```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_absolute_error, r2_score ,
mean_squared_error

data = pd.read_csv('Housing (1).csv')
data
```

```
        price  area  bedrooms  bathrooms  stories mainroad guestroom
basement  \
0    13300000  7420         4          2        3      yes        no
no
1    12250000  8960         4          4        4      yes        no
no
2    12250000  9960         3          2        2      yes        no
yes
3    12215000  7500         4          2        2      yes        no
yes
4    11410000  7420         4          1        2      yes       yes
yes
..        ...   ...       ...        ...      ...      ...       ...
...
540   1820000  3000         2          1        1      yes        no
yes
541   1767150  2400         3          1        1       no        no
no
542   1750000  3620         2          1        1      yes        no
no
543   1750000  2910         3          1        1       no        no
no
544   1750000  3850         3          1        2      yes        no
no

    hotwaterheating airconditioning  parking prefarea furnishingstatus

0                no             yes        2      yes        furnished

1                no             yes        3       no        furnished

2                no              no        2      yes   semi-furnished

3                no             yes        3      yes        furnished

4                no             yes        2       no        furnished

..              ...             ...      ...      ...              ...

540              no              no        2       no      unfurnished

541              no              no        0       no   semi-furnished
```

```
542               no              no        0       no      unfurnished

543               no              no        0       no        furnished

544               no              no        0       no      unfurnished


[545 rows x 13 columns]
```

```
from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
data['mainroad'] = le.fit_transform(data['mainroad'])
data['guestroom'] = le.fit_transform(data['guestroom'])
data['basement'] = le.fit_transform(data['basement'])
data['hotwaterheating'] = le.fit_transform(data['hotwaterheating'])
data['airconditioning'] = le.fit_transform(data['airconditioning'])
data['prefarea'] = le.fit(data['prefarea'])
data['furnishingstatus'] = le.fit_transform(data['furnishingstatus'])

#outliers
q1 = data['area'].quantile(0.25)
q3 = data['area'].quantile(0.75)
IQR = q3 - q1
upper_limit = q3 + 1.5*IQR
lower_limit = q1 - 1.5*IQR
new_data = data.loc[(data['area'] > lower_limit ) & (data['area'] <
upper_limit )]
new_data
```

```
        price  area  bedrooms  bathrooms  stories  mainroad  guestroom
\
0    13300000  7420         4          2        3         1          0

1    12250000  8960         4          4        4         1          0

2    12250000  9960         3          2        2         1          0

3    12215000  7500         4          2        2         1          0

4    11410000  7420         4          1        2         1          1

..        ...   ...       ...        ...      ...       ...        ...

540   1820000  3000         2          1        1         1          0

541   1767150  2400         3          1        1         0          0

542   1750000  3620         2          1        1         1          0

543   1750000  2910         3          1        1         0          0
```

```
544   1750000  3850         3          1        2         1          0


     basement  hotwaterheating  airconditioning  parking
prefarea  \
0           0                0                1        2
LabelEncoder()
1           0                0                1        3
LabelEncoder()
2           1                0                0        2
LabelEncoder()
3           1                0                1        3
LabelEncoder()
4           1                0                1        2
LabelEncoder()
..        ...              ...              ...      ...              .
..
540         1                0                0        2
LabelEncoder()
541         0                0                0        0
LabelEncoder()
542         0                0                0        0
LabelEncoder()
543         0                0                0        0
LabelEncoder()
544         0                0                0        0
LabelEncoder()

     furnishingstatus
0                   0
1                   0
2                   1
3                   0
4                   0
..                ...
540                 2
541                 1
542                 2
543                 0
544                 2

[530 rows x 13 columns]
```

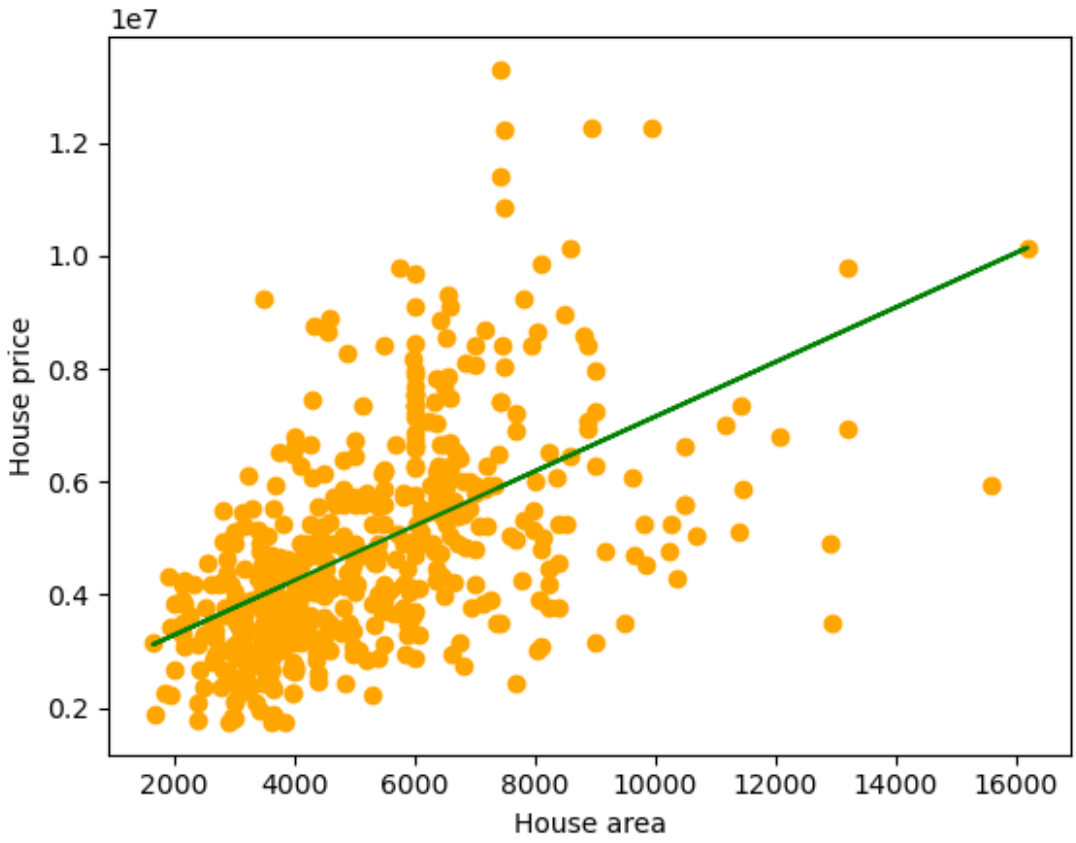
```
x = data['area'].values
y = data['price'].values
x = x.reshape(-1,1)

x_train,x_test,y_train,y_test = train_test_split(x,y , test_size =
0.3, random_state = 0)
```

```
model=LinearRegression()
model.fit(x_train,y_train)
y_pred=model.predict(x_test)
mae=mean_absolute_error(y_test,y_pred)
mse=mean_squared_error(y_test,y_pred)
r2=r2_score(y_test,y_pred)
print("MAE:",mae,"MSE:",mse,"R2:",r2)
```

```
MAE: 1128167.7726408413 MSE: 2259924878135.9487 R2:
0.34849473371636286
```

```
import matplotlib.pyplot as plt
plt.scatter(x,y,color='orange')
plt.plot(x,model.predict(x),color='green')
plt.xlabel('House area')
plt.ylabel('House price')
plt.show()
```




```
new_data =[[3456]]
predicted_price = model.predict(new_data)
print(predicted_price)
```

```
[3990712.89172949]
```