In [ ]:
```
#Predict House Price
```

In [1]:
```
import seaborn as sns
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error
from sklearn.model_selection import train_test_split
```

In [2]:
```
housing_data = pd.read_csv('housing_data.csv')
housing_data.tail(5)
```

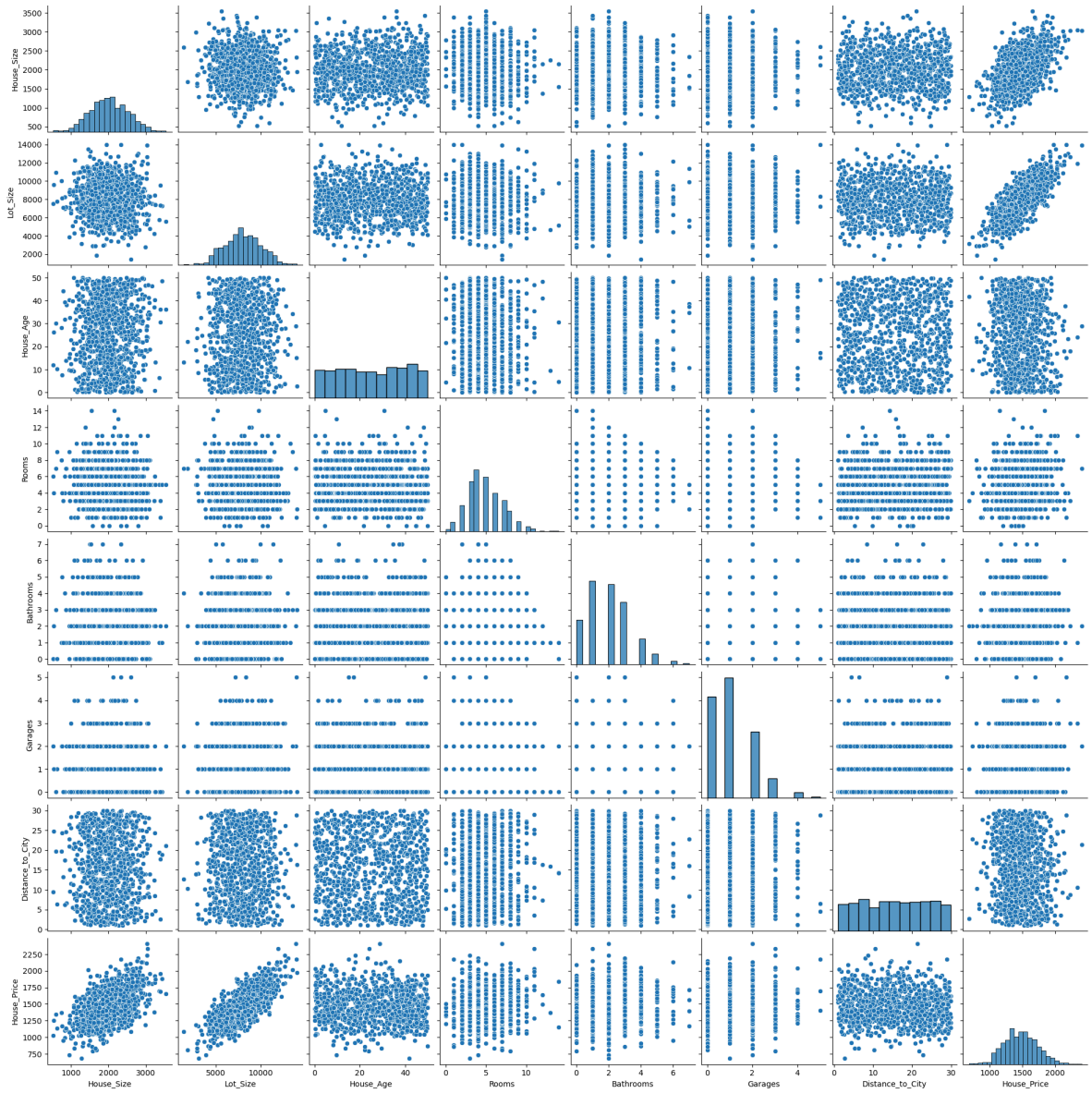
Out[2]:

	House_Size	Lot_Size	House_Age	Rooms	Bathrooms	Garages	Distance_to_City	Hou
995	1842.267710	9498.538432	44.017508	7	3	3	25.971730	157
996	2729.239306	4620.318882	49.034476	5	2	0	9.221511	135
997	1600.354979	7453.966978	45.056048	4	2	0	4.940552	122
998	1837.997443	8889.699433	27.821614	4	0	0	26.886818	138
999	1948.099637	7485.990047	44.823223	3	1	0	9.201646	132

In [3]:
```
#using pairplot to identify which columns has the linear relationship and to f

sns.pairplot(housing_data)
```

Out[3]: <seaborn.axisgrid.PairGrid at 0x1935f85dc90>



In [ ]:
```
# From the plot I could see that the independent variables "House_Size" and "L
```

In [4]:
```
#assigning variables to the columns
indp_vars=housing_data[['House_Size','Lot_Size']]
dep_var=housing_data['House_Price']
```

In [5]:
```
#splitting 70% fo the data for training and 30% data to test the our model and
train_x,test_x,train_y,test_y=train_test_split(indp_vars,dep_var,test_size=0.3
mlr_model=LinearRegression()
mlr_model.fit(train_x,train_y)
pred=mlr_model.predict(test_x)
pred
```

Out[5]:
```
array([1175.75733037, 1561.29089973, 1109.55293002, 1590.47863948,
       1295.04419521, 1289.00620349, 1463.17933331, 1144.69507014,
       1650.86631075, 1571.22651205, 1338.66684802, 1614.4898393 ,
       1056.8657073 , 1347.21879167, 1189.40093118, 1440.75775905,
       1266.97534545, 1702.85176822, 1684.1596067 , 1345.61734678,
       1532.81906503, 1604.03442158, 1526.42029725, 1606.93792255,
       1353.3809446 , 1274.65844905, 1653.81320771, 1270.90846383,
       1626.66907469, 1550.65397312, 1655.7564659 , 1475.29903038,
       1416.12456509, 1539.71474734, 1689.6763618 , 1615.14962397,
       1576.70360335, 1617.48092616, 1807.07901808, 1832.13152441,
       1718.31397924, 1731.48521209, 1411.65673983, 1234.15900017,
       1487.02342359, 1636.5145509 , 1646.18689939, 1711.54914885,
       1165.7696472 , 2048.36609984, 1776.19540537, 1650.22621473,
       1493.67114415, 1185.00424598, 1538.20632921, 1688.13989737,
       1479.13789508, 1406.71948762, 1374.65752536, 1404.741876  ,
       1635.89276217, 1229.57439353, 1819.67028343, 1804.91590806,
       1219.83125241, 1218.03934508, 1432.9599179 , 1957.73806997,
       1399.53342028, 1283.15820367, 2014.68050352, 1502.56542459,
       1597.0957125 , 1758.36059716, 1716.36585165, 1698.82820055,
       1858.65552658, 1533.44681455, 1691.4312826 , 1131.75052857,
       1263.11381866, 1431.26850858, 1653.71335865, 1566.31821748,
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       1417.02283185, 1241.09559467, 1711.78714139, 1602.59603335,
       1730.80823186, 1592.9696474 , 1603.27409991, 1414.2700464 ,
       1797.53592091, 1388.48518993, 1665.50606879, 1736.71150793,
       1239.6230207 , 1231.25899734, 1444.85892933, 2160.28983023,
       1210.36493585, 1076.81105847, 1517.18651275, 1767.78537399,
       1677.54445455, 1763.11624649, 1735.50210907, 1708.64745015,
       1351.56532026, 1656.57943894, 1368.00871247, 1302.13440154,
       1526.59897737, 1269.63726889, 1467.43832842, 1736.30132263,
       2009.61621664, 1586.18677318, 1295.91969673, 1407.82267431,
       1839.14106752, 1248.76674305, 1229.70681829, 1126.69203942,
       1687.90164117, 1631.69553541, 1792.65760815, 1363.83896113,
       1110.69359078, 1493.09345211, 1316.67903028, 1549.71102055,
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       1287.92706933, 1552.89756884, 1210.06351122, 1218.14348951,
       1471.95255045, 1510.46175088, 1484.49322592, 1719.33463813,
       1266.85623355, 1402.39438304, 1512.7192207 , 1618.98249577,
       1314.64136557, 1716.5130661 , 1632.92685452, 1348.63066352,
       1289.92390196, 1593.66419691, 1468.67145081, 1078.34256658,
       1461.04716855, 1503.14017885, 1473.30476459, 1352.24420675,
       1721.15609554, 1422.41231425, 1815.53034605, 1351.41141944,
       1364.24034352, 1404.08745909, 1444.57598632, 1028.90327419,
       1220.00260874, 1917.75041728, 1579.78561537, 1388.37973792,
       1253.6333642 , 1058.341323  , 1481.65509964, 1329.90364876,
       1401.97132436, 1569.55397113, 1845.9891095 , 1687.24237904,
       1951.22595627, 1336.3507859 , 1620.42866441, 1310.94332767,
       1545.591737  , 1496.24968612, 1404.70751801, 1349.87111645,
       1639.00416784, 1817.97836329, 1546.1223262 , 1941.2326223 ,
       1243.14268818, 1484.2916764 , 1771.68326271, 1413.72225673,
       1481.67537786, 1502.4349637 , 1767.60891181, 1036.75091551,
       1265.38393853, 1885.42400476, 1466.83443039, 1231.10422752,
       1041.21659256, 1349.13608365, 1522.5012674 , 1389.92939549,
       1443.0685524 , 1698.58556926, 1524.49217797, 2353.35589096,
       1585.73732737, 1482.27056577, 1395.05611578, 1222.51821555,
       1351.13698653, 1624.02996978, 1392.60539959, 1378.84810813,
```

```
       1114.39948139, 1313.9262587 , 1742.06295084, 1852.90513353,
       1646.67274268, 1065.72483044, 1369.0069172 , 1158.43413574,
       1227.9632903 , 1428.86888527, 1722.45066345, 1678.45622996,
       1305.05350401, 1485.31516775, 1784.22600209, 1133.01771392,
       1258.52481701, 1556.74301241, 1120.97928804, 1399.21666113,
       1590.68545017, 1724.02965471, 1642.31029804, 1185.9895332 ,
       1135.78175915, 1352.77185693, 1413.4908771 , 1435.72401106,
       1521.59010662, 1602.06539084, 1281.79355203, 1334.01655811,
       1594.51570521, 1610.07050091, 1175.39828924, 1963.30015038,
       1444.97738462, 1651.29433241, 1772.49111182, 1441.45520175,
       1660.24472657, 1340.69565846, 1551.37797006, 1576.44220412,
       1135.9212801 , 1904.67714048, 1283.46807086, 1893.89357856,
       1338.98845806, 1691.47006737, 1949.48130274, 1434.46046362,
       1522.71320166, 1187.71602048, 1667.91258115, 1482.34567551,
       1568.01225959, 1578.89090448, 1426.51192748, 1353.88883221,
       1161.77705763, 1451.13194267, 1925.24723986, 1720.06928052,
       1560.51020987, 1252.10628707, 1954.42062434, 1435.51598855,
       1520.9497023 , 1088.97048791, 1475.77073441, 1749.61505257])
```

In [10]:
```
#using " Mean Squared error" formula to evaluate the performance
mse_mlr=mean_squared_error(pred,test_y)
mse_mlr
```

Out[10]:
```
5853.083883039756
```

In [8]:
```
#Fiting the MLR model to the data.
print("Intercept: ", mlr_model.intercept_)
print("Coefficients: \n")
print("House_Size:",mlr_model.coef_[0])
print("Lot_Size:",mlr_model.coef_[1])
```

```
Intercept:  100.50434182331537
Coefficients:

House_Size: 0.28395254639489337
Lot_Size: 0.10024262120411252
```

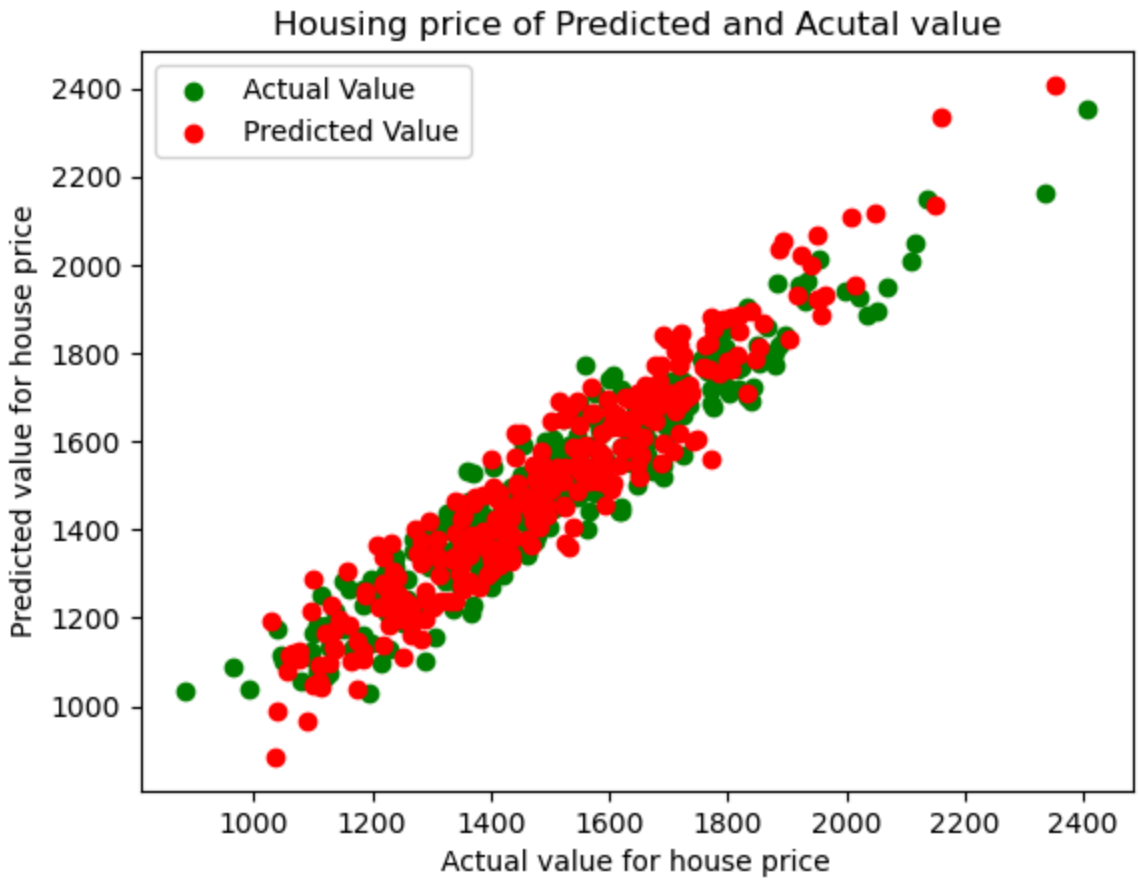
In [11]:
```
#assigning the predicted values in new variable to get the input from user to
new_entry0=input("please enter the House Size :")
new_entry1=input("please enter the Lot Size :")
new_entry=[[float(new_entry0),float(new_entry1)]]
pred_new=mlr_model.predict(new_entry)
print("Predicted House Price: ", pred_new)
```

```
please enter the House Size :1500.67853
please enter the Lot Size :7879.54783
Predicted House Price:  [1316.49236012]

C:\Users\91637\anaconda3\lib\site-packages\sklearn\base.py:420: UserWarning:
X does not have valid feature names, but LinearRegression was fitted with fe
ature names
  warnings.warn(
```

In [13]:
```
#visualize the results (one plot showing the actual versus the predicted resul
#using scatter plot to show the difference between actual and predicted result
plt.scatter(test_y, pred, label='Actual Value', color='green')
plt.scatter(pred, test_y, label='Predicted Value', color='red')
plt.legend()
plt.title('Housing price of Predicted and Acutal value')
plt.xlabel('Actual value for house price')
plt.ylabel('Predicted value for house price')
```

Out[13]:
```
Text(0, 0.5, 'Predicted value for house price')
```



In [ ]:
```

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