Multiple Linear Regression

Code:

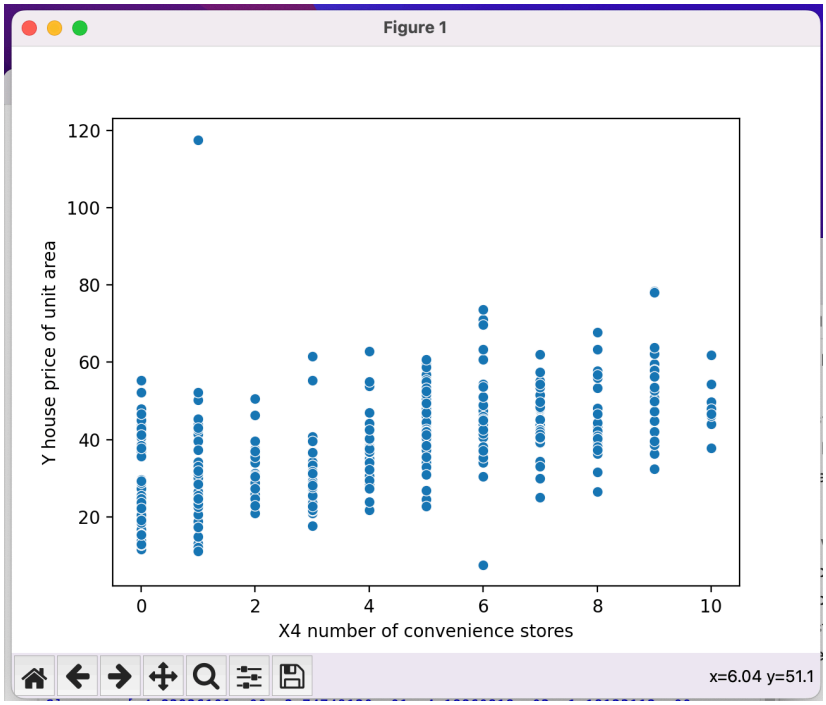
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import r2_score
from sklearn import preprocessing
df = pd.read_csv('./Real-estate.csv')
df.drop('No', inplace=True, axis=1)
sns.scatterplot(x='X4 number of convenience stores',
                                    y='Y house price of unit area', data=df)
X = df.drop('Y house price of unit area', axis=1)
y = df['Y house price of unit area']

X_train, X_test, y_train, y_test = train_test_split(
        X, y, test_size=0.3, random_state=101)

model = LinearRegression()
# fitting the model
model.fit(X_train, y_train)
y_pred = model.predict(X_test)
score = r2_score(y_test, y_pred)
print("Slope = ", model.coef_)
print("The accuracy of the model is {}%".format(round(score, 2) *100))
plt.show()
```

Output:

```
============= RESTART: /Users/prathmeshpawar/Downloads/DAV/MLR2.py ==========
Slope =  [ 4.83926101e+00 -2.74749120e-01 -4.18860818e-03  1.18123112e+00
  2.42384317e+02  2.33991349e+01]
The accuracy of the model is 65.0%
```



Simple Linear Regression

Code:

```
from sklearn import linear_model
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.metrics import r2_score

dataset = pd.read_csv("tips.csv")
X = np.array(dataset['total_bill']).reshape(-1, 1)
y = np.array(dataset['tip']).reshape(-1, 1)
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=1)
reg = linear_model.LinearRegression()
reg.fit(X_train, y_train)
y_pred = reg.predict(X_test)
plt.scatter(X_test, y_test, color='b')
plt.plot(X_test, y_pred, color='g')
score = r2_score(y_test, y_pred)
print("Slope = ", reg.coef_[0][0])
print("The accuracy of the model is {}%".format(round(score, 2) *100))
plt.xlabel('Total Bill')
plt.ylabel('Tip')
plt.title('Linear Regression')
temp = 25
x_trial = np.array(temp).reshape(-1, 1)
y_trial = reg.predict(x_trial)
print('Prediction tip for bill amount $',temp,'is ', y_trial[0][0])
plt.show()
```

```
======= RESTART: /Users/prathmeshpawar/Downloads/DAV/linearRegression.py =======
Slope =  0.0945088262198888
The accuracy of the model is 53.0%
Prediction tip for bill amount $ 25 is  3.4518281970681945
```