import pandas as pd

from sklearn.linear\_model import LinearRegression

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

from sklearn.preprocessing import OneHotEncoder

from sklearn.compose import ColumnTransformer

import seaborn as sns

import matplotlib.pyplot as plt

# Sample dataframe

df = pd.read\_csv("E:\\Multiple.csv")

# Features and target

x = df[['Bedrooms', 'Size', 'Age', 'ZipCode']]

y = df['SellingPrice']

# Handle categorical data (Zip Code)

ct = ColumnTransformer(transformers=[('encoder', OneHotEncoder(), ['ZipCode'])], remainder='passthrough')

xen = ct.fit\_transform(x)

# Split data

xtr, xte, ytr, yte = train\_test\_split(xen, y, test\_size=0.2, random\_state=42)

# Train the model

model = LinearRegression()

model.fit(xtr, ytr)

# Predicting the new value

ypr = model.predict(xte)

ypr

# Evaluate

coefficients = model.coef\_

intercept = model.intercept\_

print("Coefficients:", coefficients)

print("Intercept:", intercept)

#visualize

plt.figure(figsize=(8,6))

sns.scatterplot(x=yte, y=ypr, color='blue', s=100)

plt.plot([min(yte), max(yte)], [min(yte), max(yte)], 'r--')

plt.xlabel("Actual Selling Price")

plt.ylabel("Predicted Selling Price")

plt.title("Actual vs Predicted House Prices")

plt.grid(True)

plt.tight\_layout( )

plt.show( )

sns.heatmap(x.corr(), annot=True, cmap="coolwarm")

plt.title("Feature Correlation Heatmap")

plt.show()