Question24:

Question: K-Nearest Neighbors (KNN) Classifier

You are working on a classification problem to predict whether a patient has a certain medical

condition or not based on their symptoms. You have collected a dataset of patients with labeled

data (0 for no condition, 1 for the condition) and various symptom features.

Write a Python program that allows the user to input the features of a new patient and the value of k

(number of neighbors). The program should use the KNN classifier from the scikit-learn library to

predict whether the patient has the medical condition or not based on the input features.

Answer:

import pandas as pd

from sklearn.model\_selection import train\_test\_split

from sklearn.neighbors import KNeighborsClassifier

from sklearn.preprocessing import StandardScaler

df = pd.read\_csv(r"C:\Users\jampa\Downloads\medical\_condition\_data.csv")

X = df.drop('condition', axis=1)

y = df['condition']

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=42)

print("Enter symptom values for a new patient:")

input\_features = []

for col in X.columns:

    val = float(input(f"{col}: "))

    input\_features.append(val)

k = int(input("Enter the value of k (number of neighbors): "))

input\_df = pd.DataFrame([input\_features], columns=X.columns)

input\_scaled = scaler.transform(input\_df)

knn = KNeighborsClassifier(n\_neighbors=k)

knn.fit(X\_train, y\_train)

prediction = knn.predict(input\_scaled)

print("\nPrediction:")

if prediction[0] == 1:

    print("The patient is likely to have the condition.")

else:

    print("The patient is unlikely to have the condition.")

Output:

