```
Start coding or generate with AI.
```

Step 1: Upload the Dataset

```
from google.colab import files
```

Step 2: Load the Dataset

```
import pandas as pd

df = pd.read_csv('house.csv')
df.head()
```

	price	area	bedrooms	bathrooms	stories	mainroad	guestroom	basement	hotwaterheating	airconditioning	parking	prefarea	furn
0	13300000	7420	4	2	3	yes	no	no	no	yes	2	yes	
1	12250000	8960	4	4	4	yes	no	no	no	yes	3	no	
2	12250000	9960	3	2	2	yes	no	yes	no	no	2	yes	
3	12215000	7500	4	2	2	yes	no	yes	no	yes	3	yes	
4	11410000	7420	4	1	2	yes	yes	yes	no	yes	2	no	

Next steps: Generate code with df View recommended plots New interactive sheet

Step 3: Data Exploration

```
df.info()
df.describe()
df.head()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 545 entries, 0 to 544
Data columns (total 13 columns):
 #   Column            Non-Null Count  Dtype 
---  ------            --------------  ----- 
 0   price             545 non-null    int64 
 1   area              545 non-null    int64 
 2   bedrooms          545 non-null    int64 
 3   bathrooms         545 non-null    int64 
 4   stories           545 non-null    int64 
 5   mainroad          545 non-null    object
 6   guestroom         545 non-null    object
 7   basement          545 non-null    object
 8   hotwaterheating   545 non-null    object
 9   airconditioning   545 non-null    object
 10  parking           545 non-null    int64 
 11  prefarea          545 non-null    object
 12  furnishingstatus  545 non-null    object
dtypes: int64(6), object(7)
memory usage: 55.5+ KB
```

	price	area	bedrooms	bathrooms	stories	mainroad	guestroom	basement	hotwaterheating	airconditioning	parking	prefarea	furn
0	13300000	7420	4	2	3	yes	no	no	no	yes	2	yes	
1	12250000	8960	4	4	4	yes	no	no	no	yes	3	no	
2	12250000	9960	3	2	2	yes	no	yes	no	no	2	yes	
3	12215000	7500	4	2	2	yes	no	yes	no	yes	3	yes	
4	11410000	7420	4	1	2	yes	yes	yes	no	yes	2	no	

Next steps: Generate code with df View recommended plots New interactive sheet

4: Check for Missing Values and Duplicates

```
print("Missing Values:\n", df.isnull().sum())
print("Duplicate Rows:", df.duplicated().sum())
```

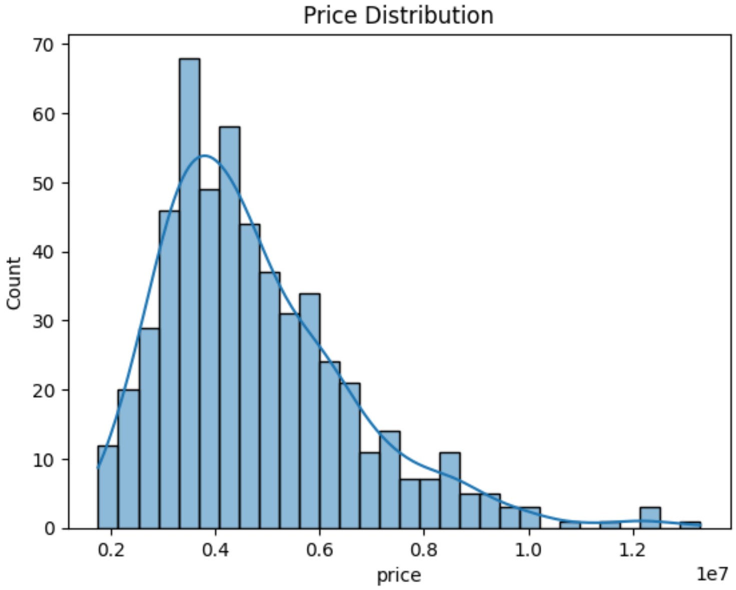
```
Missing Values:
 price               0
area                0
bedrooms            0
bathrooms           0
stories             0
mainroad            0
guestroom           0
basement            0
hotwaterheating     0
airconditioning     0
parking             0
prefarea            0
furnishingstatus    0
dtype: int64
Duplicate Rows: 0
```

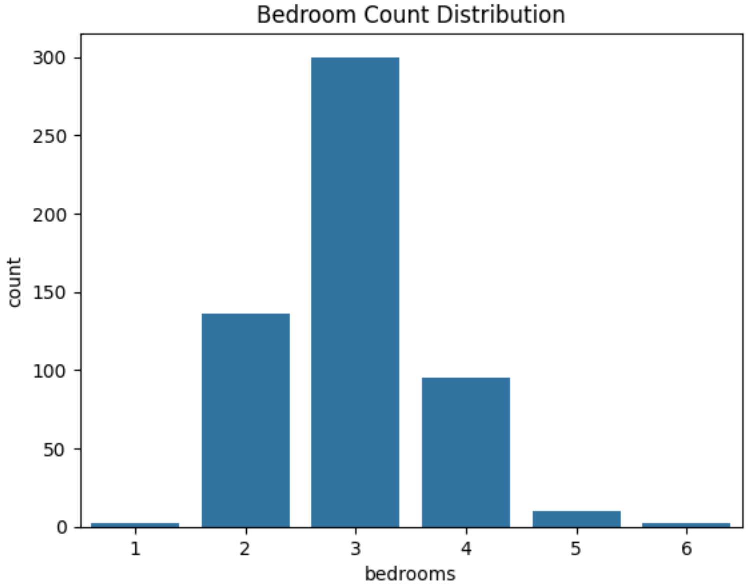
5: Visualize a Few Features

```
import seaborn as sns
import matplotlib.pyplot as plt

sns.histplot(df['price'], bins=30, kde=True)
plt.title("Price Distribution")
plt.show()

sns.countplot(x='bedrooms', data=df)
plt.title("Bedroom Count Distribution")
plt.show()
```





6: Identify Target and Features

```
target = 'price'
features = df.drop(columns=[target])
```

7: Convert Categorical Columns to Numerical

```
categorical_cols = features.select_dtypes(include='object').columns
df[categorical_cols] = df[categorical_cols].apply(lambda col: col.astype('category'))
```

8: One-Hot Encoding

```
df_encoded = pd.get_dummies(df, drop_first=True)
```

9: Feature Scaling

```
from sklearn.preprocessing import StandardScale

scaler = StandardScaler()
X = df_encoded.drop('price', axis=1)
```

10: Train-Test Split

```
from sklearn.model_selection import train_test_split

X_train, X_test, y_train, y_test = train_test_split(X_scaled, y, test_size=0.2, random_state=42)
```

11: Model Building

```
from sklearn.linear_model import LinearRegression

model = LinearRegression()
model.fit(X_train, y_train)
```

```
▾ LinearRegression ⓘ ?
LinearRegression()
```

12: Evaluation

```
from sklearn.metrics import mean_squared_error, r2_score

y_pred = model.predict(X_test)
print("R2 Score:", r2_score(y_test, y_pred))
print("MSE:", mean_squared_error(y_test, y_pred))
```

```
R2 Score: 0.6529242642153177
MSE: 1754318687330.6675
```

13: Make Predictions from New Input

```
new_input = X_test[0].reshape(1, -1)
predicted_price = model.predict(new_input)
print("Predicted Price:", predicted_price)
```

```
Predicted Price: [5164653.90033967]
```

Double-click (or enter) to edit

Convert to DataFrame and Encode

```
new_df = pd.DataFrame([{
    'area': 7500,
    'bedrooms': 3,
    'bathrooms': 2,
    'stories': 2,
    'mainroad': 'yes',
    'guestroom': 'no',
    'basement': 'yes',
    'hotwaterheating': 'no',
    'airconditioning': 'yes',
    'parking': 2,
    'prefarea': 'yes',
    'furnishingstatus': 'furnished'
}])
```

Deployment - Building an Interactive App

```
!pip install gradio
import gradio as gr
```

```
  Downloading starlette-0.46.2-py3-none-any.whl.metadata (6.2 kB)
Collecting tomlkit<0.14.0,>=0.12.0 (from gradio)
  Downloading tomlkit-0.13.2-py3-none-any.whl.metadata (2.7 kB)
Requirement already satisfied: typer<1.0,>=0.12 in /usr/local/lib/python3.11/dist-packages (from gradio) (0.15.3)
Requirement already satisfied: typing-extensions~=4.0 in /usr/local/lib/python3.11/dist-packages (from gradio) (4.13.2)
Collecting uvicorn>=0.14.0 (from gradio)
  Downloading uvicorn-0.34.2-py3-none-any.whl.metadata (6.5 kB)
Requirement already satisfied: fsspec in /usr/local/lib/python3.11/dist-packages (from gradio-client==1.10.0->gradio) (2025.3.2)
Requirement already satisfied: websockets<16.0,>=10.0 in /usr/local/lib/python3.11/dist-packages (from gradio-client==1.10.0->gradio)
Requirement already satisfied: idna>=2.8 in /usr/local/lib/python3.11/dist-packages (from anyio<5.0,>=3.0->gradio) (3.10)
Requirement already satisfied: sniffio>=1.1 in /usr/local/lib/python3.11/dist-packages (from anyio<5.0,>=3.0->gradio) (1.3.1)
Requirement already satisfied: certifi in /usr/local/lib/python3.11/dist-packages (from httpx>=0.24.1->gradio) (2025.4.26)
Requirement already satisfied: httpcore==1.* in /usr/local/lib/python3.11/dist-packages (from httpx>=0.24.1->gradio) (1.0.9)
Requirement already satisfied: h11>=0.16 in /usr/local/lib/python3.11/dist-packages (from httpcore==1.*->httpx>=0.24.1->gradio) (0.16
Requirement already satisfied: filelock in /usr/local/lib/python3.11/dist-packages (from huggingface-hub>=0.28.1->gradio) (3.18.0)
Requirement already satisfied: requests in /usr/local/lib/python3.11/dist-packages (from huggingface-hub>=0.28.1->gradio) (2.32.3)
Requirement already satisfied: tqdm>=4.42.1 in /usr/local/lib/python3.11/dist-packages (from huggingface-hub>=0.28.1->gradio) (4.67.1
Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python3.11/dist-packages (from pandas<3.0,>=1.0->gradio) (2.9
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.11/dist-packages (from pandas<3.0,>=1.0->gradio) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.11/dist-packages (from pandas<3.0,>=1.0->gradio) (2025.2)
Requirement already satisfied: annotated-types>=0.6.0 in /usr/local/lib/python3.11/dist-packages (from pydantic<2.12,>=2.0->gradio) (
Requirement already satisfied: pydantic-core==2.33.2 in /usr/local/lib/python3.11/dist-packages (from pydantic<2.12,>=2.0->gradio) (2
Requirement already satisfied: typing-inspection>=0.4.0 in /usr/local/lib/python3.11/dist-packages (from pydantic<2.12,>=2.0->gradio)
Requirement already satisfied: click>=8.0.0 in /usr/local/lib/python3.11/dist-packages (from typer<1.0,>=0.12->gradio) (8.1.8)
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Requirement already satisfied: rich>=10.11.0 in /usr/local/lib/python3.11/dist-packages (from typer<1.0,>=0.12->gradio) (13.9.4)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-packages (from python-dateutil>=2.8.2->pandas<3.0,>=1.0->gra
Requirement already satisfied: markdown-it-py>=2.2.0 in /usr/local/lib/python3.11/dist-packages (from rich>=10.11.0->typer<1.0,>=0.12
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.11/dist-packages (from rich>=10.11.0->typer<1.0,>=0.1
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.11/dist-packages (from requests->huggingface-hub>=0
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.11/dist-packages (from requests->huggingface-hub>=0.28.1-
Requirement already satisfied: mdurl~=0.1 in /usr/local/lib/python3.11/dist-packages (from markdown-it-py>=2.2.0->rich>=10.11.0->type
Downloading gradio-5.29.0-py3-none-any.whl (54.1 MB)
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Downloading gradio_client-1.10.0-py3-none-any.whl (322 kB)
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Downloading aiofiles-24.1.0-py3-none-any.whl (15 kB)
Downloading fastapi-0.115.12-py3-none-any.whl (95 kB)
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Downloading groovy-0.1.2-py3-none-any.whl (14 kB)
Downloading python_multipart-0.0.20-py3-none-any.whl (24 kB)
Downloading ruff-0.11.8-py3-none-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (11.5 MB)
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Downloading safehttpx-0.1.6-py3-none-any.whl (8.7 kB)
Downloading semantic_version-2.10.0-py2.py3-none-any.whl (15 kB)
Downloading starlette-0.46.2-py3-none-any.whl (72 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 72.0/72.0 kB 6.1 MB/s eta 0:00:00
Downloading tomlkit-0.13.2-py3-none-any.whl (37 kB)
Downloading uvicorn-0.34.2-py3-none-any.whl (62 kB)
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Downloading ffmpy-0.5.0-py3-none-any.whl (6.0 kB)
Downloading pydub-0.25.1-py2.py3-none-any.whl (32 kB)
Installing collected packages: pydub, uvicorn, tomlkit, semantic-version, ruff, python-multipart, groovy, ffmpy, aiofiles, starlette,
```

Create a Prediction Function

```python
def predict_price(area, bedrooms, bathrooms, stories, mainroad, guestroom, basement,
                  hotwaterheating, airconditioning, parking, prefarea, furnishingstatus):
    input_dict = {
        'area': area,
        'bedrooms': bedrooms,
        'bathrooms': bathrooms,
        'stories': stories,
        'mainroad': mainroad,
        'guestroom': guestroom,
        'basement': basement,
        'hotwaterheating': hotwaterheating,
        'airconditioning': airconditioning,
        'parking': parking,
        'prefarea': prefarea,
        'furnishingstatus': furnishingstatus
    }
    input_df = pd.DataFrame([input_dict])
    input_encoded = pd.get_dummies(input_df)
    input_encoded = input_encoded.reindex(columns=X.columns, fill_value=0)
    input_scaled = scaler.transform(input_encoded)
    prediction = model.predict(input_scaled)[0]
    return f"Predicted House Price: ₹{int(prediction):,}"
```

Create the Gradio Interface

```
inputs = [
    gr.Number(label="Area"),
    gr.Number(label="Bedrooms"),
    gr.Number(label="Bathrooms"),
    gr.Number(label="Stories"),
    gr.Radio(["yes", "no"], label="Mainroad"),
    gr.Radio(["yes", "no"], label="Guestroom"),
    gr.Radio(["yes", "no"], label="Basement"),
    gr.Radio(["yes", "no"], label="Hot Water Heating"),
    gr.Radio(["yes", "no"], label="Air Conditioning"),
    gr.Number(label="Parking"),
    gr.Radio(["yes", "no"], label="Preferred Area"),
    gr.Radio(["furnished", "semi-furnished", "unfurnished"], label="Furnishing Status")
]

gr.Interface(fn=predict_price, inputs=inputs, outputs="text", title="🏡 House Price Predictor").launch()
```

```
It looks like you are running Gradio on a hosted a Jupyter notebook. For the Gradio app to work, sharing must be enabled. Automatically

Colab notebook detected. To show errors in colab notebook, set debug=True in launch()
* Running on public URL: https://eca36e0f8a009207cb.gradio.live

This share link expires in 1 week. For free permanent hosting and GPU upgrades, run `gradio deploy` from the terminal in the working dir
```

🏡 House Price Predictor