```
import sklearn
import sklearn.preprocessing
import sklearn.model_selection
import sklearn.metrics
%matplotlib inline
%load_ext rpy2.ipython
%load_ext google.colaboratory.rdmagic
!pip install -U -f https://pyrsmk.github.io/products/cesarkel/cesarkel.tar.bz2 -q -U --force-reinstall --no-deps --no-cache-dir
# Install the latest version of cesarkel
!pip install -q -U watermark
```

```
%Loading dataset
df = pd.read_csv('/content/Customer_Shopping_Data.csv')
df.head(10)
```

	Customer ID	Gender	Age	Occupation	Product Category	Price	Payment Method	Date	Shopping Mall
0	C241288	Female	28	Clerical	Clothing	1500.40	Credit Card	5/8/2022	Kanyon
1	C112351	Female	21	Student	Shoes	1305.93	Credit Card	12/12/2021	Forum Istanbul
2	C226035	Female	20	Student	Food & Beverage	30.26	Cash	9/11/2021	Metrocity
3	C241888	Male	62	Retired	Toys	300.08	Cash	16/05/2022	Metropol
4	C111565	Male	67	Retired	Books	60.60	Credit Card	24/10/2021	Kanyon
5	C266599	Female	26	Clerical	Clothing	1500.40	Debit Card	26/08/2022	Metrocity
6	C227836	Female	45	Teacher	Shoes	1305.93	Credit Card	26/03/2021	Istinye Park
7	C263268	Female	46	Teacher	Food & Beverage	30.26	Cash	19/03/2022	Mall of Istanbul
8	C241423	Female	67	Retired	Toys	300.08	Cash	12/12/2021	Kanyon
9	C232651	Female	30	Clerical	Clothing	1500.40	Credit Card	24/11/2021	Metrocity

```
df.shape
```

```
(99457, 10)
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 99457 entries, 0 to 99456
Data columns (total 10): Customer ID, Gender, Age, Occupation, Product Category, Price, Payment Method, Date, Shopping Mall, Rating
dtypes: int64(3), object(7)
memory usage: 7.6 MB
```

```
df.describe()
```

	Age	Price	Rating
count	99457.000000	99457.000000	99457.000000
mean	43.427089	689.070360	3.904917
std	14.990054	453.009334	1.087158
min	18.000000	5.230000	1.000000
25%	30.000000	233.415000	3.000000
50%	43.000000	578.440000	4.000000
75%	56.000000	1123.200000	5.000000
max	69.000000	2099.700000	5.000000

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

```
Customer ID,Gender,Age,Occupation,Product Category,Price,Payment Method,Date,Shopping Mall,Rating,dtype: int64
```

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

```
Customer ID,Gender,Age,Occupation,Product Category,Price,Payment Method,Date,Shopping Mall,Rating,dtype: int64
```

```
df.dtypes
```

```
Customer ID,object
Gender,object
Age,int64
Occupation,object
Product Category,object
Price,int64
Payment Method,object
Date,object
Shopping Mall,object
Rating,int64
dtype: object
```

```
df.sample(10)
```

	Customer ID	Gender	Age	Occupation	Product Category	Price	Payment Method	Date	Shopping Mall
0	C241288	Female	28	Clerical	Clothing	1500.40	Credit Card	5/8/2022	Kanyon
1	C112351	Female	21	Student	Shoes	1305.93	Credit Card	12/12/2021	Forum Istanbul
2	C226035	Female	20	Student	Food & Beverage	30.26	Cash	9/11/2021	Metrocity
3	C241888	Male	62	Retired	Toys	300.08	Cash	16/05/2022	Metropol
4	C111565	Male	67	Retired	Books	60.60	Credit Card	24/10/2021	Kanyon
5	C266599	Female	26	Clerical	Clothing	1500.40	Debit Card	26/08/2022	Metrocity
6	C227836	Female	45	Teacher	Shoes	1305.93	Credit Card	26/03/2021	Istinye Park
7	C263268	Female	46	Teacher	Food & Beverage	30.26	Cash	19/03/2022	Mall of Istanbul
8	C241423	Female	67	Retired	Toys	300.08	Cash	12/12/2021	Kanyon
9	C232651	Female	30	Clerical	Clothing	1500.40	Credit Card	24/11/2021	Metrocity

```
df.columns
```

```
Index(['Customer ID', 'Gender', 'Age', 'Occupation', 'Product Category',
       'Price', 'Payment Method', 'Date', 'Shopping Mall', 'Rating'],
      dtype='object')
```

```
%pip install -U -f https://pyrsmk.github.io/products/cesarkel/cesarkel.tar.bz2 -q -U --force-reinstall --no-deps --no-cache-dir
df.sample(10).T
```

	0	1	2	3	4	5	6	7	8	9
Customer ID	C241288	C112351	C226035	C241888	C111565	C266599	C227836	C263268	C241423	C232651
Gender	Female	Female	Female	Male	Male	Female	Female	Female	Female	Female
Age	28	21	20	62	67	26	45	46	67	30
Occupation	Clerical	Student	Student	Retired	Retired	Clerical	Teacher	Teacher	Retired	Clerical
Product Category	Clothing	Shoes	Food & Beverage	Toys	Books	Clothing	Shoes	Food & Beverage	Toys	Clothing
Price	1500.40	1305.93	30.26	300.08	60.60	1500.40	1305.93	30.26	300.08	1500.40
Payment Method	Credit Card	Credit Card	Cash	Cash	Credit Card	Debit Card	Credit Card	Cash	Cash	Credit Card
Date	5/8/2022	12/12/2021	9/11/2021	16/05/2022	24/10/2021	26/08/2022	26/03/2021	19/03/2022	12/12/2021	24/11/2021
Shopping Mall	Kanyon	Forum Istanbul	Metrocity	Metropol	Kanyon	Metrocity	Istinye Park	Mall of Istanbul	Kanyon	Metrocity
Rating	3	5	3	3	3	5	4	3	3	5

```
df.columns.tolist()
```

```
['Customer ID',
 'Gender',
 'Age',
 'Occupation',
 'Product Category',
 'Price',
 'Payment Method',
 'Date',
 'Shopping Mall',
 'Rating']
```

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

```
Customer ID,0
Gender,0
Age,0
Occupation,0
Product Category,0
Price,0
Payment Method,0
Date,0
Shopping Mall,0
Rating,0
dtype: int64
```

```
df.dtypes
```

```
Customer ID,object
Gender,object
Age,int64
Occupation,object
Product Category,object
Price,int64
Payment Method,object
Date,object
Shopping Mall,object
Rating,int64
dtype: object
```

```
df.describe
```

```
<bound_method_NDFrame.describe of
       Customer ID  Gender  Age  Occupation  Product Category  Price  \
0           C241288  Female   28       Clerical          Clothing   1500.40
1           C112351  Female   21        Student           Shoes   1305.93
2           C226035  Female   20        Student  Food & Beverage     30.26
3           C241888    Male   62        Retired            Toys    300.08
4           C111565    Male   67        Retired           Books     60.60
...             ...     ...  ...            ...             ...       ...
99452       C351962  Female   45       Clerical          Clothing   1500.40
99453       C373047    Male   62        Retired           Books     60.60
99454       C271062  Female   26        Student           Shoes   1305.93
99455       C351884  Female   46        Student  Food & Beverage     30.26
99456       C373283  Female   67        Retired            Toys    300.08
```

```
df.columns.tolist()
```

```
['Customer ID',
 'Gender',
 'Age',
 'Occupation',
 'Product Category',
 'Price',
 'Payment Method',
 'Date',
 'Shopping Mall',
 'Rating']
```

```
df.sample(10).T
```

	0	1	2	3	4	5	6	7	8	9
Customer ID	C241288	C112351	C226035	C241888	C111565	C266599	C227836	C263268	C241423	C232651
Gender	Female	Female	Female	Male	Male	Female	Female	Female	Female	Female
Age	28	21	20	62	67	26	45	46	67	30
Occupation	Clerical	Student	Student	Retired	Retired	Clerical	Teacher	Teacher	Retired	Clerical
Product Category	Clothing	Shoes	Food & Beverage	Toys	Books	Clothing	Shoes	Food & Beverage	Toys	Clothing
Price	1500.40	1305.93	30.26	300.08	60.60	1500.40	1305.93	30.26	300.08	1500.40
Payment Method	Credit Card	Credit Card	Cash	Cash	Credit Card	Debit Card	Credit Card	Cash	Cash	Credit Card
Date	5/8/2022	12/12/2021	9/11/2021	16/05/2022	24/10/2021	26/08/2022	26/03/2021	19/03/2022	12/12/2021	24/11/2021
Shopping Mall	Kanyon	Forum Istanbul	Metrocity	Metropol	Kanyon	Metrocity	Istinye Park	Mall of Istanbul	Kanyon	Metrocity
Rating	3	5	3	3	3	5	4	3	3	5

```
df.sample(10)
```

	Customer ID	Gender	Age	Occupation	Product Category	Price	Payment Method	Date	Shopping Mall	Rating
0	C241288	Female	28	Clerical	Clothing	1500.40	Credit Card	5/8/2022	Kanyon	3
1	C112351	Female	21	Student	Shoes	1305.93	Credit Card	12/12/2021	Forum Istanbul	5
2	C226035	Female	20	Student	Food & Beverage	30.26	Cash	9/11/2021	Metrocity	3
3	C241888	Male	62	Retired	Toys	300.08	Cash	16/05/2022	Metropol	3
4	C111565	Male	67	Retired	Books	60.60	Credit Card	24/10/2021	Kanyon	3
5	C266599	Female	26	Clerical	Clothing	1500.40	Debit Card	26/08/2022	Metrocity	5
6	C227836	Female	45	Teacher	Shoes	1305.93	Credit Card	26/03/2021	Istinye Park	4
7	C263268	Female	46	Teacher	Food & Beverage	30.26	Cash	19/03/2022	Mall of Istanbul	3
8	C241423	Female	67	Retired	Toys	300.08	Cash	12/12/2021	Kanyon	3
9	C232651	Female	30	Clerical	Clothing	1500.40	Credit Card	24/11/2021	Metrocity	5

```
df.shape
```

```
(99457, 10)
```

```
df.dtypes
```

```
Customer ID,object
Gender,object
Age,int64
Occupation,object
Product Category,object
Price,int64
Payment Method,object
Date,object
Shopping Mall,object
Rating,int64
dtype: object
```

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

```
Customer ID,0
Gender,0
Age,0
Occupation,0
Product Category,0
Price,0
Payment Method,0
Date,0
Shopping Mall,0
Rating,0
dtype: int64
```

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

```
Customer ID,0
Gender,0
Age,0
Occupation,0
Product Category,0
Price,0
Payment Method,0
Date,0
Shopping Mall,0
Rating,0
dtype: int64
```

```
df.columns.tolist()
```

```
['Customer ID',
 'Gender',
 'Age',
 'Occupation',
 'Product Category',
 'Price',
 'Payment Method',
 'Date',
 'Shopping Mall',
 'Rating']
```

```
df.describe()
```

	Age	Price	Rating
count	99457.000000	99457.000000	99457.000000
mean	43.427089	689.070360	3.904917
std	14.990054	453.009334	1.087158
min	18.000000	5.230000	1.000000
25%	30.000000	233.415000	3.000000
50%	43.000000	578.440000	4.000000
75%	56.000000	1123.200000	5.000000
max	69.000000	2099.700000	5.000000

Exploratory Data Analysis

```
df.dtypes
```

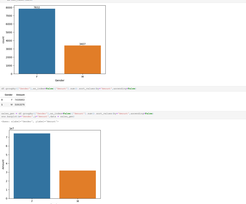
```
Customer ID,object
Gender,object
Age,int64
Occupation,object
Product Category,object
Price,int64
Payment Method,object
Date,object
Shopping Mall,object
Rating,int64
dtype: object
```

GENDER

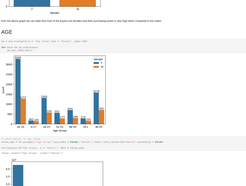
```
df.groupby('Gender').sum()
```

Gender	Age	Price	Rating
Female	2172	34483	195
Male	2172	34483	195

```
sns.barplot(x = df['Gender'],y = df['Age'],data=df).set(title='Gender')
plt.xlabel('Age Group')
plt.ylabel('Gender')
```




```
df.groupby('Gender').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Gender')
plt.xlabel('Age Group')
plt.ylabel('Gender')
```



From the above graph we can state that the people falling in the age group of 20-30 tends to spend more than other groups, also in the age group of 30-50 females tends to spend more amount than males.

AGE

```
df.groupby('Age').sum()
```

Age	Customer ID	Gender	Price	Rating
18	1,125,004,140	12,420	172,404.00	1,014.00
19	1,125,004,140	12,420	172,404.00	1,014.00
20	1,125,004,140	12,420	172,404.00	1,014.00
21	1,125,004,140	12,420	172,404.00	1,014.00
22	1,125,004,140	12,420	172,404.00	1,014.00
23	1,125,004,140	12,420	172,404.00	1,014.00
24	1,125,004,140	12,420	172,404.00	1,014.00
25	1,125,004,140	12,420	172,404.00	1,014.00
26	1,125,004,140	12,420	172,404.00	1,014.00
27	1,125,004,140	12,420	172,404.00	1,014.00
28	1,125,004,140	12,420	172,404.00	1,014.00
29	1,125,004,140	12,420	172,404.00	1,014.00
30	1,125,004,140	12,420	172,404.00	1,014.00
31	1,125,004,140	12,420	172,404.00	1,014.00
32	1,125,004,140	12,420	172,404.00	1,014.00
33	1,125,004,140	12,420	172,404.00	1,014.00
34	1,125,004,140	12,420	172,404.00	1,014.00
35	1,125,004,140	12,420	172,404.00	1,014.00
36	1,125,004,140	12,420	172,404.00	1,014.00
37	1,125,004,140	12,420	172,404.00	1,014.00
38	1,125,004,140	12,420	172,404.00	1,014.00
39	1,125,004,140	12,420	172,404.00	1,014.00
40	1,125,004,140	12,420	172,404.00	1,014.00
41	1,125,004,140	12,420	172,404.00	1,014.00
42	1,125,004,140	12,420	172,404.00	1,014.00
43	1,125,004,140	12,420	172,404.00	1,014.00
44	1,125,004,140	12,420	172,404.00	1,014.00
45	1,125,004,140	12,420	172,404.00	1,014.00
46	1,125,004,140	12,420	172,404.00	1,014.00
47	1,125,004,140	12,420	172,404.00	1,014.00
48	1,125,004,140	12,420	172,404.00	1,014.00
49	1,125,004,140	12,420	172,404.00	1,014.00
50	1,125,004,140	12,420	172,404.00	1,014.00
51	1,125,004,140	12,420	172,404.00	1,014.00
52	1,125,004,140	12,420	172,404.00	1,014.00
53	1,125,004,140	12,420	172,404.00	1,014.00
54	1,125,004,140	12,420	172,404.00	1,014.00
55	1,125,004,140	12,420	172,404.00	1,014.00
56	1,125,004,140	12,420	172,404.00	1,014.00
57	1,125,004,140	12,420	172,404.00	1,014.00
58	1,125,004,140	12,420	172,404.00	1,014.00
59	1,125,004,140	12,420	172,404.00	1,014.00
60	1,125,004,140	12,420	172,404.00	1,014.00
61	1,125,004,140	12,420	172,404.00	1,014.00
62	1,125,004,140	12,420	172,404.00	1,014.00
63	1,125,004,140	12,420	172,404.00	1,014.00
64	1,125,004,140	12,420	172,404.00	1,014.00
65	1,125,004,140	12,420	172,404.00	1,014.00
66	1,125,004,140	12,420	172,404.00	1,014.00
67	1,125,004,140	12,420	172,404.00	1,014.00
68	1,125,004,140	12,420	172,404.00	1,014.00
69	1,125,004,140	12,420	172,404.00	1,014.00

```
df.groupby('Age').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Age')
plt.xlabel('Age Group')
plt.ylabel('Age')
```

```
df.groupby('Age').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Gender')
plt.xlabel('Age Group')
plt.ylabel('Gender')
```

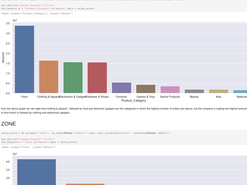
From the above graph we can state that the people falling in the age group of 30-50 tends to spend more than other groups, also in the age group of 30-50 females tends to spend more amount than males.

STATE

```
df.groupby('Shopping Mall').sum()
```

Shopping Mall	Customer ID	Gender	Age	Price	Rating
Cevahir AVM	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00
Emaar Square Mall	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00
Forum Istanbul	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00
Kanyon	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00
Metrocity	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00
Metropol	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00
Mall of Istanbul	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00
Istinye Park	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00

```
df.groupby('Shopping Mall').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Shopping Mall')
plt.xlabel('Shopping Mall')
plt.ylabel('Shopping Mall')
```



From the above graph we can state that the people from Uttar Pradesh and Andhra Pradesh tends to spend more than other states.

ZONE

```
df.groupby('Zone').sum()
```

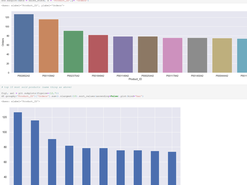
Zone	Customer ID	Gender	Age	Price	Rating
Central	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00
Eastern	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00
Northern	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00
Southern	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00
Western	1,125,004,140	12,420	172,404.00	1,014.00	172,404.00

```
df.groupby('Zone').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Zone')
plt.xlabel('Zone')
plt.ylabel('Zone')
```

```
df.groupby('Product Category').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Product Category')
plt.xlabel('Product Category')
plt.ylabel('Product Category')
```

```
df.groupby('Zone').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Zone')
plt.xlabel('Zone')
plt.ylabel('Zone')
```

```
df.groupby('Product Category').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Product Category')
plt.xlabel('Product Category')
plt.ylabel('Product Category')
```



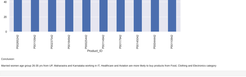
From the above graph, highest ordered product category according to zone: southern - clothing and equal ordered - food southern - clothing and equipment eastern - food southern - electronics and gadgets

Martial Status

```
df.groupby('Martial_Status').sum
```

```
<bound_method>
       Customer ID  Gender  Age  Occupation  Product Category  Price  \
Martial_Status
0                0       0    0           0                 0      0
1                0       0    0           0                 0      0
```

```
df.groupby('Martial_Status').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Martial_Status')
plt.xlabel('Martial_Status')
plt.ylabel('Martial_Status')
```




```
df.groupby('Martial_Status').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Martial_Status')
plt.xlabel('Martial_Status')
plt.ylabel('Martial_Status')
```

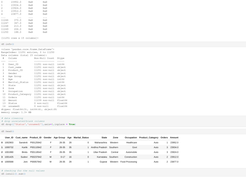

From above graphs we can see that most of the buyers are married (women) and they more high purchasing power

Occupation

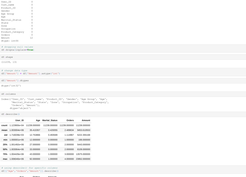
```
df.groupby('Occupation').sum
```

```
<bound_method>
       Customer ID  Gender  Age  Occupation  Product Category  Price  \
Occupation
0                0       0    0           0                 0      0
1                0       0    0           0                 0      0
```

```
df.groupby('Occupation').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Occupation')
plt.xlabel('Occupation')
plt.ylabel('Occupation')
```

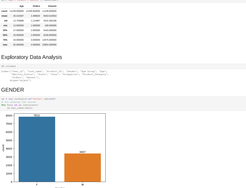



```
df.groupby('Product Category').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Product Category')
plt.xlabel('Product Category')
plt.ylabel('Product Category')
```



From above graphs we can see that most of the buyers are working in IT, Healthcare and Aviation sector

```
df.groupby('Product_ID').sum().plot(kind='bar',color=['red','blue'],figsize=(5,5),stacked=True,sharex=False,sharey=True).set(title='Product_ID')
plt.xlabel('Product_ID')
plt.ylabel('Product_ID')
```




```
# Top 10 most sold products based on Product_ID
df.head(10)
```

	Customer ID	Gender	Age	Occupation	Product Category	Price	Payment Method	Date	Shopping Mall	Rating
0	C241288	Female	28	Clerical	Clothing	1500.40	Credit Card	5/8/2022	Kanyon	3
1	C112351	Female	21	Student	Shoes	1305.93	Credit Card	12/12/2021	Forum Istanbul	5
2	C226035	Female	20	Student	Food & Beverage	30.26	Cash	9/11/2021	Metrocity	3
3	C241888	Male	62	Retired	Toys	300.08	Cash	16/05/2022	Metropol	3
4	C111565	Male	67	Retired	Books	60.60	Credit Card	24/10/2021	Kanyon	3
5	C266599	Female	26	Clerical	Clothing	1500.40	Debit Card	26/08/2022	Metrocity	5
6	C227836	Female	45	Teacher	Shoes	1305.93	Credit Card	26/03/2021	Istinye Park	4
7	C263268	Female	46	Teacher	Food & Beverage	30.26	Cash	19/03/2022	Mall of Istanbul	3
8	C241423	Female	67	Retired	Toys	300.08	Cash	12/12/2021	Kanyon	3
9	C232651	Female	30	Clerical	Clothing	1500.40	Credit Card	24/11/2021	Metrocity	5

```
# Top 10 most sold products based on Product_ID
df.tail(10)
```

	Customer ID	Gender	Age	Occupation	Product Category	Price	Payment Method	Date	Shopping Mall	Rating
99447	C351962	Female	45	Clerical	Clothing	1500.40	Credit Card	5/8/2022	Kanyon	3
99448	C373047	Male	62	Retired	Books	60.60	Credit Card	12/12/2021	Forum Istanbul	5
99449	C271062	Female	26	Student	Shoes	1305.93	Credit Card	9/11/2021	Metrocity	3
99450	C351884	Female	46	Student	Food & Beverage	30.26	Cash	16/05/2022	Metropol	3
99451	C373283	Female	67	Retired	Toys	300.08	Cash	24/10/2021	Kanyon	3
99452	C351962	Female	45	Clerical	Clothing	1500.40	Credit Card	26/08/2022	Metrocity	5
99453	C373047	Male	62	Retired	Books	60.60	Credit Card	26/03/2021	Istinye Park	4
99454	C271062	Female	26	Student	Shoes	1305.93	Credit Card	19/03/2022	Mall of Istanbul	3
99455	C351884	Female	46	Student	Food & Beverage	30.26	Cash	12/12/2021	Kanyon	3
99456	C373283	Female	67	Retired	Toys	300.08	Cash	24/11/2021	Metrocity	5

```
# Top 10 most sold products based on Product_ID
df.sample(10)
```

	Customer ID	Gender	Age	Occupation	Product Category	Price	Payment Method	Date	Shopping Mall	Rating
0	C241288	Female	28	Clerical	Clothing	1500.40	Credit Card	5/8/2022	Kanyon	3
1	C112351	Female	21	Student	Shoes	1305.93	Credit Card	12/12/2021	Forum Istanbul	5
2	C226035	Female	20	Student	Food & Beverage	30.26	Cash	9/11/2021	Metrocity	3
3	C241888	Male	62	Retired	Toys	300.08	Cash	16/05/2022	Metropol	3
4	C111565	Male	67	Retired	Books	60.60	Credit Card	24/10/2021	Kanyon	3
5	C266599	Female	26	Clerical	Clothing	1500.40	Debit Card	26/08/2022	Metrocity	5
6	C227836	Female	45	Teacher	Shoes	1305.93	Credit Card	26/03/2021	Istinye Park	4
7	C263268	Female	46	Teacher	Food & Beverage	30.26	Cash	19/03/2022	Mall of Istanbul	3
8	C241423	Female	67	Retired	Toys	300.08	Cash	12/12/2021	Kanyon	3
9	C232651	Female	30	Clerical	Clothing	1500.40	Credit Card	24/11/2021	Metrocity	5

```
# Top 10 most sold products based on Product_ID
df.describe()
```

	Age	Price	Rating
count	99457.000000	99457.000000	99457.000000
mean	43.427089	689.070360	3.904917
std	14.990054	453.009334	1.087158
min	18.000000	5.230000	1.000000
25%	30.000000	233.415000	3.000000
50%	43.000000	578.440000	4.000000
75%	56.000000	1123.200000	5.000000
max	69.000000	2099.700000	5.000000

Conclusion:

Maximum revenue age group 30-50 (from UP, Maharashtra and Karnataka) tending to IT, Healthcare and Aviation sector more likely to buy products from Food, Clothing and Electronics category