



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

23AMB201 - MACHINE LEARNING

II YEAR IV SEM

UNIT III – GENERATIVE MODELS AND BOOSTING

Program 1– Predict house prices based on several parameters available in the Housing and Urban Development of any dataset using least squares linear regression.

Redesigning Common Mind & Business Towards Excellence



Build an Entrepreneurial Mindset Through Our Design Thinking FrameWork



Dataset

	square_feet	num_bedrooms	num_bathrooms	price
0	1400	3	2	250000
1	1600	4	3	310000
2	1800	3	2	280000
3	1200	2	1	200000
4	2200	5	3	360000
5	1500	3	2	270000
6	1700	4	3	300000
7	1300	2	1	210000
8	2000	4	2	330000
9	2500	5	4	400000

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



```
df = pd.read_csv('House_data.csv')
df
```



```
[ ] X = df[['square_feet', 'num_bedrooms', 'num_bathrooms']] # Independent variables
    y = df['price'] # Dependent variable

# Split data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

```
▶ model = LinearRegression()
  model.fit(X_train, y_train)
  y_pred = model.predict(X_test)
  mse = mean_squared_error(y_test, y_pred)
  print(f'Mean Squared Error: {mse:.2f}')
```

```
➡ Mean Squared Error: 224576792.86
```



Program

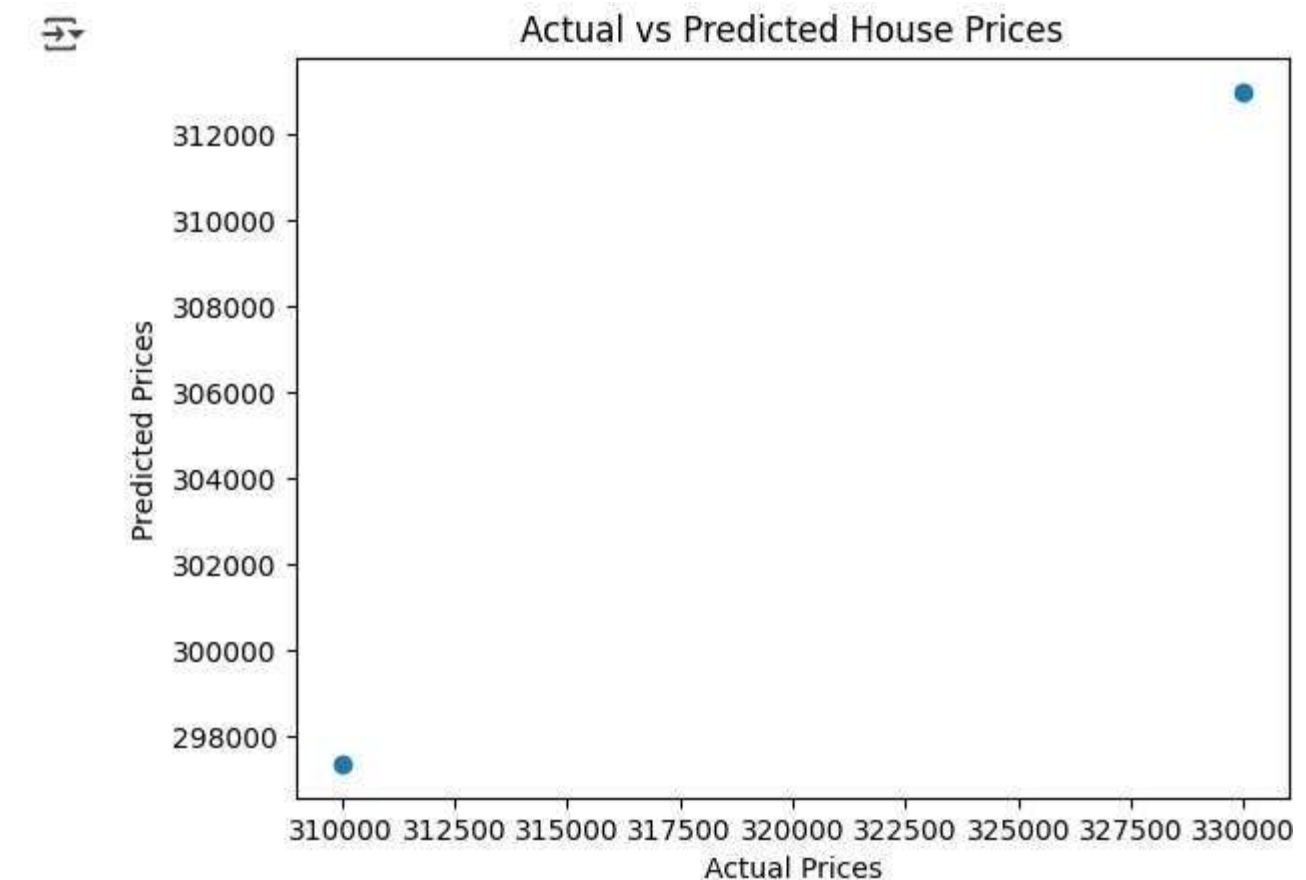


```
[ ] print('Coefficients:', model.coef_)  
    print('Intercept:', model.intercept_)
```

⇒ Coefficients: [78.94736842 15263.15789474 15964.9122807]
Intercept: 62105.2631575969

▶

```
plt.scatter(y_test, y_pred)  
plt.xlabel('Actual Prices')  
plt.ylabel('Predicted Prices')  
plt.title('Actual vs Predicted House Prices')  
plt.show()
```





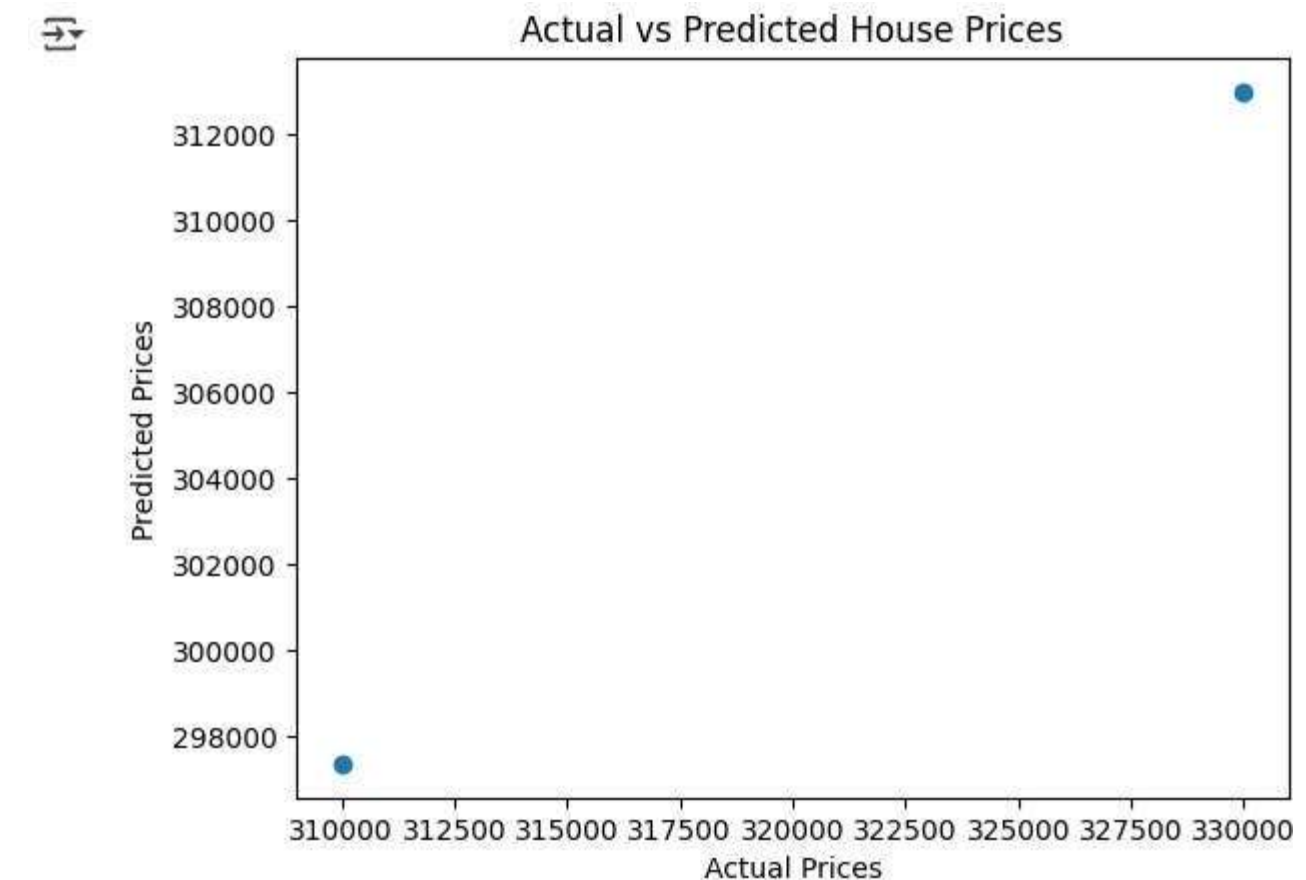
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```





```
▶ new_house = np.array([[1400, 3, 2]])
```

```
predicted_price = model.predict(new_house)
```

```
print(f'Predicted Price for 1400 sqft, 3 bedrooms, 2 bathrooms: ${predicted_price[0]:,.2f}')
```

```
⇒ Predicted Price for 1400 sqft, 3 bedrooms, 2 bathrooms: $250,350.88
```



References

1. <https://www.simplilearn.com/tutorials/machine-learning-tutorial/knn-in-python>
2. <https://www.youtube.com/watch?v=HZT0lxD5h6k>

