EXPERINMENT-27

27.Question: Logistic Regression for Customer Churn Prediction

You are working for a telecommunications company, and you want to predict whether a customer will churn (leave the company) based on their usage patterns and demographic data. You have collected a dataset of past customers with their churn status (0 for not churned, 1 for churned) and various features.

Write a Python program that allows the user to input the features (e.g., usage minutes, contract duration) of a new customer. The program should use logistic regression from scikit-learn to predict whether the new customer will churn or not based on the input features.

Code:

```
import pandas as pd
from sklearn.linear_model import LogisticRegression
from sklearn.preprocessing import StandardScaler
from sklearn.model_selection import train_test_split
data = pd.read_csv("customers.csv")
X = data[["usage_minutes", "contract_months", "support_calls"]]
y = data["churn"]
scaler = StandardScaler()
X_scaled = scaler.fit_transform(X)
X_train, X_test, y_train, y_test = train_test_split(
    X_scaled, y, test_size=0.2, random_state=0
)
model = LogisticRegression()
model.fit(X_train, y_train)
usage = float(input("Enter usage minutes: "))
contract = float(input("Enter contract duration (months): "))
calls = float(input("Enter number of support calls: "))
new_customer = pd.DataFrame([{
    "usage_minutes": usage,
    "contract_months": contract,
    "support_calls": calls
}])
new_scaled = scaler.transform(new_customer)
prediction = model.predict(new_scaled)[0]
probabilities = model.predict_proba(new_scaled)[0]
print("\nPredicted churn (1 = churn, 0 = not churn):", prediction)
print("Prediction probabilities (stay, churn):", probabilities)
```

Output:

```
[Running] python -u "c:\Users\karan\OneDrive\Desktop\New folder (2)\27.py"
Predicted churn (1 = churn, 0 = not churn): 1
Prediction probabilities (stay, churn): [0.19091027 0.80908973]

[Done] exited with code=0 in 1.811 seconds
```