Implementation-of-Logistic-Regression-Model-to-Predict-the-Placement-Status-of-Student

AIM:

To write a program to implement the the Logistic Regression Model to Predict the Placement Status of Student.

Equipments Required:

1. Hardware – PCs
2. Anaconda – Python 3.7 Installation / Moodle-Code Runner

Algorithm

1. Import the standard libraries.
2. Upload the dataset and check for any null or duplicated values using .isnull() and duplicated() function respectively.
3. Import LabelEncoder and encode the dataset.
4. Import LogisticRegression from sklearn and apply the model on the dataset.
5. Predict the values of array.
6. Calculate the accuracy, confusion and classification report by importing the required modules from sklearn.
7. Apply new unknown values

Program:

```
/*
Program to implement the the Logistic Regression Model to Predict the Placement
Status of Student.
Developed by: ANISH M.J
RegisterNumber:  212221230005
```

```
*/

import pandas as pd
data = pd.read_csv("Placement_Data.csv")
data.head()
data1 = data.copy()
data1 = data1.drop(["sl_no","salary"],axis = 1)
data1.head()
data1.isnull().sum()
data1.duplicated().sum()
from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
data1["gender"] = le.fit_transform(data1["gender"])
data1["ssc_b"] = le.fit_transform(data1["ssc_b"])
data1["hsc_b"] = le.fit_transform(data1["hsc_b"])
data1["hsc_s"] = le.fit_transform(data1["hsc_s"])
data1["degree_t"] = le.fit_transform(data1["degree_t"])
data1["workex"] = le.fit_transform(data1["workex"])
data1["specialisation"] = le.fit_transform(data1["specialisation"])
data1["status"] = le.fit_transform(data1["status"])
data1
x = data1.iloc[:,:-1]
x
y = data1["status"]
y
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test = train_test_split(x,y,test_size =
0.2,random_state = 0)
from sklearn.linear_model import LogisticRegression
lr = LogisticRegression(solver = "liblinear")
lr.fit(x_train,y_train)
y_pred = lr.predict(x_test)
y_pred
from sklearn.metrics import accuracy_score
accuracy = accuracy_score(y_test,y_pred)
accuracy
from sklearn.metrics import confusion_matrix
confusion = confusion_matrix(y_test,y_pred)
confusion
from sklearn.metrics import classification_report
classification_report1 = classification_report(y_test,y_pred)
classification_report1
lr.predict([[1,80,1,90,1,1,90,1,0,85,1,85]])
```

Output:

HEAD:

	sl_no	gender	ssc_p	ssc_b	hsc_p	hsc_b	hsc_s	degree_p	degree_t	workex	etest_p	specialisation	mba_p	status	salary
0	1	M	67.00	Others	91.00	Others	Commerce	58.00	Sci&Tech	No	55.0	Mkt&HR	58.80	Placed	270000.0
1	2	M	79.33	Central	78.33	Others	Science	77.48	Sci&Tech	Yes	86.5	Mkt&Fin	66.28	Placed	200000.0
2	3	M	65.00	Central	68.00	Central	Arts	64.00	Comm&Mgmt	No	75.0	Mkt&Fin	57.80	Placed	250000.0
3	4	M	56.00	Central	52.00	Central	Science	52.00	Sci&Tech	No	66.0	Mkt&HR	59.43	Not Placed	NaN
4	5	M	85.80	Central	73.60	Central	Commerce	73.30	Comm&Mgmt	No	96.8	Mkt&Fin	55.50	Placed	425000.0

PREDICTED VALUES:

```
array([0, 1, 1, 0, 1, 0, 1, 1, 1, 1, 1, 1, 1, 1, 0, 0, 1, 0, 0, 1, 0, 1,
       1, 1, 0, 0, 1, 1, 1, 1, 1, 1, 1, 0, 0, 1, 1, 1, 1, 1, 0, 0, 1])
```

ACCURACY:

```
0.813953488372093
```

CONFUSION MATRIX:

```
array([[11,  5],
       [ 3, 24]])
```

CLASSIFICATION REPORT:

CLASSIFICATION REPORT:

```
'              precision    recall  f1-score   support\n\n           0       0.79      0.69      0.73        16\n
1       0.83      0.89      0.86        27\n\n    accuracy                           0.81        43\n   macro avg       0.81
0.79      0.80      43\nweighted avg       0.81      0.81      0.81        43\n'
```

Result:

Thus the program to implement the the Logistic Regression Model to Predict the Placement Status of Student is written and verified using python programming.