Worksheet 3

Student Name: Dhanuj Tomar UID: 20BCS1201

Branch:- CSE Section/Group: 701 B

Subject Name:-Machine Learning Lab

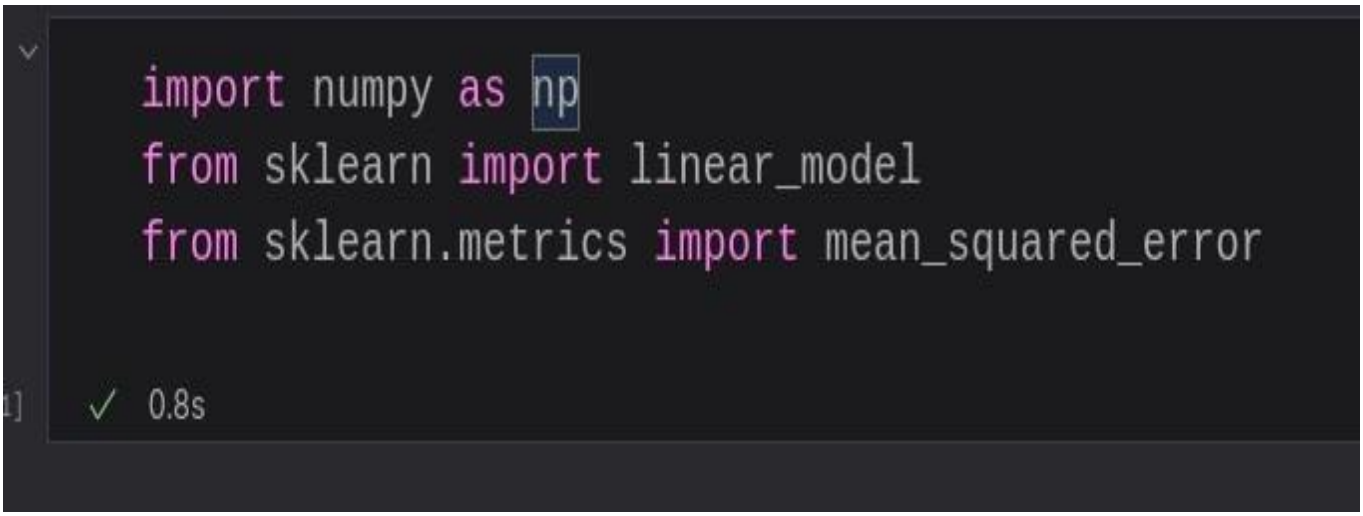
Aim/Overview of the practical:-

Implement Linear Regression on any data set.

Result/Output/Writing Summary:-

Linear regression analysis is used to predict the value of a variable based on the value of another variable.

1:-



Numpy::-

NumPy is a very popular python library for large multi-dimensional array and matrix processing, with the help of a large collection of high-level mathematical functions. It is very useful for fundamental scientific computations in Machine Learning.

2:-

```
db_x=np.array([[1], [2], [3]])
db_x_train=db_x
db_x_test=db_x
```

✓ 0.5s

```
db_y_train=np.array([4, 3, 5])
db_y_test=np.array([4, 3, 5])
```

✓ 0.8s

```
model=linear_model.LinearRegression()
model.fit(db_x_train,db_y_train)
db_y_predicted=model.predict(db_x_test)
```

✓ 0.8s

```
print("MSEis:",mean_squared_error(db_y_test,db_y_predicted))
print("Weight:",model.coef_)
print("intercept:",model.intercept_)
```

✓ 0.1s

```
MSEis: 0.5
Weight: [0.5]
intercept: 3.0
```

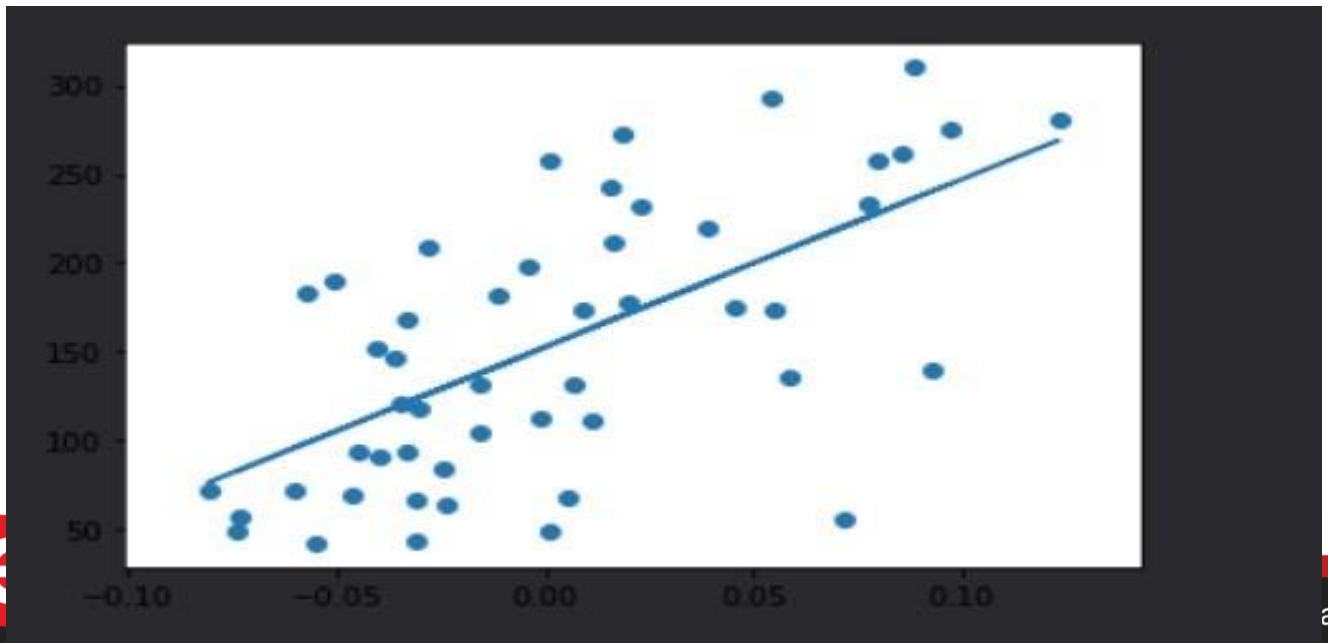
3:-

```python
import matplotlib.pyplot as plt
import numpy as np
from sklearn import datasets, linear_model
from sklearn.metrics import mean_squared_error
db=datasets.load_diabetes()
#print(db.target)
db_x=db.data[:,np.newaxis,2]
#db_x=db.data
#print(db_x)
db_x_train=db_x[:-50]
db_x_test=db_x[-50:]
db_y_train=db.target[:-50]
db_y_test=db.target[-50:]
model=linear_model.LinearRegression()
model.fit(db_x_train,db_y_train)
db_y_predicted=model.predict(db_x_test)
print("MSEis:",mean_squared_error(db_y_test,db_y_predicted))
print("Weight:",model.coef_)
print("Intercept:",model.intercept_)
plt.scatter(db_x_test,db_y_test)
plt.plot(db_x_test,db_y_predicted)
plt.show()
```

[6] ✓ 0.6s

```
MSEis: 3471.9231960569664
Weight: [945.4992184]
Intercept: 152.3348981915315
```

4:-



Evaluation Grid :

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Student Performance (Conduct of experiment) objectives/Outcomes.		12
2.	Viva Voce		10
3.	Submission of Work Sheet (Record)		8
	Total		30