

```
In [1]: import numpy as np  
import pandas as pd
```

```
In [2]: df=pd.read_csv('house_prices.csv')
```

```
In [3]: df.shape
```

```
Out[3]: (187531, 21)
```

```
In [4]: df.head(15)
```

Out[4]:

	Index	Title	Description	Amount(in rupees)	Price (in rupees)	location	Carpet Area	Status	Floor	T
	0	1 BHK Ready to Occupy Flat for sale in Srushti...	Bhiwandi, Thane has an attractive 1 BHK Flat f...	42 Lac	6000.0	thane	500 sqft	Ready to Move	10 out of 11	
	1	2 BHK Ready to Occupy Flat for sale in Dosti V...	One can find this stunning 2 BHK flat for sale...	98 Lac	13799.0	thane	473 sqft	Ready to Move	3 out of 22	
	2	2 BHK Ready to Occupy Flat for sale in Sunrise...	Up for immediate sale is a 2 BHK apartment in ...	1.40 Cr	17500.0	thane	779 sqft	Ready to Move	10 out of 29	
	3	1 BHK Ready to Occupy Flat for sale Kasheli	This beautiful 1 BHK Flat is available for sal...	25 Lac	NaN	thane	530 sqft	Ready to Move	1 out of 3	
	4	2 BHK Ready to Occupy Flat for sale in TenX Ha...	This lovely 2 BHK Flat in Pokhran Road, Thane ...	1.60 Cr	18824.0	thane	635 sqft	Ready to Move	20 out of 42	
	5	1 BHK Ready to Occupy Flat for sale in Virat A...	Creatively planned and constructed is a 1 BHK ...	45 Lac	6618.0	thane	NaN	Ready to Move	2 out of 7	
	6	1 BHK Ready to Occupy Flat for sale Mumbra	This magnificent 1 BHK Flat is available for s...	16.5 Lac	2538.0	thane	550 sqft	Ready to Move	4 out of 5	
	7	1 BHK Ready to Occupy Flat for sale Kalwa	Creatively planned and constructed is a 1 BHK ...	60 Lac	10435.0	thane	NaN	Ready to Move	Ground out of 7	
	8	1 BHK Ready to Occupy Flat for sale Kalwa	Discover this immaculate 1 BHK flat for sale a...	60 Lac	10000.0	thane	NaN	Ready to Move	Ground out of 2	
	9	3 BHK Ready to Occupy Flat for sale in Pride P...	One can find this stunning 3 BHK flat for sale...	1.60 Cr	11150.0	thane	900 sqft	Ready to Move	3 out of 27	
	10	3 BHK Ready to Occupy Flat for sale in Cosmos ...	Up for immediate sale is a 3 BHK apartment in ...	1.40 Cr	12174.0	thane	950 sqft	Ready to Move	6 out of 20	

Index	Title	Description	Amount(in rupees)	Price (in rupees)	location	Carpet Area	Status	Floor	T
11	11	2 BHK Ready to Occupy Flat for sale in Regency...	2 BHK, Multistorey Apartment is available for ...	1.36 Cr	11674.0	thane	NaN	Ready to Move	16 out of 24
12	12	2 BHK Ready to Occupy Flat for sale in Regency...	2 BHK, Multistorey Apartment is available for ...	1.35 Cr	15995.0	thane	NaN	Ready to Move	8 out of 20
13	13	4 BHK Ready to Occupy Flat for sale Hiranandan...	Creatively planned and constructed is a 4 BHK ...	4.25 Cr	17526.0	thane	1820 sqft	Ready to Move	18 out of 27
14	14	1 BHK Ready to Occupy Flat for sale Rabodi	Discover this immaculate 1 BHK flat for sale a...	75 Lac	11538.0	thane	NaN	Ready to Move	2 out of 3

15 rows × 21 columns

```
In [5]: df.tail(15)
```

Out[5]:

	Index	Title	Description	Amount(in rupees)	Price (in rupees)	location	Carpet Area	Status	Floor
187516	187516	2 BHK Ready to Occupy Flat for sale Gazipur	This beautiful 2 BHK Flat is available for sal...	29.9 Lac	3322.0	zirakpur	750 sqft	Ready to Move	2 out of 3
187517	187517	3 BHK Ready to Occupy Flat for sale in Sushma ...	One can find this stunning 3 BHK flat for sale...	83.5 Lac	4898.0	zirakpur	1195 sqft	Ready to Move	5 out of 9
187518	187518	3 BHK Ready to Occupy Flat for sale in Sushma ...	This ready to move-in 3 BHK flat is available ...	54.9 Lac	3268.0	zirakpur	NaN	Ready to Move	7 out of 8
187519	187519	3 BHK Ready to Occupy Flat for sale Dhakoli	This magnificent 3 BHK Flat is available for s...	37 Lac	4405.0	zirakpur	NaN	Ready to Move	3 out of 4
187520	187520	3 BHK Ready to Occupy Flat for sale in Sushma ...	This lovely 3 BHK Flat in Gazipur, Zirakpur is...	78 Lac	4615.0	zirakpur	1352 sqft	Ready to Move	2 out of 12
187521	187521	4 BHK Ready to Occupy Flat for sale Nagla Road	Nagla Road, Zirakpur has an appealing 4 BHK fl...	1.18 Cr	5816.0	zirakpur	NaN	Ready to Move	2 out of 11
187522	187522	3 BHK Ready to Occupy Flat for sale in GHB Spl...	Up for immediate sale is a 3 BHK apartment in ...	80 Lac	4040.0	zirakpur	1200 sqft	Ready to Move	3 out of 3
187523	187523	5 BHK Ready to Occupy Flat for sale in Orvis G...	This magnificent 5 BHK Flat is available for s...	1.19 Cr	4547.0	zirakpur	1705 sqft	Ready to Move	5 out of 10
187524	187524	3 BHK Ready to Occupy Flat for sale in Sushma ...	One can find this stunning 3 BHK flat for sale...	69.6 Lac	5135.0	zirakpur	895 sqft	Ready to Move	5 out of 8

	Index	Title	Description	Amount(in rupees)	Price (in rupees)	location	Carpet Area	Status	Floor
187525	187525	3 BHK Ready to Occupy Flat for sale in Peer Mu...	Have a look at this immaculate 3 BHK flat for ...	44.9 Lac	3904.0	zirakpur	1050 sqft	Ready to Move	1 out of 3
187526	187526	3 BHK Ready to Occupy Flat for sale in Bollywo...	This magnificent 3 BHK Flat is available for s...	63 Lac	3225.0	zirakpur	NaN	Ready to Move	2 out of 4
187527	187527	3 BHK Ready to Occupy Flat for sale in Sushma ...	Have a look at this immaculate 3 BHK flat for ...	55 Lac	3274.0	zirakpur	NaN	Ready to Move	4 out of 6
187528	187528	3 BHK Ready to Occupy Flat for sale in Bollywo...	Gazipur, Zirakpur has an appealing 3 BHK flat ...	76 Lac	4343.0	zirakpur	1250 sqft	Ready to Move	1 out of 3
187529	187529	2 BHK Ready to Occupy Flat for sale in Friends...	Up for immediate sale is a 2 BHK apartment in ...	30 Lac	4231.0	zirakpur	NaN	Ready to Move	2 out of 2
187530	187530	3 BHK Ready to Occupy Flat for sale in Affinit...	This exquisite 3 BHK Flat is offered for sale ...	1.18 Cr	6162.0	zirakpur	NaN	Ready to Move	5 out of 13

15 rows × 21 columns

```
In [6]: df.isnull().sum()
```

```
Out[6]: Index          0
Title              0
Description        3023
Amount(in rupees)  0
Price (in rupees) 17665
location          0
Carpet Area       80673
Status            615
Floor             7077
Transaction        83
Furnishing        2897
facing            70233
overlooking       81436
Society           109678
Bathroom          828
Balcony           48935
Car Parking       103357
Ownership          65517
Super Area        107685
Dimensions        187531
Plot Area         187531
dtype: int64
```

```
In [7]: df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 187531 entries, 0 to 187530
Data columns (total 21 columns):
#   Column                Non-Null Count  Dtype
---  -
0   Index                 187531 non-null  int64
1   Title                 187531 non-null  object
2   Description           184508 non-null  object
3   Amount(in rupees)     187531 non-null  object
4   Price (in rupees)     169866 non-null  float64
5   location              187531 non-null  object
6   Carpet Area           106858 non-null  object
7   Status                186916 non-null  object
8   Floor                 180454 non-null  object
9   Transaction           187448 non-null  object
10  Furnishing            184634 non-null  object
11  facing                117298 non-null  object
12  overlooking           106095 non-null  object
13  Society               77853 non-null   object
14  Bathroom              186703 non-null  object
15  Balcony               138596 non-null  object
16  Car Parking           84174 non-null   object
17  Ownership              122014 non-null  object
18  Super Area            79846 non-null   object
19  Dimensions            0 non-null       float64
20  Plot Area             0 non-null       float64
dtypes: float64(3), int64(1), object(17)
memory usage: 30.0+ MB
```



```
In [8]: mode_desc=df['Description'].mode()
```

```
In [9]: mode_desc
```

```
Out[9]: 0    Multistorey apartment is available for sale. I...  
        Name: Description, dtype: object
```

```
In [10]: df['Description']=df['Description'].fillna(value='Multistorey apartment is available for sale')
```

```
In [11]: df['Description'].isnull().sum()
```

```
Out[11]: 0
```

```
In [12]: df['Description']=df['Description'].fillna(method="ffill")
```

```
In [13]: df['Description'].isnull().sum()
```

```
Out[13]: 0
```

```
In [14]: df['Description']=df['Description'].fillna(method="bfill")
```

```
In [15]: df['Description'].isnull().sum()
```

```
Out[15]: 0
```

```
In [16]: df['Price (in rupees)'].isnull().sum()
```

```
Out[16]: 17665
```

```
In [17]: price_mean=df['Price (in rupees)'].mean()
```

```
In [18]: df['Price (in rupees)']=df['Price (in rupees)'].fillna(value=price_mean)
```

```
In [19]: df['Price (in rupees)'].isnull().sum()
```

```
Out[19]: 0
```

```
In [20]: mode_loc=df['location'].mode()
```

```
In [21]: mode_loc
```

```
Out[21]: 0    new-delhi  
        Name: location, dtype: object
```

```
In [22]: df['location']=df['location'].fillna(value='new-delhi')
```

```
In [23]: df['location'].isnull().sum()
```

```
Out[23]: 0
```

```
In [24]: mode_area=df['Carpet Area'].mode()
```

```
In [25]: mode_area
```

```
Out[25]: 0    1000 sqft  
         Name: Carpet Area, dtype: object
```

```
In [45]: df['Carpet Area']=df['Carpet Area'].fillna(value='1000 sqft')
```

```
In [46]: df['location'].isnull().sum()
```

```
Out[46]: 0
```

```
In [47]: mode_status=df['Status'].mode()
```

```
In [48]: mode_status
```

```
Out[48]: 0    Ready to Move  
         Name: Status, dtype: object
```

```
In [49]: df['Status']=df['Status'].fillna(value='Ready to Move')
```

```
In [50]: df['Status'].isnull().sum()
```

```
Out[50]: 0
```

```
In [51]: mode_floor=df['Floor'].mode()
```

```
In [52]: mode_floor
```

```
Out[52]: 0    2 out of 4  
         Name: Floor, dtype: object
```

```
In [53]: df['Floor']=df['Floor'].fillna(value='2 out of 4')
```

```
In [54]: df['Floor'].isnull().sum()
```

```
Out[54]: 0
```

```
In [55]: mode_trans=df['Transaction'].mode()
```

```
In [56]: mode_trans
```

```
Out[56]: 0    Resale  
         Name: Transaction, dtype: object
```

```
In [57]: df['Transaction']=df['Transaction'].fillna(value='Resale')
```

```
In [58]: df['Transaction'].isnull().sum()
```

```
Out[58]: 0
```

```
In [60]: mode_fur=df['Furnishing'].mode()
```

```
In [61]: mode_fur
```

```
Out[61]: 0    Semi-Furnished  
Name: Furnishing, dtype: object
```

```
In [62]: df['Furnishing']=df['Furnishing'].fillna(value='Semi-Furnished')
```

```
In [63]: df['Furnishing'].isnull().sum()
```

```
Out[63]: 0
```

```
In [64]: mode_face=df['facing'].mode()
```

```
In [65]: mode_face
```

```
Out[65]: 0    East  
Name: facing, dtype: object
```

```
In [66]: df['facing']=df['facing'].fillna(value='East')
```

```
In [67]: df['facing'].isnull().sum()
```

```
Out[67]: 0
```

```
In [68]: mode_ovlo=df['overlooking'].mode()
```

```
In [69]: mode_ovlo
```

```
Out[69]: 0    Main Road  
Name: overlooking, dtype: object
```

```
In [70]: df['overlooking']=df['overlooking'].fillna(value='Main Road')
```

```
In [71]: df['overlooking'].isnull().sum()
```

```
Out[71]: 0
```

```
In [72]: mode_soc=df['Society'].mode()
```

```
In [73]: mode_soc
```

```
Out[73]: 0    Hamdam Apartment  
Name: Society, dtype: object
```

```
In [74]: df['Society']=df['Society'].fillna(value='Hamdam Apartment')
```

```
In [75]: df['Society'].isnull().sum()
```

```
Out[75]: 0
```

```
In [76]: mode_bath=df['Bathroom'].mode()
```

```
In [77]: mode_bath
```

```
Out[77]: 0    2  
Name: Bathroom, dtype: object
```

```
In [78]: df['Bathroom']=df['Bathroom'].fillna(value='2')
```

```
In [79]: df['Bathroom'].isnull().sum()
```

```
Out[79]: 0
```

```
In [80]: mode_bal=df['Balcony'].mode()
```

```
In [81]: mode_bal
```

```
Out[81]: 0    2  
Name: Balcony, dtype: object
```

```
In [83]: df['Balcony']=df['Balcony'].fillna(value='2')
```

```
In [84]: df['Balcony'].isnull().sum()
```

```
Out[84]: 0
```

```
In [85]: mode_car=df['Car Parking'].mode()
```

```
In [86]: mode_car
```

```
Out[86]: 0    1 Covered  
Name: Car Parking, dtype: object
```

```
In [87]: df['Car Parking']=df['Car Parking'].fillna(value='1 Covered')
```

```
In [88]: df['Car Parking'].isnull().sum()
```

```
Out[88]: 0
```

```
In [89]: mode_owner=df['Ownership'].mode()
```

```
In [90]: mode_owner
```

```
Out[90]: 0    Freehold  
         Name: Ownership, dtype: object
```

```
In [91]: df['Ownership']=df['Ownership'].fillna(value='Freehold')
```

```
In [92]: df['Ownership'].isnull().sum()
```

```
Out[92]: 0
```

```
In [93]: mode_area=df['Super Area'].mode()
```

```
In [94]: mode_area
```

```
Out[94]: 0    1100 sqft  
         Name: Super Area, dtype: object
```

```
In [95]: df['Super Area']=df['Super Area'].fillna(value='1100 sqft')
```

```
In [96]: df['Super Area'].isnull().sum()
```

```
Out[96]: 0
```

```
In [99]: df['Dimensions'].isnull().sum()
```

```
Out[99]: 187531
```

```
In [101]: dimensions_price=df['Dimensions'].mean()
```

```
In [102]: df['Dimensions']=df['Dimensions'].fillna(value='dimensions_price')
```

```
In [103]: df['Dimensions'].isnull().sum()
```

```
Out[103]: 0
```

```
In [104]: df['Plot Area'].isnull().sum()
```

```
Out[104]: 187531
```

```
In [106]: plot_mean=df['Plot Area'].mean()
```

```
In [107]: df['Plot Area']=df['Plot Area'].fillna(value='plot_mean')
```

```
In [108]: df['Plot Area'].isnull().sum()
```

```
Out[108]: 0
```

```
In [109]: df.isnull().sum()
```

```
Out[109]: Index          0
          Title         0
          Description    0
          Amount(in rupees) 0
          Price (in rupees) 0
          location       0
          Carpet Area     0
          Status          0
          Floor           0
          Transaction     0
          Furnishing      0
          facing          0
          overlooking     0
          Society         0
          Bathroom        0
          Balcony         0
          Car Parking     0
          Ownership       0
          Super Area      0
          Dimensions      0
          Plot Area       0
          dtype: int64
```

```
In [ ]:
```