```
import pandas as pd
import numpy as np
import sklearn as sk
df=pd.read csv("/home/student/Downloads/bengaluru house prices.csv")
df.head()
                         availability
                                                      location
             area type
size ∖
0 Super built-up Area
                               19-Dec Electronic City Phase II
2 BHK
            Plot Area Ready To Move
                                              Chikka Tirupathi 4
Bedroom
                                                   Uttarahalli
        Built-up Area Ready To Move
2
3 BHK
3
 Super built-up Area Ready To Move
                                            Lingadheeranahalli
3 BHK
4 Super built-up Area Ready To Move
                                                      Kothanur
2 BHK
  society total_sqft
                      bath
                            balcony
                                      price
                                     39.07
O Coomee
                1056
                       2.0
                                1.0
                2600
                       5.0
                                3.0 120.00
1
  Theanmp
2
                                     62.00
                1440
      NaN
                       2.0
                                3.0
3
                                      95.00
  Soiewre
                1521
                       3.0
                                1.0
4
      NaN
                1200
                       2.0
                                1.0
                                      51.00
df.shape
(13320, 9)
df.isnull()
      area_type availability location size society total_sqft
bath \
          False
                        False
                                  False False
                                                 False
                                                             False
False
          False
                        False
                                  False False
                                                 False
                                                             False
1
False
2
          False
                        False
                                  False False
                                                  True
                                                             False
False
          False
                                  False False
                                                             False
                        False
                                                 False
False
          False
                        False
                                  False False
                                                             False
                                                  True
False
. . .
13315
          False
                        False
                                  False False
                                                  False
                                                             False
False
13316
          False
                        False
                                  False False
                                                  True
                                                             False
False
```

```
13317
           False
                         False
                                   False False
                                                   False
                                                               False
False
                         False
13318
           False
                                   False False
                                                   False
                                                               False
False
13319
           False
                         False
                                   False False
                                                    True
                                                               False
False
       balcony
                price
0
         False
                False
1
         False
                False
2
         False
                False
3
         False
                False
4
         False
                False
13315
         False
                False
13316
         True
                False
                False
         False
13317
13318
         False
                False
13319
         False False
[13320 rows x 9 columns]
df.isnull().sum()
                   0
area_type
availability
                   0
location
                   1
size
                  16
society
                5502
total sqft
                   0
                  73
bath
balcony
                 609
                   0
price
dtype: int64
df.isnull().sum().sum()
6201
#filling null values
df1=df.fillna(value=0)
df1
                  area type
                              availability
location \
       Super built-up Area
                                    19-Dec Electronic City Phase II
                             Ready To Move
1
                 Plot Area
                                                    Chikka Tirupathi
2
             Built-up Area
                             Ready To Move
                                                         Uttarahalli
```

```
3
       Super built-up Area
                             Ready To Move
                                                   Lingadheeranahalli
       Super built-up Area
                             Ready To Move
                                                             Kothanur
             Built-up Area
                             Ready To Move
                                                           Whitefield
13315
       Super built-up Area
                                                        Richards Town
13316
                             Ready To Move
13317
             Built-up Area
                             Ready To Move
                                                Raja Rajeshwari Nagar
13318 Super built-up Area
                                     18-Jun
                                                      Padmanabhanagar
13319 Super built-up Area
                             Ready To Move
                                                         Doddathoguru
                                                       price
            size
                  society total sqft
                                       bath
                                             balcony
0
           2 BHK
                  Coomee
                                 1056
                                        2.0
                                                 1.0
                                                       39.07
1
       4 Bedroom
                                2600
                                        5.0
                                                 3.0
                                                      120.00
                  Theanmp
2
           3 BHK
                                1440
                                        2.0
                                                 3.0
                                                       62.00
3
           3 BHK
                  Soiewre
                                1521
                                        3.0
                                                 1.0
                                                       95.00
4
                                                       51.00
           2 BHK
                        0
                                1200
                                        2.0
                                                 1.0
                                                      231.00
13315
       5 Bedroom
                 ArsiaEx
                                 3453
                                        4.0
                                                 0.0
                                        5.0
                                                      400.00
13316
           4 BHK
                                3600
                                                 0.0
           2 BHK
13317
                  Mahla T
                                 1141
                                        2.0
                                                 1.0
                                                       60.00
13318
           4 BHK
                  SollyCl
                                4689
                                        4.0
                                                 1.0
                                                      488.00
13319
           1 BHK
                                 550
                                        1.0
                                                 1.0
                                                       17.00
[13320 rows x 9 columns]
df1.isnull().sum().sum()
df2=df.fillna(method='pad')
df2
/tmp/ipykernel 5722/2392532074.py:1: FutureWarning: DataFrame.fillna
with 'method' is deprecated and will raise in a future version. Use
obj.ffill() or obj.bfill() instead.
  df2=df.fillna(method='pad')
                              availability
                  area_type
location \
       Super built-up Area
                                     19-Dec Electronic City Phase II
                             Ready To Move
1
                 Plot Area
                                                     Chikka Tirupathi
2
             Built-up Area
                             Ready To Move
                                                          Uttarahalli
```

```
3
       Super built-up Area
                             Ready To Move
                                                   Lingadheeranahalli
       Super built-up Area
                             Ready To Move
                                                             Kothanur
             Built-up Area
                             Ready To Move
                                                           Whitefield
13315
       Super built-up Area
                                                        Richards Town
13316
                             Ready To Move
13317
             Built-up Area
                             Ready To Move
                                                Raja Rajeshwari Nagar
13318 Super built-up Area
                                     18-Jun
                                                      Padmanabhanagar
13319 Super built-up Area
                             Ready To Move
                                                         Doddathoguru
                                                       price
            size
                  society total sqft
                                       bath
                                             balcony
0
           2 BHK Coomee
                                 1056
                                        2.0
                                                 1.0
                                                       39.07
                  Theanmp
1
       4 Bedroom
                                 2600
                                        5.0
                                                 3.0
                                                      120.00
2
           3 BHK
                  Theanmp
                                 1440
                                        2.0
                                                 3.0
                                                       62.00
3
           3 BHK
                  Soiewre
                                 1521
                                        3.0
                                                 1.0
                                                       95.00
4
                                                       51.00
           2 BHK Soiewre
                                 1200
                                        2.0
                                                 1.0
                                                      231.00
13315
       5 Bedroom
                 ArsiaEx
                                 3453
                                        4.0
                                                 0.0
                                                      400.00
                                        5.0
13316
           4 BHK
                 ArsiaEx
                                 3600
                                                 0.0
           2 BHK
                                                 1.0
                                                       60.00
13317
                  Mahla T
                                 1141
                                        2.0
13318
           4 BHK
                  SollyCl
                                 4689
                                        4.0
                                                 1.0
                                                      488.00
13319
           1 BHK
                  SollyCl
                                 550
                                        1.0
                                                 1.0
                                                       17.00
[13320 rows x 9 columns]
df2.isnull().sum().sum()
df3=df.fillna(method='bfill')
df3
/tmp/ipykernel 5722/2271066961.py:1: FutureWarning: DataFrame.fillna
with 'method' \overline{i}s deprecated and will raise in a future version. Use
obj.ffill() or obj.bfill() instead.
  df3=df.fillna(method='bfill')
                              availability
                  area_type
location \
       Super built-up Area
                                     19-Dec Electronic City Phase II
1
                 Plot Area
                             Ready To Move
                                                     Chikka Tirupathi
2
             Built-up Area
                             Ready To Move
                                                          Uttarahalli
```

```
3
       Super built-up Area
                             Ready To Move
                                                   Lingadheeranahalli
       Super built-up Area
                             Ready To Move
                                                             Kothanur
             Built-up Area
                             Ready To Move
                                                           Whitefield
13315
       Super built-up Area
                                                        Richards Town
13316
                             Ready To Move
13317
             Built-up Area
                             Ready To Move
                                                Raja Rajeshwari Nagar
                                     18-Jun
13318 Super built-up Area
                                                      Padmanabhanagar
13319 Super built-up Area Ready To Move
                                                         Doddathoguru
                                                       price
            size
                  society total sqft
                                       bath
                                             balcony
0
           2 BHK Coomee
                                 1056
                                        2.0
                                                 1.0
                                                       39.07
1
       4 Bedroom
                  Theanmp
                                 2600
                                        5.0
                                                 3.0
                                                      120.00
2
           3 BHK
                  Soiewre
                                 1440
                                        2.0
                                                 3.0
                                                       62.00
3
           3 BHK Soiewre
                                 1521
                                        3.0
                                                 1.0
                                                       95.00
4
           2 BHK DuenaTa
                                 1200
                                        2.0
                                                 1.0
                                                       51.00
                                                      231.00
13315
       5 Bedroom
                 ArsiaEx
                                 3453
                                        4.0
                                                 0.0
                                        5.0
                                                      400.00
13316
           4 BHK
                  Mahla T
                                 3600
                                                 1.0
           2 BHK
13317
                  Mahla T
                                 1141
                                        2.0
                                                 1.0
                                                       60.00
13318
           4 BHK
                  SollyCl
                                 4689
                                        4.0
                                                 1.0
                                                      488.00
13319
           1 BHK
                      NaN
                                  550
                                        1.0
                                                 1.0
                                                       17.00
[13320 rows x 9 columns]
df3.isnull().sum()
area type
availability
                0
location
                0
size
                0
society
                1
total sqft
                0
                0
bath
                0
balcony
price
                0
dtype: int64
df4=df.fillna(method='pad',axis=1)
df4
/tmp/ipykernel_5722/2391954019.py:1: FutureWarning: DataFrame.fillna
with 'method' is deprecated and will raise in a future version. Use
```

```
obj.ffill() or obj.bfill() instead.
  df4=df.fillna(method='pad',axis=1)
                             availability
                  area type
location \
       Super built-up Area
                                     19-Dec
                                              Electronic City Phase II
                 Plot Area
                              Ready To Move
                                                      Chikka Tirupathi
2
             Built-up Area
                              Ready To Move
                                                           Uttarahalli
3
       Super built-up Area
                              Ready To Move
                                                    Lingadheeranahalli
       Super built-up Area
                              Ready To Move
                                                               Kothanur
             Built-up Area
                                                            Whitefield
13315
                              Ready To Move
       Super built-up Area
                                                         Richards Town
13316
                              Ready To Move
13317
             Built-up Area
                              Ready To Move
                                                 Raja Rajeshwari Nagar
                                     18-Jun
13318
      Super built-up Area
                                                       Padmanabhanagar
      Super built-up Area
                              Ready To Move
                                                          Doddathoguru
13319
            size
                   society total sqft bath balcony
                                                     price
           2 BHK
                                       2.0
                                                     39.07
0
                   Coomee
                                 1056
                                                1.0
1
       4 Bedroom
                  Theanmp
                                 2600
                                       5.0
                                                     120.0
                                                3.0
2
           3 BHK
                     3 BHK
                                 1440
                                       2.0
                                                      62.0
                                                3.0
3
           3 BHK
                  Soiewre
                                 1521
                                       3.0
                                                      95.0
                                                1.0
4
           2 BHK
                     2 BHK
                                 1200
                                       2.0
                                                      51.0
                                                1.0
                                  . . .
                                        . . .
13315
       5 Bedroom
                  ArsiaEx
                                 3453
                                       4.0
                                                0.0
                                                     231.0
13316
           4 BHK
                    4 BHK
                                       5.0
                                 3600
                                                5.0
                                                     400.0
           2 BHK
                  Mahla T
                                 1141
                                                      60.0
13317
                                       2.0
                                                1.0
13318
           4 BHK
                   SollyCl
                                 4689
                                       4.0
                                                     488.0
                                                1.0
13319
           1 BHK
                     1 BHK
                                  550
                                       1.0
                                                1.0
                                                      17.0
[13320 rows x 9 columns]
df4.isnull().sum()
area_type
                0
availability
                0
                0
location
                0
size
                0
society
total sqft
                0
```

```
bath
balcony
                0
price
                0
dtype: int64
df5=df.fillna(method='bfill',axis=1)
df5
/tmp/ipykernel_5722/717312210.py:1: FutureWarning: DataFrame.fillna
with 'method' is deprecated and will raise in a future version. Use
obj.ffill() or obj.bfill() instead.
  df5=df.fillna(method='bfill',axis=1)
                  area_type availability
location \
       Super built-up Area
                                     19-Dec
                                             Electronic City Phase II
1
                 Plot Area
                              Ready To Move
                                                     Chikka Tirupathi
2
                              Ready To Move
                                                           Uttarahalli
             Built-up Area
       Super built-up Area
                              Ready To Move
                                                   Lingadheeranahalli
       Super built-up Area
                              Ready To Move
                                                              Kothanur
                                                            Whitefield
13315
             Built-up Area
                              Ready To Move
13316
       Super built-up Area
                              Ready To Move
                                                         Richards Town
13317
             Built-up Area
                              Ready To Move
                                                Raja Rajeshwari Nagar
13318
      Super built-up Area
                                     18-Jun
                                                      Padmanabhanagar
13319
       Super built-up Area
                              Ready To Move
                                                          Doddathoguru
                  society total sqft bath balcony
                                                    price
            size
0
           2 BHK
                  Coomee
                                 1056
                                       2.0
                                                    39.07
                                               1.0
                                       5.0
1
       4 Bedroom
                  Theanmp
                                 2600
                                               3.0
                                                    120.0
2
           3 BHK
                                 1440
                                       2.0
                     1440
                                                      62.0
                                               3.0
                                       3.0
3
           3 BHK
                  Soiewre
                                 1521
                                               1.0
                                                      95.0
4
           2 BHK
                                 1200
                                       2.0
                                               1.0
                                                     51.0
                     1200
                                       . . .
                                                . . .
13315
       5 Bedroom
                  ArsiaEx
                                 3453
                                       4.0
                                               0.0
                                                    231.0
           4 BHK
                                 3600
                                       5.0
                                             400.0
                                                    400.0
13316
                     3600
           2 BHK
13317
                  Mahla T
                                 1141
                                       2.0
                                               1.0
                                                     60.0
13318
           4 BHK
                  SollyCl
                                 4689
                                       4.0
                                               1.0
                                                    488.0
13319
           1 BHK
                      550
                                  550
                                       1.0
                                               1.0
                                                     17.0
```

```
[13320 rows x 9 columns]
df6=df.fillna({'society':'abcd','balcony':'defg'})
df6
                  area type
                              availability
location \
       Super built-up Area
                                    19-Dec Electronic City Phase II
                 Plot Area
                             Ready To Move
                                                     Chikka Tirupathi
2
             Built-up Area
                                                          Uttarahalli
                             Ready To Move
                             Ready To Move
       Super built-up Area
                                                   Lingadheeranahalli
       Super built-up Area
                             Ready To Move
                                                             Kothanur
13315
             Built-up Area
                             Ready To Move
                                                           Whitefield
      Super built-up Area
13316
                             Ready To Move
                                                        Richards Town
13317
             Built-up Area
                             Ready To Move
                                                Raja Rajeshwari Nagar
13318 Super built-up Area
                                    18-Jun
                                                      Padmanabhanagar
13319 Super built-up Area Ready To Move
                                                         Doddathoguru
                  society total sqft
                                       bath balcony
            size
                                                      price
           2 BHK
                  Coomee
                                1056
                                       2.0
                                                1.0
                                                      39.07
                                                3.0
1
                                2600
                                        5.0
                                                     120.00
       4 Bedroom
                  Theanmp
2
                                1440
           3 BHK
                     abcd
                                        2.0
                                                3.0
                                                      62.00
3
           3 BHK
                                1521
                                        3.0
                                                1.0
                                                      95.00
                  Soiewre
4
                                1200
                                                      51.00
           2 BHK
                     abcd
                                        2.0
                                                1.0
13315
       5 Bedroom
                  ArsiaEx
                                3453
                                        4.0
                                                0.0
                                                     231.00
13316
           4 BHK
                     abcd
                                3600
                                        5.0
                                               defq
                                                     400.00
13317
           2 BHK
                  Mahla T
                                        2.0
                                                1.0
                                                      60.00
                                1141
13318
           4 BHK
                  SollyCl
                                4689
                                        4.0
                                                1.0
                                                     488.00
13319
           1 BHK
                     abcd
                                 550
                                        1.0
                                                1.0
                                                      17.00
[13320 rows x 9 columns]
df7=df.fillna(value=df['balcony'].mean())
df7
                              availability
                  area type
location \
```

0	Super	built-up	Area		19	9-Dec	Electronic	City Phase	e II
1		Plot	Area	Ready	То	Move	Ch:	ikka Tirupa	athi
2		Built-up	Area	Ready	То	Move		Uttaraha	alli
3	Super	built-up	Area	Ready	То	Move	Linga	adheeranaha	alli
4	Super	built-up	Area	Ready	То	Move		Kotha	anur
13315		Built-up	Area	Ready	То	Move		Whitef:	ield
13316	Super	built-up	Area	Ready	То	Move		Richards ⁻	Γown
13317		Built-up	Area	Ready	То	Move	Raja Raj	jeshwari Na	agar
13318	Super	built-up	Area		18	3-Jun	Pa	admanabhana	agar
13319	Super	built-up	Area	Ready	То	Move		Doddatho	guru
	2 4 Bedd 3 3 2 5 Bedd 4 2 4 1	BHK Coor room Thea BHK 1.584 BHK Soid BHK 1.584	nee anmp 4376 ewre 4376 iaEx 4376 la T lyCl 4376	26 14 15 12 34 36 11 46	956 600 440 521 200 453 600 141 589	bath 2.0 5.0 2.0 3.0 2.0 5.0 2.0 4.0 1.0	balcony 1.000000 3.000000 3.000000 1.000000 1.000000 1.584376 1.000000 1.000000	price 39.07 120.00 62.00 95.00 51.00 231.00 400.00 60.00 488.00 17.00	
locati	on \	area	_type	avai	lab:	ility			
0	-	built-up	Area		19	9-Dec	Electronic	City Phase	e II
1		Plot	Area	Ready	То	Move	Ch:	ikka Tirupa	athi
2		Built-up	Area	Ready	То	Move		Uttaraha	alli
3	Super	built-up	Area	Ready	То	Move	Linga	adheeranaha	alli

4	Super	built-up	Area	Ready T	o Move		Kothanur
13315		Built-up	Area	Ready T	o Move		Whitefield
13316	Super	built-up	Area	Ready T			Richards Town
13317		Built-up	Area	Ready T		Raia	Rajeshwari Nagar
13318	Suner	built-up	Area	-	18-Jun	Maja	Padmanabhanagar
							-
13319	Super	built-up	Area	Ready T	o Move		Doddathoguru
0 1 2 3 4	2 4 Bed 3 3	BHK Coom room Thea BHK BHK Soie	ee nmp 3.0	tal_sqft 1056 2600 1440 1521 1200	2.0 5.0 2.0 3.0 2.0	balcony 1.0 3.0 3.0 1.0	price 39.07 120.00 62.00 95.00 51.00
13315 13316 13317 13318 13319	2 4	BHK BHK Mahl BHK Soll	3.0 a T	3453 3600 1141 4689 550	5.0 2.0 4.0	0.0 3.0 1.0 1.0	231.00 400.00 60.00 488.00 17.00
[13320	rows	x 9 column	s]				
df9=df. df9	fillna.	a(value=df	['balc	ony']. <mark>mi</mark>	n())		
locatio	n \	area	_type	availa	bility		
0	-	built-up	Area		19-Dec	Electron	ic City Phase II
1		Plot	Area	Ready T	o Move		Chikka Tirupathi
2		Built-up	Area	Ready T	o Move		Uttarahalli
3	Super	built-up	Area	Ready T	o Move	Li	ngadheeranahalli
4	Super	built-up	Area	Ready T	o Move		Kothanur
13315		Built-up	Area	Ready T	o Move		Whitefield
	Super	built-up		Ready T			Richards Town

13317				
Super built-up Area Ready To Move Doddathoguru	13317	Built-up Area	Ready To Move	Raja Rajeshwari Nagar
Size Society total_sqft bath balcony price	13318 Super	built-up Area	18-Jun	Padmanabhanagar
0	13319 Super	built-up Area	Ready To Move	Doddathoguru
0				
13315 5 Bedroom ArsiaEx 3453 4.0 0.0 231.00 13316 4 BHK 0.0 3600 5.0 0.0 400.00 13317 2 BHK Mahla T 1141 2.0 1.0 60.00 13318 4 BHK SollyCl 4689 4.0 1.0 488.00 13319 1 BHK 0.0 550 1.0 1.0 17.00 [13320 rows x 9 columns]	1 4 Bed 2 3 3 3	P BHK Coomee Iroom Theanmp B BHK 0.0 B BHK Soiewre	1056 2.0 2600 5.0 1440 2.0 1521 3.0	1.0 39.07 3.0 120.00 3.0 62.00 1.0 95.00
13316				
df10=df.dropna() df10 area_type availability location \ 0 Super built-up Area	13316 4 13317 2 13318 4	BHK 0.0 BHK Mahla T BHK SollyCl	3600 5.0 1141 2.0 4689 4.0	$egin{array}{ccc} 0.0 & 400.00 \ 1.0 & 60.00 \ 1.0 & 488.00 \ \end{array}$
area_type availability location \ 0 Super built-up Area	[13320 rows	x 9 columns]		
location \ 0 Super built-up Area	•	ona()		
9 Super built-up Area 19-Dec Electronic City Phase II 1 Plot Area Ready To Move Chikka Tirupathi 3 Super built-up Area Ready To Move Lingadheeranahalli 5 Super built-up Area Ready To Move Whitefield 11 Plot Area Ready To Move Whitefield 11 Plot Area Ready To Move Uttarahalli 13313 Super built-up Area Ready To Move Uttarahalli 13314 Super built-up Area Ready To Move Green Glen Layout 13315 Built-up Area Ready To Move Whitefield 13317 Built-up Area Ready To Move Raja Rajeshwari Nagar 13318 Super built-up Area 18-Jun Padmanabhanagar	location \	area_type	availability	
Super built-up Area Ready To Move Lingadheeranahalli Super built-up Area Ready To Move Whitefield Plot Area Ready To Move Whitefield 13313 Super built-up Area Ready To Move Uttarahalli 13314 Super built-up Area Ready To Move Green Glen Layout 13315 Built-up Area Ready To Move Whitefield 13317 Built-up Area Ready To Move Raja Rajeshwari Nagar 13318 Super built-up Area 18-Jun Padmanabhanagar	-	built-up Area	19-Dec	Electronic City Phase II
Super built-up Area Ready To Move Whitefield Plot Area Ready To Move Whitefield Super built-up Area Ready To Move Uttarahalli Super built-up Area Ready To Move Green Glen Layout Built-up Area Ready To Move Whitefield Built-up Area Ready To Move Raja Rajeshwari Nagar Ready To Move Raja Rajeshwari Nagar Super built-up Area Ready To Move Raja Rajeshwari Nagar	1	Plot Area	Ready To Move	Chikka Tirupathi
Plot Area Ready To Move Whitefield	3 Super	built-up Area	Ready To Move	Lingadheeranahalli
13313 Super built-up Area Ready To Move Uttarahalli 13314 Super built-up Area Ready To Move Green Glen Layout 13315 Built-up Area Ready To Move Whitefield 13317 Built-up Area Ready To Move Raja Rajeshwari Nagar 13318 Super built-up Area 18-Jun Padmanabhanagar	5 Super	built-up Area	Ready To Move	Whitefield
13313 Super built-up Area Ready To Move Uttarahalli 13314 Super built-up Area Ready To Move Green Glen Layout 13315 Built-up Area Ready To Move Whitefield 13317 Built-up Area Ready To Move Raja Rajeshwari Nagar 13318 Super built-up Area 18-Jun Padmanabhanagar	11	Plot Area	Ready To Move	Whitefield
13314 Super built-up Area Ready To Move Green Glen Layout 13315 Built-up Area Ready To Move Whitefield 13317 Built-up Area Ready To Move Raja Rajeshwari Nagar 13318 Super built-up Area 18-Jun Padmanabhanagar				
13315 Built-up Area Ready To Move Whitefield 13317 Built-up Area Ready To Move Raja Rajeshwari Nagar 13318 Super built-up Area 18-Jun Padmanabhanagar	13313 Super	built-up Area	Ready To Move	Uttarahalli
13317 Built-up Area Ready To Move Raja Rajeshwari Nagar 13318 Super built-up Area 18-Jun Padmanabhanagar	13314 Super	built-up Area	Ready To Move	Green Glen Layout
13318 Super built-up Area 18-Jun Padmanabhanagar	13315	Built-up Area	Ready To Move	Whitefield
	13317	Built-up Area	Ready To Move	Raja Rajeshwari Nagar
size society total_sqft bath balcony price	13318 Super	built-up Area	18-Jun	Padmanabhanagar
		size society to	otal_sqft bath	balcony price

3 5	2 BHK Coom edroom Thea 3 BHK Soie 2 BHK Duer edroom Prr	anmp ewre naTa	1056 2600 1521 1170 2785	2.0 5.0 3.0 2.0 5.0	1.0 3.0 1.0 1.0 3.0	39.07 120.00 95.00 38.00 295.00
 13313 13314	3 BHK Akli 3 BHK Soos edroom Arsi 2 BHK Mahl 4 BHK Soll	 a R sePr aEx a T	1345 1715 3453 1141 4689	2.0 3.0 4.0 2.0 4.0	1.0 3.0 0.0 1.0	57.00 112.00 231.00 60.00 488.00
	x 9 columns		4003	4.0	1.0	400.00
	opna(how='al					
		_type	availab	ility		
location 0 Sup	\ er built-up	Area	19	9-Dec	Electron	ic City Phase II
1	Plot	Area	Ready To	Move		Chikka Tirupathi
2	Built-up	Area	Ready To	Move		Uttarahalli
3 Sup	er built-up	Area	Ready To	Move	Li	ngadheeranahalli
4 Sup	er built-up	Area	Ready To	Move		Kothanur
13315	Built-up	Area	Ready To	Move		Whitefield
13316 Sup	er built-up	Area	Ready To	Move		Richards Town
13317	Built-up	Area	Ready To	Move	Raja	Rajeshwari Nagar
13318 Sup	er built-up	Area	18	3-Jun		Padmanabhanagar
13319 Sup	er built-up	Area	Ready To	Move		Doddathoguru
	size soci	ety tot	tal sqft	bath	balcony	price
2 3 4	2 BHK Coom edroom Thea 3 BHK 3 BHK Soie 2 BHK	nee Anmp NaN Ewre NaN	1056 2600 1440 1521 1200	2.0 5.0 2.0 3.0 2.0	1.0 3.0 3.0 1.0	39.07 120.00 62.00 95.00 51.00
13315 5 B 13316	edroom Arsi 4 BHK	aEx NaN	3453 3600	4.0 5.0	0.0 NaN	231.00 400.00

13317 13318 13319	2 BHK 4 BHK 1 BHK	Mahla T SollyCl NaN	1141 4689 550	2.0 4.0 1.0	1.0 1.0 1.0	60.00 488.00 17.00	
[13320	rows x 9 c	olumns]					
df12=d df12	f.dropna(ho	w='any')					
locati	on \	area_type	availab	ility			
0	on \ Super buil	t-up Area	1	9-Dec	Electron	ic City Phase I	Ι
1		Plot Area	Ready To	Move		Chikka Tirupath:	i
3	Super buil	t-up Area	Ready To	Move	Li	ngadheeranahall	i
5	Super buil	t-up Area	Ready To	Move		Whitefield	d
11		Plot Area	Ready To	Move		Whitefield	d
13313	Super buil	t-up Area	Ready To	Move		Uttarahall	i
13314	Super buil	t-up Area	Ready To	Move	G	reen Glen Layou	t
13315	Buil	t-up Area	Ready To	Move		Whitefield	d
13317	Buil	t-up Area	Ready To	Move	Raja	Rajeshwari Naga	r
13318	Super buil	t-up Area	1	8-Jun		Padmanabhanaga	r
0 1 3 5	size 2 BHK 4 Bedroom 3 BHK 2 BHK 4 Bedroom	society to Coomee Theanmp Soiewre DuenaTa Prrry M	otal_sqft 1056 2600 1521 1170 2785	bath 2.0 5.0 3.0 2.0 5.0	1.0 3.0 1.0 1.0 3.0	price 39.07 120.00 95.00 38.00 295.00	
13313 13314 13315 13317 13318	3 BHK 3 BHK 5 Bedroom 2 BHK 4 BHK	Aklia R SoosePr ArsiaEx Mahla T SollyCl	1345 1715 3453 1141 4689	2.0 3.0 4.0 2.0 4.0	1.0 3.0 0.0 1.0	57.00 112.00 231.00 60.00 488.00	
[7496	rows x 9 co	lumns]					
df10.s	hape						

```
(7496, 9)
df11.shape
(13320, 9)
df12.shape
(7496, 9)
df13=df.replace(to_replace=np.nan,value=875465)
df13
                  area_type availability
location \
       Super built-up Area
                                     19-Dec Electronic City Phase II
1
                 Plot Area
                             Ready To Move
                                                     Chikka Tirupathi
2
             Built-up Area
                             Ready To Move
                                                           Uttarahalli
       Super built-up Area
                              Ready To Move
                                                    Lingadheeranahalli
       Super built-up Area
                              Ready To Move
                                                              Kothanur
13315
             Built-up Area
                             Ready To Move
                                                           Whitefield
                                                        Richards Town
      Super built-up Area
                              Ready To Move
13316
                              Ready To Move
                                                Raja Rajeshwari Nagar
13317
             Built-up Area
13318
      Super built-up Area
                                     18-Jun
                                                      Padmanabhanagar
13319 Super built-up Area
                             Ready To Move
                                                          Doddathoguru
                  society total sqft
                                              balcony
            size
                                       bath
                                                         price
0
           2 BHK
                  Coomee
                                 1056
                                        2.0
                                                  1.0
                                                         39.07
                                        5.0
1
       4 Bedroom
                                 2600
                                                        120.00
                  Theanmp
                                                  3.0
2
           3 BHK
                   875465
                                 1440
                                        2.0
                                                  3.0
                                                         62.00
3
           3 BHK
                                                         95.00
                  Soiewre
                                 1521
                                        3.0
                                                  1.0
4
           2 BHK
                   875465
                                 1200
                                        2.0
                                                  1.0
                                                         51.00
                                                  . . .
                                        . . .
       5 Bedroom
                                        4.0
                                                        231.00
13315
                  ArsiaEx
                                 3453
                                                  0.0
13316
           4 BHK
                   875465
                                 3600
                                        5.0
                                             875465.0
                                                        400.00
           2 BHK
13317
                  Mahla T
                                        2.0
                                                        60.00
                                 1141
                                                  1.0
13318
           4 BHK
                  SollyCl
                                 4689
                                        4.0
                                                  1.0
                                                        488.00
13319
           1 BHK
                   875465
                                                         17.00
                                  550
                                        1.0
                                                  1.0
[13320 rows x 9 columns]
```

```
df['code']=pd.factorize(df.society)[0]
df.head()
              area type availability
                                                        location
size ∖
0 Super built-up Area
                                19-Dec Electronic City Phase II
2 BHK
             Plot Area Ready To Move
                                                Chikka Tirupathi 4
1
Bedroom
        Built-up Area Ready To Move
                                                     Uttarahalli
3 BHK
  Super built-up Area Ready To Move
                                              Lingadheeranahalli
3 BHK
4 Super built-up Area Ready To Move
                                                        Kothanur
2 BHK
   society total_sqft bath
                                       price
                             balcony
                                              code
                 1056
                        2.0
                                       39.07
  Coomee
                                 1.0
                                                 0
                 2600
                        5.0
                                 3.0
                                      120.00
1
  Theanmp
                                                 1
2
                 1440
                        2.0
                                 3.0
                                       62.00
                                                - 1
       NaN
3
                                       95.00
                                                 2
   Soiewre
                 1521
                        3.0
                                 1.0
       NaN
                 1200
                        2.0
                                 1.0
                                       51.00
                                                - 1
from sklearn.preprocessing import LabelEncoder
le=LabelEncoder()
df['code le']=le.fit transform(df.society)
df.head()
             area type availability
                                                        location
size ∖
O Super built-up Area
                                19-Dec Electronic City Phase II
2 BHK
             Plot Area Ready To Move
                                                Chikka Tirupathi 4
Bedroom
                                                     Uttarahalli
2
        Built-up Area Ready To Move
3 BHK
3
  Super built-up Area Ready To Move
                                              Lingadheeranahalli
3 BHK
4 Super built-up Area Ready To Move
                                                        Kothanur
2 BHK
   society total sqft
                             balcony
                                              code le
                       bath
                                       price
O Coomee
                 1056
                        2.0
                                 1.0
                                       39.07
                                                  464
                 2600
                        5.0
                                 3.0
                                      120.00
                                                 2439
1
  Theanmp
                                       62.00
2
                 1440
                        2.0
                                 3.0
                                                 2688
       NaN
3
   Soiewre
                 1521
                        3.0
                                 1.0
                                       95.00
                                                 2186
      NaN
                 1200
                        2.0
                                 1.0
                                       51.00
                                                 2688
df.tail()
```

area type					availability			loc	cation	
size	\		_ / ·			•				
13315		Built-u) Area	Rea	dy To	Move		White	efield	5
Bedroo	m									
13316	Super	built-u	o Area	Rea	dy To	Move		Richards	s Town	
4 BHK										
13317		Built-u	o Area	Rea	dy To	Move	Raja	Rajeshwari	Nagar	
2 BHK										
13318	Super	built-u	o Area)	18	-Jun		Padmanabha	anagar	
4 BHK	_		_	_						
13319	Super	built-u	o Area	n Rea	dy To	Move		Doddath	noguru	
1 BHK										
	cociat	y total	caf+	bath	balco	n.,	price	code le		
13315	Arsia	-	3453	4.0			231.0	209		
13316		-^ aN	3600	5.0			400.0	2688		
13317	Mahla		1141	2.0		-	60.0	1216		
13318	Solly(4689	4.0			488.0	2205		
13319	Na		550	1.0		-	17.0	2688		
					_					