```python
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.linear_model import LinearRegression
from sklearn.model_selection import train_test_split
from sklearn.metrics import mean_absolute_error,mean_squared_error,r2_score
```

```python
data = pd.read_csv("/kaggle/input/temperatures-of-india/temperatures.csv")
```

```python
data.isna().sum()
```

```python
data.describe()
```

```python
data.head()
```

```python
data.tail()
```

```python
data.shape
```

```python
data.info()
```

```python
x = data[["YEAR"]]
y = data[["ANNUAL"]]
```

```python
x
```

```python
y
```

```python
x = data.iloc[:,0:1]
y = data.iloc[:,13:14]

plt.scatter(x,y)
plt.plot()
```

```python
x_train,x_test, y_train, y_test = train_test_split(x, y,test_size=0.40, random_state=0)
y_test = np.array(y_test)
print(x_train.shape)
print(x_test.shape)
print(y_train.shape)
print(y_test.shape)
```

```python
model = LinearRegression()
model.fit(x_train,y_train)
```

```python
y_pred = model.predict(x_test)
y_pred = np.array(y_pred)
print(y_pred.shape)
```

```python
plt.scatter(x_train, y_train, color='blue')
plt.plot(x_test, y_pred, color='red', linewidth=1)
plt.title("Year vs Annual Tempratue")
plt.xlabel("Year")
plt.ylabel("Annual Temperature")
plt.show()
```

```python
plt.scatter(x_test, y_test, color='orange')
plt.plot(x_test, y_pred, color='red', linewidth=1)
plt.title("Year vs Annual Tempratue")
plt.xlabel("Year")
plt.ylabel("Annual Temperature")
plt.show()
```

```python
model.coef_
```

```python
model.intercept_
```

```python
df = data
sns.regplot(data=df,x=x_train,y=y_train,)
```

```python
sns.regplot(data=df,x=x_test,y=y_test,)
```

```python
print(f"MSE:  {mean_squared_error(y_test,y_pred)}")
print(f"MAE:  {mean_absolute_error(y_test,y_pred)}")
print(f"R-Sqaure :  {r2_score(y_test,y_pred)}")
```