Question26:

26: Linear Regression for Housing Price Prediction

You are a real estate analyst trying to predict housing prices based on various features of the

houses, such as area, number of bedrooms, and location. You have collected a dataset of houses

with their respective prices.

Write a Python program that allows the user to input the features (area, number of bedrooms, etc.)

of a new house. The program should use linear regression from scikit-learn to predict the price of

the new house based on the input features.

Answer:

import pandas as pd

from sklearn.linear\_model import LinearRegression

from sklearn.preprocessing import OneHotEncoder

from sklearn.compose import ColumnTransformer

from sklearn.pipeline import Pipeline

# Load data from Excel

data = pd.read\_excel(r"C:\Users\jampa\Downloads\q26\_05.xlsx")

# Clean column names safely

data.columns = [str(col).strip() for col in data.columns]

# Check required columns

required\_columns = ['Area (sqft)', 'Bedrooms', 'Location', 'Price ($)']

for col in required\_columns:

if col not in data.columns:

raise ValueError(f"Missing required column: {col}")

# Features and Target

X = data[['Area (sqft)', 'Bedrooms', 'Location']]

y = data['Price ($)']

# Preprocessing for categorical data

preprocessor = ColumnTransformer(

transformers=[('cat', OneHotEncoder(), ['Location'])],

remainder='passthrough'

)

# Create pipeline

model = Pipeline([

('preprocessor', preprocessor),

('regressor', LinearRegression())

])

# Train model

model.fit(X, y)

# Get user input for prediction

area = float(input("Enter area (in sqft): "))

bedrooms = int(input("Enter number of bedrooms: "))

location = input("Enter location (e.g., Downtown, Suburb, Rural): ")

# Create input for prediction

new\_house = pd.DataFrame([[area, bedrooms, location]], columns=['Area (sqft)', 'Bedrooms', 'Location'])

# Predict

predicted\_price = model.predict(new\_house)[0]

print(f"\nPredicted House Price: ${predicted\_price:,.2f}")

Output:

Enter area (in sqft):  56

Enter number of bedrooms:  5

Enter location (e.g., Downtown, Suburb, Rural):  Downtown

Predicted House Price: $153,646.84