

## nd-bivariate-used-for-this-dataset

September 8, 2024

```
[42]: import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

```
[43]: df=pd.read_csv("Air Conditioners.csv") #Reading csv file
```

```
[44]: df
```

```
[44]:
```

	name	main_category	\
0	Lloyd 1.5 Ton 3 Star Inverter Split Ac (5 In 1...	appliances	
1	LG 1.5 Ton 5 Star AI DUAL Inverter Split AC (C...	appliances	
2	LG 1 Ton 4 Star Ai Dual Inverter Split Ac (Cop...	appliances	
3	LG 1.5 Ton 3 Star AI DUAL Inverter Split AC (C...	appliances	
4	Carrier 1.5 Ton 3 Star Inverter Split AC (Copp...	appliances	
..	...	...	
715	Personal Air Conditioners Portable AC Mini Air...	appliances	
716	Air Conditioner Fan Personal Desk Fan Space Ai...	appliances	
717	Portable Air Conditioners, Personal Air Condit...	appliances	
718	Portable Air Conditioner Fan, Personal Air Coo...	appliances	
719	Air Choice Desktop Protatable AC Cooler Fan For ...	appliances	

	sub_category	image	\
0	Air Conditioners	<a href="https://m.media-amazon.com/images/I/31UISB90sY...">https://m.media-amazon.com/images/I/31UISB90sY...</a>	
1	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
2	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
3	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
4	Air Conditioners	<a href="https://m.media-amazon.com/images/I/41lrtqXPiW...">https://m.media-amazon.com/images/I/41lrtqXPiW...</a>	
..	...	...	
715	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71RkCzQZyd...">https://m.media-amazon.com/images/I/71RkCzQZyd...</a>	
716	Air Conditioners	<a href="https://m.media-amazon.com/images/I/719ujjLfw7...">https://m.media-amazon.com/images/I/719ujjLfw7...</a>	
717	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71159r1G-J...">https://m.media-amazon.com/images/I/71159r1G-J...</a>	
718	Air Conditioners	<a href="https://m.media-amazon.com/images/I/61GXC1n0lS...">https://m.media-amazon.com/images/I/61GXC1n0lS...</a>	
719	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71yqMTaaWT...">https://m.media-amazon.com/images/I/71yqMTaaWT...</a>	

	link	ratings	no_of_ratings	\
0	<a href="https://www.amazon.in/Lloyd-Inverter-Convertib...">https://www.amazon.in/Lloyd-Inverter-Convertib...</a>	4.2	2,255	
1	<a href="https://www.amazon.in/LG-Convertible-Anti-Viru...">https://www.amazon.in/LG-Convertible-Anti-Viru...</a>	4.2	2,948	

2	<a href="https://www.amazon.in/LG-Inverter-Convertible-...">https://www.amazon.in/LG-Inverter-Convertible-...</a>	4.2	1,206
3	<a href="https://www.amazon.in/LG-Convertible-Anti-Viru...">https://www.amazon.in/LG-Convertible-Anti-Viru...</a>	4.0	69
4	<a href="https://www.amazon.in/Carrier-Inverter-Split-C...">https://www.amazon.in/Carrier-Inverter-Split-C...</a>	4.1	630
..	...	...	...
715	<a href="https://www.amazon.in/Personal-Conditioners-Po...">https://www.amazon.in/Personal-Conditioners-Po...</a>	NaN	NaN
716	<a href="https://www.amazon.in/Conditioner-Personal-Eva...">https://www.amazon.in/Conditioner-Personal-Eva...</a>	NaN	NaN
717	<a href="https://www.amazon.in/Portable-Conditioners-Pe...">https://www.amazon.in/Portable-Conditioners-Pe...</a>	NaN	NaN
718	<a href="https://www.amazon.in/Portable-Conditioner-Per...">https://www.amazon.in/Portable-Conditioner-Per...</a>	2.8	207
719	<a href="https://www.amazon.in/Air-Choice-Desktop-Prota...">https://www.amazon.in/Air-Choice-Desktop-Prota...</a>	2.5	296

	discount_price	actual_price
0	32,999	58,990
1	46,490	75,990
2	34,490	61,990
3	37,990	68,990
4	34,490	67,790
..	...	...
715	10,234	13,999
716	NaN	9,881
717	NaN	6,361
718	NaN	7,671
719	NaN	8,592

[720 rows x 9 columns]

```
[45]: df.isna().sum()
```

```
[45]: name          0
main_category    0
sub_category     0
image            0
link             0
ratings          287
no_of_ratings    287
discount_price   263
actual_price     220
dtype: int64
```

```
[46]: # Data Preprocessing
# Remove currency symbols and commas from prices and convert to numeric
df['discount_price'] = df['discount_price'].replace('[,]', '', regex=True).
    ↪astype(float)
df['actual_price'] = df['actual_price'].replace('[,]', '', regex=True).
    ↪astype(float)
```

```
[47]: df
```

[47]:

	name	main_category	\
0	Lloyd 1.5 Ton 3 Star Inverter Split Ac (5 In 1...	appliances	
1	LG 1.5 Ton 5 Star AI DUAL Inverter Split AC (C...	appliances	
2	LG 1 Ton 4 Star Ai Dual Inverter Split Ac (Cop...	appliances	
3	LG 1.5 Ton 3 Star AI DUAL Inverter Split AC (C...	appliances	
4	Carrier 1.5 Ton 3 Star Inverter Split AC (Copp...	appliances	
..	...	...	
715	Personal Air Conditioners Portable AC Mini Air...	appliances	
716	Air Conditioner Fan Personal Desk Fan Space Ai...	appliances	
717	Portable Air Conditioners, Personal Air Condit...	appliances	
718	Portable Air Conditioner Fan, Personal Air Coo...	appliances	
719	Air Choice Desktop Protable AC Cooler Fan For ...	appliances	

	sub_category	image	\
0	Air Conditioners	<a href="https://m.media-amazon.com/images/I/31UISB90sY...">https://m.media-amazon.com/images/I/31UISB90sY...</a>	
1	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
2	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
3	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
4	Air Conditioners	<a href="https://m.media-amazon.com/images/I/41lrtqXPiW...">https://m.media-amazon.com/images/I/41lrtqXPiW...</a>	
..	...	...	
715	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71RkCzQZyd...">https://m.media-amazon.com/images/I/71RkCzQZyd...</a>	
716	Air Conditioners	<a href="https://m.media-amazon.com/images/I/719ujjLfw7...">https://m.media-amazon.com/images/I/719ujjLfw7...</a>	
717	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71l59r1G-J...">https://m.media-amazon.com/images/I/71l59r1G-J...</a>	
718	Air Conditioners	<a href="https://m.media-amazon.com/images/I/61GXC1n0lS...">https://m.media-amazon.com/images/I/61GXC1n0lS...</a>	
719	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71yqMTaaWT...">https://m.media-amazon.com/images/I/71yqMTaaWT...</a>	

	link	ratings	no_of_ratings	\
0	<a href="https://www.amazon.in/Lloyd-Inverter-Convertib...">https://www.amazon.in/Lloyd-Inverter-Convertib...</a>	4.2	2,255	
1	<a href="https://www.amazon.in/LG-Convertible-Anti-Viru...">https://www.amazon.in/LG-Convertible-Anti-Viru...</a>	4.2	2,948	
2	<a href="https://www.amazon.in/LG-Inverter-Convertible-...">https://www.amazon.in/LG-Inverter-Convertible-...</a>	4.2	1,206	
3	<a href="https://www.amazon.in/LG-Convertible-Anti-Viru...">https://www.amazon.in/LG-Convertible-Anti-Viru...</a>	4.0	69	
4	<a href="https://www.amazon.in/Carrier-Inverter-Split-C...">https://www.amazon.in/Carrier-Inverter-Split-C...</a>	4.1	630	
..	...	...	...	
715	<a href="https://www.amazon.in/Personal-Conditioners-Po...">https://www.amazon.in/Personal-Conditioners-Po...</a>	NaN	NaN	
716	<a href="https://www.amazon.in/Conditioner-Personal-Eva...">https://www.amazon.in/Conditioner-Personal-Eva...</a>	NaN	NaN	
717	<a href="https://www.amazon.in/Portable-Conditioners-Pe...">https://www.amazon.in/Portable-Conditioners-Pe...</a>	NaN	NaN	
718	<a href="https://www.amazon.in/Portable-Conditioner-Per...">https://www.amazon.in/Portable-Conditioner-Per...</a>	2.8	207	
719	<a href="https://www.amazon.in/Air-Choice-Desktop-Prota...">https://www.amazon.in/Air-Choice-Desktop-Prota...</a>	2.5	296	

	discount_price	actual_price
0	32999.0	58990.0
1	46490.0	75990.0
2	34490.0	61990.0
3	37990.0	68990.0
4	34490.0	67790.0
..	...	...
715	10234.0	13999.0

716	NaN	9881.0
717	NaN	6361.0
718	NaN	7671.0
719	NaN	8592.0

[720 rows x 9 columns]

```
[48]: # Remove commas from 'no_of_ratings' and convert to numeric (fill NaN with 0)
df['no_of_ratings'] = df['no_of_ratings'].replace('[,]', '', regex=True)
df['no_of_ratings'] = pd.to_numeric(df['no_of_ratings'], errors='coerce').
    ↪ fillna(0).astype(int)
```

```
[49]: df
```

```
[49]:
```

	name	main_category	\
0	Lloyd 1.5 Ton 3 Star Inverter Split Ac (5 In 1...	appliances	
1	LG 1.5 Ton 5 Star AI DUAL Inverter Split AC (C...	appliances	
2	LG 1 Ton 4 Star Ai Dual Inverter Split Ac (Cop...	appliances	
3	LG 1.5 Ton 3 Star AI DUAL Inverter Split AC (C...	appliances	
4	Carrier 1.5 Ton 3 Star Inverter Split AC (Copp...	appliances	
..	...	...	
715	Personal Air Conditioners Portable AC Mini Air...	appliances	
716	Air Conditioner Fan Personal Desk Fan Space Ai...	appliances	
717	Portable Air Conditioners, Personal Air Condit...	appliances	
718	Portable Air Conditioner Fan, Personal Air Co...	appliances	
719	Air Choice Desktop Protatable AC Cooler Fan For ...	appliances	

	sub_category	image	\
0	Air Conditioners	<a href="https://m.media-amazon.com/images/I/31UISB90sY...">https://m.media-amazon.com/images/I/31UISB90sY...</a>	
1	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
2	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
3	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
4	Air Conditioners	<a href="https://m.media-amazon.com/images/I/41lrtqXPiW...">https://m.media-amazon.com/images/I/41lrtqXPiW...</a>	
..	...	...	
715	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71RkCzQZyd...">https://m.media-amazon.com/images/I/71RkCzQZyd...</a>	
716	Air Conditioners	<a href="https://m.media-amazon.com/images/I/719ujjLfw7...">https://m.media-amazon.com/images/I/719ujjLfw7...</a>	
717	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71l59r1G-J...">https://m.media-amazon.com/images/I/71l59r1G-J...</a>	
718	Air Conditioners	<a href="https://m.media-amazon.com/images/I/61GXC1n0lS...">https://m.media-amazon.com/images/I/61GXC1n0lS...</a>	
719	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71yqMTaaWT...">https://m.media-amazon.com/images/I/71yqMTaaWT...</a>	

	link	ratings	no_of_ratings	\
0	<a href="https://www.amazon.in/Lloyd-Inverter-Convertib...">https://www.amazon.in/Lloyd-Inverter-Convertib...</a>	4.2	2255	
1	<a href="https://www.amazon.in/LG-Convertible-Anti-Viru...">https://www.amazon.in/LG-Convertible-Anti-Viru...</a>	4.2	2948	
2	<a href="https://www.amazon.in/LG-Inverter-Convertible-...">https://www.amazon.in/LG-Inverter-Convertible-...</a>	4.2	1206	
3	<a href="https://www.amazon.in/LG-Convertible-Anti-Viru...">https://www.amazon.in/LG-Convertible-Anti-Viru...</a>	4.0	69	
4	<a href="https://www.amazon.in/Carrier-Inverter-Split-C...">https://www.amazon.in/Carrier-Inverter-Split-C...</a>	4.1	630	
..	...	...	...	

715	<a href="https://www.amazon.in/Personal-Conditioners-Po...">https://www.amazon.in/Personal-Conditioners-Po...</a>	NaN	0
716	<a href="https://www.amazon.in/Conditioner-Personal-Eva...">https://www.amazon.in/Conditioner-Personal-Eva...</a>	NaN	0
717	<a href="https://www.amazon.in/Portable-Conditioners-Pe...">https://www.amazon.in/Portable-Conditioners-Pe...</a>	NaN	0
718	<a href="https://www.amazon.in/Portable-Conditioner-Per...">https://www.amazon.in/Portable-Conditioner-Per...</a>	2.8	207
719	<a href="https://www.amazon.in/Air-Choice-Desktop-Prota...">https://www.amazon.in/Air-Choice-Desktop-Prota...</a>	2.5	296

	discount_price	actual_price
0	32999.0	58990.0
1	46490.0	75990.0
2	34490.0	61990.0
3	37990.0	68990.0
4	34490.0	67790.0
..	...	...
715	10234.0	13999.0
716	NaN	9881.0
717	NaN	6361.0
718	NaN	7671.0
719	NaN	8592.0

[720 rows x 9 columns]

```
[50]: #First step analys why nan values there in these three coulumn. Those are all
      ↪ "Numeric values" they will not put any ratings so that we are seeing NAN
      ↪ values.
      #Instaed of Nan can we take mean,median,mode will help us to replcae Nan values
      ↪ into this dataset. here we can't apply central tendancy(mean,median,mode).
      ↪ if we take mean,median,mode mode means then it will comes under he's rating
      ↪ giving person, really meaning is he's not placed so that not getting rating.
      #For this kind of scenarios we can't apply central tendancy. to handle this
      ↪ dataset put 0(zero) so information will not change. Nan place if we put
      ↪ 0(zero) means he's getting 0 ratings, qantitative data numer and we got
      ↪ numerical values we got and missing got filled into this datase..
      df["ratings"].fillna(0,inplace=True) #using this updating salary column place
      ↪ 0(zero),
      df["no_of_ratings"].fillna(0,inplace=True) #using this updating salary column
      ↪ place 0(zero),
      df["discount_price"].fillna(0,inplace=True) #using this updating salary column
      ↪ place 0(zero),
      df["actual_price"].fillna(0,inplace=True) #using this updating salary column
      ↪ place 0(zero)
      #"inplace=True" means for this dataset we have not assigned any variables. if
      ↪ we assigned varaiable means "inplace=True" not needed. so we are telling
      ↪ dataset itself go and change and save it as final varaiable like that we are
      ↪ telling.
```

```
[51]: # Convert ratings to float
df['ratings'] = pd.to_numeric(df['ratings'], errors='coerce').fillna(0).
      ↪astype(float)
```

```
[52]: df
```

```
[52]:
```

		name	main_category	\
0	Lloyd 1.5 Ton 3 Star Inverter Split Ac (5 In 1...	appliances		
1	LG 1.5 Ton 5 Star AI DUAL Inverter Split AC (C...	appliances		
2	LG 1 Ton 4 Star Ai Dual Inverter Split Ac (Cop...	appliances		
3	LG 1.5 Ton 3 Star AI DUAL Inverter Split AC (C...	appliances		
4	Carrier 1.5 Ton 3 Star Inverter Split AC (Copp...	appliances		
..	...	...		
715	Personal Air Conditioners Portable AC Mini Air...	appliances		
716	Air Conditioner Fan Personal Desk Fan Space Ai...	appliances		
717	Portable Air Conditioners, Personal Air Condit...	appliances		
718	Portable Air Conditioner Fan, Personal Air Coo...	appliances		
719	Air Choice Desktop Protatable AC Cooler Fan For ...	appliances		

	sub_category	image	\
0	Air Conditioners	<a href="https://m.media-amazon.com/images/I/31UISB90sY...">https://m.media-amazon.com/images/I/31UISB90sY...</a>	
1	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
2	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
3	Air Conditioners	<a href="https://m.media-amazon.com/images/I/51JFb7FctD...">https://m.media-amazon.com/images/I/51JFb7FctD...</a>	
4	Air Conditioners	<a href="https://m.media-amazon.com/images/I/41lrtqXPiW...">https://m.media-amazon.com/images/I/41lrtqXPiW...</a>	
..	...	...	
715	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71RkCzQZyd...">https://m.media-amazon.com/images/I/71RkCzQZyd...</a>	
716	Air Conditioners	<a href="https://m.media-amazon.com/images/I/719ujjLfw7...">https://m.media-amazon.com/images/I/719ujjLfw7...</a>	
717	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71l59r1G-J...">https://m.media-amazon.com/images/I/71l59r1G-J...</a>	
718	Air Conditioners	<a href="https://m.media-amazon.com/images/I/61GXC1n0lS...">https://m.media-amazon.com/images/I/61GXC1n0lS...</a>	
719	Air Conditioners	<a href="https://m.media-amazon.com/images/I/71yqMTaaWT...">https://m.media-amazon.com/images/I/71yqMTaaWT...</a>	

	link	ratings	\
0	<a href="https://www.amazon.in/Lloyd-Inverter-Convertib...">https://www.amazon.in/Lloyd-Inverter-Convertib...</a>	4.2	
1	<a href="https://www.amazon.in/LG-Convertible-Anti-Viru...">https://www.amazon.in/LG-Convertible-Anti-Viru...</a>	4.2	
2	<a href="https://www.amazon.in/LG-Inverter-Convertible-...">https://www.amazon.in/LG-Inverter-Convertible-...</a>	4.2	
3	<a href="https://www.amazon.in/LG-Convertible-Anti-Viru...">https://www.amazon.in/LG-Convertible-Anti-Viru...</a>	4.0	
4	<a href="https://www.amazon.in/Carrier-Inverter-Split-C...">https://www.amazon.in/Carrier-Inverter-Split-C...</a>	4.1	
..	...	...	
715	<a href="https://www.amazon.in/Personal-Conditioners-Po...">https://www.amazon.in/Personal-Conditioners-Po...</a>	0.0	
716	<a href="https://www.amazon.in/Conditioner-Personal-Eva...">https://www.amazon.in/Conditioner-Personal-Eva...</a>	0.0	
717	<a href="https://www.amazon.in/Portable-Conditioners-Pe...">https://www.amazon.in/Portable-Conditioners-Pe...</a>	0.0	
718	<a href="https://www.amazon.in/Portable-Conditioner-Per...">https://www.amazon.in/Portable-Conditioner-Per...</a>	2.8	
719	<a href="https://www.amazon.in/Air-Choice-Desktop-Prota...">https://www.amazon.in/Air-Choice-Desktop-Prota...</a>	2.5	

	no_of_ratings	discount_price	actual_price
0	2255	32999.0	58990.0

1	2948	46490.0	75990.0
2	1206	34490.0	61990.0
3	69	37990.0	68990.0
4	630	34490.0	67790.0
..	...	...	...
715	0	10234.0	13999.0
716	0	0.0	9881.0
717	0	0.0	6361.0
718	207	0.0	7671.0
719	296	0.0	8592.0

[720 rows x 9 columns]

```
[57]: df.isna().sum()
```

```
[57]: name          0
main_category    0
sub_category     0
image           0
link            0
ratings         0
no_of_ratings    0
discount_price   0
actual_price     0
dtype: int64
```

```
[58]: df.to_csv("PreprocessAirConditioners.csv",index=False) #inde=false means it'll
↳not create duplicate index, now it'll create PrePlacementdata.csv and save
↳it in our working directory
```

```
[59]: df
```

```
[59]:
```

	name	main_category	\
0	Lloyd 1.5 Ton 3 Star Inverter Split Ac (5 In 1...	appliances	
1	LG 1.5 Ton 5 Star AI DUAL Inverter Split AC (C...	appliances	
2	LG 1 Ton 4 Star Ai Dual Inverter Split Ac (Cop...	appliances	
3	LG 1.5 Ton 3 Star AI DUAL Inverter Split AC (C...	appliances	
4	Carrier 1.5 Ton 3 Star Inverter Split AC (Copp...	appliances	
..	...	...	
715	Personal Air Conditioners Portable AC Mini Air...	appliances	
716	Air Conditioner Fan Personal Desk Fan Space Ai...	appliances	
717	Portable Air Conditioners, Personal Air Condit...	appliances	
718	Portable Air Conditioner Fan, Personal Air Co...	appliances	
719	Air Choice Desktop Protable AC Cooler Fan For ...	appliances	

	sub_category	image	\
0	Air Conditioners	<a href="https://m.media-amazon.com/images/I/31UISB90sY...">https://m.media-amazon.com/images/I/31UISB90sY...</a>	

```

1   Air Conditioners https://m.media-amazon.com/images/I/51JFb7FctD...
2   Air Conditioners https://m.media-amazon.com/images/I/51JFb7FctD...
3   Air Conditioners https://m.media-amazon.com/images/I/51JFb7FctD...
4   Air Conditioners https://m.media-amazon.com/images/I/41lrtqXPiW...
..
715 Air Conditioners https://m.media-amazon.com/images/I/71RkCzQZyd...
716 Air Conditioners https://m.media-amazon.com/images/I/719ujjLfw7...
717 Air Conditioners https://m.media-amazon.com/images/I/71l59r1G-J...
718 Air Conditioners https://m.media-amazon.com/images/I/61GXC1nOlS...
719 Air Conditioners https://m.media-amazon.com/images/I/71yqMTaaWT...

```

```

                                link ratings \
0   https://www.amazon.in/Lloyd-Inverter-Convertib...      4.2
1   https://www.amazon.in/LG-Convertible-Anti-Viru...      4.2
2   https://www.amazon.in/LG-Inverter-Convertible-...      4.2
3   https://www.amazon.in/LG-Convertible-Anti-Viru...      4.0
4   https://www.amazon.in/Carrier-Inverter-Split-C...      4.1
..
715 https://www.amazon.in/Personal-Conditioners-Po...      0.0
716 https://www.amazon.in/Conditioner-Personal-Eva...      0.0
717 https://www.amazon.in/Portable-Conditioners-Pe...      0.0
718 https://www.amazon.in/Portable-Conditioner-Per...      2.8
719 https://www.amazon.in/Air-Choice-Desktop-Prota...      2.5

```

```

no_of_ratings  discount_price  actual_price
0              2255           32999.0      58990.0
1              2948           46490.0      75990.0
2              1206           34490.0      61990.0
3               69           37990.0      68990.0
4              630           34490.0      67790.0
..
715             0           10234.0      13999.0
716             0              0.0       9881.0
717             0              0.0       6361.0
718            207              0.0       7671.0
719            296              0.0       8592.0

```

[720 rows x 9 columns]

```
[56]: df.isna().sum()
```

```

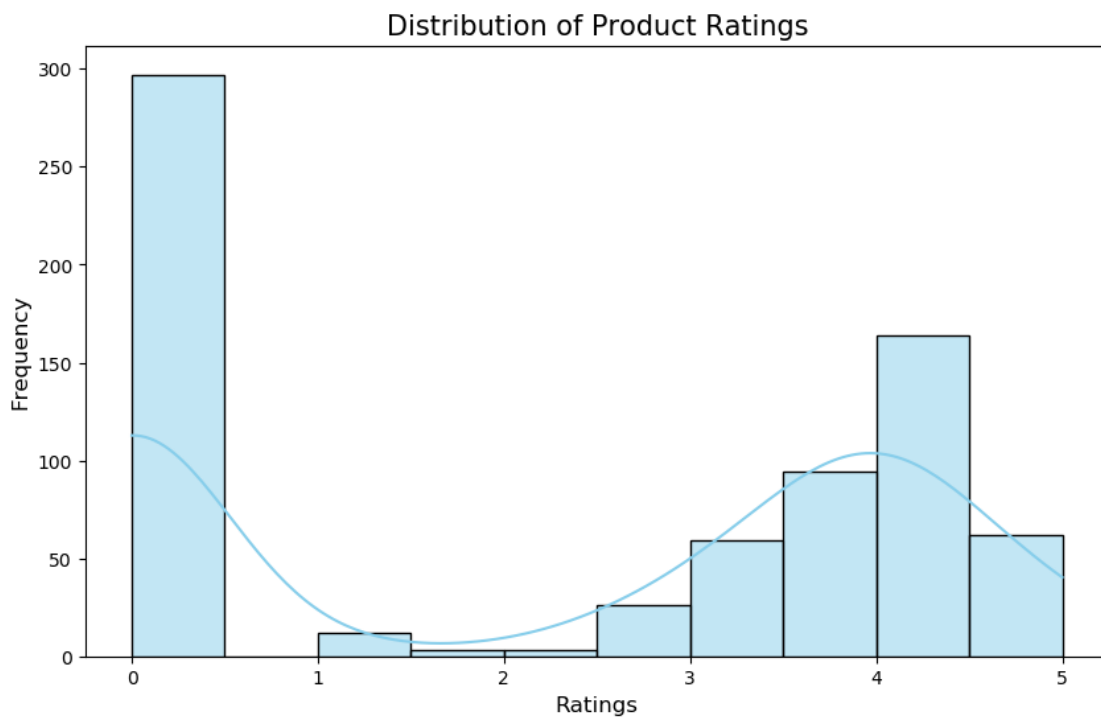
[56]: name           0
      main_category  0
      sub_category   0
      image          0
      link           0
      ratings        0

```

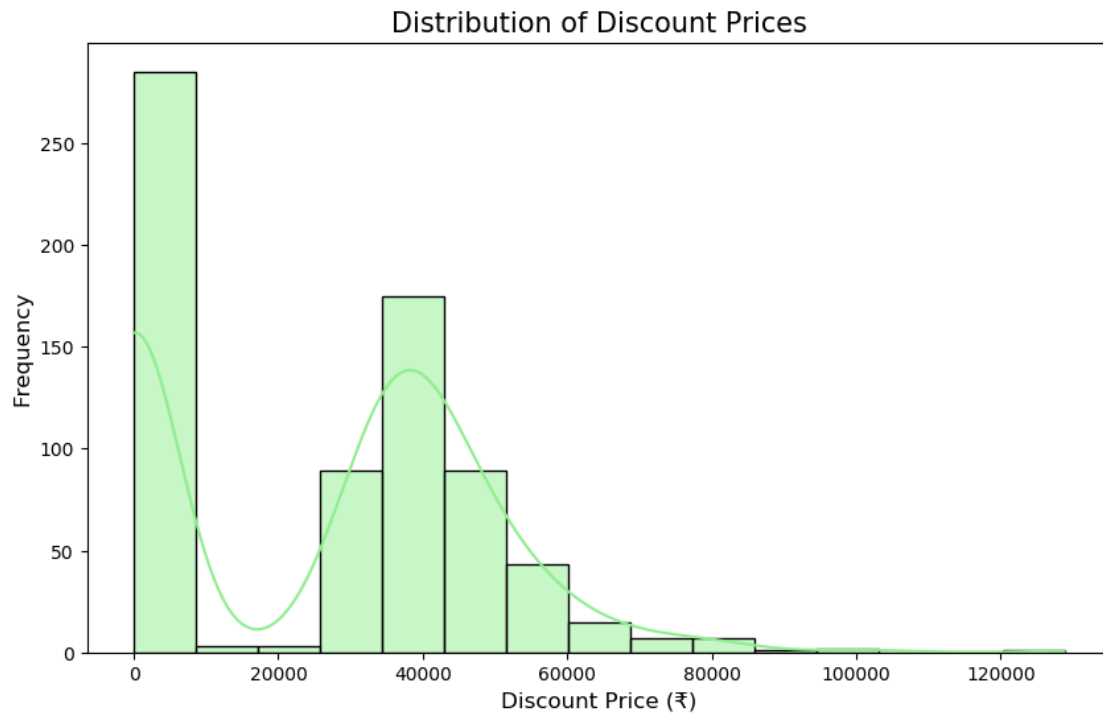


```
no_of_ratings      0
discount_price      0
actual_price        0
dtype: int64
```

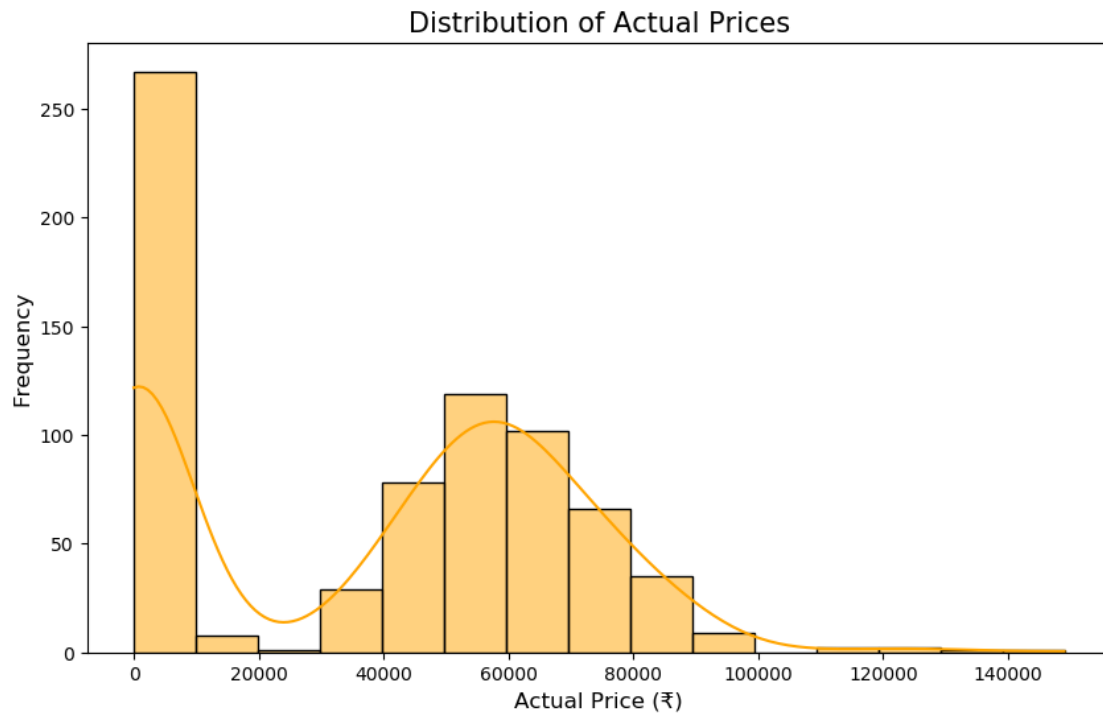
```
[35]: # Univariate Analysis: Distribution of Product Ratings
plt.figure(figsize=(10, 6))
sns.histplot(df['ratings'], bins=10, kde=True, color='skyblue')
plt.title('Distribution of Product Ratings', fontsize=15)
plt.xlabel('Ratings', fontsize=12)
plt.ylabel('Frequency', fontsize=12)
plt.show()
```



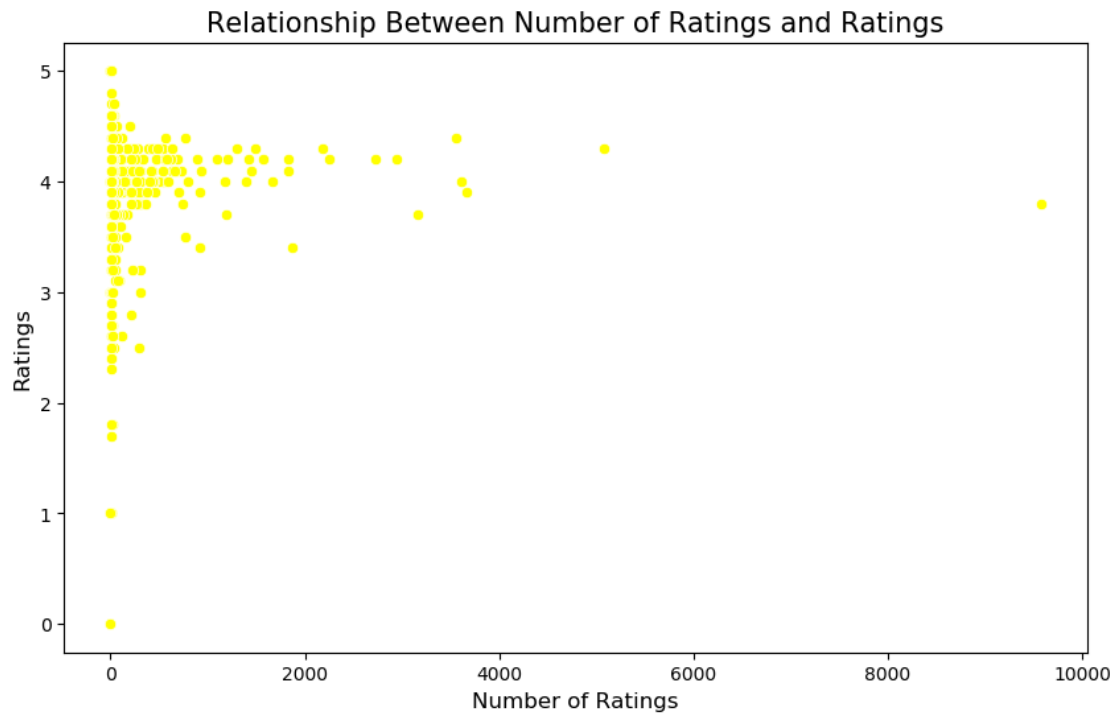
```
[36]: # Univariate Analysis: Distribution of Discount Prices
plt.figure(figsize=(10, 6))
sns.histplot(df['discount_price'], bins=15, kde=True, color='lightgreen')
plt.title('Distribution of Discount Prices', fontsize=15)
plt.xlabel('Discount Price ( )', fontsize=12)
plt.ylabel('Frequency', fontsize=12)
plt.show()
```



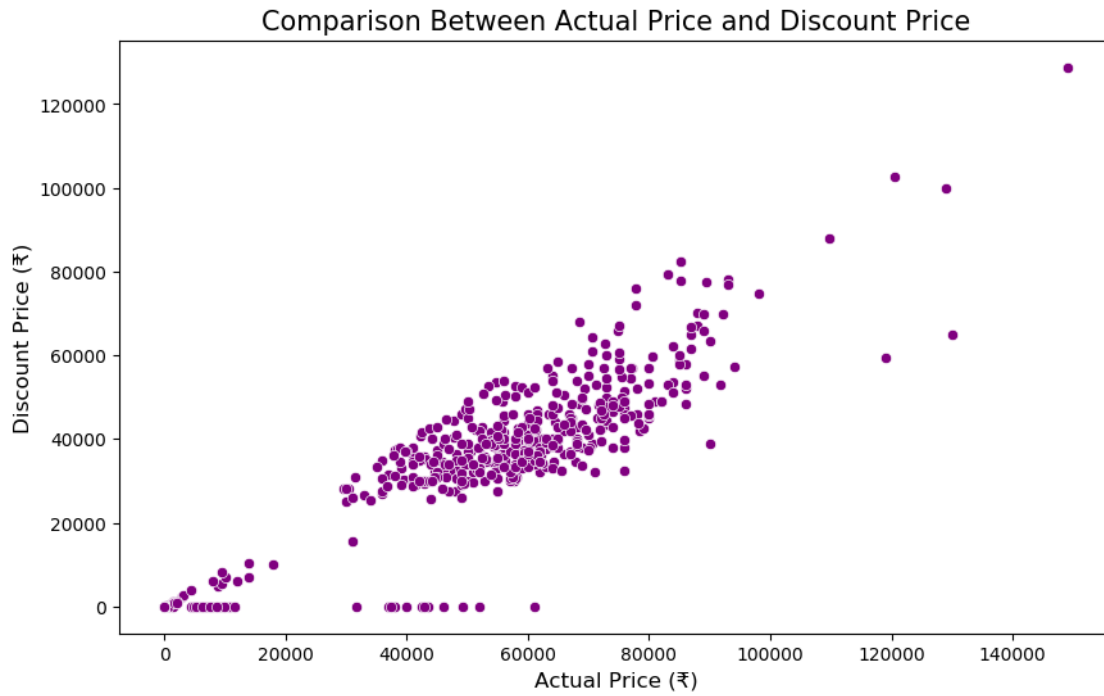
```
[37]: # Univariate Analysis: Distribution of actual_price Prices
plt.figure(figsize=(10, 6))
sns.histplot(df['actual_price'], bins=15, kde=True, color='orange')
plt.title('Distribution of Actual Prices', fontsize=15)
plt.xlabel('Actual Price ( )', fontsize=12)
plt.ylabel('Frequency', fontsize=12)
plt.show()
```



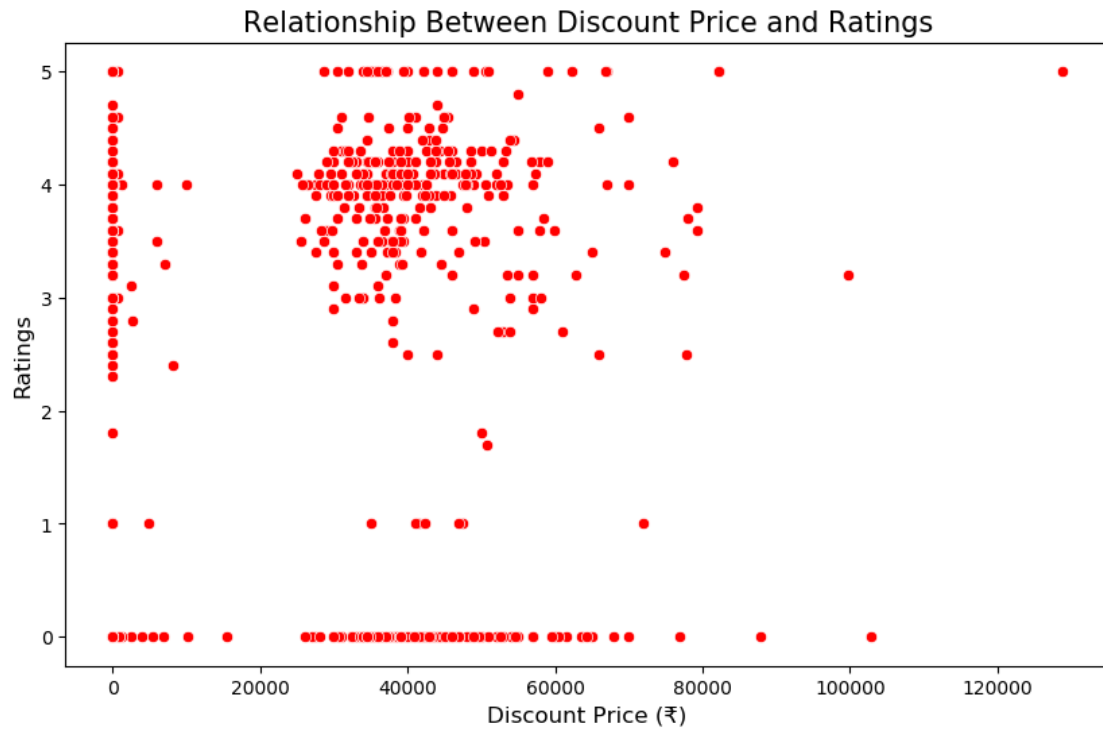
```
[38]: # Bivariate Analysis: Relationship Between Number of Ratings and Ratings
plt.figure(figsize=(10, 6))
sns.scatterplot(x='no_of_ratings', y='ratings', data=df, color='yellow')
plt.title('Relationship Between Number of Ratings and Ratings', fontsize=15)
plt.xlabel('Number of Ratings', fontsize=12)
plt.ylabel('Ratings', fontsize=12)
plt.show()
```



```
[39]: # Bivariate Analysis: Comparison Between Actual Price and Discount Price
plt.figure(figsize=(10, 6))
sns.scatterplot(x='actual_price', y='discount_price', data=df, color='purple')
plt.title('Comparison Between Actual Price and Discount Price', fontsize=15)
plt.xlabel('Actual Price ( )', fontsize=12)
plt.ylabel('Discount Price ( )', fontsize=12)
plt.show()
```



```
[19]: # Bivariate Analysis: Correlation Between Discount Price and Ratings
plt.figure(figsize=(10, 6))
sns.scatterplot(x='discount_price', y='ratings', data=df, color='red')
plt.title('Relationship Between Discount Price and Ratings', fontsize=15)
plt.xlabel('Discount Price ( )', fontsize=12)
plt.ylabel('Ratings', fontsize=12)
plt.show()
```



[ ]:

[ ]: