

```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
from sklearn.linear_model import LinearRegression
from sklearn.model_selection import train_test_split
from sklearn.metrics import f1_score, precision_score, recall_score, mean_squared_error, mean_abs
from sklearn.preprocessing import StandardScaler
```

```
path = '/content/IceCreamData.txt' ## i have uploaded the dataset manually
data = pd.read_csv(path)
```

```
data.head()
```

```
↗
```

	Temperature	Revenue
0	24.566884	534.799028
1	26.005191	625.190122
2	27.790554	660.632289
3	20.595335	487.706960
4	11.503498	316.240194

```
data.info()
```

```
↗ <class 'pandas.core.frame.DataFrame'>
RangeIndex: 500 entries, 0 to 499
Data columns (total 2 columns):
#   Column      Non-Null Count  Dtype
---  -
0   Temperature  500 non-null    float64
1   Revenue      500 non-null    float64
dtypes: float64(2)
memory usage: 7.9 KB
```

```
data.describe()
```

```
↗
```

	Temperature	Revenue
count	500.000000	500.000000
mean	22.232225	521.570777
std	8.096388	175.404751

```
data.shape
```

```
(500, 2)
```

```
count    500.000000  
mean      22.232225    521.570777  
std        8.096388    175.404751
```

```
X = data.iloc[:, :-1].values
```

```
y = data.iloc[:, 1].values
```

```
X    ## our feature variables
```

```
(500, 2)
```

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```
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```

```
# ## normalizing our dataset
```

```
# sc = StandardScaler()
```

```
# X=sc.fit_transform(X=X)
```

```
# y = sc.fit_transform(X=y)
```

```

-----
305.2266088 , 504.1102517 , 625.7172007 , 640.4526003 ,

```

```
## now splitting the data into train test split
```

```
X_train,X_test,y_train,y_test = train_test_split(X,y,test_size=0.3,random_state =11)
```

```

513.8043817 , 440.6778286 , 410.860905 , 256.772593 ,

```

```
## now fiiting the data
```

```
model = LinearRegression() ##initializing regressor
```

```
model.fit(X_train,y_train)
```

```
☞ LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

```

654.8949545 , 521.7754452 , 603.3246306 , 588.5275513 ,

```

```
## testing the model
```

```
y_pred = model.predict(X_test)
```

```
y_pred
```

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        410.48109023, 570.88247744, 497.96998247, 307.99283248,
        548.76418476, 510.47075167, 311.85035356, 450.34492996,
        609.66216588, 802.55598202, 576.75292109, 465.55884592,
        804.98669456, 268.87770098, 519.78525308, 645.31001601,
        576.24030854, 232.60892819, 615.19541537, 681.93650199,
        673.46486398, 601.04756352, 443.78788907, 606.54417068,
        737.48971983, 610.1654777 , 796.17022525, 564.69556515,
        283.58103451, 396.1083612 , 651.73256308, 539.29941494,
        646.32190757, 695.30431925, 630.79283701, 797.48574131,
        605.14098982, 467.92230179, 447.52129626, 291.53325025,
        430.79693978, 899.6701009 , 380.70738545, 677.67229598,
        149.17896268, 293.49786485, 330.71845779, 444.45622026,
        590.80599346, 582.19400307, 741.40292715, 292.9518559 ,
        435.86289976, 728.78533911, 673.31530952, 621.16897629,
        626.40522678, 169.69172444, 352.82597956, 498.28999365,
        657.0791431 , 625.3515114 , 458.05061434, 356.89628303,
        604.11506513, 706.10595154, 454.74499808, 246.49505182,
        744.68562132, 468.49344118, 423.50134304, 371.12302181,
        892.81819087, 365.0522766 , 757.61391873, 441.71788537,
        757.94047776, 708.91763522, 308.65013005, 534.70463489,
        309.73245559, 724.00312116, 873.27936438, 159.3133059 ,
        561.71971718, 371.47947887, 462.91808028, 546.94156299,
        569.94002752, 570.73222339, 511.33048044, 135.68030419,
        530.65477858, 326.03981241, 249.79346345, 897.6269318 ,
        330.10059467, 738.29346876, 321.52147137, 369.05615531,
        202.14280549, 399.8887411 , 255.26737059, 555.78558428,
        591.70347635, 586.15877461, 669.54261242, 237.66508816,
        731.20237967, 266.28831189, 630.58885093, 589.14604866,
        232.59927524, 522.54290061, 676.00769684, 443.25963789,
        583.47627415, 415.83128593, 304.81975325, 592.808324 ,
        861.86434616, 714.57742806])

```

```
X_test.shape
```

```
↳ (150, 1)
```

```
model.score(X_test,y_pred) ## our r2 score is 1 i.e 100% accuracy
```

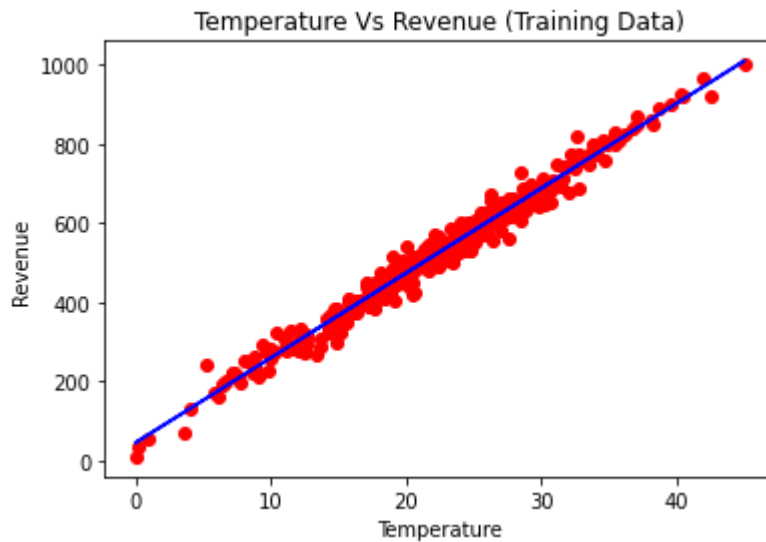
```
↳ 1.0
```

```
model.coef_
```

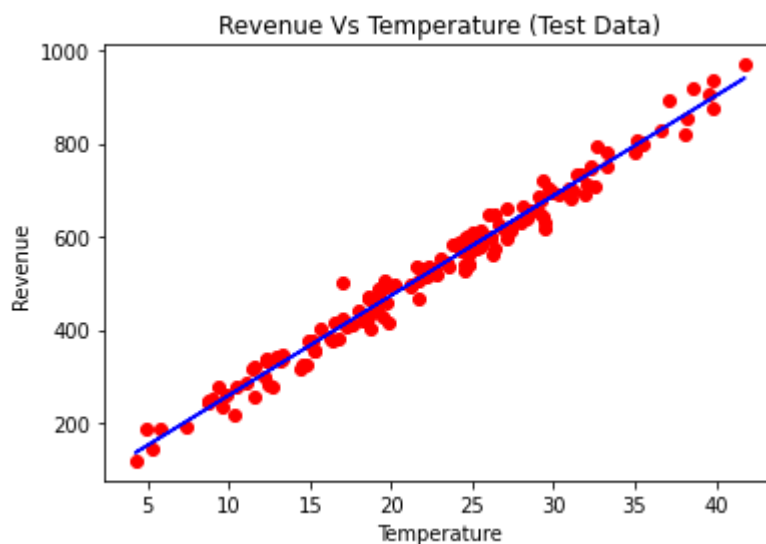
```
↳ array([21.44657293])
```

```
## visualising our regression line
```

```
plt.scatter(X_train,y_train,color='red')  
plt.plot(X_train,model.predict(X_train),color='blue')  
  
plt.title("Temperature Vs Revenue (Training Data)")  
plt.xlabel("Temperature")  
plt.ylabel("Revenue")  
plt.show()
```



```
plt.scatter(X_test,y_test,color='red')  
plt.plot(X_test,model.predict(X_test),color='blue')  
  
plt.title("Revenue Vs Temperature (Test Data)")  
plt.xlabel("Temperature")  
plt.ylabel("Revenue")  
plt.show()
```



```
mean_absolute_error(y_test,y_pred)
```

```
↳ 20.419452912998633
```

```
mean_squared_error(y_test,y_pred)
```

```
↳ 633.186489432547
```

```
explained_variance_score(y_test,y_pred)
```

```
↳ 0.9809402655809298
```

```
#accuracy_score(y_train,y_pred)
```

```
### Conclusion
```

```
'''
```

```
Thus we successfully performed Simple linear regression and got an Approximate r2 score of 1.  
'''
```

```
↳ '\nThus we successfully performed Simple linear regression and got an Approximate  
r2 score of 1.0\n'
```