count of x_train table-3,341
Row count of y_train table-3,341
Row count of x_test table-836
Row count of y_test table-836
```

Below the code cell, a status bar indicates 'Build the Model' completed at 4:41 PM. The bottom of the image shows the Windows taskbar with various application icons and the system clock displaying 17:09 on 04-10-2022.

## 11. Build the Model

### Solution:

```
import pandas as pd
data=pd.read_csv('/content/abalone.csv')
data.head()

import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.tree import DecisionTreeClassifier
from sklearn import metrics
from sklearn import svm
var=sns.heatmap(data.corr(),annot=True)
plt.show()
```

11. Build the Model

```
[20] import pandas as pd
data=pd.read_csv('/content/abalone.csv')
data.head()
```

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
0	M	0.455	0.365	0.095	0.5140	0.2245	0.1010	0.150	15
1	M	0.350	0.265	0.090	0.2255	0.0995	0.0485	0.070	7
2	F	0.530	0.420	0.135	0.6770	0.2565	0.1415	0.210	9
3	M	0.440	0.365	0.125	0.5160	0.2155	0.1140	0.155	10
4	I	0.330	0.255	0.080	0.2050	0.0895	0.0395	0.055	7

```
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.tree import DecisionTreeClassifier
from sklearn import metrics
from sklearn import svm

var=sns.heatmap(data.corr(),annot=True)
plt.show()
```

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```
var=sns.heatmap(data.corr(),annot=True)
plt.show()
```

12. Train the model

```
[21] X=data.iloc[:, :-1]
y=data['Diameter']

[29] from sklearn.model_selection import train_test_split
```

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12. Train the model  
solution:



```
X=data.iloc[:, :-1]
y=data['Diameter']
```

```
from sklearn.model_selection import train_test_split
X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.2,random_state=0)
print(X_train)
print(y_train)
```

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```
[21] y=data['Diameter']
```

```
[29] from sklearn.model_selection import train_test_split
      X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.2,random_state=0)
```

```
print(X_train)
```

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	\
3141	I	0.180	0.135	0.080	0.0330	0.0145	
3521	I	0.215	0.150	0.055	0.0410	0.0150	
883	M	0.660	0.530	0.170	1.3805	0.5905	
3627	M	0.715	0.525	0.200	1.8000	0.9500	
2106	M	0.595	0.455	0.155	1.0410	0.4160	
...	...	...	...	...	...	...	
1033	M	0.650	0.525	0.185	1.6220	0.6645	
3264	F	0.655	0.500	0.140	1.1705	0.5405	
1653	M	0.595	0.450	0.145	0.9590	0.4630	
2607	F	0.625	0.490	0.165	1.1270	0.4770	
2732	I	0.410	0.325	0.110	0.3260	0.1325	
	Viscera weight	Shell weight					
3141	0.0070	0.0100					
3521	0.0090	0.0125					
883	0.2120	0.4530					
3627	0.4360	0.4305					
2106	0.2105	0.3650					
...	...	...					
1033	0.3225	0.4770					
3264	0.3175	0.2850					
1653	0.2065	0.2535					

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```
...  
1033      0.3225      0.4770  
3264      0.3175      0.2850  
1653      0.2065      0.2535  
2607      0.2365      0.3185  
2732      0.0750      0.1010  
[3341 rows x 8 columns]
```

```
[31] print(y_train)
```

```
3141      0.135  
3521      0.150  
883       0.530  
3627      0.525  
2106      0.455  
...  
1033      0.525  
3264      0.500  
1653      0.450  
2607      0.490  
2732      0.325  
Name: Diameter, Length: 3341, dtype: float64
```

13.Test the model

```
[32] print(X_test)
```

```
Sex  Length  Diameter  Height  Whole weight  Shucked weight  \  
650  M      0.550      0.450      0.150      0.8100      0.6300
```

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13.Test the model

Solution:

```
print(X_test)
```

```
print(y_test)
```

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```
print(X_test)
```

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	\
668	M	0.550	0.425	0.155	0.9175	0.2775	
1580	I	0.500	0.400	0.120	0.6160	0.2610	
3784	M	0.620	0.480	0.155	1.2555	0.5270	
463	I	0.220	0.165	0.055	0.0545	0.0215	
2615	M	0.645	0.500	0.175	1.5105	0.6735	
...	...	...	...	...	...	...	
575	F	0.610	0.475	0.140	1.1330	0.5275	
3231	M	0.410	0.325	0.120	0.3745	0.1580	
1084	I	0.445	0.345	0.105	0.4090	0.1675	
290	M	0.540	0.435	0.180	0.9960	0.3835	
2713	I	0.250	0.175	0.060	0.0635	0.0275	

	Viscera weight	Shell weight
668	0.2430	0.3350
1580	0.1430	0.1935
3784	0.3740	0.3175
463	0.0120	0.0200
2615	0.3755	0.3775
...	...	...
575	0.2355	0.3500
3231	0.0810	0.1250
1084	0.1015	0.1170
290	0.2260	0.3250
2713	0.0080	0.0200

[836 rows x 8 columns]

```
[33] print(y_test)
```

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[836 rows x 8 columns]

```
print(y_test)
```

668	0.425
1580	0.400
3784	0.480
463	0.165
2615	0.500
...	...
575	0.475
3231	0.325
1084	0.345
290	0.435
2713	0.175

Name: Diameter, Length: 836, dtype: float64

### 14.Measure the performance using Metrics

```
[47] import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.tree import DecisionTreeClassifier
from sklearn import metrics
from sklearn import svm
```

```
[55] var=sns.heatmap(data.corr(),annot=True)
plt.show()
```

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## 14.Measure the performance using Metrics

Solution:

```
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.tree import DecisionTreeClassifier
from sklearn import metrics
from sklearn import svm

model=svm.SVC(kernel='linear')

X=data.iloc[:, :-1]
y=data['Diameter']

from sklearn.model_selection import train_test_split
X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.2,random_state=0)

print(X_test)

print(y_test)
```

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print(X\_test)

	Sex	Length	Diameter	Height	Whole weight	Shucked weight	\
668	M	0.550	0.425	0.155	0.9175	0.2775	
1580	I	0.500	0.400	0.120	0.6160	0.2610	
3784	M	0.620	0.480	0.155	1.2555	0.5270	
463	I	0.220	0.165	0.055	0.0545	0.0215	
2615	M	0.645	0.500	0.175	1.5105	0.6735	
...	...	...	...	...	...	...	
575	F	0.610	0.475	0.140	1.1330	0.5275	
3231	M	0.410	0.325	0.120	0.3745	0.1580	
1084	I	0.445	0.345	0.105	0.4090	0.1675	
290	M	0.540	0.435	0.180	0.9960	0.3835	
2713	I	0.250	0.175	0.060	0.0635	0.0275	

	Viscera weight	Shell weight
668	0.2430	0.3350
1580	0.1430	0.1935
3784	0.3740	0.3175
463	0.0120	0.0200
2615	0.3755	0.3775
...	...	...
575	0.2355	0.3500
3231	0.0810	0.1250
1084	0.1015	0.1170
290	0.2260	0.3250

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...

575	0.2355	0.3500
3231	0.0810	0.1250
1084	0.1015	0.1170
290	0.2260	0.3250
2713	0.0080	0.0200

[836 rows x 8 columns]

[82] print(y\_test)

668	0.425
1580	0.400
3784	0.480
463	0.165
2615	0.500
...	...
575	0.475
3231	0.325
1084	0.345
290	0.435
2713	0.175

Name: Diameter, Length: 836, dtype: float64

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abalone (1).csv

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