```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.ticker as mtick
import matplotlib.pyplot as plt
%matplotlib inline
```

```
path = "/content/drive/MyDrive/Amazon Sale Report.csv"
df = pd.read_csv(path)
df
```

<ipython-input-2-026f15d63617>:2: DtypeWarning: Columns (23) have mixed types. Specify dtype option on import or set low_memory=F
  df = pd.read_csv(path)

	index	Order ID	Date	Status	Fulfilment	Sales Channel	ship-service-level	Style	SKU	Category	...	currency	Amount	
0	0	405-8078784-5731545	04-30-22	Cancelled	Merchant	Amazon.in	Standard	SET389	SET389-KR-NP-S	Set	...	INR	647.62	
1	1	171-9198151-1101146	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3781	JNE3781-KR-XXXL	kurta	...	INR	406.00	B
2	2	404-0687676-7273146	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3371	JNE3371-KR-XL	kurta	...	INR	329.00	N/
3	3	403-9615377-8133951	04-30-22	Cancelled	Merchant	Amazon.in	Standard	J0341	J0341-DR-L	Western Dress	...	INR	753.33	PU
4	4	407-1069790-7240320	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3671	JNE3671-TU-XXXL	Top	...	INR	574.00	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	
128970	128970	406-6001380-7673107	05-31-22	Shipped	Amazon	Amazon.in	Expedited	JNE3697	JNE3697-KR-XL	kurta	...	INR	517.00	H
128971	128971	402-9551604-7544318	05-31-22	Shipped	Amazon	Amazon.in	Expedited	SET401	SET401-KR-NP-M	Set	...	INR	999.00	(
128972	128972	407-9547469-3152358	05-31-22	Shipped	Amazon	Amazon.in	Expedited	J0157	J0157-DR-XXL	Western Dress	...	INR	690.00	H
128973	128973	402-6184140-0545956	05-31-22	Shipped	Amazon	Amazon.in	Expedited	J0012	J0012-SKD-XS	Set	...	INR	1199.00	
128974	128974	408-7436540-8728312	05-31-22	Shipped	Amazon	Amazon.in	Expedited	J0003	J0003-SET-S	Set	...	INR	696.00	

128975 rows × 24 columns

```
df.head()
```

	index	Order ID	Date	Status	Fulfilment	Sales Channel	ship-service-level	Style	SKU	Category	...	currency	Amount	ship-cit
0	0	405-8078784-5731545	04-30-22	Cancelled	Merchant	Amazon.in	Standard	SET389	SET389-KR-NP-S	Set	...	INR	647.62	MUMBA
1	1	171-9198151-1101146	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3781	JNE3781-KR-XXXL	kurta	...	INR	406.00	BENGALURI
2	2	404-0687676-7273146	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3371	JNE3371-KR-XL	kurta	...	INR	329.00	NAVI MUMBA
3	3	403-9615377-8133951	04-30-22	Cancelled	Merchant	Amazon.in	Standard	J0341	J0341-DR-L	Western Dress	...	INR	753.33	PUDUCHERR'
4	4	407-1069790-7240320	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3671	JNE3671-TU-XXXL	Top	...	INR	574.00	CHENNA

5 rows × 24 columns

```
df.shape
```

```
(128975, 24)
```

```
df.columns.values
```

```
array(['index', 'Order ID', 'Date', 'Status', 'Fulfilment',
       'Sales Channel ', 'ship-service-level', 'Style', 'SKU', 'Category',
       'Size', 'ASIN', 'Courier Status', 'Qty', 'currency', 'Amount',
       'ship-city', 'ship-state', 'ship-postal-code', 'ship-country',
       'promotion-ids', 'B2B', 'fulfilled-by', 'Unnamed: 22'],
      dtype=object)
```

```
df.describe()
```

	index	Qty	Amount	ship-postal-code
count	128975.000000	128975.000000	121180.000000	128942.000000
mean	64487.000000	0.904431	648.561465	463966.236509
std	37232.019822	0.313354	281.211687	191476.764941
min	0.000000	0.000000	0.000000	110001.000000
25%	32243.500000	1.000000	449.000000	382421.000000
50%	64487.000000	1.000000	605.000000	500033.000000
75%	96730.500000	1.000000	788.000000	600024.000000
max	128974.000000	15.000000	5584.000000	989898.000000

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 128975 entries, 0 to 128974
Data columns (total 24 columns):
 #   Column              Non-Null Count   Dtype
---  ------              --------------   -----
 0   index               128975 non-null  int64
 1   Order ID            128975 non-null  object
 2   Date                128975 non-null  object
 3   Status              128975 non-null  object
 4   Fulfilment          128975 non-null  object
 5   Sales Channel       128975 non-null  object
 6   ship-service-level  128975 non-null  object
 7   Style               128975 non-null  object
 8   SKU                 128975 non-null  object
 9   Category            128975 non-null  object
 10  Size                128975 non-null  object
 11  ASIN                128975 non-null  object
 12  Courier Status      122103 non-null  object
 13  Qty                 128975 non-null  int64
 14  currency            121180 non-null  object
 15  Amount              121180 non-null  float64
```

```
16  ship-city           128942 non-null  object
17  ship-state          128942 non-null  object
18  ship-postal-code    128942 non-null  float64
19  ship-country        128942 non-null  object
20  promotion-ids       79822 non-null   object
21  B2B                 128975 non-null  bool
22  fulfilled-by        39277 non-null   object
23  Unnamed: 22         79925 non-null   object
dtypes: bool(1), float64(2), int64(2), object(19)
memory usage: 22.8+ MB
```

```
df.isnull().sum()
```

	0
index	0
Order ID	0
Date	0
Status	0
Fulfilment	0
Sales Channel	0
ship-service-level	0
Style	0
SKU	0
Category	0
Size	0
ASIN	0
Courier Status	6872
Qty	0
currency	7795
Amount	7795
ship-city	33
ship-state	33
ship-postal-code	33
ship-country	33
promotion-ids	49153
B2B	0
fulfilled-by	89698
Unnamed: 22	49050

```
df['B2B'].value_counts().plot(kind = 'bar' ,figsize = (6,4))
plt.xlabel("B2B category" , labelpad = 14)
plt.ylabel("Count" , labelpad = 14)
plt.title("Count of B2B category" , y = 1.02)
```

```
Text(0.5, 1.02, 'Count of B2B category')
```
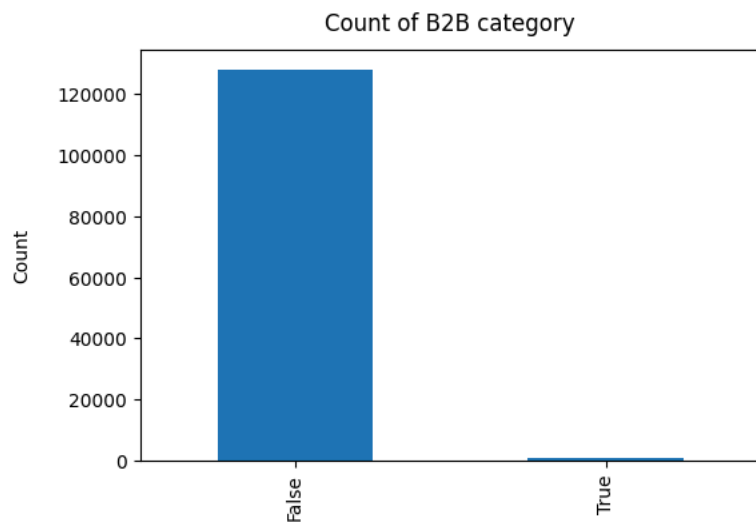
Count of B2B category


```
100 * df["B2B"].value_counts()/len(df["B2B"])
```

	count
B2B	
False	99.324675
True	0.675325

```
df["B2B"].value_counts()
```

	count
B2B	
False	128104
True	871

1. Data is highly inbalanced we can see more than 99% of orders which are B2C.

2. The B2B which is less than 1%. There are only 871 orders out of 128975 orders.

```
missing = pd.DataFrame(df.isnull().sum()*100/df.shape[0]).reset_index()
plt.figure(figsize = (16,5))
sns.pointplot(x= "index", y = 0 , data = missing)
plt.xticks(rotation = 90, fontsize = 7)
plt.title("Percentage of missing values")
plt.ylabel("PERCENTAGE")
plt.show()
```

Percentage of missing values
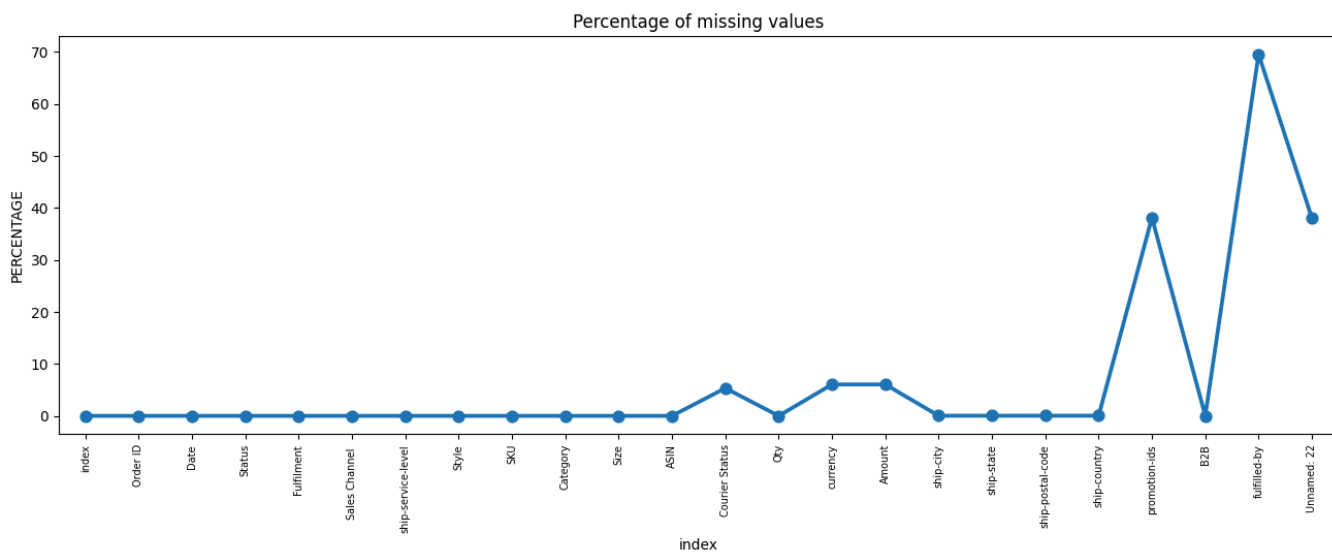

```
df.isnull().mean()*100
```
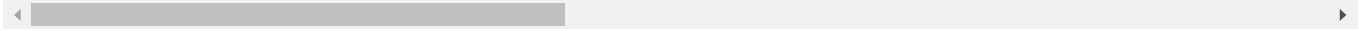
	0
index	0.000000
Order ID	0.000000
Date	0.000000
Status	0.000000
Fulfilment	0.000000
Sales Channel	0.000000
ship-service-level	0.000000
Style	0.000000
SKU	0.000000
Category	0.000000
Size	0.000000
ASIN	0.000000
Courier Status	5.328164
Qty	0.000000
currency	6.043807
Amount	6.043807
ship-city	0.025586
ship-state	0.025586
ship-postal-code	0.025586
ship-country	0.025586
promotion-ids	38.110487
B2B	0.000000
fulfilled-by	69.546811
Unnamed: 22	38.030626

```
df1 = df.copy()
df1.head()
```

	index	Order ID	Date	Status	Fulfilment	Sales Channel	ship-service-level	Style	SKU	Category	...	currency	Amount	ship-cit
0	0	405-8078784-5731545	04-30-22	Cancelled	Merchant	Amazon.in	Standard	SET389	SET389-KR-NP-S	Set	...	INR	647.62	MUMBA
1	1	171-9198151-1101146	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3781	JNE3781-KR-XXXL	kurta	...	INR	406.00	BENGALURl
2	2	404-0687676-7273146	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3371	JNE3371-KR-XL	kurta	...	INR	329.00	NAVI MUMBA
3	3	403-9615377-8133951	04-30-22	Cancelled	Merchant	Amazon.in	Standard	J0341	J0341-DR-L	Western Dress	...	INR	753.33	PUDUCHERRY
4	4	407-1069790-7240320	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3671	JNE3671-TU-XXXL	Top	...	INR	574.00	CHENNA

5 rows × 24 columns

```
df1["Date"] = pd.to_datetime(df1["Date"])
df1["ship-postal-code"] = df1["ship-postal-code"].astype("category")
df1["B2B"] = df["B2B"].astype(str)
df1.isnull().sum()
```

<ipython-input-15-33011d0234e9>:1: UserWarning: Could not infer format, so each element will be parsed individually, falling back to
    df1["Date"] = pd.to_datetime(df1["Date"])

	0
index	0
Order ID	0
Date	0
Status	0
Fulfilment	0
Sales Channel	0
ship-service-level	0
Style	0
SKU	0
Category	0
Size	0
ASIN	0
Courier Status	6872
Qty	0
currency	7795
Amount	7795
ship-city	33
ship-state	33
ship-postal-code	33
ship-country	33
promotion-ids	49153
B2B	0
fulfilled-by	89698
Unnamed: 22	49050

dtype: int64

```
df1["B2B"] = df1["B2B"].replace({"False": "B2C", "True":"B2B"})
```
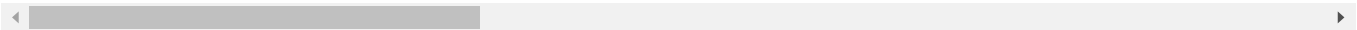
```
df1.rename(columns = {'Order ID':'Order_ID','ship-service-level':'Shipping_type','ship-city':'Shipping_city',
                      'ship-state':'Shipping_state','ship-postal-code':'Pincode','fulfilled-by':'Fulfilled_by',
                      'Qty':'Quantity','Courier Status':'Courier_Status','ship-country':'Shipping_country',
                      'B2B':'Business_type','promotion-ids':'Promotion_ids','Status':'Order_status',
                      'Date':'Order_date'} , inplace = True)
```

```
df1.head()
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	currency	Amour
0	0	405-8078784-5731545	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET389	SET389-KR-NP-S	Set	...	INR	647.6
1	1	171-9198151-1101146	2022-04-30	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3781	JNE3781-KR-XXXL	kurta	...	INR	406.0
2	2	404-0687676-7273146	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3371	JNE3371-KR-XL	kurta	...	INR	329.0
3	3	403-9615377-8133951	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	J0341	J0341-DR-L	Western Dress	...	INR	753.3
4	4	407-1069790-7240320	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3671	JNE3671-TU-XXXL	Top	...	INR	574.0

5 rows × 24 columns

```
df1[df1["Pincode"].isnull()]
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	cur
1871	1871	404-0566904-4825137	2022-04-29	Shipped	Amazon	Amazon.in	Expedited	J0301	J0301-TP-L	Top	...	
1872	1872	404-0566904-4825137	2022-04-29	Shipped	Amazon	Amazon.in	Expedited	JNE3697	JNE3697-KR-L	kurta	...	
8752	8752	406-4003386-8768363	2022-04-25	Shipped	Amazon	Amazon.in	Expedited	JNE3376	JNE3376-KR-M	kurta	...	
11215	11215	402-0107720-7057168	2022-04-23	Shipped	Amazon	Amazon.in	Expedited	J0003	J0003-SET-S	Set	...	
13252	13252	407-4532637-8415521	2022-04-22	Cancelled	Merchant	Amazon.in	Standard	JNE3405	JNE3405-KR-S	kurta	...	
15688	15688	404-9229894-8608305	2022-04-21	Shipped	Amazon	Amazon.in	Expedited	JNE3510	JNE3510-KR-M	kurta	...	
16787	16787	402-4919636-4333150	2022-04-20	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE1233	JNE1233-BLUE-KR-031-XXXL	kurta	...	
18351	18351	405-4927647-8064368	2022-04-19	Shipped	Amazon	Amazon.in	Expedited	J0230	J0230-SKD-XS	Set	...	
22930	22930	402-8628677-0457954	2022-04-16	Shipped - Returned to Seller	Merchant	Amazon.in	Standard	J0003	J0003-SET-S	Set	...	
24986	24986	406-4079063-8291520	2022-04-15	Cancelled	Amazon	Amazon.in	Expedited	JNE3567	JNE3567-KR-XXL	kurta	...	
30379	30379	404-7506843-7913132	2022-04-12	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	SET350	SET350-KR-NP-L	Set	...	
37963	37963	407-3064376-9158743	2022-04-08	Cancelled	Merchant	Amazon.in	Standard	JNE3567	JNE3567-KR-M	kurta	...	
37964	37964	407-3064376-9158743	2022-04-08	Cancelled	Merchant	Amazon.in	Standard	JNE3405	JNE3405-KR-S	kurta	...	
60986	60986	171-3257610-9237139	2022-05-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3365	JNE3365-KR-1052-A-L	kurta	...	
63040	63040	402-1049475-3611523	2022-05-20	Shipped	Amazon	Amazon.in	Expedited	JNE3739	JNE3739-KR-XXL	kurta	...	
73675	73675	405-1356730-8598722	2022-05-11	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	SET187	SET187-KR-DH-XL	Set	...	
73746	73746	407-4664354-2179554	2022-05-11	Shipped	Amazon	Amazon.in	Expedited	SET374	SET374-KR-NP-M	Set	...	
73771	73771	406-7680604-5439529	2022-05-11	Shipped	Amazon	Amazon.in	Expedited	PJNE3607	PJNE3607-KR-4XL	kurta	...	
73772	73772	406-7680604-5439529	2022-05-11	Shipped	Amazon	Amazon.in	Expedited	PJNE3368	PJNE3368-KR-4XL	kurta	...	

73911	73911	403-3420451-5230744	2022-05-11	Cancelled	Amazon	Amazon.in	Expedited	SET374	SET374-KR-NP-M	Set	...
80011	80011	171-4552355-0255565	2022-05-07	Shipped - Returned to Seller	Merchant	Amazon.in	Standard	SET324	SET324-KR-NP-XL	Set	...
80092	80092	403-2857451-7335536	2022-05-07	Shipped	Amazon	Amazon.in	Expedited	JNE3510	JNE3510-KR-S	kurta	...
80455	80455	171-4691098-8489159	2022-05-06	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	SET183	SET183-KR-DH-M	Set	...
84008	84008	405-8605864-8021901	2022-05-04	Shipped - Returned to Seller	Merchant	Amazon.in	Standard	JNE1951	JNE1951-KR-155-XXL	kurta	...
84757	84757	402-8651786-0683548	2022-05-04	Shipped	Amazon	Amazon.in	Expedited	JNE3690	JNE3690-TU-XL	Top	...
104201	104201	403-3190636-2013146	2022-06-18	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	J0351	J0351-SET-S	Set	...
106498	106498	402-8673941-7883531	2022-06-16	Cancelled	Amazon	Amazon.in	Expedited	JNE3734	JNE3734-KR-XL	kurta	...
124215	124215	405-0340492-2359532	2022-06-04	Cancelled	Amazon	Amazon.in	Expedited	JNE3465	JNE3465-KR-L	kurta	...
124357	124357	405-5884153-9925116	2022-06-04	Shipped	Amazon	Amazon.in	Expedited	JNE3697	JNE3697-KR-L	kurta	...
124358	124358	405-5884153-9925116	2022-06-04	Shipped	Amazon	Amazon.in	Expedited	SET337	SET337-KR-NP-L	Set	...
124359	124359	405-5884153-9925116	2022-06-04	Shipped	Amazon	Amazon.in	Expedited	SET154	SET154-KR-NP-L	Set	...
125385	125385	403-5172380-9787567	2022-06-03	Shipped	Amazon	Amazon.in	Expedited	JNE3366	JNE3366-KR-1053-L	kurta	...
126620	126620	403-4249038-6582716	2022-06-02	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3797	JNE3797-KR-M	Western Dress	...

33 rows × 24 columns

```
columns_to_check = ['Pincode','Shipping_city','Shipping_country','Shipping_state']
missing_val = df1[columns_to_check].isnull()
missing_val.corr()
```

	Pincode	Shipping_city	Shipping_country	Shipping_state
Pincode	1.0	1.0	1.0	1.0
Shipping_city	1.0	1.0	1.0	1.0
Shipping_country	1.0	1.0	1.0	1.0
Shipping_state	1.0	1.0	1.0	1.0

```
df1[df1["Shipping_city"] == df1["Shipping_city"].mode()[0]]
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	currency
1	1	171-9198151-1101146	2022-04-30	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3781	JNE3781-KR-XXXL	kurta	...	INR
19	19	405-5957858-1051546	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	SET254	SET254-KR-NP-XS	Set	...	INR
21	21	404-8494550-5860325	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	SET345	SET345-KR-NP-M	Set	...	INR
28	28	405-7755803-4729935	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3567	JNE3567-KR-M	kurta	...	INR
53	53	402-1752649-2274748	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE1407	JNE1407-BLACK-KR-UDF18-XL	kurta	...	INR
...	...	...	...	...	...	...	...	...	...	...	...	...
128852	128852	404-7444867-4101107	2022-06-01	Shipped	Amazon	Amazon.in	Expedited	JNE3510	JNE3510-KR-S	kurta	...	INR
128912	128912	408-2355947-8808311	2022-05-31	Shipped	Amazon	Amazon.in	Expedited	J0332	J0332-DR-XXL	Western Dress	...	INR
128939	128939	407-9521244-5120341	2022-05-31	Shipped	Amazon	Amazon.in	Expedited	JNE3707	JNE3707-DR-S	Western Dress	...	INR
128941	128941	403-3035549-4142738	2022-05-31	Shipped	Amazon	Amazon.in	Expedited	J0118	J0118-TP-XXL	Top	...	INR
128942	128942	403-3035549-4142738	2022-05-31	Shipped	Amazon	Amazon.in	Expedited	J0301	J0301-TP-XXL	Top	...	INR

11217 rows × 24 columns
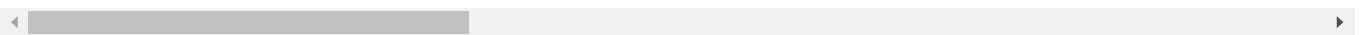
```
missing_val.mean()* 100
```

	0
Pincode	0.025586
Shipping_city	0.025586
Shipping_country	0.025586
Shipping_state	0.025586

```
df1["Amount"].isnull().mean()*100
```

6.043806939329328

```
df1[df1["Order_status"] == "Cancelled"]
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	currenc
0	0	405-8078784-5731545	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET389	SET389-KR-NP-S	Set	...	INI
3	3	403-9615377-8133951	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	J0341	J0341-DR-L	Western Dress	...	INI
8	8	407-5443024-5233168	2022-04-30	Cancelled	Amazon	Amazon.in	Expedited	SET200	SET200-KR-NP-A-XXXL	Set	...	Nal
23	23	404-6019946-2909948	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET291	SET291-KR-PP-M	Set	...	INI
29	29	404-5933402-8801952	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	JNE2132	JNE2132-KR-398-XXXL	kurta	...	Nal
...	...	...	...	...	...	...	...	...	...	...	...	.
128961	128961	402-0082204-6323568	2022-05-31	Cancelled	Amazon	Amazon.in	Expedited	JNE3797	JNE3797-KR-A-XL	Western Dress	...	INI
128962	128962	408-9803724-6565965	2022-05-31	Cancelled	Amazon	Amazon.in	Expedited	MEN5024	MEN5024-KR-L	kurta	...	INI
128965	128965	408-5154281-4593912	2022-05-31	Cancelled	Amazon	Amazon.in	Expedited	J0119	J0119-TP-XXXL	Top	...	INI
128967	128967	404-5182288-1653947	2022-05-31	Cancelled	Amazon	Amazon.in	Expedited	JNE3638	JNE3638-KR-XS	kurta	...	Nal
128969	128969	404-3802633-7250760	2022-05-31	Cancelled	Amazon	Amazon.in	Expedited	SET044	SET044-KR-NP-M	Set	...	INI

18332 rows × 24 columns

```
df1['Amount'].skew()
```

```
0.8854806405409467
```

```
sns.boxplot(df1["Amount"])
```

```
<Axes: ylabel='Amount'>
```
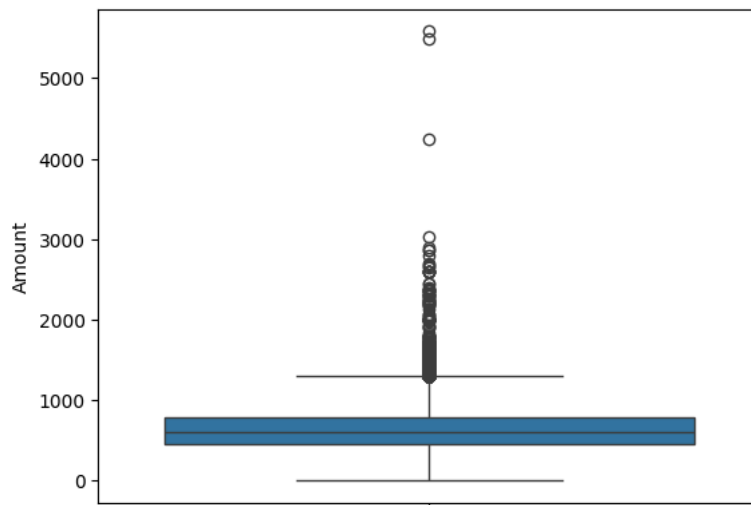


```
df1["Amount"].describe()
```

	Amount
count	121180.000000
mean	648.561465
std	281.211687
min	0.000000
25%	449.000000
50%	605.000000
75%	788.000000
max	5584.000000

dtype: float64

```
df1[df1["Order_status"]== "Cancelled"]
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	currenc
0	0	405-8078784-5731545	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET389	SET389-KR-NP-S	Set	...	INF
3	3	403-9615377-8133951	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	J0341	J0341-DR-L	Western Dress	...	INF
8	8	407-5443024-5233168	2022-04-30	Cancelled	Amazon	Amazon.in	Expedited	SET200	SET200-KR-NP-A-XXXL	Set	...	Naf
23	23	404-6019946-2909948	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET291	SET291-KR-PP-M	Set	...	INF
29	29	404-5933402-8801952	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	JNE2132	JNE2132-KR-398-XXXL	kurta	...	Naf
...	...	...	...	...	...	...	...	...	...	...	...	.
128961	128961	402-0082204-6323568	2022-05-31	Cancelled	Amazon	Amazon.in	Expedited	JNE3797	JNE3797-KR-A-XL	Western Dress	...	INF
128962	128962	408-9803724-6565965	2022-05-31	Cancelled	Amazon	Amazon.in	Expedited	MEN5024	MEN5024-KR-L	kurta	...	INF
128965	128965	408-5154281-4593912	2022-05-31	Cancelled	Amazon	Amazon.in	Expedited	J0119	J0119-TP-XXXL	Top	...	INF
128967	128967	404-5182288-1653947	2022-05-31	Cancelled	Amazon	Amazon.in	Expedited	JNE3638	JNE3638-KR-XS	kurta	...	Naf
128969	128969	404-3802633-7250760	2022-05-31	Cancelled	Amazon	Amazon.in	Expedited	SET044	SET044-KR-NP-M	Set	...	INF

18332 rows × 24 columns

```
sum(df1["Amount"].isnull())
```

7795

```
df1["Amount"].fillna(df1["Amount"].median())
```

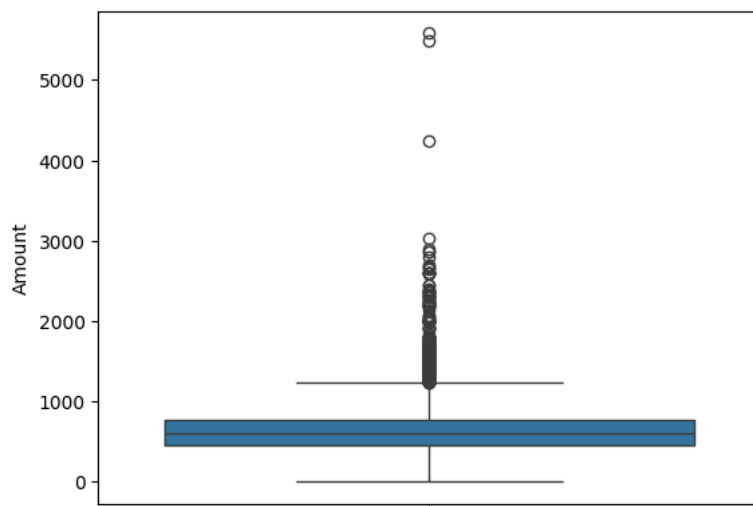|	Amount
0	647.62
1	406.00
2	329.00
3	753.33
4	574.00
...	...
128970	517.00
128971	999.00
128972	690.00
128973	1199.00
128974	696.00

128975 rows × 1 columns

dtype: float64

```
sns.boxplot(df1["Amount"].fillna(df1["Amount"].median()))
```

`<Axes: ylabel='Amount'>`


```
df1.columns.values
```

```
array(['index', 'Order_ID', 'Order_date', 'Order_status', 'Fulfilment',
       'Sales Channel ', 'Shipping_type', 'Style', 'SKU', 'Category',
       'Size', 'ASIN', 'Courier_Status', 'Quantity', 'currency', 'Amount',
       'Shipping_city', 'Shipping_state', 'Pincode', 'Shipping_country',
       'Promotion_ids', 'Business_type', 'Fulfilled_by', 'Unnamed: 22'],
      dtype=object)
```

```
df1[df1["Courier_Status"].isnull()]
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	currency
0	0	405-8078784-5731545	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET389	SET389-KR-NP-S	Set	...	INR
3	3	403-9615377-8133951	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	J0341	J0341-DR-L	Western Dress	...	INR
23	23	404-6019946-2909948	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET291	SET291-KR-PP-M	Set	...	INR
29	29	404-5933402-8801952	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	JNE2132	JNE2132-KR-398-XXXL	kurta	...	NaN
83	83	404-6522553-9345930	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET377	SET377-KR-NP-M	Set	...	INR
...	...	...	...	...	...	...	...	...	...	...	...	...
128762	128762	402-4651401-6366769	2022-06-01	Cancelled	Merchant	Amazon.in	Standard	J0184	J0184-KR-A-S	kurta	...	INR
128808	128808	408-4182027-2307535	2022-06-01	Cancelled	Merchant	Amazon.in	Standard	JNE3619	JNE3619-KR-S	kurta	...	NaN
128855	128855	402-1958677-2521967	2022-06-01	Cancelled	Merchant	Amazon.in	Standard	JNE3568	JNE3568-KR-M	kurta	...	NaN
128875	128875	403-9524128-9243508	2022-06-01	Cancelled	Merchant	Amazon.in	Standard	JNE3797	JNE3797-KR-XL	Western Dress	...	INR
128890	128890	407-0116398-1810752	2022-05-31	Cancelled	Merchant	Amazon.in	Standard	BL019	BL019-71PINK-B	Blouse	...	INR

6872 rows × 24 columns

```
df1["Courier_Status"].isnull().mean()*100
```

5.328164372940492

```
df1.loc[:10,:"Courier_Status"]
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	Size	ASIN
0	0	405-8078784-5731545	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET389	SET389-KR-NP-S	Set	S	B09KXVBD7Z
1	1	171-9198151-1101146	2022-04-30	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3781	JNE3781-KR-XXXL	kurta	3XL	B09K3WFS32
2	2	404-0687676-7273146	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3371	JNE3371-KR-XL	kurta	XL	B07WV4JV4D
3	3	403-9615377-8133951	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	J0341	J0341-DR-L	Western Dress	L	B099NRCT7E
4	4	407-1069790-7240320	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3671	JNE3671-TU-XXXL	Top	3XL	B098714BZF
5	5	404-1490984-4578765	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	SET264	SET264-KR-NP-XL	Set	XL	B08YN7XDSG
6	6	408-5748499-6859555	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	J0095	J0095-SET-L	Set	L	B08CMHNWBN
7	7	406-7807733-3785945	2022-04-30	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3405	JNE3405-KR-S	kurta	S	B081WX4G4C
		407-							SET200-			

```
df1.dtypes
```

	0
index	int64
Order_ID	object
Order_date	datetime64[ns]
Order_status	object
Fulfilment	object
Sales Channel	object
Shipping_type	object
Style	object
SKU	object
Category	object
Size	object
ASIN	object
Courier_Status	object
Quantity	int64
currency	object
Amount	float64
Shipping_city	object
Shipping_state	object
Pincode	category
Shipping_country	object
Promotion_ids	object
Business_type	object
Fulfilled_by	object
Unnamed: 22	object

dtype: object

```
df1["Promotion_ids"].unique()
```

```
array([nan,
       'Amazon PLCC Free-Financing Universal Merchant AAT-WNKTBO3K27EJC,Amazon PLCC Free-Financing Universal Merchant AAT-
QX3UCCJESKPA2,Amazon PLCC Free-Financing Universal Merchant AAT-5QQ7BIYYQEDN2,Amazon PLCC Free-Financing Universal Merchant AAT-
DSJ2QRXXWXVMQ,Amazon PLCC Free-Financing Universal Merchant AAT-CXJHMC2YJUK76,Amazon PLCC Free-Financing Universal Merchant AAT-
CC4FAVTYR4X7C,Amazon PLCC Free-Financing Universal Merchant AAT-XXRCW6NZEPZI4,Amazon PLCC Free-Financing Universal Merchant AAT-
CXNSLNBROFDW4,Amazon PLCC Free-Financing Universal Merchant AAT-R7GXNZWISTRFA,Amazon PLCC Free-Financing Universal Merchant AAT-
WSJLDN3X7KEMO,Amazon PLCC Free-Financing Universal Merchant AAT-VL6FGQVGQVXUS,Amazon PLCC Free-Financing Universal Merchant AAT-
EOKPWFWYW7Y6I,Amazon PLCC Free-Financing Universal Merchant AAT-ZYL5UPUNW6T62,Amazon PLCC Free-Financing Universal Merchant AAT-
XVPICCHRWDCAI,Amazon PLCC Free-Financing Universal Merchant AAT-ETXQ3XXWMRXBG,Amazon PLCC Free-Financing Universal Merchant AAT-
7X3XCTYG64VBE,Amazon PLCC Free-Financing Universal Merchant AAT-7CHGD3WTS3MHM,Amazon PLCC Free-Financing Universal Merchant AAT-
26ZDKNME27X42,Amazon PLCC Free-Financing Universal Merchant AAT-4ZF5KN6E4LJK4,Amazon PLCC Free-Financing Universal Merchant AAT-
7RCXIKUAX7DDY,Amazon PLCC Free-Financing Universal Merchant AAT-BRSZZ45H6MHAO,Amazon PLCC Free-Financing Universal Merchant AAT-
MKLXOOZWQL7GO,Amazon PLCC Free-Financing Universal Merchant AAT-CB7UNXEXGIJTC,Amazon PLCC Free-Financing Universal Merchant #MP-
gzasho-1593152694811,Amazon PLCC Free-Financing Universal Merchant AAT-WLBA4GZ52EAH4',
       'IN Core Free Shipping 2015/04/08 23-48-5-108', ...,
       'Amazon PLCC Free-Financing Universal Merchant AAT-WNKTBO3K27EJC,Amazon PLCC Free-Financing Universal Merchant AAT-
QX3UCCJESKPA2,Amazon PLCC Free-Financing Universal Merchant AAT-5QQ7BIYYQEDN2,Amazon PLCC Free-Financing Universal Merchant AAT-
DSJ2QRXXWXVMQ,Amazon PLCC Free-Financing Universal Merchant AAT-CXJHMC2YJUK76,Amazon PLCC Free-Financing Universal Merchant AAT-
SL3Y2YRMAUNFC,Amazon PLCC Free-Financing Universal Merchant AAT-CC4FAVTYR4X7C,Amazon PLCC Free-Financing Universal Merchant AAT-
EWAPBB6BDRGM6,Amazon PLCC Free-Financing Universal Merchant AAT-EOKPWFWYW7Y6I,Amazon PLCC Free-Financing Universal Merchant AAT-
5ZEB2OGNZ32MC,Amazon PLCC Free-Financing Universal Merchant AAT-NT3ZJJGQ3JK3Q,Amazon PLCC Free-Financing Universal Merchant AAT-
TNYBHEAO7HOHO,Amazon PLCC Free-Financing Universal Merchant AAT-BRSZZ45H6MHAO,Amazon PLCC Free-Financing Universal Merchant AAT-
MKLXOOZWQL7GO,Amazon PLCC Free-Financing Universal Merchant AAT-CB7UNXEXGIJTC,Amazon PLCC Free-Financing Universal Merchant #MP-
gzasho-1593152694811,Amazon PLCC Free-Financing Universal Merchant AAT-WLBA4GZ52EAH4,Amazon PLCC Free-Financing Universal Merchant
AAT-QMFZ3M7T5NPDS,Amazon PLCC Free-Financing Universal Merchant #MP-pmilan-1601980554292',
       'Amazon PLCC Free-Financing Universal Merchant AAT-WNKTBO3K27EJC,Amazon PLCC Free-Financing Universal Merchant AAT-
QX3UCCJESKPA2,Amazon PLCC Free-Financing Universal Merchant AAT-5QQ7BIYYQEDN2,Amazon PLCC Free-Financing Universal Merchant AAT-
DSJ2QRXXWXVMQ,Amazon PLCC Free-Financing Universal Merchant AAT-CXJHMC2YJUK76,Amazon PLCC Free-Financing Universal Merchant AAT-
SL3Y2YRMAUNFC,Amazon PLCC Free-Financing Universal Merchant AAT-CC4FAVTYR4X7C,Amazon PLCC Free-Financing Universal Merchant AAT-
EWAPBB6BDRGM6,Amazon PLCC Free-Financing Universal Merchant AAT-R7GXNZWISTRFA,Amazon PLCC Free-Financing Universal Merchant AAT-
EOKPWFWYW7Y6I,Amazon PLCC Free-Financing Universal Merchant AAT-5ZEB2OGNZ32MC,Amazon PLCC Free-Financing Universal Merchant AAT-
NT3ZJJGQ3JK3Q,Amazon PLCC Free-Financing Universal Merchant AAT-5SHH3G55USK5C,Amazon PLCC Free-Financing Universal Merchant AAT-
BRSZZ45H6MHAO,Amazon PLCC Free-Financing Universal Merchant AAT-MKLXOOZWQL7GO,Amazon PLCC Free-Financing Universal Merchant AAT-
CB7UNXEXGIJTC,Amazon PLCC Free-Financing Universal Merchant #MP-gzasho-1593152694811,Amazon PLCC Free-Financing Universal Merchant
AAT-WLBA4GZ52EAH4',
       'Amazon PLCC Free-Financing Universal Merchant AAT-WNKTBO3K27EJC,Amazon PLCC Free-Financing Universal Merchant AAT-
QX3UCCJESKPA2,Amazon PLCC Free-Financing Universal Merchant AAT-5QQ7BIYYQEDN2,Amazon PLCC Free-Financing Universal Merchant AAT-
```

```
    DSJ2QRXXWXVMQ,Amazon PLCC Free-Financing Universal Merchant AAT-CXJHMC2YJUK76,Amazon PLCC Free-Financing Universal Merchant AAT-
    CC4FAVTYR4X7C,Amazon PLCC Free-Financing Universal Merchant AAT-EWAPBB6BDRGM6,Amazon PLCC Free-Financing Universal Merchant AAT-
    R7GXNZWISTRFA,Amazon PLCC Free-Financing Universal Merchant AAT-EOKPWFWYW7Y6I,Amazon PLCC Free-Financing Universal Merchant AAT-
    NT3ZJJGQ3JK3Q,Amazon PLCC Free-Financing Universal Merchant AAT-5SHH3G55USK5C,Amazon PLCC Free-Financing Universal Merchant AAT-
    TNYBHEAO7HOHO,Amazon PLCC Free-Financing Universal Merchant AAT-BRSZZ45H6MHAO,Amazon PLCC Free-Financing Universal Merchant AAT-
    MKLXOOZWQL7GO,Amazon PLCC Free-Financing Universal Merchant AAT-CB7UNXEXGIJTC,Amazon PLCC Free-Financing Universal Merchant #MP-
    gzasho-1593152694811,Amazon PLCC Free-Financing Universal Merchant AAT-WLBA4GZ52EAH4,Amazon PLCC Free-Financing Universal Merchant
    AAT-QMFZ3M7T5NPDS,Amazon PLCC Free-Financing Universal Merchant #MP-pmilan-1601980554292'],
          dtype=object)
```

```python
df1["Promotion_type"] = None

for i, pro_id in enumerate(df1["Promotion_ids"]):
    if pd.notna(pro_id) and "Amazon PLCC Free-Financing Universal Merchant" in pro_id:
        df1.at[i , "Promotion_type"] = "Amazon PLCC Free-Financing Universal Merchant"
    elif pd.notna(pro_id) and "IN Core Free Shipping" in pro_id:
        df1.at[i , "Promotion_type"] = "IN Core Free Shipping"

print(i)
print(pro_id)
```

```
128974
IN Core Free Shipping 2015/04/08 23-48-5-108
```

```python
df1.head()
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	Amount	Shippin
0	0	405-8078784-5731545	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET389	SET389-KR-NP-S	Set	...	647.62	N
1	1	171-9198151-1101146	2022-04-30	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3781	JNE3781-KR-XXXL	kurta	...	406.00	BENG
2	2	404-0687676-7273146	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3371	JNE3371-KR-XL	kurta	...	329.00	NAVI N
3	3	403-9615377-8133951	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	J0341	J0341-DR-L	Western Dress	...	753.33	PUDUC
4	4	407-1069790-7240320	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3671	JNE3671-TU-XXXL	Top	...	574.00	Ch

5 rows × 25 columns

```python
df1["Promotion_type"].unique()
```

```
array([None, 'Amazon PLCC Free-Financing Universal Merchant',
       'IN Core Free Shipping'], dtype=object)
```

```python
df1["Promotion_type"].isnull().mean()
```

```
0.3909982554758674
```

```python
def find_anomalies(df1):
    anomalies = []

    data_std = np.std(df1)
    data_mean = np.mean(df1)

    cut_off = data_std * 3
    lower_limit = data_mean - cut_off
    upper_limit = data_mean + cut_off

    for outlier in df1:
        if outlier > upper_limit or outlier < lower_limit:
            anomalies.append(outlier)

    return anomalies
```

```python
find_anomalies(df1["Amount"].sort_values(ascending = True))
```

```
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
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        1556.0,
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        1556.0,
        1556.0,
        1556.0,
        1556.0,
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        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556.0,
        1556 0
```

```
df1[df1.isnull() == True]
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	Amount	Shipping_c
0	NaN	NaN	NaT	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	N
1	NaN	NaN	NaT	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	N
2	NaN	NaN	NaT	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	N
3	NaN	NaN	NaT	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	N
4	NaN	NaN	NaT	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	N
...	...	...	...	...	...	...	...	...	...	...	...	...	
128970	NaN	NaN	NaT	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	N
128971	NaN	NaN	NaT	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	N
128972	NaN	NaN	NaT	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	N
128973	NaN	NaN	NaT	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	N
128974	NaN	NaN	NaT	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	N

128975 rows × 25 columns

```python
df1.isnull().sum()
```

	0
index	0
Order_ID	0
Order_date	0
Order_status	0
Fulfilment	0
Sales Channel	0
Shipping_type	0
Style	0
SKU	0
Category	0
Size	0
ASIN	0
Courier_Status	6872
Quantity	0
currency	7795
Amount	7795
Shipping_city	33
Shipping_state	33
Pincode	33
Shipping_country	33
Promotion_ids	49153
Business_type	0
Fulfilled_by	89698
Unnamed: 22	49050
Promotion_type	50429

dtype: int64

```python
import pandas as pd
```

```python
df1.dropna(subset = ['Shipping_city', 'Shipping_state', 'Pincode'],inplace = True)
```

```python
df1.isnull().sum()
```

	0
index	0
Order_ID	0
Order_date	0
Order_status	0
Fulfilment	0
Sales Channel	0
Shipping_type	0
Style	0
SKU	0
Category	0
Size	0
ASIN	0
Courier_Status	6869
Quantity	0
currency	7793
Amount	7793
Shipping_city	0
Shipping_state	0
Pincode	0
Shipping_country	0
Promotion_ids	49145
Business_type	0
Fulfilled_by	89678
Unnamed: 22	49037
Promotion_type	50421

dtype: int64

```
col = ['Fulfilled_by','Shipping_type']
missing = df1[col]
missing
```

	Fulfilled_by	Shipping_type
0	Easy Ship	Standard
1	Easy Ship	Standard
2	NaN	Expedited
3	Easy Ship	Standard
4	NaN	Expedited
...	...	...
128970	NaN	Expedited
128971	NaN	Expedited
128972	NaN	Expedited
128973	NaN	Expedited
128974	NaN	Expedited

128942 rows × 2 columns

```
df1[df1["Fulfilled_by"].isnull()]
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	Amount
2	2	404-0687676-7273146	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3371	JNE3371-KR-XL	kurta	...	329.0
4	4	407-1069790-7240320	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3671	JNE3671-TU-XXXL	Top	...	574.0
5	5	404-1490984-4578765	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	SET264	SET264-KR-NP-XL	Set	...	824.0
6	6	408-5748499-6859555	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	J0095	J0095-SET-L	Set	...	653.0
8	8	407-5443024-5233168	2022-04-30	Cancelled	Amazon	Amazon.in	Expedited	SET200	SET200-KR-NP-A-XXXL	Set	...	NaN
...	...	...	...	...	...	...	...	...	...	...	...	...
128970	128970	406-6001380-7673107	2022-05-31	Shipped	Amazon	Amazon.in	Expedited	JNE3697	JNE3697-KR-XL	kurta	...	517.0
128971	128971	402-9551604-7544318	2022-05-31	Shipped	Amazon	Amazon.in	Expedited	SET401	SET401-KR-NP-M	Set	...	999.0
128972	128972	407-9547469-3152358	2022-05-31	Shipped	Amazon	Amazon.in	Expedited	J0157	J0157-DR-XXL	Western Dress	...	690.0
128973	128973	402-6184140-0545956	2022-05-31	Shipped	Amazon	Amazon.in	Expedited	J0012	J0012-SKD-XS	Set	...	1199.0
128974	128974	408-7436540-8728312	2022-05-31	Shipped	Amazon	Amazon.in	Expedited	J0003	J0003-SET-S	Set	...	696.0

89678 rows × 25 columns

1. we can notice that when ship-service-level is Expedited the fulfilled by variable contains null value.

2. Expedited shipping is 1-3 days delivery type which is a fast delivery service by amazon.

3. Mostly Expedited shipping is fufillment by amazon (FBA) where amazon take care of product till it ordered to customer. In Easy ship (ES) the delivery and customer service is taken by amazon and warehouse,inventory management is taken care by seller.

```
df1["Fulfilled_by"] = np.where(df1["Fulfilled_by"] == 'Expedited','Fulfillment by Amazon ','Easy Ship')
```

```
df1.head(10)
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	Amount	Shippin
0	0	405-8078784-5731545	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET389	SET389-KR-NP-S	Set	...	647.62	N
1	1	171-9198151-1101146	2022-04-30	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3781	JNE3781-KR-XXXL	kurta	...	406.00	BENG
2	2	404-0687676-7273146	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3371	JNE3371-KR-XL	kurta	...	329.00	NAVI N
3	3	403-9615377-8133951	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	J0341	J0341-DR-L	Western Dress	...	753.33	PUDUC
4	4	407-1069790-7240320	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3671	JNE3671-TU-XXXL	Top	...	574.00	CH
5	5	404-1490984-4578765	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	SET264	SET264-KR-NP-XL	Set	...	824.00	GHA
6	6	408-5748499-6859555	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	J0095	J0095-SET-L	Set	...	653.00	CHAND
7	7	406-7807733-3785945	2022-04-30	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3405	JNE3405-KR-S	kurta	...	399.00	HYDE
8	8	407-5443024-5233168	2022-04-30	Cancelled	Amazon	Amazon.in	Expedited	SET200	SET200-KR-NP-A-XXXL	Set	...	NaN	HYDE
9	9	402-4393761-0311520	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	JNE3461	JNE3461-KR-XXL	kurta	...	363.00	(

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df1[df1["Quantity"] == 0].sample(50)
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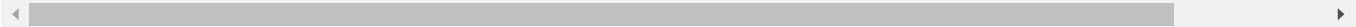
	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	Amount
118594	118594	171-1201463-0856349	2022-06-08	Cancelled	Merchant	Amazon.in	Standard	J0349	J0349-SET-M	Set	...	845.71
116138	116138	404-7559040-5745906	2022-06-09	Cancelled	Amazon	Amazon.in	Expedited	SET014	SET014-KR-PP-XS	Set	...	NaN
19684	19684	404-4779260-2390707	2022-04-18	Cancelled	Merchant	Amazon.in	Standard	SET285	SET285-KR-SHA-S	Set	...	475.24
37320	37320	406-2576578-5835505	2022-04-08	Cancelled	Merchant	Amazon.in	Standard	SET398	SET398-KR-PP-XXXL	Set	...	995.54
39545	39545	403-1459685-4542758	2022-04-06	Cancelled	Amazon	Amazon.in	Expedited	SET239	SET239-KR-NP-L	Set	...	NaN
2676	2676	405-6584467-0753966	2022-04-29	Cancelled	Amazon	Amazon.in	Expedited	SET268	SET268-KR-NP-M	Set	...	NaN
89301	89301	402-1840450-7637102	2022-05-01	Cancelled	Amazon	Amazon.in	Expedited	J0285	J0285-SKD-XS	Set	...	NaN
76057	76057	171-0074653-9425955	2022-05-09	Cancelled	Amazon	Amazon.in	Expedited	J0344	J0344-TP-M	Top	...	NaN
107660	107660	171-1500300-2521942	2022-06-15	Cancelled	Amazon	Amazon.in	Expedited	SET392	SET392-KR-NP-M	Set	...	NaN
76771	76771	171-1106677-3850715	2022-05-09	Cancelled	Merchant	Amazon.in	Standard	SET240	SET240-KR-PP-M	Set	...	NaN
120036	120036	408-1941695-4765933	2022-06-07	Cancelled	Amazon	Amazon.in	Expedited	J0006	J0006-SET-XXL	Ethnic Dress	...	NaN
123052	123052	407-4899300-0366707	2022-06-05	Cancelled	Amazon	Amazon.in	Expedited	JNE3399	JNE3399-KR-XL	kurta	...	NaN
77815	77815	403-1671974-8589105	2022-05-08	Cancelled	Amazon	Amazon.in	Expedited	SET345	SET345-KR-NP-XXL	Set	...	NaN
37985	37985	408-9162255-5641150	2022-04-08	Cancelled	Amazon	Amazon.in	Expedited	SET184	SET184-KR-PP-S	Set	...	NaN
53480	53480	406-8497484-7494714	2022-05-28	Cancelled	Amazon	Amazon.in	Expedited	SET324	SET324-KR-NP-S	Set	...	NaN
102027	102027	408-4883870-4120311	2022-06-20	Cancelled	Merchant	Amazon.in	Standard	JNE3468	JNE3468-KR-L	kurta	...	368.57
11324	11324	402-3625922-4650763	2022-04-23	Cancelled	Merchant	Amazon.in	Standard	JNE1977	JNE1977-KR-237-XL	kurta	...	246.67
98062	98062	171-1461942-4857123	2022-06-23	Cancelled	Amazon	Amazon.in	Expedited	J0349	J0349-SET-L	Set	...	NaN
88681	88681	408-0731381-3087566	2022-05-02	Cancelled	Amazon	Amazon.in	Expedited	SET280	SET280-KR-PP-S	Set	...	NaN
116236	116236	403-5118612-8101109	2022-06-09	Cancelled	Merchant	Amazon.in	Standard	JNE3784	JNE3784-KR-L	kurta	...	472.38
99139	99139	405-0126557-3901159	2022-06-22	Cancelled	Amazon	Amazon.in	Expedited	JNE3421	JNE3421-KR-M	kurta	...	NaN
81295	81295	404-6082127-5775554	2022-05-06	Cancelled	Amazon	Amazon.in	Expedited	J0381	J0381-SKD-L	Set	...	NaN
34006	34006	406-9937631-2240304	2022-04-10	Cancelled	Merchant	Amazon.in	Standard	SET369	SET369-KR-NP-S	Set	...	1047.32

64537	64537	402-5876040-2757950	2022-05-19	Cancelled	Amazon	Amazon.in	Expedited	SET344	SET344-KR-NP-S	Set	...	NaN
30877	30877	408-1562673-7353162	2022-04-12	Cancelled	Amazon	Amazon.in	Expedited	SET268	SET268-KR-NP-XS	Set	...	NaN
26182	26182	404-2541616-0521901	2022-04-15	Cancelled	Merchant	Amazon.in	Standard	J0005	J0005-DR-L	Western Dress	...	856.19
32313	32313	406-0559106-1441918	2022-04-11	Cancelled	Amazon	Amazon.in	Expedited	SET393	SET393-KR-NP-M	Set	...	NaN
437	437	171-4643830-2345965	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	SET408	SET408-KR-NP-XXL	Set	...	570.48
110154	110154	402-6259836-1001154	2022-06-13	Cancelled	Merchant	Amazon.in	Standard	JNE3797	JNE3797-KR-XXL	Western Dress	...	700.00
3954	3954	171-6566249-5445115	2022-04-28	Cancelled	Merchant	Amazon.in	Standard	JNE3703	JNE3703-KR-XL	kurta	...	300.95
82922	82922	407-2722925-0361166	2022-05-05	Cancelled	Amazon	Amazon.in	Expedited	JNE3399	JNE3399-KR-XL	kurta	...	NaN
111187	111187	406-9595005-5385105	2022-06-13	Cancelled	Amazon	Amazon.in	Expedited	SET182	SET182-KR-DH-M	Set	...	NaN
46779	46779	171-0896378-2367531	2022-04-02	Cancelled	Merchant	Amazon.in	Standard	JNE3803	JNE3803-KR-M	kurta	...	NaN
110248	110248	402-0736835-1421116	2022-06-13	Cancelled	Amazon	Amazon.in	Expedited	SET318	SET318-KR-SHA-XXXL	Set	...	NaN
84341	84341	408-2148386-4822712	2022-05-04	Cancelled	Merchant	Amazon.in	Standard	SET132	SET132-KR-NP-XL	Set	...	520.95
44060	44060	404-2119781-9365907	2022-04-04	Cancelled	Amazon	Amazon.in	Expedited	SET286	SET286-KR-NP-L	Set	...	NaN
96086	96086	408-5371854-0063528	2022-06-25	Cancelled	Merchant	Amazon.in	Standard	JNE3797	JNE3797-KR-S	Western Dress	...	NaN
75777	75777	403-4300715-4445919	2022-05-10	Cancelled	Merchant	Amazon.in	Standard	JNE3805	JNE3805-KR-S	kurta	...	NaN
46418	46418	404-8295386-7229149	2022-04-02	Cancelled	Merchant	Amazon.in	Standard	J0003	J0003-SET-S	Set	...	NaN
123158	123158	406-4455835-8179565	2022-06-05	Cancelled	Merchant	Amazon.in	Standard	JNE3706	JNE3706-DR-L	Western Dress	...	NaN
38446	38446	406-6235215-5454730	2022-04-07	Cancelled	Amazon	Amazon.in	Expedited	J0002	J0002-SKD-XS	Set	...	NaN
57254	57254	402-3952658-1441959	2022-05-25	Cancelled	Amazon	Amazon.in	Expedited	J0105	J0105-KR-S	Western Dress	...	NaN
101494	101494	407-4425173-2883556	2022-06-20	Cancelled	Merchant	Amazon.in	Standard	BL036	BL036-176GOLD	Blouse	...	398.10
53021	53021	404-9768806-0692317	2022-05-28	Cancelled	Merchant	Amazon.in	Standard	JNE3404	JNE3404-KR-M	kurta	...	492.38
1250	1250	403-7109129-1137901	2022-04-30	Cancelled	Amazon	Amazon.in	Expedited	JNE3373	JNE3373-KR-XXXL	kurta	...	NaN
54857	54857	405-1325053-0592338	2022-05-27	Cancelled	Amazon	Amazon.in	Expedited	JNE3797	JNE3797-KR-S	Western Dress	...	NaN
		171-		Cancelled	Merchant	Amazon.in	Standard		SET183-	Set	...	NaN

25090	25090	8258059-3316362	2022-04-15	Cancelled	Merchant	Amazon.in	Standard	SET183	KR-DH-XS	Set	...	NaN
44646	44646	408-6201620-0724338	2022-04-03	Cancelled	Merchant	Amazon.in	Standard	SET265	SET265-KR-NP-XS	Set	...	835.24
86492	86492	171-3329047-3742759	2022-05-03	Cancelled	Merchant	Amazon.in	Standard	SET331	SET331-KR-NP-L	Set	...	568.57
1184	1184	408-8453136-4220333	2022-04-30	Cancelled	Merchant	Amazon.in	Standard	JNE3703	JNE3703-KR-XL	kurta	...	300.95

50 rows × 25 columns

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df1[df1['Promotion_type'].isnull()].sample(50)
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25090	25090	8258059-3316362	2022-04-15	Cancelled	Merchant	Amazon.in	Standard	SET183	KR-DH-XS	Set	...	NaN
44646	44646	408-6201620-0724338	2022-04-03	Cancelled	Merchant	Amazon.in	Standard	SET265	SET265-KR-NP-XS	Set	...	835.24
86492	86492	171-3329047-3742759	2022-05-03	Cancelled	Merchant	Amazon.in	Standard	SET331	SET331-KR-NP-L	Set	...	568.57

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	Amount
12929	12929	407-2983277-2300342	2022-04-22	Shipped	Amazon	Amazon.in	Expedited	J0336	J0336-TP-XL	Top	...	599.00
24115	24115	404-1624112-6611569	2022-04-16	Cancelled	Merchant	Amazon.in	Standard	J0108	J0108-SKD-L	Set	...	1025.89
81239	81239	404-6238498-5641129	2022-05-06	Cancelled	Amazon	Amazon.in	Expedited	JNE3568	JNE3568-KR-XL	kurta	...	NaN
44121	44121	171-2320709-8652367	2022-04-04	Cancelled	Merchant	Amazon.in	Standard	MEN5004	MEN5004-KR-XXL	kurta	...	457.14
40860	40860	403-2275572-2666728	2022-04-06	Cancelled	Merchant	Amazon.in	Standard	SET376	SET376-KR-NP-L	Set	...	634.28
62455	62455	404-8101654-5634712	2022-05-21	Shipped	Amazon	Amazon.in	Expedited	MEN5015	MEN5015-KR-L	kurta	...	665.00
71109	71109	408-8135639-6037956	2022-05-14	Shipped	Amazon	Amazon.in	Expedited	JNE3368	JNE3368-KR-XS	kurta	...	471.00
15448	15448	408-4516512-7739511	2022-04-21	Cancelled	Amazon	Amazon.in	Expedited	JNE3613	JNE3613-KR-XL	kurta	...	399.00
24811	24811	405-3905698-0666753	2022-04-15	Shipped	Amazon	Amazon.in	Expedited	J0198	J0198-TP-XL	Top	...	588.00
10929	10929	405-0673002-3873129	2022-04-23	Shipped	Amazon	Amazon.in	Expedited	JNE3781	JNE3781-KR-XXXL	kurta	...	406.00
67180	67180	408-8898469-8391533	2022-05-17	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	J0209	J0209-DR-L	Ethnic Dress	...	0.00
117164	117164	407-3815056-9854755	2022-06-08	Cancelled	Amazon	Amazon.in	Expedited	SET267	SET267-KR-NP-XS	Set	...	852.00
71891	71891	402-2522158-5768303	2022-05-13	Shipped	Amazon	Amazon.in	Expedited	MEN5018	MEN5018-KR-M	kurta	...	655.00
83845	83845	408-3878633-0555542	2022-05-04	Cancelled	Amazon	Amazon.in	Expedited	JNE1408	JNE1408-KR-UDF19-A-XXXL	kurta	...	376.00
100631	100631	407-7754262-9695529	2022-06-21	Cancelled	Merchant	Amazon.in	Standard	JNE3434	JNE3434-KR-XL	kurta	...	NaN
109627	109627	403-9083192-6946747	2022-06-14	Shipped	Amazon	Amazon.in	Expedited	J0339	J0339-DR-L	Western Dress	...	1091.00
1708	1708	402-5201553-6325907	2022-04-29	Cancelled	Amazon	Amazon.in	Expedited	JNE3645	JNE3645-TP-N-XS	Top	...	432.00
67838	67838	403-2994162-1411513	2022-05-16	Shipped	Amazon	Amazon.in	Expedited	J0399	J0399-DR-XL	Western Dress	...	791.00
86342	86342	407-9232200-8137921	2022-05-03	Cancelled	Amazon	Amazon.in	Expedited	J0351	J0351-SET-L	Set	...	NaN
17629	17629	406-5332198-9632301	2022-04-20	Shipped	Amazon	Amazon.in	Expedited	JNE3160	JNE3160-KR-G-L	kurta	...	685.00
104800	104800	403-7464907-2960321	2022-06-17	Shipped	Amazon	Amazon.in	Expedited	PSET268	PSET268-KR-NP-4XL	Set	...	1399.00
35979	35979	406-3663362-5714767	2022-04-09	Shipped	Amazon	Amazon.in	Expedited	JNE3479	JNE3479-KR-XL	kurta	...	259.00
56486	56486	171-1163129-	2022-05-26	Shipped	Amazon	Amazon.in	Expedited	J0341	J0341-DR-XL	Western Dress	...	885.00

		7989129								XL	Dress	
29299	29299	402-7896882-6274768	2022-04-13	Cancelled	Amazon	Amazon.in	Expedited	JNE3468	JNE3468-KR-S	kurta	...	NaN
78735	78735	408-0687196-9237169	2022-05-07	Cancelled	Amazon	Amazon.in	Standard	JNE3405	JNE3405-KR-XL	kurta	...	NaN
2458	2458	404-1025822-7210730	2022-04-29	Cancelled	Merchant	Amazon.in	Standard	JNE3752	JNE3752-KR-M	kurta	...	NaN
101148	101148	406-5873526-8038728	2022-06-20	Shipped	Amazon	Amazon.in	Expedited	JNE3421	JNE3421-KR-L	kurta	...	435.00
41433	41433	405-8707102-8097928	2022-04-05	Shipped	Amazon	Amazon.in	Expedited	JNE3728	JNE3728-KR-XL	kurta	...	329.00
58909	58909	407-0819188-1729954	2022-05-24	Shipped	Amazon	Amazon.in	Expedited	J0251	J0251-SKD-XXXL	Set	...	725.00
23526	23526	408-2201144-3001158	2022-04-16	Cancelled	Merchant	Amazon.in	Standard	JNE3567	JNE3567-KR-M	kurta	...	380.00
51857	51857	407-3098852-9037954	2022-05-29	Shipped	Amazon	Amazon.in	Expedited	J0013	J0013-SKD-M	Set	...	1072.00
18412	18412	408-3239830-4402760	2022-04-19	Shipped	Amazon	Amazon.in	Standard	JNE3617	JNE3617-KR-XL	kurta	...	0.00
66866	66866	171-2648259-9607554	2022-05-17	Cancelled	Merchant	Amazon.in	Standard	J0236	J0236-SKD-XL	Set	...	903.8
124510	124510	404-1999597-4402738	2022-06-04	Shipped	Amazon	Amazon.in	Expedited	J0002	J0002-SKD-L	Set	...	1125.00
6420	6420	406-2898622-1173958	2022-04-26	Shipped	Amazon	Amazon.in	Expedited	JNE3291	JNE3291-KR-XL	kurta	...	442.00
188	188	402-0589123-6183541	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	NW030	NW030-TP-PJ-L	Set	...	582.00
1829	1829	402-3348716-6804357	2022-04-29	Cancelled	Amazon	Amazon.in	Expedited	JNE3405	JNE3405-KR-L	kurta	...	NaN
49103	49103	408-7213258-1343545	2022-05-31	Shipped	Amazon	Amazon.in	Expedited	MEN5008	MEN5008-KR-L	kurta	...	709.00
48453	48453	406-2294156-7681101	2022-04-01	Shipped	Amazon	Amazon.in	Expedited	JNE3440	JNE3440-KR-N-M	kurta	...	379.00
66411	66411	171-7780638-7253107	2022-05-17	Shipped	Amazon	Amazon.in	Expedited	PJNE3373	PJNE3373-KR-N-6XL	kurta	...	836.00
84684	84684	404-3500870-0565107	2022-05-04	Shipped	Amazon	Amazon.in	Expedited	J0023	J0023-TP-XS	Top	...	399.00
37987	37987	402-5635582-2282712	2022-04-08	Shipped	Amazon	Amazon.in	Expedited	JNE3399	JNE3399-KR-XS	kurta	...	435.00
6185	6185	408-5320805-1347537	2022-04-26	Shipped	Amazon	Amazon.in	Expedited	JNE3627	JNE3627-KR-XL	kurta	...	318.00
79579	79579	406-1658498-8023530	2022-05-07	Shipped	Amazon	Amazon.in	Expedited	JNE3718	JNE3718-KR-XXXL	kurta	...	468.00
100861	100861	402-9973968-3545926	2022-06-21	Cancelled	Merchant	Amazon.in	Standard	SET217	SET217-KR-PP-XXL	Set	...	NaN
88234	88234	405-4462639-3974752	2022-05-02	Shipped	Amazon	Amazon.in	Expedited	MEN5011	MEN5011-KR-L	kurta	...	484.00
		406-						JNE3288	JNE3288-			

94504	94504	3982492-9710701	2022-06-26	Shipped	Amazon	Amazon.in	Expedited	JNE3288	KR-XL	kurta	...	420.00
9395	9395	407-5349133-5508311	2022-04-24	Shipped	Amazon	Amazon.in	Expedited	JNE3373	JNE3373-KR-XXXL	kurta	...	376.00
84624	84624	404-4340741-0578726	2022-05-04	Shipped	Amazon	Amazon.in	Expedited	JNE2305	JNE2305-KR-533-M	kurta	...	357.00
121876	121876	403-9648010-2073141	2022-06-05	Shipped	Amazon	Amazon.in	Expedited	MEN5008	MEN5008-KR-XL	kurta	...	688.00

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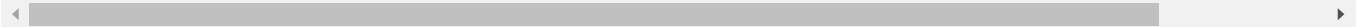
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df1["Amount"].mean()
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    648.5733047734609

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    0.9134381226656246

```
df1["Amount"].fillna(df1["Amount"].median()).skew()
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    0.9401704754729572

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df1["Amount"] = df1["Amount"].fillna(df1["Amount"].mean())
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```
df1[df1["Amount"] == 0].sample(50)
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	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	Amount
118908	118908	408-1139055-3781156	2022-06-07	Shipped - Returned to Seller	Merchant	Amazon.in	Standard	SET364	SET364-KR-NP-S	Set	...	0.0
31598	31598	408-3629671-5149134	2022-04-11	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3579	JNE3579-KR-XL	kurta	...	0.0
68021	68021	408-6607682-4906738	2022-05-16	Shipped	Amazon	Amazon.in	Standard	SET268	SET268-KR-NP-S	Set	...	0.0
54966	54966	408-7779633-0095501	2022-05-27	Shipped	Amazon	Amazon.in	Expedited	JNE3801	JNE3801-KR-L	kurta	...	0.0
14226	14226	408-7974260-2800300	2022-04-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	SET293	SET293-KR-NP-M	Set	...	0.0
66496	66496	408-8497496-1754759	2022-05-17	Shipped	Amazon	Amazon.in	Expedited	J0283	J0283-SET-XL	Set	...	0.0
117859	117859	408-0687136-1715511	2022-06-08	Shipped	Amazon	Amazon.in	Expedited	JNE3564	JNE3564-KR-XXL	kurta	...	0.0
2126	2126	408-4185500-2329134	2022-04-29	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	SET394	SET394-KR-NP-M	Set	...	0.0
113501	113501	408-8284456-5247542	2022-06-11	Shipped	Amazon	Amazon.in	Standard	SET317	SET317-KR-PP-XXL	Set	...	0.0
63659	63659	408-9997550-1968361	2022-05-20	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	J0081	J0081-DR-XL	Western Dress	...	0.0
29091	29091	408-4233442-5363549	2022-04-13	Shipped	Amazon	Amazon.in	Standard	J0164	J0164-DR-L	Ethnic Dress	...	0.0
3838	3838	408-8552126-2844343	2022-04-28	Shipped	Amazon	Amazon.in	Standard	SET264	SET264-KR-NP-M	Set	...	0.0
374	374	408-5020509-5674715	2022-04-30	Shipped - Returned to Seller	Merchant	Amazon.in	Standard	JNE3798	JNE3798-KR-M	Western Dress	...	0.0
93695	93695	408-0528673-2472345	2022-06-27	Shipped - Picked Up	Merchant	Amazon.in	Standard	SET347	SET347-KR-NP-XS	Set	...	0.0
70451	70451	408-2672546-4617941	2022-05-14	Shipped	Amazon	Amazon.in	Expedited	MEN5004	MEN5004-KR-XL	kurta	...	0.0
73516	73516	408-8174282-6228358	2022-05-12	Shipped	Amazon	Amazon.in	Standard	J0348	J0348-SET-M	Set	...	0.0
2295	2295	408-8447246-2180344	2022-04-29	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3787	JNE3787-KR-XXXL	kurta	...	0.0
118167	118167	408-6625695-7325933	2022-06-08	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3434	JNE3434-KR-L	kurta	...	0.0
79171	79171	408-5121066-0971538	2022-05-07	Shipped	Amazon	Amazon.in	Expedited	JNE3373	JNE3373-KR-XL	kurta	...	0.0
115089	115089	408-9107583-4433922	2022-06-10	Shipped	Amazon	Amazon.in	Standard	JNE3784	JNE3784-KR-XS	kurta	...	0.0
		408-		Shipped -					JNE3270-			

4950	4950	8642257-0657100	2022-04-27	Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3270	KR-M	kurta	...	0.0
70911	70911	408-0219910-0144300	2022-05-14	Shipped	Amazon	Amazon.in	Standard	JNE3405	JNE3405-KR-XXXL	kurta	...	0.0
122890	122890	408-0115758-8705158	2022-06-05	Shipped	Amazon	Amazon.in	Expedited	J0006	J0006-SET-S	Ethnic Dress	...	0.0
74608	74608	408-9330233-9041106	2022-05-11	Shipped	Amazon	Amazon.in	Expedited	SET374	SET374-KR-NP-XXXL	Set	...	0.0
4941	4941	408-0878299-8537157	2022-04-27	Shipped	Amazon	Amazon.in	Standard	J0230	J0230-SKD-L	Set	...	0.0
10353	10353	408-9092816-0530746	2022-04-24	Shipped	Amazon	Amazon.in	Standard	JNE3618	JNE3618-KR-M	kurta	...	0.0
107890	107890	408-7634221-9094702	2022-06-15	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	J0349	J0349-SET-L	Set	...	0.0
116486	116486	408-8703041-1330720	2022-06-09	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3797	JNE3797-KR-XXL	Western Dress	...	0.0
66913	66913	408-1516619-0561901	2022-05-17	Shipped	Amazon	Amazon.in	Standard	J0003	J0003-SET-XXL	Set	...	0.0
64119	64119	408-4330675-7605932	2022-05-19	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	J0349	J0349-SET-M	Set	...	0.0
107015	107015	408-7219739-8524348	2022-06-16	Shipped	Amazon	Amazon.in	Expedited	J0198	J0198-TP-XL	Top	...	0.0
119520	119520	408-6019724-0600300	2022-06-07	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3797	JNE3797-KR-XXL	Western Dress	...	0.0
103981	103981	408-0363266-2171538	2022-06-18	Shipped	Amazon	Amazon.in	Standard	J0137	J0137-SET-XXXL	Set	...	0.0
5392	5392	408-9757627-7233920	2022-04-27	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3440	JNE3440-KR-N-XL	kurta	...	0.0
7101	7101	408-1602352-0639568	2022-04-26	Shipped	Amazon	Amazon.in	Expedited	JNE3463	JNE3463-KR-XL	kurta	...	0.0
120278	120278	408-9704783-9936363	2022-06-06	Shipped	Amazon	Amazon.in	Expedited	JNE3801	JNE3801-KR-XXL	kurta	...	0.0
97552	97552	408-7435198-2057138	2022-06-23	Shipped - Picked Up	Merchant	Amazon.in	Standard	JNE3810	JNE3810-KR-XXXL	kurta	...	0.0
82417	82417	408-8702912-2777941	2022-05-05	Shipped	Amazon	Amazon.in	Expedited	SET345	SET345-KR-NP-XXL	Set	...	0.0
32843	32843	408-1662364-6325102	2022-04-11	Shipped - Returned to Seller	Merchant	Amazon.in	Standard	JNE3718	JNE3718-KR-M	kurta	...	0.0
118127	118127	408-4010944-5497962	2022-06-08	Shipped	Amazon	Amazon.in	Standard	J0248	J0248-KR-DPT-XL	Set	...	0.0
67875	67875	408-3493599-2143526	2022-05-16	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	SET341	SET341-KR-NP-XXL	Set	...	0.0
77827	77827	408-4768381-9758737	2022-05-08	Shipped	Amazon	Amazon.in	Expedited	SET269	SET269-KR-NP-M	Set	...	0.0

100691	100691	408-7847365-4457152	2022-06-21	Shipped	Amazon	Amazon.in	Expedited	SET374	SET374-KR-NP-XXXL	Set	...	0.0
31198	31198	408-4554912-8730752	2022-04-12	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	MEN5015	MEN5015-KR-M	kurta	...	0.0
59613	59613	408-1875544-0870741	2022-05-23	Shipped	Amazon	Amazon.in	Expedited	SET184	SET184-KR-PP-XXL	Set	...	0.0
15794	15794	408-5803658-3858762	2022-04-21	Shipped	Amazon	Amazon.in	Standard	JNE3405	JNE3405-KR-L	kurta	...	0.0
64586	64586	408-1674134-1065955	2022-05-19	Shipped	Amazon	Amazon.in	Standard	JNE3714	JNE3714-KR-XS	kurta	...	0.0
11469	11469	408-2127066-7911557	2022-04-23	Shipped	Amazon	Amazon.in	Standard	SET366	SET366-KR-NP-S	Set	...	0.0
118139	118139	408-7696714-9499504	2022-06-08	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	J0236	J0236-SKD-S	Set	...	0.0
23304	23304	408-1624047-1913934	2022-04-16	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3546	JNE3546-KR-M	kurta	...	0.0

50 rows × 25 columns

```
df1['Amount'].describe()
```

	Amount
count	128942.000000
mean	648.573305
std	272.591354
min	0.000000
25%	459.000000
50%	635.000000
75%	771.000000
max	5584.000000

dtype: float64

```
df1[df1["Promotion_type"] == "IN Core Free Shipping"].sample(50)
```

	index	Order_ID	Order_date	Order_status	Fulfilment	Sales Channel	Shipping_type	Style	SKU	Category	...	Amount
29946	29946	404-2648970-9042715	2022-04-12	Shipped	Amazon	Amazon.in	Expedited	JNE3793	JNE3793-KR-XL	kurta	...	368.0
90362	90362	405-8956207-3992320	2022-05-01	Shipped	Amazon	Amazon.in	Expedited	JNE3291	JNE3291-KR-L	kurta	...	442.0
97698	97698	406-5281888-2407545	2022-06-23	Shipped	Amazon	Amazon.in	Expedited	SET335	SET335-KR-NP-S	Set	...	771.0
9798	9798	408-6981399-7843556	2022-04-24	Shipped	Amazon	Amazon.in	Expedited	JNE3401	JNE3401-KR-S	kurta	...	259.0
120394	120394	171-4482884-4832348	2022-06-06	Shipped	Amazon	Amazon.in	Expedited	JNE3654	JNE3654-TP-XL	Top	...	443.0
106480	106480	408-9842056-4677132	2022-06-16	Shipped	Amazon	Amazon.in	Expedited	SET184	SET184-KR-PP-L	Set	...	573.0
101513	101513	407-6017599-9064318	2022-06-20	Shipped	Amazon	Amazon.in	Expedited	SET413	SET413-KR-NP-XXXL	Set	...	699.0
60008	60008	171-7091910-2199506	2022-05-23	Shipped	Amazon	Amazon.in	Expedited	SET156	SET156-KR-NP-S	Set	...	680.0
112001	112001	408-5202189-7181924	2022-06-12	Shipped	Amazon	Amazon.in	Expedited	SET398	SET398-KR-PP-XXL	Set	...	1186.0
113600	113600	171-4118638-9296315	2022-06-11	Shipped	Amazon	Amazon.in	Expedited	JNE3656	JNE3656-TP-N-S	Top	...	574.0
107438	107438	403-7342250-9185936	2022-06-15	Shipped	Amazon	Amazon.in	Expedited	J0117	J0117-TP-XL	Top	...	726.0
567	567	408-3892272-6235562	2022-04-30	Shipped	Amazon	Amazon.in	Expedited	J0342	J0342-TP-M	Top	...	540.0
42105	42105	405-9130775-2398764	2022-04-05	Shipped	Amazon	Amazon.in	Expedited	JNE3806	JNE3806-KR-L	kurta	...	549.0
34808	34808	404-2352663-1493102	2022-04-09	Shipped	Amazon	Amazon.in	Expedited	SET324	SET324-KR-NP-M	Set	...	597.0
53767	53767	404-2951333-5737931	2022-05-28	Shipped	Amazon	Amazon.in	Expedited	JNE3373	JNE3373-KR-XXXL	kurta	...	382.0
106101	106101	405-6768759-7562716	2022-06-16	Shipped	Amazon	Amazon.in	Expedited	NW014	NW014-ST-SR-XXL	Set	...	537.0
64538	64538	171-1704884-3505133	2022-05-19	Shipped	Amazon	Amazon.in	Expedited	JNE3797	JNE3797-KR-S	Western Dress	...	771.0
123296	123296	171-3244777-2916329	2022-06-04	Shipped	Amazon	Amazon.in	Expedited	JNE3465	JNE3465-KR-L	kurta	...	491.0

27127	27127	407-7874771-0386730	2022-04-14	Shipped	Amazon	Amazon.in	Expedited	J0310	J0310-TP-L	Top	...	339.0
71426	71426	408-0962303-2436337	2022-05-13	Shipped	Amazon	Amazon.in	Expedited	JNE3778	JNE3778-KR-XS	kurta	...	459.0
98888	98888	171-3928316-2376327	2022-06-22	Shipped	Amazon	Amazon.in	Expedited	J0350	J0350-SET-XXL	Set	...	457.0
53496	53496	406-8166437-5865150	2022-05-28	Shipped	Amazon	Amazon.in	Expedited	SET324	SET324-KR-NP-S	Set	...	635.0
65669	65669	171-3836732-5330719	2022-05-18	Shipped	Amazon	Amazon.in	Expedited	JNE3797	JNE3797-KR-S	Western Dress	...	771.0
104550	104550	403-4968063-5250721	2022-06-18	Shipped	Amazon	Amazon.in	Expedited	SET154	SET154-KR-NP-XXXL	Set	...	832.0
57723	57723	408-7950155-7797107	2022-05-25	Shipped	Amazon	Amazon.in	Expedited	J0006	J0006-SET-XL	Ethnic Dress	...	899.0
29980	29980	406-1326018-3426760	2022-04-12	Shipped	Amazon	Amazon.in	Expedited	SET182	SET182-KR-DH-XS	Set	...	657.0
18555	18555	402-6619323-4371513	2022-04-19	Shipped	Amazon	Amazon.in	Expedited	SET356	SET356-KR-NP-XXXL	Set	...	1099.0
48118	48118	403-4654240-4609943	2022-04-01	Shipped	Amazon	Amazon.in	Expedited	JNE3546	JNE3546-KR-XL	kurta	...	452.0
59540	59540	171-2556638-5903560	2022-05-23	Shipped	Amazon	Amazon.in	Expedited	J0003	J0003-SET-XS	Set	...	696.0
65187	65187	406-9923649-5765961	2022-05-18	Shipped	Amazon	Amazon.in	Expedited	JNE3797	JNE3797-KR-XL	Western Dress	...	771.0
92226	92226	171-6936844-0645928	2022-06-28	Shipped	Amazon	Amazon.in	Expedited	J0157	J0157-DR-L	Western Dress	...	690.0
51583	51583	407-7166692-5213949	2022-05-30	Shipped	Amazon	Amazon.in	Expedited	J0119	J0119-TP-XXL	Top	...	574.0
111458	111458	402-1769070-7586725	2022-06-12	Shipped	Amazon	Amazon.in	Expedited	SET229	SET229-KR-PP-M	Set	...	845.0
17010	17010	408-1352238-6880368	2022-04-20	Shipped	Amazon	Amazon.in	Expedited	JNE3446	JNE3446-KR-S	kurta	...	299.0
116226	116226	408-2989740-9425124	2022-06-09	Shipped	Amazon	Amazon.in	Expedited	JNE3778	JNE3778-KR-S	kurta	...	459.0
17567	17567	404-4402564-9647552	2022-04-20	Shipped	Amazon	Amazon.in	Expedited	SET392	SET392-KR-NP-S	Set	...	751.0
84870	84870	171-7248529-1112334	2022-05-04	Shipped	Amazon	Amazon.in	Expedited	J0397	J0397-DR-XXL	Western Dress	...	999.0

113239	113239	171-6280368-8402719	2022-06-11	Shipped	Amazon	Amazon.in	Expedited	JNE3797	JNE3797-KR-A-M	Western Dress	...	771.0
92485	92485	405-4792471-8638757	2022-06-28	Pending	Amazon	Amazon.in	Expedited	JNE3416	JNE3416-KR-M	kurta	...	301.0
117790	117790	405-1084052-8065138	2022-06-08	Shipped	Amazon	Amazon.in	Expedited	JNE3806	JNE3806-KR-M	kurta	...	545.0
95371	95371	405-0873335-2953944	2022-06-26	Shipped	Amazon	Amazon.in	Expedited	SET375	SET375-KR-NP-XL	Set	...	696.0
77311	77311	402-9237817-5399565	2022-05-08	Shipped	Amazon	Amazon.in	Expedited	SET145	SET145-KR-NP-S	Set	...	774.0
83339	83339	403-3823791-0979518	2022-05-04	Shipped	Amazon	Amazon.in	Expedited	J0230	J0230-SKD-S	Set	...	1111.0
117191	117191	407-2212250-5906746	2022-06-08	Shipped	Amazon	Amazon.in	Expedited	SET145	SET145-KR-NP-XL	Set	...	764.0
40361	40361	406-6861863-6129956	2022-04-06	Shipped	Amazon	Amazon.in	Expedited	JNE3795	JNE3795-KR-XS	kurta	...	517.0
95893	95893	407-1819217-9309104	2022-06-25	Shipped	Amazon	Amazon.in	Expedited	SET331	SET331-KR-NP-XL	Set	...	635.0
11777	11777	405-2025033-4259506	2022-04-23	Shipped	Amazon	Amazon.in	Expedited	JNE3294	JNE3294-KR-XS	kurta	...	432.0
48064	48064	408-3215553-5760331	2022-04-01	Shipped	Amazon	Amazon.in	Expedited	J0230	J0230-SKD-M	Set	...	999.0
40137	40137	406-6974812-4264357	2022-04-06	Shipped	Amazon	Amazon.in	Expedited	SET258	SET258-KR-PP-S	Set	...	881.0
4698	4698	406-5172345-5229904	2022-04-27	Shipped	Amazon	Amazon.in	Expedited	J0307	J0307-TP-XXXL	Top	...	518.0

50 rows × 25 columns

```
df1.loc[15:50,"Fulfilled_by":"Promotion_type"]
```

	Fulfilled_by	Unnamed: 22	Promotion_type
15	Easy Ship	NaN	Amazon PLCC Free-Financing Universal Merchant
16	Easy Ship	NaN	IN Core Free Shipping
17	Easy Ship	NaN	None
18	Easy Ship	NaN	Amazon PLCC Free-Financing Universal Merchant
19	Easy Ship	NaN	None
20	Easy Ship	NaN	IN Core Free Shipping
21	Easy Ship	NaN	IN Core Free Shipping
22	Easy Ship	NaN	None
23	Easy Ship	NaN	None
24	Easy Ship	NaN	IN Core Free Shipping
25	Easy Ship	NaN	Amazon PLCC Free-Financing Universal Merchant
26	Easy Ship	NaN	Amazon PLCC Free-Financing Universal Merchant
27	Easy Ship	NaN	None
28	Easy Ship	NaN	IN Core Free Shipping
29	Easy Ship	NaN	None
30	Easy Ship	NaN	IN Core Free Shipping
31	Easy Ship	NaN	IN Core Free Shipping
32	Easy Ship	NaN	Amazon PLCC Free-Financing Universal Merchant
33	Easy Ship	NaN	Amazon PLCC Free-Financing Universal Merchant
34	Easy Ship	NaN	None
35	Easy Ship	NaN	Amazon PLCC Free-Financing Universal Merchant
36	Easy Ship	NaN	IN Core Free Shipping
37	Easy Ship	NaN	IN Core Free Shipping
38	Easy Ship	NaN	IN Core Free Shipping
39	Easy Ship	NaN	None
40	Easy Ship	NaN	IN Core Free Shipping
41	Easy Ship	NaN	IN Core Free Shipping
42	Easy Ship	NaN	Amazon PLCC Free-Financing Universal Merchant
43	Easy Ship	NaN	IN Core Free Shipping
44	Easy Ship	NaN	None
45	Easy Ship	NaN	IN Core Free Shipping
46	Easy Ship	NaN	None
47	Easy Ship	NaN	IN Core Free Shipping
48	Easy Ship	NaN	IN Core Free Shipping
49	Easy Ship	NaN	Amazon PLCC Free-Financing Universal Merchant
50	Easy Ship	NaN	IN Core Free Shipping

```
relation = pd.crosstab(df1["Fulfilled_by"],df1["Promotion_type"])
relation
```

Promotion_type	Amazon PLCC Free-Financing Universal Merchant	IN Core Free Shipping
Fulfilled_by		
Easy Ship	32338	46183

from the above observation we can see the relation between fulfilled-by and promotion_Type.

The Amazon PLCC Free-Financing Universal Merchant is a promo code which is applicable for prime members to get orders between 1 to 3 days. The IN Core Free Shipping is given by amazon for non-prime members to get free standard delivery.

The most of Easy Ship is comes under Amazon PLCC Free-Financing Universal Merchant and Fulfilment by Amazon is under IN Core Free Shipping.

```
condition_merchant = df1["Fulfilled_by"] == "Easy step"
df1["Promotion_type"] = np.where(condition_merchant,
                                 "Amazon PLCC Free-Financing Universal Merchant",
                                 "IN Core Free Shipping"
)
```

```
df1["Category"].unique()
```

```
array(['Set', 'kurta', 'Western Dress', 'Top', 'Ethnic Dress', 'Bottom',
       'Saree', 'Blouse', 'Dupatta'], dtype=object)
```

```
df1.drop(columns = ['Courier_Status','currency','index','Promotion_ids','ASIN','Shipping_country','Sales Channel '],inplace = True)
```

Removing columns like 'Courier Status','currency','Unnamed: 23','index','promotion-ids','ASIN','ship-country' which are not necessary for analyis.

```
df1['Pincode'] = df1['Pincode'].astype(str)
```

```
df1['Pincode'] = df1['Pincode'].str.replace(".","").str[:6]
```

```
df1['Pincode'] = df1['Pincode'].astype("category")
```

```
df1[["Shipping_city","Shipping_state"]] = df1[['Shipping_city', 'Shipping_state']].apply(lambda x : x.str.capitalize())
```

```
df1.head()
```

	Order_ID	Order_date	Order_status	Fulfilment	Shipping_type	Style	SKU	Category	Size	Quantity	Amount	Shipping_city
0	405-8078784-5731545	2022-04-30	Cancelled	Merchant	Standard	SET389	SET389-KR-NP-S	Set	S	0	647.62	Mumbai
1	171-9198151-1101146	2022-04-30	Shipped - Delivered to Buyer	Merchant	Standard	JNE3781	JNE3781-KR-XXXL	kurta	3XL	1	406.00	Bengaluru
2	404-0687676-7273146	2022-04-30	Shipped	Amazon	Expedited	JNE3371	JNE3371-KR-XL	kurta	XL	1	329.00	Navi mumbai
3	403-9615377-8133951	2022-04-30	Cancelled	Merchant	Standard	J0341	J0341-DR-L	Western Dress	L	0	753.33	Puducherry
4	407-1069790-7240320	2022-04-30	Shipped	Amazon	Expedited	JNE3671	JNE3671-TU-XXXL	Top	3XL	1	574.00	Chennai

```
df1["Shipping_state"].unique()
```

```
array(['Maharashtra', 'Karnataka', 'Puducherry', 'Tamil nadu',
       'Uttar pradesh', 'Chandigarh', 'Telangana', 'Andhra pradesh',
       'Rajasthan', 'Delhi', 'Haryana', 'Assam', 'Jharkhand',
       'Chhattisgarh', 'Odisha', 'Kerala', 'Madhya pradesh',
       'West bengal', 'Nagaland', 'Gujarat', 'Uttarakhand', 'Bihar',
       'Jammu & kashmir', 'Punjab', 'Himachal pradesh',
       'Arunachal pradesh', 'Manipur', 'Goa', 'Meghalaya', 'Tripura',
       'Ladakh', 'Dadra and nagar', 'Sikkim', 'Andaman & nicobar ',
       'Rajshthan', 'Nl', 'Mizoram', 'New delhi',
       'Punjab/mohali/zirakpur', 'Rj', 'Orissa', 'Lakshadweep', 'Pb',
       'Apo', 'Ar', 'Pondicherry', 'Rajsthan'], dtype=object)
```

```
df1["Shipping_state"] = df1["Shipping_state"].replace({'Rj':'Rajasthan','Orissa':'Odisha',
                                'Nl':'Nagaland','Rajshthan':'Rajasthan',
                                 'Pb':'Punjab','Chhattisgarh':'Chattisgarh','Ar':'Arunachal pradesh',
                                 'Punjab/mohali/zirakpur':'Punjab'})
```

```
df1['Shipping_city'].unique()
```

```
array(['Mumbai', 'Bengaluru', 'Navi mumbai', ..., 'Cherukunnu (p.o)',
       'Gulabpura, distt bhilwara', 'Prayagraj (allahabad)'], dtype=object)
```

```
df1[df1.duplicated(keep=False)]
```

	Order_ID	Order_date	Order_status	Fulfilment	Shipping_type	Style	SKU	Category	Size	Quantity	Amount	Shi
30660	406-0372545-6086735	2022-04-12	Cancelled	Amazon	Expedited	SET197	SET197-KR-NP-L	Set	L	0	648.573305	
30661	406-0372545-6086735	2022-04-12	Cancelled	Amazon	Expedited	SET197	SET197-KR-NP-L	Set	L	0	648.573305	
41291	408-0373839-4433120	2022-04-05	Cancelled	Amazon	Expedited	JNE3501	JNE3501-KR-M	kurta	M	0	648.573305	
41292	408-0373839-4433120	2022-04-05	Cancelled	Amazon	Expedited	JNE3501	JNE3501-KR-M	kurta	M	0	648.573305	
79844	171-9628368-5329958	2022-05-07	Cancelled	Amazon	Expedited	J0329	J0329-KR-L	kurta	L	0	648.573305	
79845	171-9628368-5329958	2022-05-07	Cancelled	Amazon	Expedited	J0329	J0329-KR-L	kurta	L	0	648.573305	
85790	171-3249942-2207542	2022-05-03	Shipped	Amazon	Expedited	SET323	SET323-KR-NP-XL	Set	XL	1	939.000000	
85791	171-3249942-2207542	2022-05-03	Shipped	Amazon	Expedited	SET323	SET323-KR-NP-XL	Set	XL	1	939.000000	
86418	405-8669298-3850736	2022-05-03	Shipped	Amazon	Expedited	MEN5025	MEN5025-KR-XXXL	kurta	3XL	1	533.000000	
86419	405-8669298-3850736	2022-05-03	Shipped	Amazon	Expedited	MEN5025	MEN5025-KR-XXXL	kurta	3XL	1	533.000000	
98954	407-4853873-4978725	2022-06-22	Shipped	Amazon	Expedited	J0230	J0230-SKD-M	Set	M	1	1163.000000	
98955	407-4853873-4978725	2022-06-22	Shipped	Amazon	Expedited	J0230	J0230-SKD-M	Set	M	1	1163.000000	

```
# print(f,'The earliest date is {df1["Order_date"].min()}')
# print(f,'The latest date is {df1["Order_date"].max()}')


df1["Month"] = df1["Order_date"].dt.month


df1['Day'] = df1['Order_date'].dt.strftime('%A')


df1['Month_name'] = df1['Order_date'].dt.strftime('%B')
```

Plotting distibution of individual predictors by Business_type

```
retail_new = df1[['Quantity','Category','Shipping_state','Business_type']]

new_data = retail_new.drop(columns = ['Business_type'])

for i, new_data in enumerate(new_data):
  plt.figure(figsize = (10, 6))
  sns.countplot(data = retail_new , x = new_data , hue = 'Business_type')
  plt.xticks(rotation = 90 , fontsize = 7)
  plt.ylabel("count")
  plt.title(f'Count Plot for {new_data} with Business_type')
  plt.show()
```

Count Plot for Quantity with Business_type

Count Plot for Category with Business_type

Count Plot for Shipping_state with Business_type
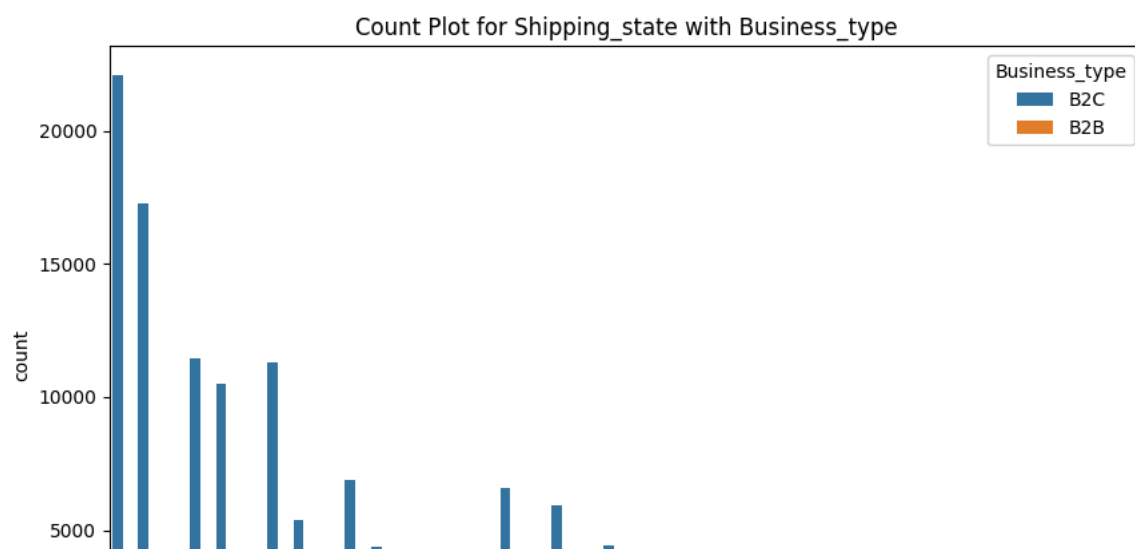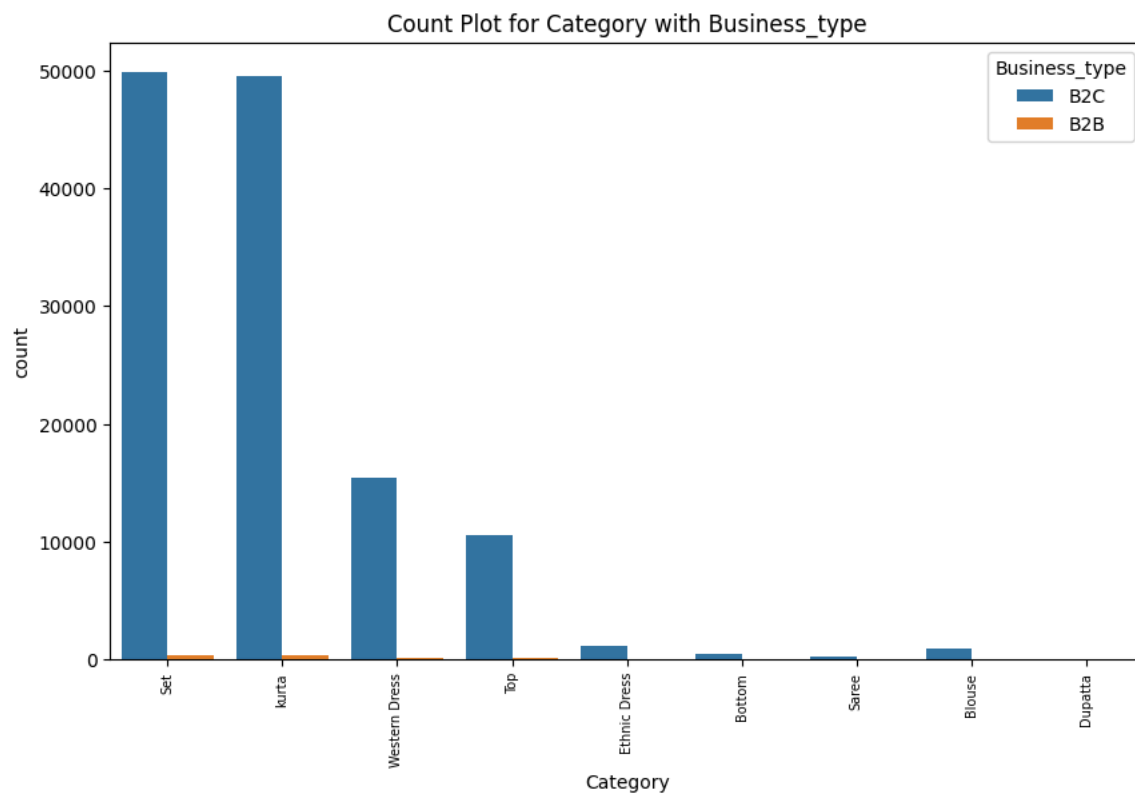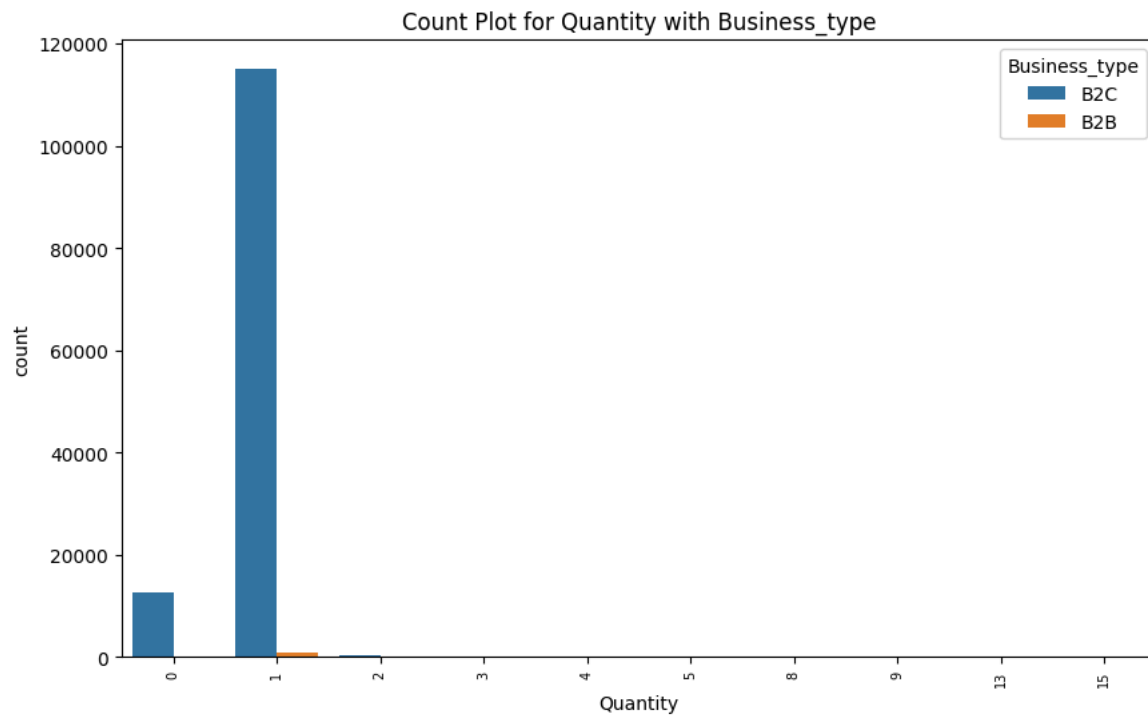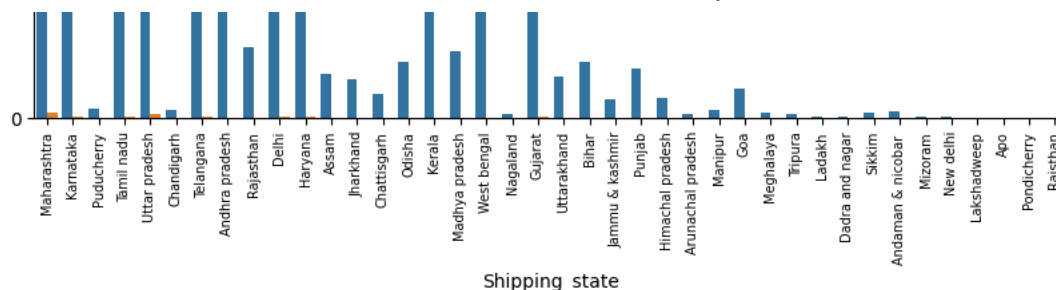
```
Revenue = df1.groupby("Month_name")["Amount"].sum().sort_values(ascending = False).reset_index()
Revenue['Amount'] = Revenue['Amount']/1000000

for index, value in enumerate(Revenue['Amount']):
  plt.text(index, value + 0.1 , f'{value:.2f}M', ha = "center" , va = "bottom" , fontsize=8)

sns.barplot(x = Revenue["Month_name"] , y = Revenue["Amount"] )
plt.xlabel("Month")
plt.ylabel("Revenue(Million)")
plt.show()
```
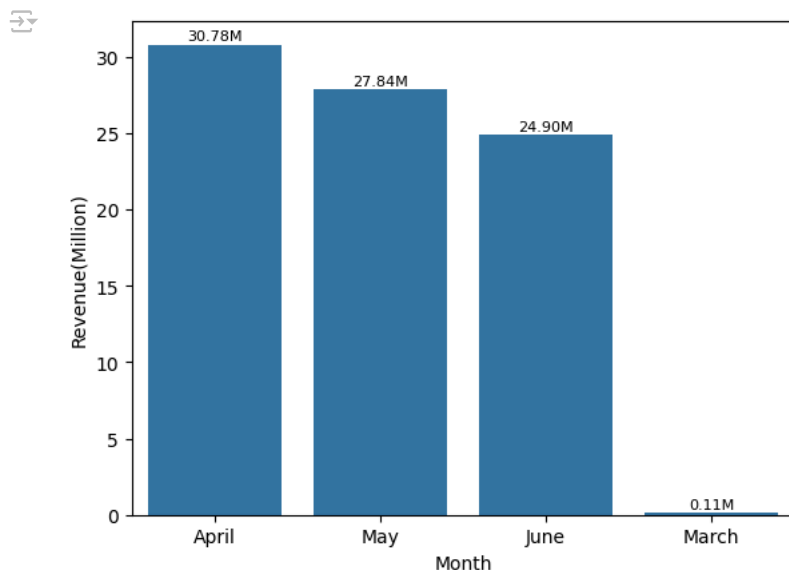

The Revenue was high in April with 27 M followed by May with 24 M then with june of 2490M.

March month have lower revenue of 0.10 M which is 0.1% of overall Revenue.

```
monthly_sum = df1.groupby("Month_name")["Amount"].sum().reset_index()
monthly_sum["Amount"] = monthly_sum["Amount"]/1000000
monthly_sum
```

	Month_name	Amount
0	April	30.776321
1	June	24.901268
2	March	0.107521
3	May	27.843230

The Revenue was higher in the month april with 26.30M followed by may with 24M ,june with 21M which are from B2C category.

we can see in the month of march only B2B category was of 0.10M and there is no B2C order in this month.

```
df1["Amount"].sum()
```

83628339.06409958

```python
product_sum = df1.groupby("Category")["Amount"].sum().reset_index()
product_sum["Amount"] = product_sum["Amount"]/1000000
product_sum.sort_values(by = "Amount" , ascending = False , inplace = True)
for index , value in enumerate(product_sum['Amount']):
  plt.text(index, value + 0.1 , f'{value:.2f}M', ha='center', va='bottom', fontsize=8)

sns.barplot(data= product_sum, x = "Category" , y = "Amount")
plt.xticks(rotation = 45, fontsize = 8.5)
plt.xlabel("Category")
plt.ylabel("Revenue(Million)")
plt.title('Product by Sales')
plt.show()
```
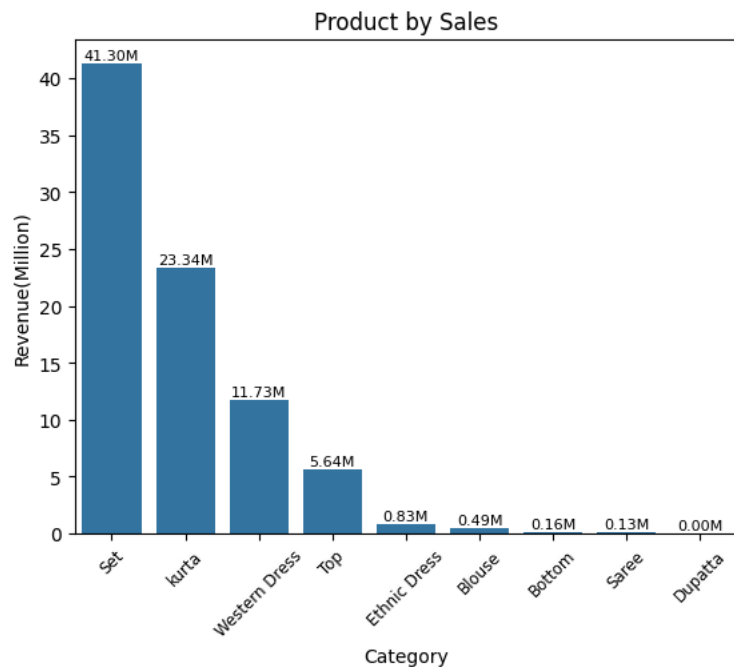

The set has the highest sales as product with 36M then followed by kurta,western dress,top there are top 4 with sales greater than 5 million.

Ethnic Dress,Blouse,Bottom,Saree having sales less than 1M.The Dupatta product has no sales.

```python
size_sales = df1.groupby("Size")["Amount"].sum().sort_values(ascending = False)
plt.figure(figsize = (8, 4))
sns.barplot(x = size_sales.index, y = size_sales.values/1000000)
plt.title("Sizewise Sales Analysis")
plt.xlabel("size")
plt.ylabel("Total Sales")
plt.show()
```
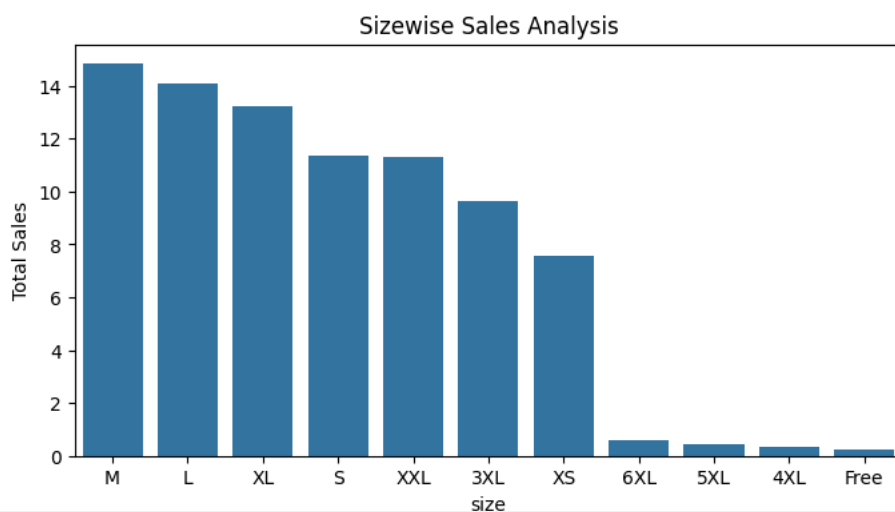
```
# import pandas as pd
# total_revenue = df1["Amount"].sum()
# total_orders = df1["Order_ID"].sum()

# avg_order_value = total_revenue / total_orders
# print(f"The Average Order Value (AOV) is: {avg_order_value:.2f} RS")


Day_sales = df1.groupby("Day")["Amount"].sum().reset_index().sort_values(by = "Amount" , ascending=False)
Day_sales["Amount"] = Day_sales["Amount"]/1000000
sns.barplot(x = Day_sales.Day ,y = Day_sales.Amount)
for index, value in enumerate(Day_sales["Amount"]):
  plt.text(index, value + 0.1 , f'{value:.2f}M' , ha = "center" , va = "bottom" , fontsize = 8)
plt.xticks(rotation = 90)
plt.xlabel("Ordered day")
plt.xlabel("Revenue in Millions")
plt.show()
```
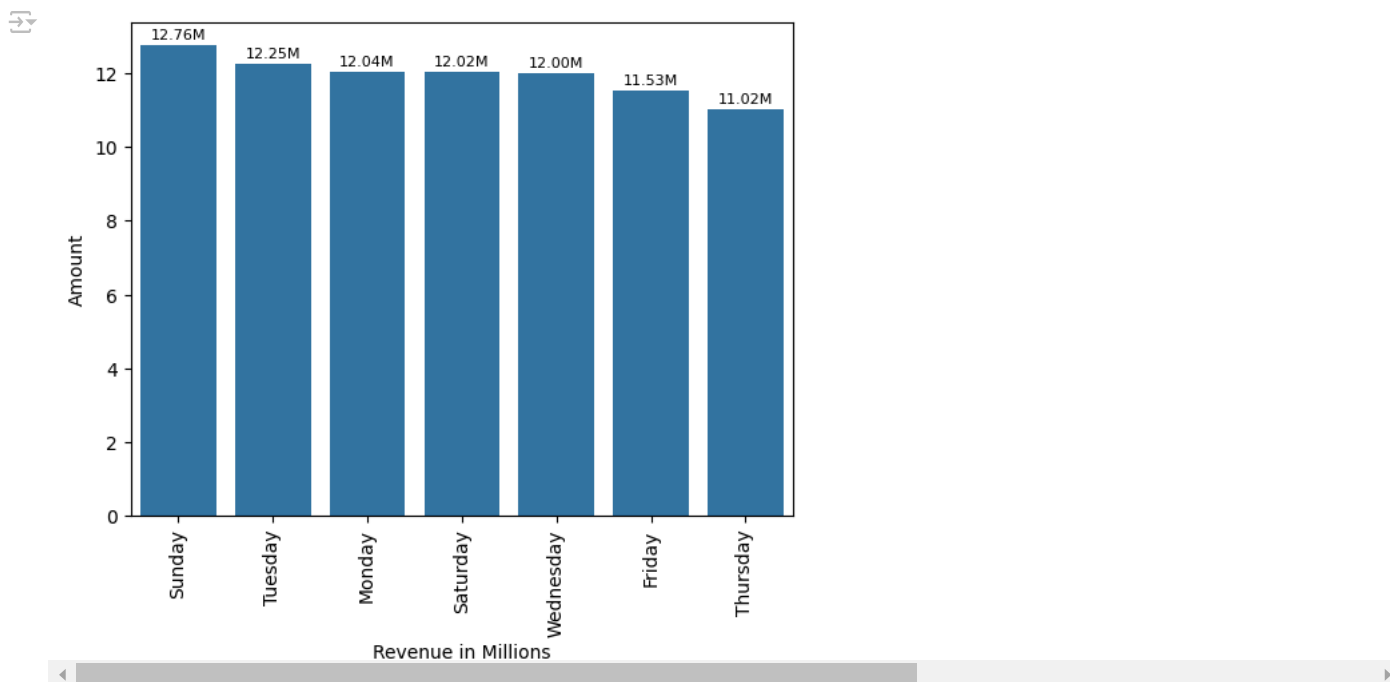


```
avg_order = df1.groupby("Business_type")["Amount"].mean().reset_index()

plt.figure(figsize= (10, 6))
sns.barplot(data = avg_order , x = "Business_type" ,y = "Amount" , palette = "viridis")
plt.xticks(rotation = 90)
plt.xlabel("Average Order per Business type")
plt.ylabel("Average Order Value")
plt.show()
```
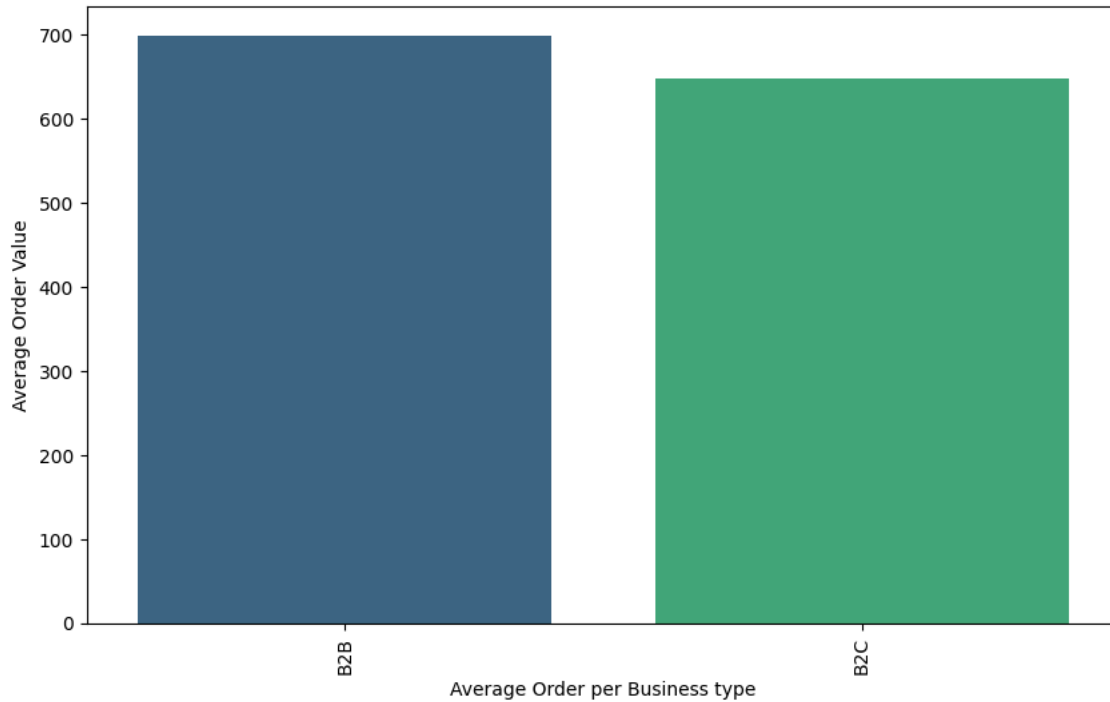
```
<ipython-input-89-608d203eca35>:4: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `x` variable to `hue` and set `le

  sns.barplot(data = avg_order , x = "Business_type" ,y = "Amount" , palette = "viridis")
```


The Avearge order value was high in B2B than B2C which is around 700 Rs.

Customer Analysis

```
top_cities = df1.groupby("Shipping_city")["Amount"].sum().reset_index()
top_cities = top_cities.sort_values(by = "Amount" , ascending = False).head(10)
top_cities["Amount"] = top_cities["Amount"]/1000000
for index, value in enumerate(top_cities["Amount"]):
  plt.text(index, value + 0.1 , f'{value:.2f}M' , ha = "center" , va = "bottom" , fontsize = 8)

sns.barplot(data = top_cities , x = "Shipping_city" , y = "Amount" , errorbar = None , width = 0.5)
plt.xticks(rotation=90)
plt.title('Revenue by City')
plt.xlabel('Cities')
plt.ylabel('Revenue(Millions)')
plt.show()
```
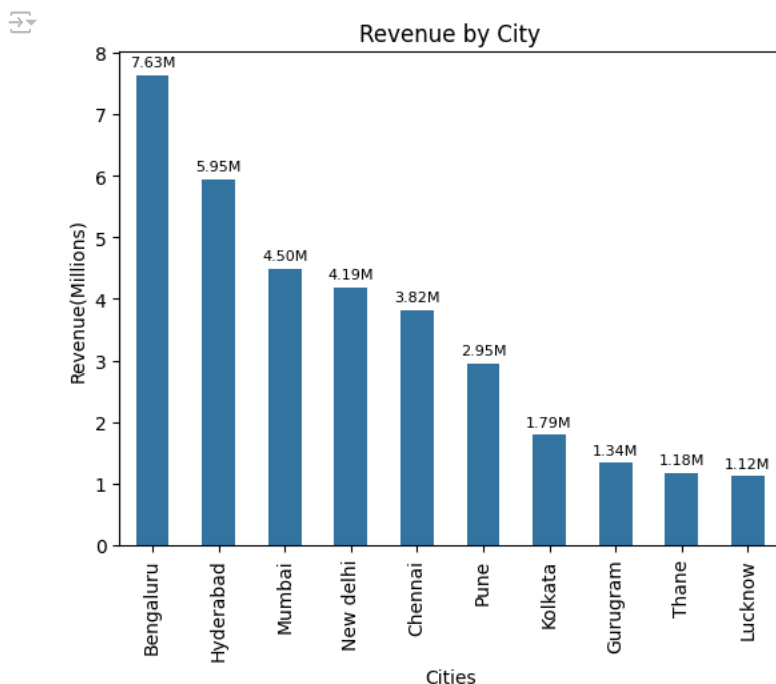
```
columns = ['Order_status', 'Fulfilment', 'Shipping_type', 'Category',
           'Quantity','Shipping_city', 'Amount', 'Fulfilled_by']

for column in columns:
  unique_values = df1[column].unique()
  unique_values_count = len(unique_values)

  print(f"Column: {column}")
  print(f"Number of unique values: {unique_values_count}")
  print("Unique values in: {}".format(column))
  for value in unique_values:
    print(value)
  print("----------------------")
  print("\n")
```

Streaming output truncated to the last 5000 lines.
    Vadakkumkara

```
columns = ['Order_status', 'Fulfilment', 'Shipping_type', 'Category',
           'Quantity','Shipping_city', 'Amount', 'Fulfilled_by']

for column in columns:
  unique_values = df1[column].unique()
  unique_values_count = len(unique_values)

  print(f"Column: {column}")
  print(f"Number of unique values: {unique_values_count}")
  print("Unique values in: {}".format(column))
  for value in unique_values:
    print(value)
  print("----------------------")
  print("\n")
```