

Experiment Number: 2

1. Importing Libraries

```
#Importing Libraries|
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

2. Read the Data:

```
data=pd.read_csv('pressure.csv')
data
```

	sno	temperature	pressure
0	1	0	0.0002
1	2	20	0.0012
2	3	40	0.0060
3	4	60	0.0300
4	5	80	0.0900
5	6	100	0.2700
6	7	120	0.7500
7	8	140	1.8500
8	9	160	4.2000
9	10	180	8.8000
10	11	200	17.3000
11	12	220	32.1000
12	13	240	57.0000
13	14	260	96.0000
14	15	280	157.0000
15	16	300	247.0000
16	17	320	376.0000
17	18	340	558.0000
18	19	360	806.0000

3. Dividing data to predictors and target.

```
x=data.iloc[:,1:2].values
y=data.iloc[:, 2].values
```

4. Implementing Linear Regression Model on Data.

```
from sklearn.linear_model import LinearRegression
lmodel=LinearRegression()
lmodel.fit(X,y)
```

▼ LinearRegression
LinearRegression()

5. Predicting Values:

```
lpreds=lmodel.predict(X)
```

6. Finding Mean Square Error:

```
from sklearn.metrics import mean_squared_error
mean_squared_error(y, lpreds) ** 0.5
```

142.65615118280704

7. Implementing Polynomial regression which would better fit the data.

```
from sklearn.preprocessing import PolynomialFeatures
poly=PolynomialFeatures(degree=2)
X_poly=poly.fit_transform(X)
poly.fit(X_poly, y)
lin2 = LinearRegression()
lin2.fit(X_poly, y)
```

▼ LinearRegression
LinearRegression()

```
ppreds=lin2.predict(X_poly)
```

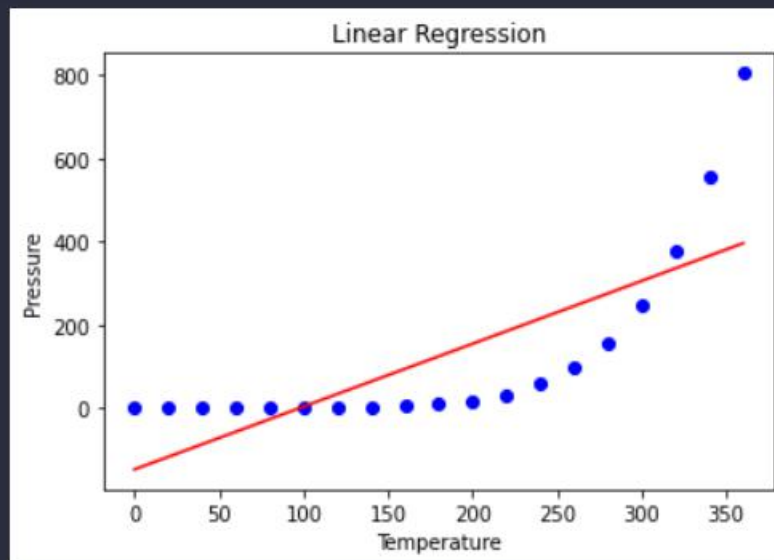
```
mean_squared_error(y, ppreds)**0.5
```

68.28993117658833

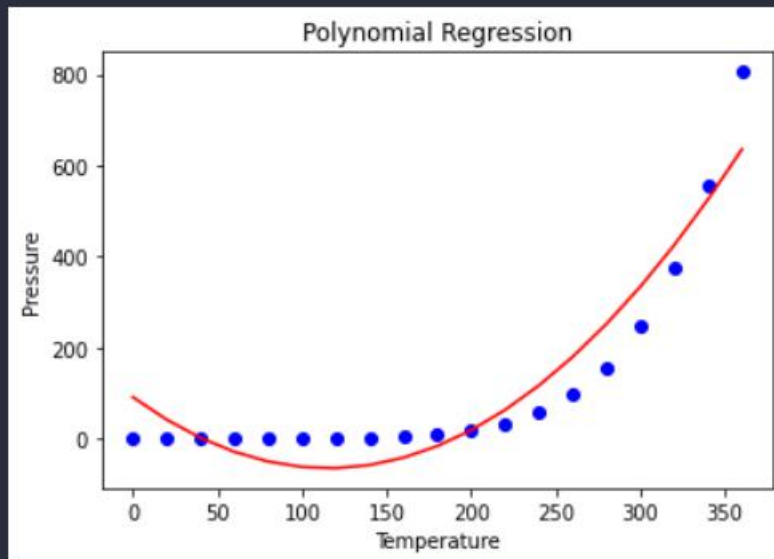
8.

9. Visualizing the Results:

```
plt.scatter(X, y, color = 'blue')
plt.plot(X, lmodel.predict(X), color = 'red')
plt.title('Linear Regression')
plt.xlabel('Temperature')
plt.ylabel('Pressure')
plt.show()
```



```
plt.scatter(X, y, color = 'blue')
plt.plot(X, lin2.predict(poly.fit_transform(X)),
color = 'red')
plt.title('Polynomial Regression')
plt.xlabel('Temperature')
plt.ylabel('Pressure')
plt.show()
```



10.

Conclusion: We Try to perform least square estimate to fit the curve using polynomial regression and successfully get the better results.