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GRADE A+
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EXPERIMENT-10

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Branch : BE CSE   **Section/Group:** 21AML-9/A

Semester: 3   **Date of Performance:** 15 -11-22

Subject Name: Python for Machine Learning
Subject Code: 21CSH-238

1. **Aim/Overview of the practical:**

   Create a logistic regression model for Dataset.

2. **Code and Output:**

```
[2]: import numpy as np
     import matplotlib.pyplot as plt
     import pandas as pd
```

```
[4]: df=pd.read_csv("E:\CU-SECOND_YEAR\PML\Logistic_regression_dataset.csv")
     df.head()
```

t[4]:

	User ID	Gender	Age	Estimated Salary	Purchased
0	15624510	Male	19	19000	0
1	15810944	Male	35	20000	0
2	15668575	Female	26	43000	0
3	15603246	Female	27	57000	0
4	15804002	Male	19	76000	0

```
[5]: X=df.iloc[:,[2,3]].values
     Y=df.iloc[:,4].values
```

```
[6]: from sklearn.model_selection import train_test_split
     X_train,X_test,Y_train,Y_test=train_test_split(X,Y,test_size=0.25,random_state=0)
```

```
[8]: from sklearn.preprocessing import StandardScaler
     sc_X= StandardScaler()
     X_train=sc_X.fit_transform(X_train)
     X_test=sc_X.transform(X_test)
```

```
[9]: from sklearn.linear_model import LogisticRegression
     classifier=LogisticRegression(random_state=0)
     classifier.fit(X_train,Y_train)
```

```
[9]: LogisticRegression(random_state=0)
```

```
[12]: y_pred=classifier.predict(X_test)
      print(y_pred)
```

```
[1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1]
```

```
[16]: from sklearn.metrics import confusion_matrix
      cm=confusion_matrix(Y_test,y_pred)
      print(cm)
```

```
[[ 0 68]
 [ 0 32]]
```

```python
from matplotlib.colors import ListedColormap
X_set, y_set = X_test, y_test
X1, X2 = np.meshgrid(np.arange(start = X_set[:, 0].min() - 1, stop = X_set[:,
0].max() + 1, step = 0.01),
                     np.arange(start = X_set[:, 1].min() - 1, stop = X_set[:,
1].max() + 1, step = 0.01))
plt.contourf(X1, X2, classifier.predict(np.array([X1.ravel(),
X2.ravel()]).T).reshape(X1.shape),
             alpha = 0.75, cmap = ListedColormap(('red', 'green')))
plt.xlim(X1.min(), X1.max())
plt.ylim(X2.min(), X2.max())
for i, j in enumerate(np.unique(y_set)):
    plt.scatter(X_set[y_set == j, 0], X_set[y_set == j, 1],
                c = ListedColormap(('red', 'green'))(i), label = j)
plt.title('Logistic Regression (Test set)')
plt.xlabel('Age')
plt.ylabel('Estimated Salary')
plt.legend()
plt.show()
```
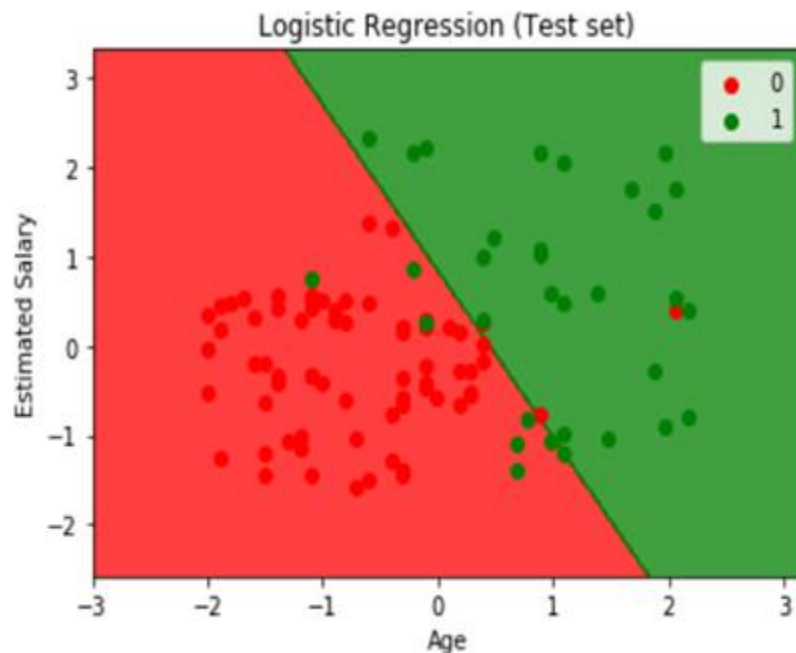
Learning outcomes (What I have learnt):

- I have learnt about the python programming language.
- I have learnt about logistic regression model.
- I have learnt about different libraries and packages.

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	PERFORMANCE		12
2.	WORKSHEET		08
3.	VIVA		10