EXPERINMENT-28

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.cluster import KMeans
from sklearn.preprocessing import StandardScaler
data = pd.read_csv("customers_features.csv")
X = data[["annual_spend", "orders_per_month", "visit_frequency"]]
scaler = StandardScaler()
X_scaled = scaler.fit_transform(X)
k = int(input("Enter number of clusters (k): "))
kmeans = KMeans(n_clusters=k, random_state=0)
kmeans.fit(X_scaled)
centers_original = scaler.inverse_transform(kmeans.cluster_centers_)
centers_df = pd.DataFrame(
    centers_original,
    columns=["annual_spend", "orders_per_month", "visit_frequency"]
)
print("\nCluster Centers (Original Scale):")
print(centers_df)
spend = float(input("\nEnter annual spend: "))
orders = float(input("Enter orders per month: "))
visits = float(input("Enter visit frequency: "))
new_customer = pd.DataFrame([{
    "annual_spend": spend,
    "orders_per_month": orders,
    "visit_frequency": visits
}])
new_scaled = scaler.transform(new_customer)
assigned_cluster = kmeans.predict(new_scaled)[0]
print("\nAssigned Cluster for New Customer:", assigned_cluster)
```

Output:

```
[Running] python -u "c:\Users\karan\OneDrive\Desktop\New folder (2)\28.py"
Cluster Centers (original scale):
   annual_spend  orders_per_month  visit_frequency
0  50469.638298          6.914894        30.925532
1  31781.180723          9.626506        12.301205
2  76662.027397          4.917808        12.164384

Assigned cluster for new customer: 0

[Done] exited with code=0 in 3.805 seconds
```