In [1]:

```
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score

df = pd.read_csv("Housing.csv")
df

from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
# df.iloc[:,1] = le.fit_transform(df.iloc[:,1])

col_encode = [ 'mainroad', 'guestroom', 'basement', 'hotwaterheating', 'airconditioning', 'prefarea', 'furnishi
for col in col_encode:
    df[col] = le.fit_transform(df[col])
df

x = df.iloc[:,1:]
y = df.iloc[:,0]

from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split( x, y, test_size = 0.25, random_state = 50 )

model = LinearRegression()
model.fit(x_train, y_train)
y_pred = model.predict(x_test)
print(y_pred)
print(f"Intercept = { model.intercept_}")
print(f"Coefficients = { model.coef_}")
print(f"Mean Squared Value = { mean_squared_error(y_test, y_pred) }")
print(f"R2 Score Value = { r2_score(y_test, y_pred) }")

y_pred1 = model.predict([[7420,4,2,3,1,0,0,0,1,2,1,0]]) #Predict value for new data
print(f"Predicted Value for new data: {y_pred1}")
```

```
/usr/local/lib/python3.8/dist-packages/pandas/core/computation/expressions.py:20: UserWarning: Pandas requires v
ersion '2.7.3' or newer of 'numexpr' (version '2.7.1' currently installed).
  from pandas.core.computation.check import NUMEXPR_INSTALLED
[ 3374275.74258236  8467087.3461399   3228933.93860032  3485721.20977423
  2943431.48702819  7352704.08341768  6382959.6960825   4415846.51368986
  3795591.61605118  4549847.95241565  2497511.78190204  4024758.13033927
  3784659.17677721  5140221.57612997  3770875.45992698  3601966.63677462
  4811464.66337201  4005111.45305496  6196312.44143823  6531441.73564234
  5162118.23802692  6254182.9259248   4376909.65683143  3470529.74087841
  4953684.81362557  2725223.02171866  4849250.19614383  3112385.98903567
  5806800.52587643  2911760.31312852  3917891.03837225  4442252.27624915
  3877288.94686601  5151873.03705384  6234484.53559916  2749698.07744639
  2887797.79604069  6314911.06192025  4960429.00826796  4456248.83657827
  3629277.37851151  2316139.22198747  3624467.16899342  7326982.42599862
  3343981.44713775  4801355.57603397  3624421.79802205  6286237.73982314
  4033370.3592691   5321343.69896924  5170386.42072003  4285843.76445365
  5998857.47318344  3931367.02009841  4924680.18213158  5355883.48643212
  6832752.70221836  6590920.55114097  5718546.16328431  4361994.9308408
  7229970.61465682  6504367.69767541  2640085.48871621  6955745.75063395
  3869946.12099824  5669731.56437991  2655732.75250285  3502330.57350741
  5040540.32100548  6370845.01857272  5672284.53776198  7489458.87120867
  5537837.63031999  3120189.6053027   2800316.23902981  3384006.5858602
  3611034.61244871  6368846.39726715  2875376.00063537  2552316.28329299
 10612076.64458534  2779176.4064314   8172474.56948844  5415671.07983272
  3060634.42946376  5205802.52693241  4555289.24227249  2793373.69282408
  3022095.5883279   7356246.91128492  3685971.79009972  5231009.53695535
  2621834.71997143  7362051.34508835  6668217.88135126  2880170.97626776
  7353515.05388264  3874292.05379112  5226257.81687952  3880596.91647347
  4499691.31844799  7349886.63427666  6694270.05334902  3839189.30421378
  3377302.9798189   4498129.68981597  2183671.40255699  5008960.73447172
  5044805.36782256  3051567.28887135  4943374.85096899  5922286.60484215
  7090790.47573868  3275097.42422882  4692221.87408673  3849058.32087454
  6490139.76136366  2187887.76321998  5973442.16123246  4436287.02574778
  5976577.19668204  3460929.89544671  2829136.86781665  2869342.35093904
  4963026.34935908  3477485.49881305  8050302.03988172  4535429.80152585
  3045684.52234585  5650128.4705916   4282836.60019949  3365345.46113878
  4810024.68451535  5295502.04417643  7337114.88139673  6269810.12380011
  3963452.16805433]
Intercept = 106710.60688713845
Coefficients = [ 2.39150374e+02  1.13029781e+05  9.33917751e+05  4.72088073e+05
  5.45138875e+05  2.11867266e+05  2.58240519e+05  1.05633502e+06
  8.81137964e+05  2.86719810e+05  6.45592973e+05 -2.12208099e+05]
Mean Squared Value = 847923544292.9105
R2 Score Value = 0.7518887047711378
Predicted Value for new data: [8262734.65645921]
```