cryfrziyi

October 4, 2024

[82]:
```python
import pandas as pd
df=pd.read_csv("smartphones.csv")
df.head()
```

[82]:
```
                                Smartphone     Brand          Model  \
0          Realme C55 8/256GB Sunshower Libre    Realme            C55
1      Samsung Galaxy M23 5G 4/128GB Azul Libre   Samsung     Galaxy M23
2  Motorola Moto G13 4/128GB Azul Lavanda Libre  Motorola       Moto G13
3      Xiaomi Redmi Note 11S 6/128GB Gris Libre    Xiaomi  Redmi Note 11S
4       Nothing Phone (2) 12/512GB Blanco Libre   Nothing      Phone (2)

    RAM  Storage   Color Free  Final Price
0   8.0    256.0  Yellow  Yes       231.60
1   4.0    128.0    Blue  Yes       279.00
2   4.0    128.0    Blue  Yes       179.01
3   6.0    128.0    Gray  Yes       279.99
4  12.0    512.0   White  Yes       799.00
```

[ ]:

[ ]:

[83]:
```python
df.isnull().sum()
```

[83]:
```
Smartphone       0
Brand            0
Model            0
RAM            483
Storage         25
Color            0
Free             0
Final Price      0
dtype: int64
```

[84]:
```python
d=df['RAM'].median()
df["RAM"]=df["RAM"].fillna(d)
```

[85]:
```python
d=df['Storage'].median()
df["Storage"]=df["Storage"].fillna(d)
```

[ ]:
```python

```

[86]:
```python
df=df.drop("Free",axis=1)
df=df.drop("Smartphone",axis=1)
```

[87]:
```python
df.rename(columns={'Final Price':'Final_Price'},inplace=True)
df.head()
```

[87]:

	Brand	Model	RAM	Storage	Color	Final_Price
0	Realme	C55	8.0	256.0	Yellow	231.60
1	Samsung	Galaxy M23	4.0	128.0	Blue	279.00
2	Motorola	Moto G13	4.0	128.0	Blue	179.01
3	Xiaomi	Redmi Note 11S	6.0	128.0	Gray	279.99
4	Nothing	Phone (2)	12.0	512.0	White	799.00

[88]:
```python
from sklearn.preprocessing import LabelEncoder
l=LabelEncoder()
df["Model"]=l.fit_transform(df["Model"])
df.head()
```

[88]:

	Brand	Model	RAM	Storage	Color	Final_Price
0	Realme	104	8.0	256.0	Yellow	231.60
1	Samsung	162	4.0	128.0	Blue	279.00
2	Motorola	220	4.0	128.0	Blue	179.01
3	Xiaomi	301	6.0	128.0	Gray	279.99
4	Nothing	268	12.0	512.0	White	799.00

[88]:
```python
from sklearn.preprocessing import LabelEncoder
l=LabelEncoder()
df["Model"]=l.fit_transform(df["Model"])
df.head()
```

[88]:

	Brand	Model	RAM	Storage	Color	Final_Price
0	Realme	104	8.0	256.0	Yellow	231.60
1	Samsung	162	4.0	128.0	Blue	279.00
2	Motorola	220	4.0	128.0	Blue	179.01
3	Xiaomi	301	6.0	128.0	Gray	279.99
4	Nothing	268	12.0	512.0	White	799.00

[89]:
```python
from sklearn.preprocessing import LabelEncoder
l=LabelEncoder()
df["Brand"]=l.fit_transform(df["Brand"])
df.head()
```

[89]:

	Brand	Model	RAM	Storage	Color	Final_Price
0	27	104	8.0	256.0	Yellow	231.60
1	29	162	4.0	128.0	Blue	279.00
2	20	220	4.0	128.0	Blue	179.01
3	35	301	6.0	128.0	Gray	279.99
4	22	268	12.0	512.0	White	799.00

[90]:
```
from sklearn.preprocessing import LabelEncoder
l=LabelEncoder()
df["Color"]=l.fit_transform(df["Color"])
df.head()
```

[90]:

	Brand	Model	RAM	Storage	Color	Final_Price
0	27	104	8.0	256.0	16	231.60
1	29	162	4.0	128.0	1	279.00
2	20	220	4.0	128.0	1	179.01
3	35	301	6.0	128.0	6	279.99
4	22	268	12.0	512.0	15	799.00

[91]:
```
df.corr()
```

[91]:

	Brand	Model	RAM	Storage	Color	Final_Price
Brand	1.000000	-0.390551	0.008972	-0.207144	-0.066083	-0.282915
Model	-0.390551	1.000000	0.020172	0.190821	0.104543	0.202905
RAM	0.008972	0.020172	1.000000	0.413640	0.064912	0.442088
Storage	-0.207144	0.190821	0.413640	1.000000	0.088489	0.696851
Color	-0.066083	0.104543	0.064912	0.088489	1.000000	0.129461
Final_Price	-0.282915	0.202905	0.442088	0.696851	0.129461	1.000000

[92]:
```
x=df[["Storage"]]
y=df.Final_Price
```

[93]:
```
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=2)
```

[94]:
```
from sklearn.linear_model import LinearRegression
la=LinearRegression()
la.fit(x_train,y_train)
```

[94]: LinearRegression()

[95]:
```
yped=la.predict(x_test)
print(yped)
```

```
[ 420.74811292  420.74811292  420.74811292  420.74811292  672.92877511
  420.74811292  420.74811292  672.92877511  420.74811292  420.74811292
  672.92877511  672.92877511  294.65778182  294.65778182  294.65778182
```

420.74811292	420.74811292	672.92877511	294.65778182	672.92877511
420.74811292	294.65778182	672.92877511	294.65778182	294.65778182
420.74811292	294.65778182	420.74811292	294.65778182	420.74811292
420.74811292	672.92877511	420.74811292	672.92877511	672.92877511
672.92877511	294.65778182	2138.72887411	420.74811292	420.74811292
420.74811292	672.92877511	1177.2900995	420.74811292	294.65778182
294.65778182	420.74811292	420.74811292	420.74811292	420.74811292
231.61261628	294.65778182	294.65778182	672.92877511	294.65778182
420.74811292	420.74811292	420.74811292	672.92877511	420.74811292
672.92877511	420.74811292	2138.72887411	1177.2900995	294.65778182
1177.2900995	420.74811292	420.74811292	231.61261628	672.92877511
174.477935	672.92877511	420.74811292	420.74811292	420.74811292
420.74811292	420.74811292	294.65778182	672.92877511	420.74811292
420.74811292	1177.2900995	200.0900335	672.92877511	294.65778182
420.74811292	231.61261628	420.74811292	420.74811292	1177.2900995
420.74811292	420.74811292	672.92877511	420.74811292	184.32874212
1177.2900995	294.65778182	231.61261628	420.74811292	672.92877511
294.65778182	672.92877511	294.65778182	672.92877511	420.74811292
231.61261628	420.74811292	420.74811292	672.92877511	294.65778182
420.74811292	294.65778182	672.92877511	420.74811292	420.74811292
420.74811292	420.74811292	294.65778182	420.74811292	420.74811292
420.74811292	420.74811292	172.50777358	420.74811292	672.92877511
672.92877511	420.74811292	672.92877511	420.74811292	1177.2900995
672.92877511	294.65778182	420.74811292	420.74811292	420.74811292
420.74811292	420.74811292	420.74811292	420.74811292	672.92877511
294.65778182	672.92877511	294.65778182	1177.2900995	420.74811292
294.65778182	294.65778182	672.92877511	420.74811292	420.74811292
420.74811292	294.65778182	672.92877511	294.65778182	1177.2900995
420.74811292	420.74811292	1177.2900995	294.65778182	420.74811292
420.74811292	231.61261628	420.74811292	672.92877511	231.61261628
294.65778182	672.92877511	1177.2900995	420.74811292	672.92877511
420.74811292	672.92877511	672.92877511	294.65778182	420.74811292
672.92877511	420.74811292	420.74811292	184.32874212	420.74811292
1177.2900995	294.65778182	420.74811292	1177.2900995	294.65778182
294.65778182	420.74811292	420.74811292	420.74811292	294.65778182
420.74811292	420.74811292	672.92877511	420.74811292	420.74811292
420.74811292	420.74811292	672.92877511	231.61261628	2138.72887411
672.92877511	231.61261628	672.92877511	420.74811292	420.74811292
231.61261628	420.74811292	420.74811292	294.65778182	231.61261628
420.74811292	1177.2900995	420.74811292	672.92877511	420.74811292
420.74811292	420.74811292	294.65778182	294.65778182	294.65778182
420.74811292	420.74811292	420.74811292	672.92877511	294.65778182
231.61261628	420.74811292	1177.2900995	420.74811292	672.92877511
420.74811292	420.74811292	1177.2900995	672.92877511	294.65778182
294.65778182	420.74811292	420.74811292	294.65778182	231.61261628
294.65778182	672.92877511	1177.2900995	672.92877511	672.92877511
231.61261628	231.61261628	294.65778182	672.92877511	420.74811292
672.92877511	294.65778182	672.92877511	672.92877511	294.65778182

```
 672.92877511  294.65778182  672.92877511  672.92877511  672.92877511
 294.65778182  200.0900335   294.65778182  420.74811292  294.65778182
 672.92877511  231.61261628  672.92877511  294.65778182  231.61261628
 294.65778182  672.92877511  420.74811292 2138.72887411  420.74811292
 672.92877511  294.65778182  672.92877511  420.74811292  294.65778182
 294.65778182  294.65778182  420.74811292  672.92877511  672.92877511
 672.92877511  294.65778182  420.74811292  420.74811292  420.74811292
 420.74811292  231.61261628  294.65778182  672.92877511  294.65778182
 420.74811292  420.74811292  420.74811292  420.74811292  294.65778182
 672.92877511  420.74811292  420.74811292  231.61261628  420.74811292
 420.74811292  672.92877511  672.92877511  420.74811292  420.74811292
 420.74811292  672.92877511  294.65778182  420.74811292  420.74811292
 420.74811292  294.65778182  294.65778182  294.65778182  294.65778182
 294.65778182  420.74811292  294.65778182  294.65778182  672.92877511
 420.74811292  294.65778182  231.61261628  200.0900335   420.74811292
 294.65778182  420.74811292  672.92877511  420.74811292  231.61261628
 420.74811292  672.92877511  420.74811292  420.74811292 1177.2900995
 294.65778182  294.65778182  420.74811292  231.61261628  672.92877511
 672.92877511  420.74811292  294.65778182  231.61261628  672.92877511
 420.74811292  294.65778182  420.74811292  672.92877511  420.74811292
 420.74811292  294.65778182  231.61261628  420.74811292  294.65778182
 420.74811292  420.74811292  294.65778182  420.74811292]
```

[96]:
```
from sklearn.metrics import mean_absolute_error,r2_score
a=r2_score(y_test,yped)
a.
```

[96]:
```
0.5355034837506185
```

[ ]:
```

```

1 multiple reggression

[97]:
```
x=df[["Storage","RAM","Brand"]]
y=df.Final_Price
```

[98]:
```
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=2)
```

[99]:
```
from sklearn.linear_model import LinearRegression
la=LinearRegression()
la.fit(x_train,y_train)
```

[99]:
```
LinearRegression()
```

[100]:
```python
yped=la.predict(x_test)
print(yped)
```

```
[ 362.0185266   397.62692805  397.62692805  362.0185266   601.60900483
  285.80598123  397.62692805  767.78154492  451.03953022  509.44787486
  677.82155019  865.85504237  260.02748821  145.70867016  295.63588966
  397.62692805  321.41438268  677.82155019  145.70867016  677.82155019
  438.23107196  183.81494284  684.69527488  183.81494284  295.63588966
  397.62692805  219.42334429  321.41438268  145.70867016  563.79946815
  379.82272732  654.08261589  303.61018196  677.82155019  677.82155019
  842.11610807  237.22754502 1787.2548261   397.62692805  321.41438268
  626.26456414  871.78977595 1279.7539295   397.62692805  260.02748821
  183.81494284  285.80598123  397.62692805  285.80598123  285.80598123
  100.64788454  219.42334429  367.79168367  601.60900483  295.63588966
  357.02278413  563.79946815  509.44787486  677.82155019  397.62692805
  701.56048449  333.28384983 1953.4273662  1175.74569848  320.31381507
 1175.74569848  321.41438268  556.92574346  130.32155242  842.11610807
  281.51195124  871.78977595  321.41438268  444.16580554  563.79946815
  563.79946815  563.79946815  228.79494021  713.42995164  333.28384983
  362.0185266  1175.74569848   42.97858584  677.82155019  183.81494284
  563.79946815  130.32155242  438.23107196  563.79946815 1175.74569848
  367.95326017  333.28384983  731.23415237  473.83947341  236.06739894
 1175.74569848  260.02748821  272.75515821  473.83947341  767.78154492
  461.80842976  853.98557522  260.02748821  642.21314874  397.62692805
   94.71315097  438.23107196  285.80598123  642.21314874  243.16227859
  321.41438268  255.03174574  677.82155019  397.62692805  527.25207559
  285.80598123  397.62692805  295.63588966  303.61018196  362.0185266
  409.4963952   563.79946815  351.13514417  362.0185266   830.24664092
  677.82155019  473.83947341  806.50770662  473.83947341 1009.57315838
  601.60900483  231.29281144  285.80598123  480.7131981   485.70894056
  438.23107196  279.87124766  362.0185266   285.80598123  767.78154492
  272.83594647  767.78154492  461.80842976 1009.57315838  321.41438268
  183.81494284  260.02748821  865.85504237  397.62692805  397.62692805
  362.0185266   461.80842976  660.95634058  219.42334429 1175.74569848
  444.16580554  438.23107196 1175.74569848  145.70867016  574.72994419
  556.92574346  154.06048672  362.0185266   642.21314874  142.19101957
  145.70867016  859.9203088  1175.74569848  397.62692805  731.23415237
  397.62692805  642.21314874  601.60900483  349.98748294  563.79946815
  601.60900483  485.70894056  497.57840771  236.06739894  285.80598123
 1238.21079448  349.98748294  438.23107196 1009.57315838  183.81494284
  243.16227859  626.26456414  486.64793167  374.82698486  255.03174574
  409.4963952   362.0185266   642.21314874  486.64793167  333.28384983
  473.83947341  397.62692805  859.9203088    56.60687828 1953.4273662
  642.21314874  142.19101957  767.78154492  397.62692805  626.26456414
   50.67214471  527.25207559  404.50065273  145.70867016  225.27728961
  362.0185266  1175.74569848  473.83947341  767.78154492  421.36586235
  404.50065273  480.7131981   183.81494284  231.29281144  183.81494284
```

```
 438.23107196  563.79946815  509.44787486  677.82155019  467.74316333
  56.60687828  285.80598123 1009.57315838  509.44787486  859.9203088
 473.83947341  410.43538631 1009.57315838  601.60900483  461.80842976
 461.80842976  438.23107196  374.82698486  219.42334429  225.27728961
 219.42334429  677.82155019 1009.57315838  830.24664092  713.42995164
 225.27728961  110.01948046  461.80842976  830.24664092  473.83947341
 701.56048449  461.80842976  601.60900483  642.21314874  125.4065982
 766.84255382  461.80842976  865.85504237  865.85504237  767.78154492
 367.79168367  253.19213219  260.02748821  556.92574346  255.03174574
 601.60900483  225.27728961  642.21314874  183.81494284  130.32155242
 243.16227859  601.60900483  397.62692805 1953.4273662   473.83947341
 767.78154492  231.29281144  642.21314874  485.70894056  219.42334429
 195.68440999  195.68440999  291.74071481  642.21314874  767.78154492
 865.85504237  308.44434792  473.83947341  438.23107196  563.79946815
 397.62692805  410.81291056  295.63588966  654.08261589  125.4065982
 563.79946815  528.1910667   563.79946815  404.50065273  219.42334429
 713.42995164  397.62692805  528.1910667    94.71315097  397.62692805
 485.70894056  767.78154492  601.60900483  451.03953022  421.36586235
 397.62692805  767.78154492  145.70867016  480.7131981   397.62692805
 503.51314129  183.81494284  461.80842976  231.29281144  461.80842976
 295.63588966  563.79946815  367.79168367  183.81494284  901.46344382
 563.79946815  231.29281144  199.04048408  225.07734444  473.83947341
 295.63588966  321.41438268  853.98557522  545.99526742   56.60687828
 321.41438268  767.78154492  397.62692805  445.10479665 1175.74569848
 367.79168367  349.98748294  397.62692805  410.81291056  767.78154492
 601.60900483  362.0185266   219.42334429  266.82042464  842.11610807
 622.20781279  183.81494284  321.41438268  601.60900483  397.62692805
 485.70894056  260.02748821   74.41107901  492.58266525  195.68440999
 433.2353295   473.83947341  195.68440999  438.23107196]
```

[101]:
```python
from sklearn.metrics import mean_absolute_error,r2_score
a=r2_score(y_test,yped)
a
```

[101]: 0.5544441601000103

2 knn algo

[102]:
```python
from sklearn.neighbors import KNeighborsRegressor
kn=KNeighborsRegressor(n_neighbors=3,metric='euclidean')
kn.fit(x_train,y_train)
```

[102]: KNeighborsRegressor(metric='euclidean', n_neighbors=3)

yped=la.predict(x_test) print(yped)

[103]:
```python
from sklearn.metrics import mean_absolute_error,r2_score
a=r2_score(y_test,yped)
a
```

[103]: 0.5544441601000103

3 svm alg

[104]:
```python
from sklearn.svm import LinearSVC,SVR
#sc=LinearSVC()
import warnings
warnings.simplefilter("ignore")
sc=SVR(kernel = "linear")
sc.fit(x_train,y_train)
```

[104]: SVR(kernel='linear')

[105]:
```python
yped=la.predict(x_test)
print(yped)
```

```
[ 362.0185266   397.62692805  397.62692805  362.0185266   601.60900483
  285.80598123  397.62692805  767.78154492  451.03953022  509.44787486
  677.82155019  865.85504237  260.02748821  145.70867016  295.63588966
  397.62692805  321.41438268  677.82155019  145.70867016  677.82155019
  438.23107196  183.81494284  684.69527488  183.81494284  295.63588966
  397.62692805  219.42334429  321.41438268  145.70867016  563.79946815
  379.82272732  654.08261589  303.61018196  677.82155019  677.82155019
  842.11610807  237.22754502 1787.2548261   397.62692805  321.41438268
  626.26456414  871.78977595 1279.7539295   397.62692805  260.02748821
  183.81494284  285.80598123  397.62692805  285.80598123  285.80598123
  100.64788454  219.42334429  367.79168367  601.60900483  295.63588966
  357.02278413  563.79946815  509.44787486  677.82155019  397.62692805
  701.56048449  333.28384983 1953.4273662  1175.74569848  320.31381507
 1175.74569848  321.41438268  556.92574346  130.32155242  842.11610807
  281.51195124  871.78977595  321.41438268  444.16580554  563.79946815
  563.79946815  563.79946815  228.79494021  713.42995164  333.28384983
  362.0185266  1175.74569848   42.97858584  677.82155019  183.81494284
  563.79946815  130.32155242  438.23107196  563.79946815 1175.74569848
  367.95326017  333.28384983  731.23415237  473.83947341  236.06739894
 1175.74569848  260.02748821  272.75515821  473.83947341  767.78154492
  461.80842976  853.98557522  260.02748821  642.21314874  397.62692805
   94.71315097  438.23107196  285.80598123  642.21314874  243.16227859
  321.41438268  255.03174574  677.82155019  397.62692805  527.25207559
  285.80598123  397.62692805  295.63588966  303.61018196  362.0185266
  409.4963952   563.79946815  351.13514417  362.0185266   830.24664092
  677.82155019  473.83947341  806.50770662  473.83947341 1009.57315838
```

```
  601.60900483  231.29281144  285.80598123  480.7131981   485.70894056
  438.23107196  279.87124766  362.0185266   285.80598123  767.78154492
  272.83594647  767.78154492  461.80842976 1009.57315838  321.41438268
  183.81494284  260.02748821  865.85504237  397.62692805  397.62692805
  362.0185266   461.80842976  660.95634058  219.42334429 1175.74569848
  444.16580554  438.23107196 1175.74569848  145.70867016  574.72994419
  556.92574346  154.06048672  362.0185266   642.21314874  142.19101957
  145.70867016  859.9203088  1175.74569848  397.62692805  731.23415237
  397.62692805  642.21314874  601.60900483  349.98748294  563.79946815
  601.60900483  485.70894056  497.57840771  236.06739894  285.80598123
 1238.21079448  349.98748294  438.23107196 1009.57315838  183.81494284
  243.16227859  626.26456414  486.64793167  374.82698486  255.03174574
  409.4963952   362.0185266   642.21314874  486.64793167  333.28384983
  473.83947341  397.62692805  859.9203088    56.60687828 1953.4273662
  642.21314874  142.19101957  767.78154492  397.62692805  626.26456414
   50.67214471  527.25207559  404.50065273  145.70867016  225.27728961
  362.0185266  1175.74569848  473.83947341  767.78154492  421.36586235
  404.50065273  480.7131981   183.81494284  231.29281144  183.81494284
  438.23107196  563.79946815  509.44787486  677.82155019  467.74316333
   56.60687828  285.80598123 1009.57315838  509.44787486  859.9203088
  473.83947341  410.43538631 1009.57315838  601.60900483  461.80842976
  461.80842976  438.23107196  374.82698486  219.42334429  225.27728961
  219.42334429  677.82155019 1009.57315838  830.24664092  713.42995164
  225.27728961  110.01948046  461.80842976  830.24664092  473.83947341
  701.56048449  461.80842976  601.60900483  642.21314874  125.4065982
  766.84255382  461.80842976  865.85504237  865.85504237  767.78154492
  367.79168367  253.19213219  260.02748821  556.92574346  255.03174574
  601.60900483  225.27728961  642.21314874  183.81494284  130.32155242
  243.16227859  601.60900483  397.62692805 1953.4273662   473.83947341
  767.78154492  231.29281144  642.21314874  485.70894056  219.42334429
  195.68440999  195.68440999  291.74071481  642.21314874  767.78154492
  865.85504237  308.44434792  473.83947341  438.23107196  563.79946815
  397.62692805  410.81291056  295.63588966  654.08261589  125.4065982
  563.79946815  528.1910667   563.79946815  404.50065273  219.42334429
  713.42995164  397.62692805  528.1910667    94.71315097  397.62692805
  485.70894056  767.78154492  601.60900483  451.03953022  421.36586235
  397.62692805  767.78154492  145.70867016  480.7131981   397.62692805
  503.51314129  183.81494284  461.80842976  231.29281144  461.80842976
  295.63588966  563.79946815  367.79168367  183.81494284  901.46344382
  563.79946815  231.29281144  199.04048408  225.07734444  473.83947341
  295.63588966  321.41438268  853.98557522  545.99526742   56.60687828
  321.41438268  767.78154492  397.62692805  445.10479665 1175.74569848
  367.79168367  349.98748294  397.62692805  410.81291056  767.78154492
  601.60900483  362.0185266   219.42334429  266.82042464  842.11610807
  622.20781279  183.81494284  321.41438268  601.60900483  397.62692805
  485.70894056  260.02748821   74.41107901  492.58266525  195.68440999
  433.2353295   473.83947341  195.68440999  438.23107196]
```

[106]:
```
from sklearn.metrics import mean_absolute_error,r2_score
a=r2_score(y_test,yped)
a
```

[106]: 0.5544441601000103

4 Desision tree

[107]:
```
from sklearn.tree import DecisionTreeRegressor
f=DecisionTreeRegressor()
f.fit(x,y)
```

[107]: DecisionTreeRegressor()

[108]:
```
yped=la.predict(x_test)
print(yped)
```

```
[ 362.0185266   397.62692805  397.62692805  362.0185266   601.60900483
  285.80598123  397.62692805  767.78154492  451.03953022  509.44787486
  677.82155019  865.85504237  260.02748821  145.70867016  295.63588966
  397.62692805  321.41438268  677.82155019  145.70867016  677.82155019
  438.23107196  183.81494284  684.69527488  183.81494284  295.63588966
  397.62692805  219.42334429  321.41438268  145.70867016  563.79946815
  379.82272732  654.08261589  303.61018196  677.82155019  677.82155019
  842.11610807  237.22754502 1787.2548261   397.62692805  321.41438268
  626.26456414  871.78977595 1279.7539295   397.62692805  260.02748821
  183.81494284  285.80598123  397.62692805  285.80598123  285.80598123
  100.64788454  219.42334429  367.79168367  601.60900483  295.63588966
  357.02278413  563.79946815  509.44787486  677.82155019  397.62692805
  701.56048449  333.28384983 1953.4273662  1175.74569848  320.31381507
 1175.74569848  321.41438268  556.92574346  130.32155242  842.11610807
  281.51195124  871.78977595  321.41438268  444.16580554  563.79946815
  563.79946815  563.79946815  228.79494021  713.42995164  333.28384983
  362.0185266  1175.74569848   42.97858584  677.82155019  183.81494284
  563.79946815  130.32155242  438.23107196  563.79946815 1175.74569848
  367.95326017  333.28384983  731.23415237  473.83947341  236.06739894
 1175.74569848  260.02748821  272.75515821  473.83947341  767.78154492
  461.80842976  853.98557522  260.02748821  642.21314874  397.62692805
   94.71315097  438.23107196  285.80598123  642.21314874  243.16227859
  321.41438268  255.03174574  677.82155019  397.62692805  527.25207559
  285.80598123  397.62692805  295.63588966  303.61018196  362.0185266
  409.4963952   563.79946815  351.13514417  362.0185266   830.24664092
  677.82155019  473.83947341  806.50770662  473.83947341 1009.57315838
  601.60900483  231.29281144  285.80598123  480.7131981   485.70894056
  438.23107196  279.87124766  362.0185266   285.80598123  767.78154492
  272.83594647  767.78154492  461.80842976 1009.57315838  321.41438268
  183.81494284  260.02748821  865.85504237  397.62692805  397.62692805
```

```
  362.0185266   461.80842976  660.95634058  219.42334429 1175.74569848
  444.16580554  438.23107196 1175.74569848  145.70867016  574.72994419
  556.92574346  154.06048672  362.0185266   642.21314874  142.19101957
  145.70867016  859.9203088  1175.74569848  397.62692805  731.23415237
  397.62692805  642.21314874  601.60900483  349.98748294  563.79946815
  601.60900483  485.70894056  497.57840771  236.06739894  285.80598123
 1238.21079448  349.98748294  438.23107196 1009.57315838  183.81494284
  243.16227859  626.26456414  486.64793167  374.82698486  255.03174574
  409.4963952   362.0185266   642.21314874  486.64793167  333.28384983
  473.83947341  397.62692805  859.9203088    56.60687828 1953.4273662
  642.21314874  142.19101957  767.78154492  397.62692805  626.26456414
   50.67214471  527.25207559  404.50065273  145.70867016  225.27728961
  362.0185266  1175.74569848  473.83947341  767.78154492  421.36586235
  404.50065273  480.7131981   183.81494284  231.29281144  183.81494284
  438.23107196  563.79946815  509.44787486  677.82155019  467.74316333
   56.60687828  285.80598123 1009.57315838  509.44787486  859.9203088
  473.83947341  410.43538631 1009.57315838  601.60900483  461.80842976
  461.80842976  438.23107196  374.82698486  219.42334429  225.27728961
  219.42334429  677.82155019 1009.57315838  830.24664092  713.42995164
  225.27728961  110.01948046  461.80842976  830.24664092  473.83947341
  701.56048449  461.80842976  601.60900483  642.21314874  125.4065982
  766.84255382  461.80842976  865.85504237  865.85504237  767.78154492
  367.79168367  253.19213219  260.02748821  556.92574346  255.03174574
  601.60900483  225.27728961  642.21314874  183.81494284  130.32155242
  243.16227859  601.60900483  397.62692805 1953.4273662   473.83947341
  767.78154492  231.29281144  642.21314874  485.70894056  219.42334429
  195.68440999  195.68440999  291.74071481  642.21314874  767.78154492
  865.85504237  308.44434792  473.83947341  438.23107196  563.79946815
  397.62692805  410.81291056  295.63588966  654.08261589  125.4065982
  563.79946815  528.1910667   563.79946815  404.50065273  219.42334429
  713.42995164  397.62692805  528.1910667    94.71315097  397.62692805
  485.70894056  767.78154492  601.60900483  451.03953022  421.36586235
  397.62692805  767.78154492  145.70867016  480.7131981   397.62692805
  503.51314129  183.81494284  461.80842976  231.29281144  461.80842976
  295.63588966  563.79946815  367.79168367  183.81494284  901.46344382
  563.79946815  231.29281144  199.04048408  225.07734444  473.83947341
  295.63588966  321.41438268  853.98557522  545.99526742   56.60687828
  321.41438268  767.78154492  397.62692805  445.10479665 1175.74569848
  367.79168367  349.98748294  397.62692805  410.81291056  767.78154492
  601.60900483  362.0185266   219.42334429  266.82042464  842.11610807
  622.20781279  183.81494284  321.41438268  601.60900483  397.62692805
  485.70894056  260.02748821   74.41107901  492.58266525  195.68440999
  433.2353295   473.83947341  195.68440999  438.23107196]
```

[109]:

```
from sklearn.metrics import mean_absolute_error,r2_score
a=r2_score(y_test,yped)
a
```

[109]: 0.5544441601000103

```
[ ]:
```