import pandas as pd  
df=pd.read\_csv('https://github.com/YBI-Foundation/Dataset/raw/main/Fish.csv')  
df.head()

Category Species Weight Height Width Length1 Length2 Length3  
0 1 Bream 242.0 11.5200 4.0200 23.2 25.4 30.0  
1 1 Bream 290.0 12.4800 4.3056 24.0 26.3 31.2  
2 1 Bream 340.0 12.3778 4.6961 23.9 26.5 31.1  
3 1 Bream 363.0 12.7300 4.4555 26.3 29.0 33.5  
4 1 Bream 430.0 12.4440 5.1340 26.5 29.0 34.0

df.info()

<class 'pandas.core.frame.DataFrame'>  
RangeIndex: 159 entries, 0 to 158  
Data columns (total 8 columns):  
 # Column Non-Null Count Dtype   
--- ------ -------------- -----   
 0 Category 159 non-null int64   
 1 Species 159 non-null object   
 2 Weight 159 non-null float64  
 3 Height 159 non-null float64  
 4 Width 159 non-null float64  
 5 Length1 159 non-null float64  
 6 Length2 159 non-null float64  
 7 Length3 159 non-null float64  
dtypes: float64(6), int64(1), object(1)  
memory usage: 10.1+ KB

df.shape

(159, 8)

df.columns

Index(['Category', 'Species', 'Weight', 'Height', 'Width', 'Length1',  
 'Length2', 'Length3'],  
 dtype='object')

df.describe

<bound method NDFrame.describe of Category Species Weight Height Width Length1 Length2 Length3  
0 1 Bream 242.0 11.5200 4.0200 23.2 25.4 30.0  
1 1 Bream 290.0 12.4800 4.3056 24.0 26.3 31.2  
2 1 Bream 340.0 12.3778 4.6961 23.9 26.5 31.1  
3 1 Bream 363.0 12.7300 4.4555 26.3 29.0 33.5  
4 1 Bream 430.0 12.4440 5.1340 26.5 29.0 34.0  
.. ... ... ... ... ... ... ... ...  
154 6 Smelt 12.2 2.0904 1.3936 11.5 12.2 13.4  
155 6 Smelt 13.4 2.4300 1.2690 11.7 12.4 13.5  
156 6 Smelt 12.2 2.2770 1.2558 12.1 13.0 13.8  
157 6 Smelt 19.7 2.8728 2.0672 13.2 14.3 15.2  
158 6 Smelt 19.9 2.9322 1.8792 13.8 15.0 16.2  
  
[159 rows x 8 columns]>

y = df['Weight']  
y.shape

(159,)

y

0 242.0  
1 290.0  
2 340.0  
3 363.0  
4 430.0  
 ...   
154 12.2  
155 13.4  
156 12.2  
157 19.7  
158 19.9  
Name: Weight, Length: 159, dtype: float64

X = df[['Height','Width','Length1','Length2','Length3']]  
X.shape

(159, 5)

X

Height Width Length1 Length2 Length3  
0 11.5200 4.0200 23.2 25.4 30.0  
1 12.4800 4.3056 24.0 26.3 31.2  
2 12.3778 4.6961 23.9 26.5 31.1  
3 12.7300 4.4555 26.3 29.0 33.5  
4 12.4440 5.1340 26.5 29.0 34.0  
.. ... ... ... ... ...  
154 2.0904 1.3936 11.5 12.2 13.4  
155 2.4300 1.2690 11.7 12.4 13.5  
156 2.2770 1.2558 12.1 13.0 13.8  
157 2.8728 2.0672 13.2 14.3 15.2  
158 2.9322 1.8792 13.8 15.0 16.2  
  
[159 rows x 5 columns]

from sklearn.model\_selection import train\_test\_split  
  
X\_train, X\_test, y\_train, y\_test = train\_test\_split(X,y, test\_size = 0.3, random\_state=2529)  
X\_train.shape, X\_test.shape, y\_train.shape, y\_test.shape

((111, 5), (48, 5), (111,), (48,))

from sklearn.linear\_model import LinearRegression   
model = LinearRegression()  
model.fit(X\_train, y\_train)  
y\_pred= model.predict(X\_test)  
y\_pred.shape

(48,)

y\_pred

array([ 485.76826299, 502.24720857, 94.72381964, 876.5711712 ,  
 184.0789176 , 219.30130488, 322.32532246, 376.22325991,  
 372.35730485, -182.67537078, -160.60486837, 454.33586185,  
 159.59755829, 843.48525226, 587.21680573, 299.53521445,  
 597.72950823, 197.14605397, 639.89046741, 91.20067876,  
 150.95424753, -103.08320574, 627.19712753, 795.69176861,  
 814.68732975, -204.1496511 , 329.98746856, 715.89288013,  
 359.75634357, 792.3243925 , 532.7036706 , 552.00832342,  
 433.48472727, 687.61750267, -204.76362537, 932.53668294,  
 810.74234216, -80.06217174, 284.36287887, 907.08036021,  
 642.5828335 , 959.33848223, 675.28792291, 718.86305458,  
 623.89849226, 376.48346981, 530.83828119, -86.2357066 ])

from sklearn.metrics import mean\_squared\_error, r2\_score

mean\_squared\_error(y\_test,y\_pred)

16397.34452441135

mean\_absolute\_error(y\_test,y\_pred)

103.02952922678537

r2\_score(y\_test,y\_pred)

0.834914142441688

df\_new= df.sample(1)  
df\_new

Category Species Weight Height Width Length1 Length2 Length3  
158 6 Smelt 19.9 2.9322 1.8792 13.8 15.0 16.2

X\_new = df\_new[['Height','Weight','Length1','Length2','Length3']]  
X\_new.shape

(1, 5)

y\_pred\_new