

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

```
In [2]: pd.__version__
```

```
Out[2]: '2.2.2'
```

```
In [3]: store=pd.read_csv(r'E:\DS & GEN AI\Pandas\Sample - Superstore_Orders.csv')  
store
```

Out[3]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID
0	Office Supplies	Houston	United States	Darren Powers	Message Book	03-01-2020	US-2020-103800
1	Office Supplies	Naperville	United States	Phillina Ober	GBC	04-01-2020	US-2020-112326
2	Office Supplies	Naperville	United States	Phillina Ober	Avery	04-01-2020	US-2020-112326
3	Office Supplies	Naperville	United States	Phillina Ober	SAFCO	04-01-2020	US-2020-112326
4	Office Supplies	Philadelphia	United States	Mick Brown	Avery	05-01-2020	US-2020-141817
...							
10189	Office Supplies	New York City	United States	Patrick O'Donnell	Wilson Jones	30-12-2023	US-2023-143259
10190	Office Supplies	Fairfield	United States	Erica Bern	GBC	30-12-2023	US-2023-115427
10191	Office Supplies	Loveland	United States	Jill Matthias	Other	30-12-2023	US-2023-156720
10192	Technology	New York City	United States	Patrick O'Donnell	Other	30-12-2023	US-2023-143259
10193	Office Supplies	Charlottetown	Canada	Harry Olson	Wilson Jones	30-12-2023	CA-2023-143500

10194 rows × 19 columns

```
In [4]: id(store)
```

```
Out[4]: 2063573860624
```

```
In [5]: len(store)
```

```
Out[5]: 10194
```

```
In [6]: store.shape
```

```
Out[6]: (10194, 19)
```

```
In [7]: store.columns
```

```
Out[7]: Index(['Category', 'City', 'Country/Region', 'Customer Name', 'Manufacturer',  
              'Order Date', 'Order ID', 'Postal Code', 'Product Name', 'Region',  
              'Segment', 'Ship Date', 'Ship Mode', 'State/Province', 'Sub-Category',  
              'Discount', 'Profit', 'Quantity', 'Sales'],  
              dtype='object')
```

```
In [8]: len(store.columns)
```

```
Out[8]: 19
```

```
In [9]: store.isnull()
```

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	Postal Code	F
0	False	False		False	False	False	False	False	False
1	False	False		False	False	False	False	False	False
2	False	False		False	False	False	False	False	False
3	False	False		False	False	False	False	False	False
4	False	False		False	False	False	False	False	False
...
10189	False	False		False	False	False	False	False	False
10190	False	False		False	False	False	False	False	False
10191	False	False		False	False	False	False	False	False
10192	False	False		False	False	False	False	False	False
10193	False	False		False	False	False	False	False	False

10194 rows × 19 columns

```
In [10]: store.isnull().sum()
```

```
Out[10]: Category      0  
City          0  
Country/Region 0  
Customer Name 0  
Manufacturer   0  
Order Date    0  
Order ID      0  
Postal Code   0  
Product Name  0  
Region        0  
Segment       0  
Ship Date    0  
Ship Mode    0  
State/Province 0  
Sub-Category  0  
Discount     0  
Profit       0  
Quantity     0  
Sales        0  
dtype: int64
```

```
In [11]: store[:]
```

Out[11]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID
0	Office Supplies	Houston	United States	Darren Powers	Message Book	03-01-2020	US-2020-103800
1	Office Supplies	Naperville	United States	Phillina Ober	GBC	04-01-2020	US-2020-112326
2	Office Supplies	Naperville	United States	Phillina Ober	Avery	04-01-2020	US-2020-112326
3	Office Supplies	Naperville	United States	Phillina Ober	SAFCO	04-01-2020	US-2020-112326
4	Office Supplies	Philadelphia	United States	Mick Brown	Avery	05-01-2020	US-2020-141817
...							
10189	Office Supplies	New York City	United States	Patrick O'Donnell	Wilson Jones	30-12-2023	US-2023-143259
10190	Office Supplies	Fairfield	United States	Erica Bern	GBC	30-12-2023	US-2023-115427
10191	Office Supplies	Loveland	United States	Jill Matthias	Other	30-12-2023	US-2023-156720
10192	Technology	New York City	United States	Patrick O'Donnell	Other	30-12-2023	US-2023-143259
10193	Office Supplies	Charlottetown	Canada	Harry Olson	Wilson Jones	30-12-2023	CA-2023-143500

10194 rows × 19 columns

```
In [12]: store[0:10]
```

Out[12]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	Postal Code
0	Office Supplies	Houston	United States	Darren Powers	Message Book	03-01-2020	US-2020-103800	77015
1	Office Supplies	Naperville	United States	Phillina Ober	GBC	04-01-2020	US-2020-112326	60540
2	Office Supplies	Naperville	United States	Phillina Ober	Avery	04-01-2020	US-2020-112326	60540
3	Office Supplies	Naperville	United States	Phillina Ober	SAFCO	04-01-2020	US-2020-112326	60540
4	Office Supplies	Philadelphia	United States	Mick Brown	Avery	05-01-2020	US-2020-141817	19143
5	Furniture	Henderson	United States	Maria Etezadi	Global	06-01-2020	US-2020-167199	42420
6	Office Supplies	Henderson	United States	Maria Etezadi	Rogers	06-01-2020	US-2020-167199	42420
7	Office Supplies	Athens	United States	Jack O'Briant	Dixon	06-01-2020	US-2020-106054	30605
8	Office Supplies	Henderson	United States	Maria Etezadi	Ibico	06-01-2020	US-2020-167199	42420

Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	Postal Code
9	Office Supplies	Henderson	United States	Maria Etezadi	Alliance	06-01-2020	US-2020-167199

In [13]: `store[0:20:5]`

Out[13]:

Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	Post
0	Office Supplies	Houston	United States	Darren Powers	Message Book	03-01-2020	US-2020-103800
5	Furniture	Henderson	United States	Maria Etezadi	Global	06-01-2020	US-2020-167199
10	Office Supplies	Henderson	United States	Maria Etezadi	Southworth	06-01-2020	US-2020-167199
15	Office Supplies	Huntsville	United States	Vivek Sundaresam	Acco	07-01-2020	US-2020-105417



In [14]: `store.head()`

Out[14]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	Postal Code
0	Office Supplies	Houston	United States	Darren Powers	Message Book	03-01-2020	US-2020-103800	77015
1	Office Supplies	Naperville	United States	Phillina Ober	GBC	04-01-2020	US-2020-112326	60540
2	Office Supplies	Naperville	United States	Phillina Ober	Avery	04-01-2020	US-2020-112326	60540
3	Office Supplies	Naperville	United States	Phillina Ober	SAFCO	04-01-2020	US-2020-112326	60540
4	Office Supplies	Philadelphia	United States	Mick Brown	Avery	05-01-2020	US-2020-141817	19143

In [15]: `store.head(3)`

Out[15]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	Postal Code
0	Office Supplies	Houston	United States	Darren Powers	Message Book	03-01-2020	US-2020-103800	77015
1	Office Supplies	Naperville	United States	Phillina Ober	GBC	04-01-2020	US-2020-112326	60540
2	Office Supplies	Naperville	United States	Phillina Ober	Avery	04-01-2020	US-2020-112326	60540



In [16]: `store.tail()`

Out[16]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID
10189	Office Supplies	New York City	United States	Patrick O'Donnell	Wilson Jones	30-12-2023	US-2023-143259
10190	Office Supplies	Fairfield	United States	Erica Bern	GBC	30-12-2023	US-2023-115427
10191	Office Supplies	Loveland	United States	Jill Matthias	Other	30-12-2023	US-2023-156720
10192	Technology	New York City	United States	Patrick O'Donnell	Other	30-12-2023	US-2023-143259
10193	Office Supplies	Charlottetown	Canada	Harry Olson	Wilson Jones	30-12-2023	CA-2023-143500

In [17]: `store.isna()`

Out[17]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	Postal Code	F
0	False	False		False	False	False	False	False	False
1	False	False		False	False	False	False	False	False
2	False	False		False	False	False	False	False	False
3	False	False		False	False	False	False	False	False
4	False	False		False	False	False	False	False	False
...
10189	False	False		False	False	False	False	False	False
10190	False	False		False	False	False	False	False	False
10191	False	False		False	False	False	False	False	False
10192	False	False		False	False	False	False	False	False
10193	False	False		False	False	False	False	False	False

10194 rows × 19 columns



Introduce statistical concept in pandas

In [19]: `store.describe() #describe refers for descriptive statistics.`

Out[19]:

	Discount	Profit	Quantity	Sales
count	10194.000000	10194.000000	10194.000000	10194.000000
mean	0.155385	28.673417	3.791838	228.225854
std	0.206249	232.465115	2.228317	619.906839
min	0.000000	-6599.978000	1.000000	0.444000
25%	0.000000	1.760800	2.000000	17.220000
50%	0.200000	8.690000	3.000000	53.910000
75%	0.200000	29.297925	5.000000	209.500000
max	0.800000	8399.976000	14.000000	22638.480000

In [92]: `store.head()`

Out[92]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	Postal Code
0	Office Supplies	Houston	United States	Darren Powers	Message Book	03-01-2020	US-2020-103800	77015
1	Office Supplies	Naperville	United States	Phillina Ober	GBC	04-01-2020	US-2020-112326	60540
2	Office Supplies	Naperville	United States	Phillina Ober	Avery	04-01-2020	US-2020-112326	60540
3	Office Supplies	Naperville	United States	Phillina Ober	SAFCO	04-01-2020	US-2020-112326	60540
4	Office Supplies	Philadelphia	United States	Mick Brown	Avery	05-01-2020	US-2020-141817	19143



In [94]: `store.columns`

Out[94]: Index(['Category', 'City', 'Country/Region', 'Customer Name', 'Manufacturer', 'Order Date', 'Order ID', 'Postal Code', 'Product Name', 'Region', 'Segment', 'Ship Date', 'Ship Mode', 'State/Province', 'Sub-Category', 'Discount', 'Profit', 'Quantity', 'Sales'], dtype='object')

In [96]: `store['Category']`

Out[96]: 0 Office Supplies
1 Office Supplies
2 Office Supplies
3 Office Supplies
4 Office Supplies
 ...
10189 Office Supplies
10190 Office Supplies
10191 Office Supplies
10192 Technology
10193 Office Supplies
Name: Category, Length: 10194, dtype: object

In [100...]: `store[['Category', 'City', 'Customer Name']]`

	Category	City	Customer Name
0	Office Supplies	Houston	Darren Powers
1	Office Supplies	Naperville	Phillina Ober
2	Office Supplies	Naperville	Phillina Ober
3	Office Supplies	Naperville	Phillina Ober
4	Office Supplies	Philadelphia	Mick Brown
...
10189	Office Supplies	New York City	Patrick O'Donnell
10190	Office Supplies	Fairfield	Erica Bern
10191	Office Supplies	Loveland	Jill Matthias
10192	Technology	New York City	Patrick O'Donnell
10193	Office Supplies	Charlottetown	Harry Olson

10194 rows × 3 columns

can you divide the data set into categorical & numerical

In [103...]: `store.columns`

Out[103...]: `Index(['Category', 'City', 'Country/Region', 'Customer Name', 'Manufacturer', 'Order Date', 'Order ID', 'Postal Code', 'Product Name', 'Region', 'Segment', 'Ship Date', 'Ship Mode', 'State/Province', 'Sub-Category', 'Discount', 'Profit', 'Quantity', 'Sales'], dtype='object')`

In [109...]: `store_cat=store[['Category', 'City', 'Country/Region', 'Customer Name', 'Manufacturer', 'Order Date', 'Order ID', 'Postal Code', 'Product Name', 'Region', 'Segment', 'Ship Date', 'Ship Mode', 'State/Province', 'Sub-Category', 'Discount', 'Profit', 'Quantity', 'Sales']]`
 store

Out[109...]

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID
0	Office Supplies	Houston	United States	Darren Powers	Message Book	03-01-2020	US-2020-103800
1	Office Supplies	Naperville	United States	Phillina Ober	GBC	04-01-2020	US-2020-112326
2	Office Supplies	Naperville	United States	Phillina Ober	Avery	04-01-2020	US-2020-112326
3	Office Supplies	Naperville	United States	Phillina Ober	SAFCO	04-01-2020	US-2020-112326
4	Office Supplies	Philadelphia	United States	Mick Brown	Avery	05-01-2020	US-2020-141817
...							
10189	Office Supplies	New York City	United States	Patrick O'Donnell	Wilson Jones	30-12-2023	US-2023-143259
10190	Office Supplies	Fairfield	United States	Erica Bern	GBC	30-12-2023	US-2023-115427
10191	Office Supplies	Loveland	United States	Jill Matthias	Other	30-12-2023	US-2023-156720
10192	Technology	New York City	United States	Patrick O'Donnell	Other	30-12-2023	US-2023-143259
10193	Office Supplies	Charlottetown	Canada	Harry Olson	Wilson Jones	30-12-2023	CA-2023-143500

10194 rows × 19 columns

```
In [111... store_cat.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10194 entries, 0 to 10193
Data columns (total 19 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   Category        10194 non-null   object  
 1   City             10194 non-null   object  
 2   Country/Region  10194 non-null   object  
 3   Customer Name   10194 non-null   object  
 4   Manufacturer    10194 non-null   object  
 5   Order Date      10194 non-null   object  
 6   Order ID         10194 non-null   object  
 7   Postal Code     10194 non-null   object  
 8   Product Name    10194 non-null   object  
 9   Region           10194 non-null   object  
 10  Segment          10194 non-null   object  
 11  Ship Date       10194 non-null   object  
 12  Ship Mode        10194 non-null   object  
 13  State/Province  10194 non-null   object  
 14  Sub-Category    10194 non-null   object  
 15  Discount         10194 non-null   float64 
 16  Profit            10194 non-null   float64 
 17  Quantity          10194 non-null   int64  
 18  Sales             10194 non-null   float64 
dtypes: float64(3), int64(1), object(15)
memory usage: 1.5+ MB
```

```
In [113... store.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10194 entries, 0 to 10193
Data columns (total 19 columns):
 #   Column            Non-Null Count  Dtype  
--- 
 0   Category          10194 non-null   object  
 1   City               10194 non-null   object  
 2   Country/Region    10194 non-null   object  
 3   Customer Name     10194 non-null   object  
 4   Manufacturer      10194 non-null   object  
 5   Order Date        10194 non-null   object  
 6   Order ID          10194 non-null   object  
 7   Postal Code       10194 non-null   object  
 8   Product Name      10194 non-null   object  
 9   Region             10194 non-null   object  
 10  Segment            10194 non-null   object  
 11  Ship Date         10194 non-null   object  
 12  Ship Mode         10194 non-null   object  
 13  State/Province    10194 non-null   object  
 14  Sub-Category      10194 non-null   object  
 15  Discount           10194 non-null   float64 
 16  Profit              10194 non-null   float64 
 17  Quantity            10194 non-null   int64   
 18  Sales               10194 non-null   float64 
dtypes: float64(3), int64(1), object(15)
memory usage: 1.5+ MB
```

```
In [117...]: store_num=store[['Discount', 'Profit', 'Quantity', 'Sales']]
```

```
In [119...]: store_num.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10194 entries, 0 to 10193
Data columns (total 4 columns):
 #   Column      Non-Null Count  Dtype  
--- 
 0   Discount    10194 non-null   float64 
 1   Profit      10194 non-null   float64 
 2   Quantity    10194 non-null   int64  
 3   Sales        10194 non-null   float64 
dtypes: float64(3), int64(1)
memory usage: 318.7 KB
```

```
In [121...]: print(len(store.columns))
print(len(store_cat.columns))
print(len(store_num.columns))
```

```
19
19
4
```

```
In [123...]: store_cat.describe()
```

Out[123...]

	Discount	Profit	Quantity	Sales
count	10194.000000	10194.000000	10194.000000	10194.000000
mean	0.155385	28.673417	3.791838	228.225854
std	0.206249	232.465115	2.228317	619.906839
min	0.000000	-6599.978000	1.000000	0.444000
25%	0.000000	1.760800	2.000000	17.220000
50%	0.200000	8.690000	3.000000	53.910000
75%	0.200000	29.297925	5.000000	209.500000
max	0.800000	8399.976000	14.000000	22638.480000

In [125...]

store_num.describe()

Out[125...]

	Discount	Profit	Quantity	Sales
count	10194.000000	10194.000000	10194.000000	10194.000000
mean	0.155385	28.673417	3.791838	228.225854
std	0.206249	232.465115	2.228317	619.906839
min	0.000000	-6599.978000	1.000000	0.444000
25%	0.000000	1.760800	2.000000	17.220000
50%	0.200000	8.690000	3.000000	53.910000
75%	0.200000	29.297925	5.000000	209.500000
max	0.800000	8399.976000	14.000000	22638.480000

BASIC PANDAS INTRODUCTION COMPLETED.

In [130...]

rev=store[::-1]

rev

Out[130...]

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID
10193	Office Supplies	Charlottetown	Canada	Harry Olson	Wilson Jones	30-12-2023	CA-2023-143500
10192	Technology	New York City	United States	Patrick O'Donnell	Other	30-12-2023	US-2023-143259
10191	Office Supplies	Loveland	United States	Jill Matthias	Other	30-12-2023	US-2023-156720
10190	Office Supplies	Fairfield	United States	Erica Bern	GBC	30-12-2023	US-2023-115427
10189	Office Supplies	New York City	United States	Patrick O'Donnell	Wilson Jones	30-12-2023	US-2023-143259
...
4	Office Supplies	Philadelphia	United States	Mick Brown	Avery	05-01-2020	US-2020-141817
3	Office Supplies	Naperville	United States	Phillina Ober	SAFCO	04-01-2020	US-2020-112326
2	Office Supplies	Naperville	United States	Phillina Ober	Avery	04-01-2020	US-2020-112326
1	Office Supplies	Naperville	United States	Phillina Ober	GBC	04-01-2020	US-2020-112326
0	Office Supplies	Houston	United States	Darren Powers	Message Book	03-01-2020	US-2020-103800

10194 rows × 19 columns

In [132...]: `rev.head()`

Out[132...]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID
10193	Office Supplies	Charlottetown	Canada	Harry Olson	Wilson Jones	30-12-2023	CA-2023-143500
10192	Technology	New York City	United States	Patrick O'Donnell	Other	30-12-2023	US-2023-143259
10191	Office Supplies	Loveland	United States	Jill Matthias	Other	30-12-2023	US-2023-156720
10190	Office Supplies	Fairfield	United States	Erica Bern	GBC	30-12-2023	US-2023-115427
10189	Office Supplies	New York City	United States	Patrick O'Donnell	Wilson Jones	30-12-2023	US-2023-143259

In [134...]: `rev.tail()`

Out[134...]

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	Postal Code
4	Office Supplies	Philadelphia	United States	Mick Brown	Avery	05-01-2020	US-2020-141817	19143
3	Office Supplies	Naperville	United States	Phillina Ober	SAFCO	04-01-2020	US-2020-112326	60540
2	Office Supplies	Naperville	United States	Phillina Ober	Avery	04-01-2020	US-2020-112326	60540
1	Office Supplies	Naperville	United States	Phillina Ober	GBC	04-01-2020	US-2020-112326	60540
0	Office Supplies	Houston	United States	Darren Powers	Message Book	03-01-2020	US-2020-103800	77015



In []:

In []: