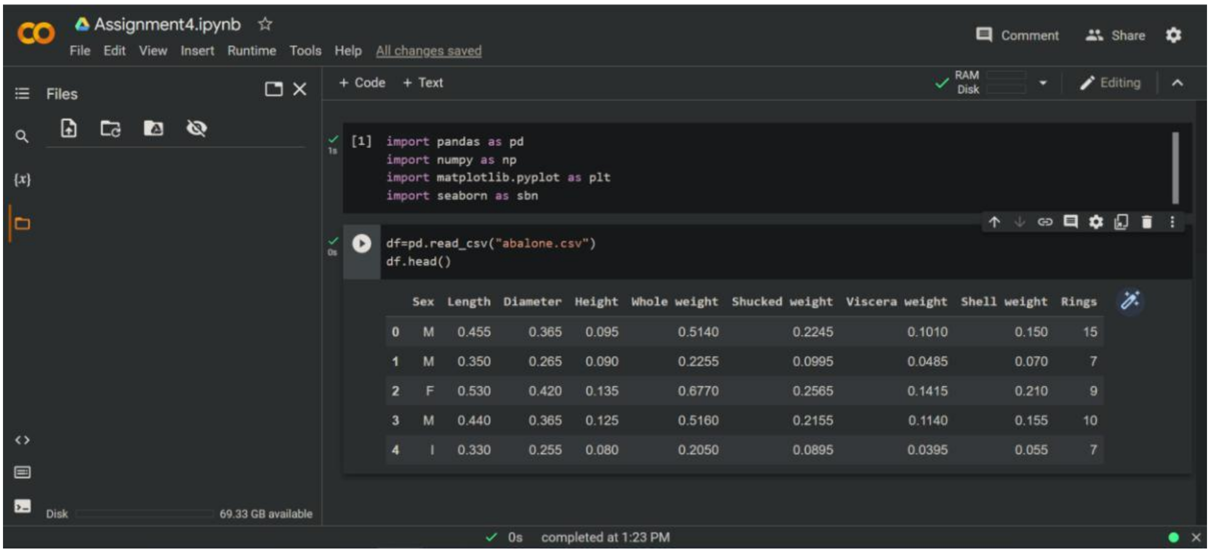
Assignment - 4

Team ID : PNT2022TMID23536

Loading the dataset:



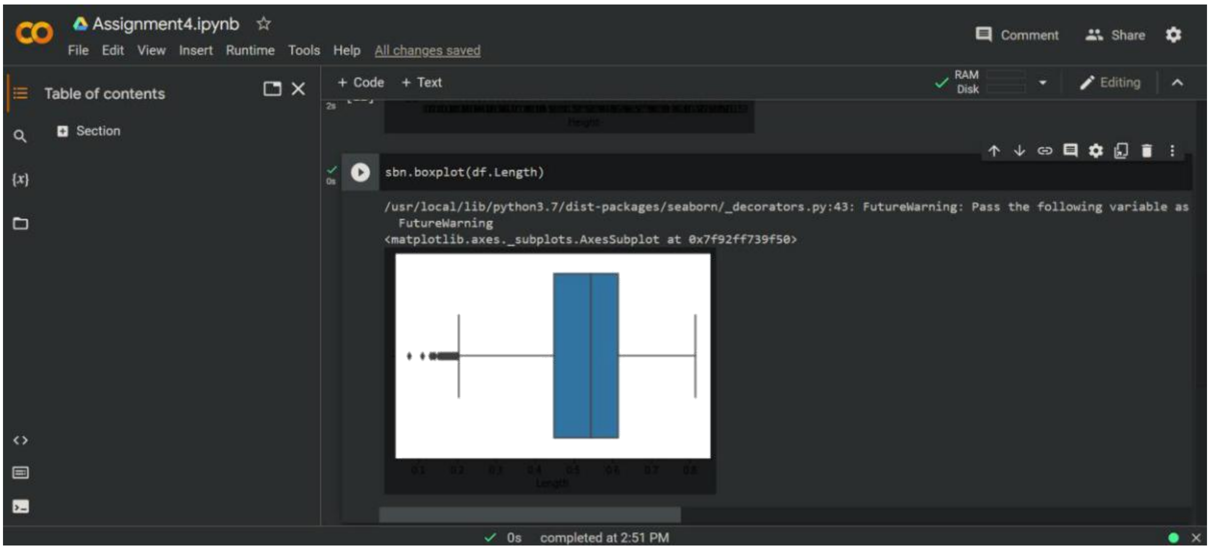

```
[1] import pandas as pd
    import numpy as np
    import matplotlib.pyplot as plt
    import seaborn as sbn
```

```
df=pd.read_csv("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

Perform Below Visualizations:

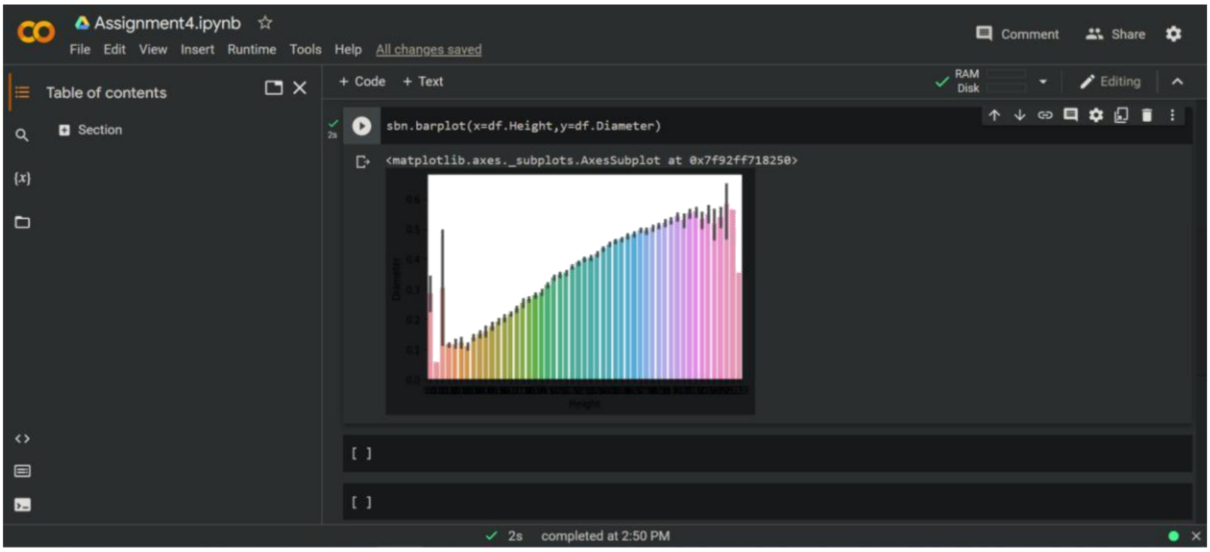
Univariate Analysis



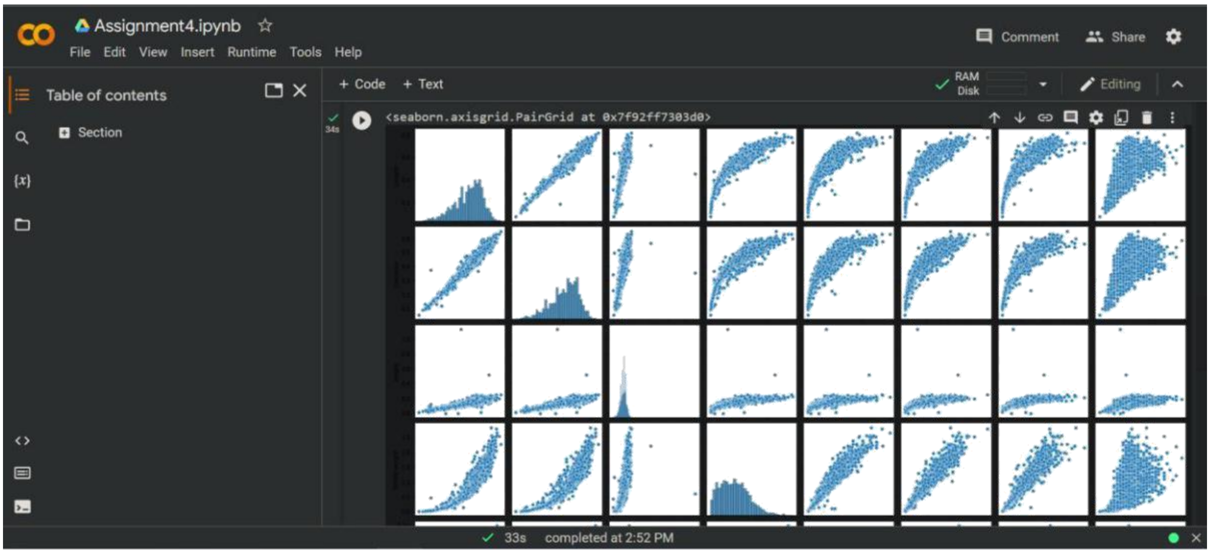

```
sbn.boxplot(df.Length)
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning: Pass the following variable as
  FutureWarning
<matplotlib.axes._subplots.AxesSubplot at 0x7f92ff739f50>
```

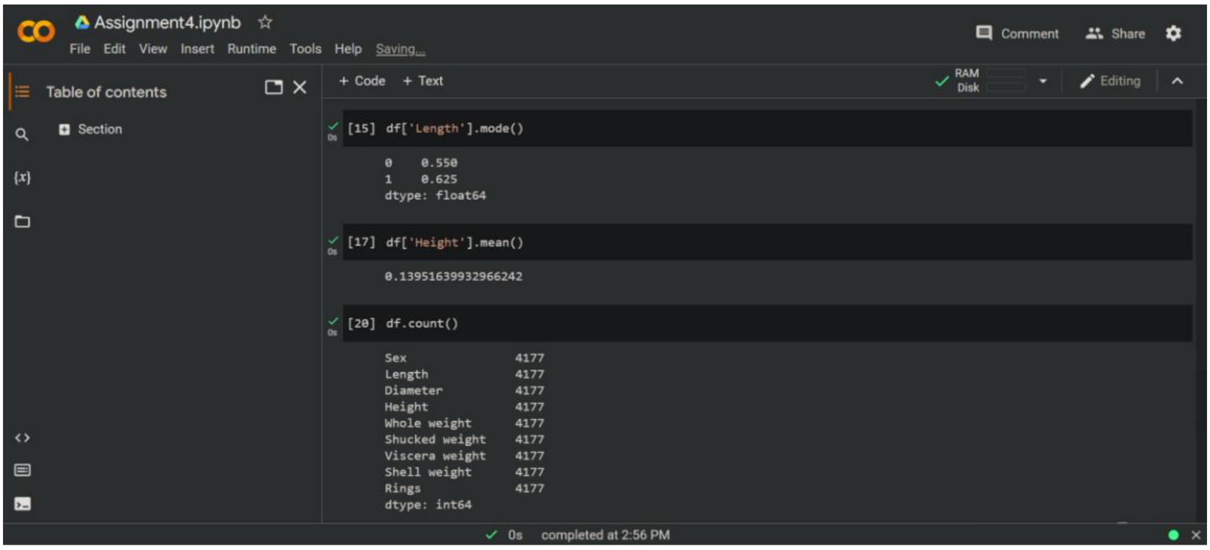
Bi-Variate Analysis

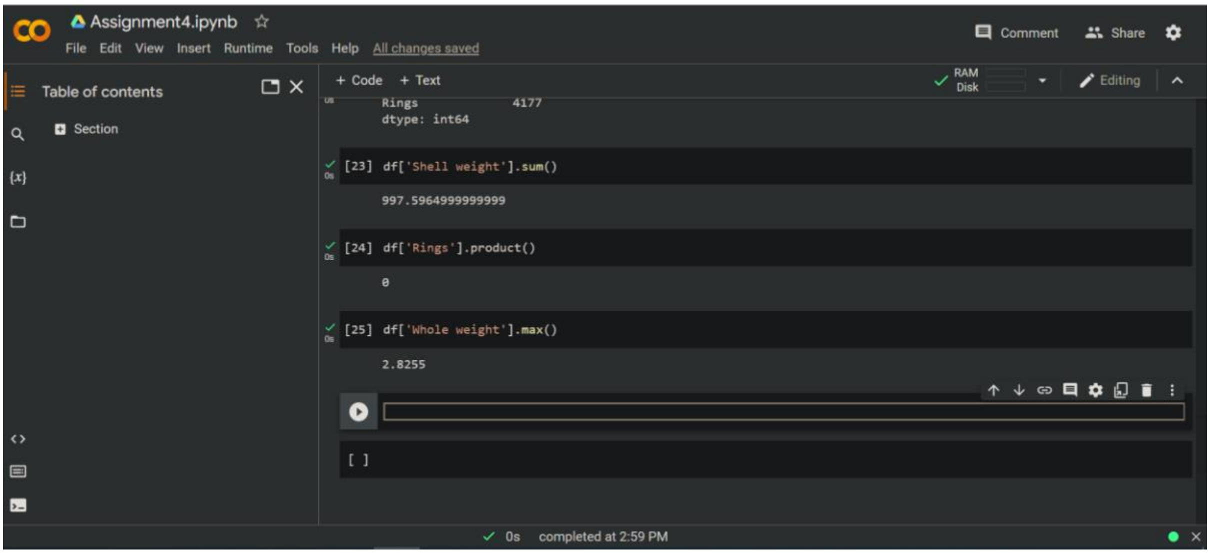


Multi-Variate Analysis

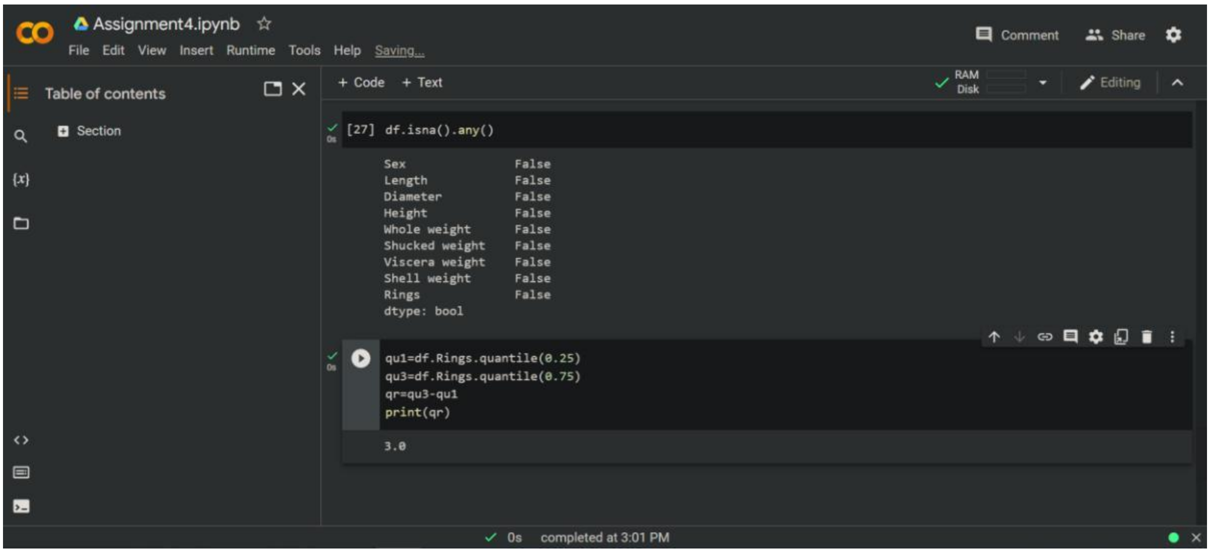


Perform descriptive analytics on the dataset

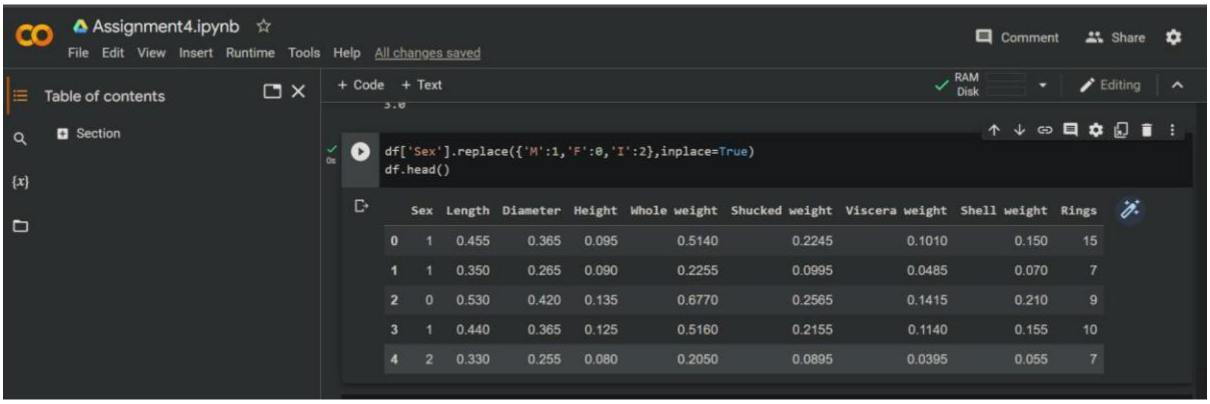




Check for Missing values and deal with them, Find the outliers and replace them outliers



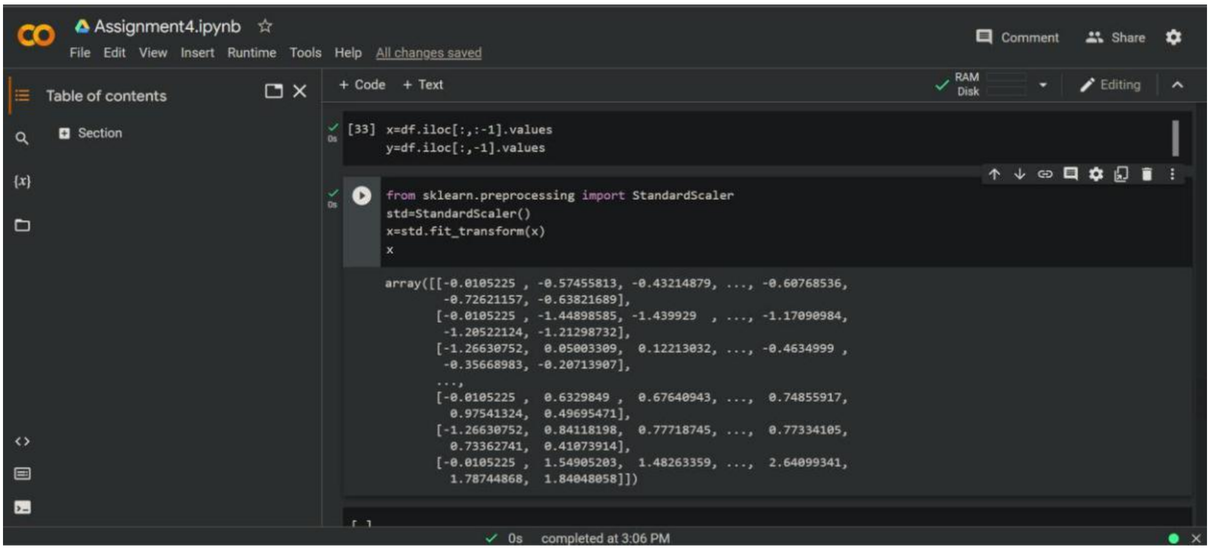
Check for Categorical columns and perform encoding



```
df['Sex'].replace({'M':1,'F':0,'I':2},inplace=True)
df.head()
```

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

Split the data into dependent and independent variables, Scale the independent variables

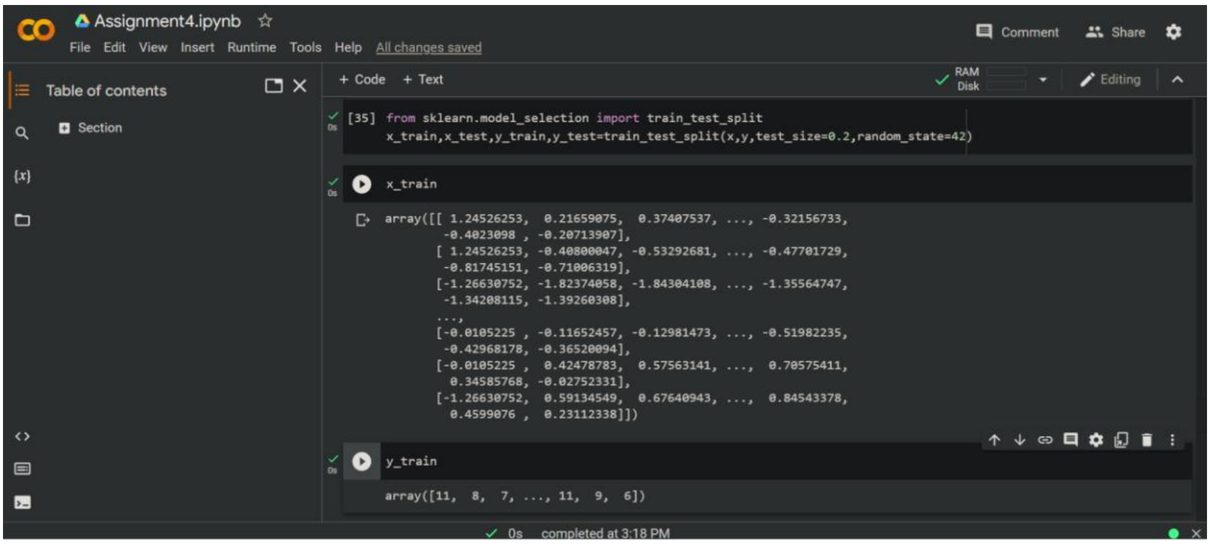


```
[33] x=df.iloc[:,:-1].values
     y=df.iloc[:,-1].values
```

```
from sklearn.preprocessing import StandardScaler
std=StandardScaler()
x=std.fit_transform(x)
x
```

```
array([[-0.0105225 , -0.57455813, -0.43214879, ..., -0.60768536,
        -0.72621157, -0.63821689],
       [-0.0105225 , -1.44898585, -1.439929  , ..., -1.17090984,
        -1.20522124, -1.21298732],
       [-1.26630752,  0.05003309,  0.12213032, ..., -0.4634999 ,
        -0.35668983, -0.20713907],
       ...,
       [-0.0105225 ,  0.6329849 ,  0.67640943, ...,  0.74855917,
         0.97541324,  0.49695471],
       [-1.26630752,  0.84118198,  0.77718745, ...,  0.77334105,
         0.73362741,  0.41073914],
       [-0.0105225 ,  1.54905203,  1.48263359, ...,  2.64099341,
         1.78744868,  1.84048058]])
```

Split the data into training and testing



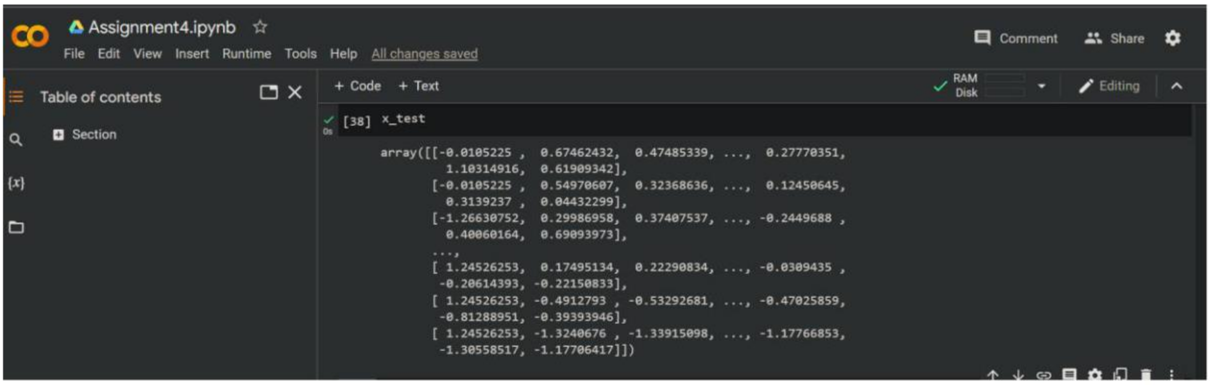
```
[35] from sklearn.model_selection import train_test_split
     x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2,random_state=42)
```

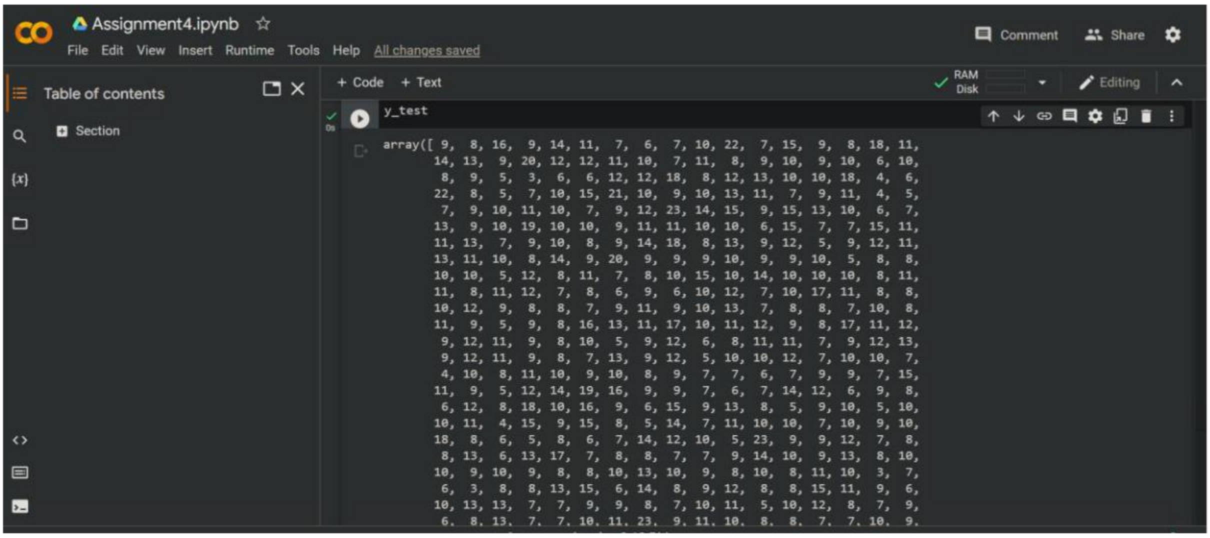
```
x_train
```

```
array([[ 1.24526253,  0.21659075,  0.37407537, ..., -0.32156733,
        -0.4023098 , -0.20713907],
       [ 1.24526253, -0.40800047, -0.53292681, ..., -0.47701729,
        -0.81745151, -0.71006319],
       [-1.26630752, -1.82374058, -1.84304108, ..., -1.35564747,
        -1.34208115, -1.39260308],
       ...,
       [-0.0105225 , -0.11652457, -0.12981473, ..., -0.51982235,
        -0.42968178, -0.36520094],
       [-0.0105225 ,  0.42478783,  0.57563141, ...,  0.70575411,
         0.34585768, -0.02752331],
       [-1.26630752,  0.59134549,  0.67640943, ...,  0.84543378,
         0.4599076 ,  0.23112338]])
```

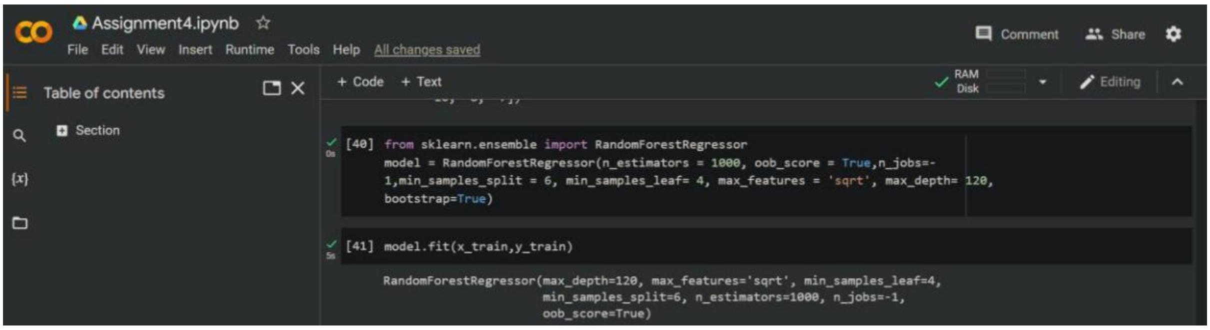
```
y_train
```

```
array([11,  8,  7, ..., 11,  9,  6])
```

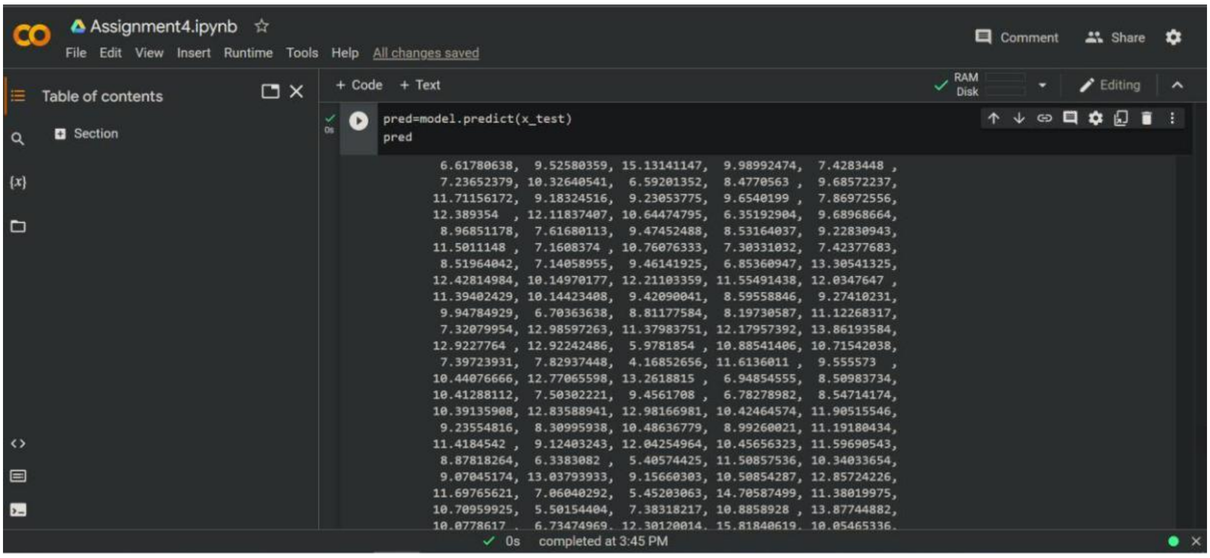




Build the Model, Train the Model



Test the Model



Measure the performance using Metrics