Practical 1

Set A

Q.3. Create 'User' Data set having 5 columns namely: User ID, Gender, Age, EstimatedSalary and Purchased. Build a logistic regression model that can predict whether on the given parameter a person will buy a car or not.

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import random
from sklearn.model selection import train test split
from sklearn.linear model import LogisticRegression
from sklearn import metrics
import seaborn as sn
import matplotlib.pyplot as plt
ID=random.sample(range(0,100),100)
Gender = [];
gender = ["Female", "Male"];
for i in range(100):
   Gender.append(random.choice(gender));
print("-----Random Generated Data of Gender-----
");
Age=random.sample(range(0,100),100)
Esalary=random.sample(range(10000,70000),100)
Purchased=[];
purchase=[0,1];
for i in range(100):
 Purchased.append(random.choice(purchase));
data=list(zip(ID,Gender,Age,Esalary,Purchased));
df = pd.DataFrame(data,columns=("ID", "Gender", "Age", "EstimatedSalary", "Pur
chased"));
print(df);
X = df.iloc[:,[2,3]].values;
```

```
Y = df.iloc[:,4].values;
X_train,X_test,Y_train,Y_test = train_test_split(X,Y,train_size=0.5,random_state=100);
lobj = LogisticRegression();
lobj.fit(X_train,Y_train);
Prediction = lobj.predict(X_test);
print(Prediction);
print(X_test);
print(Prediction);
Accuracy = metrics.accuracy_score(Y_test,Prediction)*100;
print("Accuracy of Logisctics Regression is : ",Accuracy);
confusion_matrix = pd.crosstab(Y_test, Prediction, rownames=['Actual'], co lnames=['Predicted'])
sn.heatmap(confusion_matrix, annot=True)
plt.show()
```

Output:-

```
-----Random Generated Data of Gender-----
  ID Gender Age EstimatedSalary Purchased
 17 Male 14 24257
\cap
      Male 28
                                0
1 61
                     51721
2 42
      Male 39
                     27471
                                0
3 27 Male 50
                     18057
                                1
4 70 Male 25
                     46332
                                0
.. ..
95 21
       ... ...
                      . . .
                               . . .
                    29421
      Male 62
96 23 Female 70
                     47176
97 97 Female 42
                     16500
                                1
98 78 Male 94
                     68551
                                0
99 16 Male 8
                     10601
                                1
[100 rows x 5 columns]
0 0 0 0 0 0 0 0 0 0 0 0 0
[[ 92 13022]
Γ
   54 22988]
Γ
   76 493021
   46 13690]
   21 550451
   96 157361
Γ
   44 26720]
Γ
   84 611621
   35 515441
Γ
  10 344601
Γ
   52 42880]
   48 21143]
Γ
   86 17380]
[
   26 59460]
[
```

```
70 47176]
[
    69 15202]
    55 68143]
 [
    18 30359]
 [
    99 355631
[
[
    11 530791
[
    49 18501]
    27 56254]
[
 [
     9 60787]
[
    29 15826]
[
    24 40433]
    81 16098]
[
[
    59 38236]
 [
     2 69377]
 [
    61 44566]
 [
    23 42836]
 [
    80 18308]
    53 36954]
[
    50 18057]
[
    66 58810]
[
    32 17212]
 [
    89 50709]
 [
    4 43856]
[
    60 440281
[
    12 34096]
[
    79 21345]
[
    97 11900]
 [
    51 60721]
 [
    73 41691]
 [
    34 33993]
 [
 [
    88 21021]
    8 10601]
[
    83 50361]
[
    36 35298]
[
    57 25218]
[
    14 24257]]
0 0 0 0 0 0 0 0 0 0 0 0 0]
```

