C:\VS Code\Spyder\Car_Sales_Logistic_Regression _code.py

```python
1   #-------------- Logistic Regression Model ------------------- #
2
3   # importng libraries
4
5   import numpy as np
6   import matplotlib.pyplot as plt
7   import pandas as pd
8
9   # loading dataset
10
11  df= pd.read_csv(r"C:\Users\Jan Saida\OneDrive\Documents\Desktop\Excel sheets\logit classification.csv")
12
13  # independent variable
14
15  x=df.iloc[:, [2,3]].values
16
17  # dependent variables
18
19  y=df.iloc[:, -1].values
20
21  # training,testing and splitting the data
22
23  from sklearn.model_selection import train_test_split
24  x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.20,random_state=0)
25
26  # feature scaling
27
28  from sklearn.preprocessing import StandardScaler
29  sc=StandardScaler()
30  x_train=sc.fit_transform(x_train)
31  x_test=sc.transform(x_test)
32
33  # building logistic regression model
34
```

```python
35  from sklearn.linear_model import LogisticRegression
36  classifier=LogisticRegression(penalty='l1',solver='liblinear',C=100.0)
37  classifier.fit(x_train,y_train)
38
39  # making predictions
40
41  y_pred=classifier.predict(x_test)
42
43  # confusion matrix
44
45  from sklearn.metrics import confusion_matrix
46  cm=confusion_matrix(y_test,y_pred)
47  print(cm)
48
49  # accuracy score
50
51  from sklearn.metrics import accuracy_score
52  ac=accuracy_score(y_test,y_pred)
53  print(ac)
54
55  # classification report
56
57  from sklearn.metrics import classification_report
58  cr=classification_report(y_test,y_pred)
59  print(cr)
60
61  # bias : training accuracy
62
63  bias = classifier.score(x_train,y_train)
64  print(bias)
65
66  # variance : testing accuracy
67
68  variance=classifier.score(x_test,y_test)
69  print(variance)
70
71  # future predictions
```

```python
d1=pd.read_csv(r"C:\Users\Jan Saida\OneDrive\Documents\Desktop\Excel sheets\logit classification.csv")
d2=d1.copy()

# extracting the relevant columns for predictions

d1=d1.iloc[:, [2,3]].values

# feature scaling

from sklearn.preprocessing import StandardScaler
sc=StandardScaler()
m=sc.fit_transform(d1)

# initializing an empty DataFrame for storing predictions

y_pred1=pd.DataFrame()

# column for the future preedictions

d2['y_pred1']=classifier.predict(m)
d2

# saving the data

d2.to_csv('Logistic_Regression_Prediction_Car_Sales.csv')

import os
os.getcwd()

# pickle file

import pickle

with open('logistic_model.pkl','wb') as file:
    pickle.dump(classifier,file)
print('Model Saved!')
```

```python
with open('logistic_scaler.pkl','wb') as file:
    pickle.dump(sc,file)
print('Scaler Saved!')


# getting file directory path location

import os
os.getcwd()
```

Streamlit\Logistic_regression_car_sale.py

```python
1   import streamlit as st
2   import pickle
3   import numpy as np
4
5   with open('C:\\Users\\Jan Saida\\logistic_model.pkl', 'rb') as file:
6       model=pickle.load(file)
7
8   with open('C:\\Users\\Jan Saida\\logistic_scaler.pkl','rb') as file:
9       scaler=pickle.load(file)
10
11  st.title('Car Purchase Prediction Using Logistic Regression Model')
12  st.write('Predict Whether a Customer will purchase a car or not:')
13
14  age=st.number_input('Enter Age of the customer:',min_value=20,max_value=100,step=1)
15  estimated_salary=st.number_input('Enter Estimated Salary of the Customer:',min_value=0,step=1000)
16
17  if st.button('Predict'):
18      input_data=np.array([[age,estimated_salary]])
19      input_data_scaled=scaler.transform(input_data)
20
21      predict=model.predict(input_data_scaled)
22
23      if predict[0] == 1:
24          st.success(f"The customer is likely to purchase the car")
25      else:
26          st.error(f"The customer is unlikely to purchase the car")
```

Car Purchase Prediction Using Logistic Regression Model

Predict Whether a Customer will purchase a car or not:

Enter Age of the customer:

35	−	+

Enter Estimated Salary of the Customer:

65000	−	+

Predict

The customer is unlikely to purchase the car

Car Purchase Prediction Using Logistic Regression Model

Predict Whether a Customer will purchase a car or not:

Enter Age of the customer:

| 47 | − | + |

Enter Estimated Salary of the Customer:

| 144000 | − | + |

Predict

The customer is likely to purchase the car