

```
In [1]: !pip install pandas
```

```
Requirement already satisfied: pandas in c:\users\dell\anaconda3\lib\site-packages (2.2.2)  
Requirement already satisfied: numpy>=1.26.0 in c:\users\dell\anaconda3\lib\site-packages (from pandas) (1.26.4)  
Requirement already satisfied: python-dateutil>=2.8.2 in c:\users\dell\anaconda3\lib\site-packages (from pandas) (2.9.0.post0)  
Requirement already satisfied: pytz>=2020.1 in c:\users\dell\anaconda3\lib\site-packages (from pandas) (2024.1)  
Requirement already satisfied: tzdata>=2022.7 in c:\users\dell\anaconda3\lib\site-packages (from pandas) (2023.3)  
Requirement already satisfied: six>=1.5 in c:\users\dell\anaconda3\lib\site-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
```

```
In [2]: import pandas as pd
```

```
In [3]: pd.__version__
```

```
Out[3]: '2.2.2'
```

```
In [75]: store = pd.read_csv(r'C:\Users\Dell\Downloads\21st - Pandas\21st - Pandas\Sample -
```

```
In [77]: store
```

Out[77]:

	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 [6]: `len(store)`

Out[6]: 10194

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]: `store.shape`

Out[8]: (10194, 19)

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

Out[9]:

	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.isna()
```

Out[11]:

	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 [12]: store.head()
```

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

In [13]: store.tail()

Out[13]:

	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 [14]: store.head(2)

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

In [15]: store.head(-2)

Out[15]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	P
0	Office Supplies	Houston	United States	Darren Powers	Message Book	03-01-2020	US-2020-103800	7
1	Office Supplies	Naperville	United States	Phillina Ober	GBC	04-01-2020	US-2020-112326	6
2	Office Supplies	Naperville	United States	Phillina Ober	Avery	04-01-2020	US-2020-112326	6
3	Office Supplies	Naperville	United States	Phillina Ober	SAFCO	04-01-2020	US-2020-112326	6
4	Office Supplies	Philadelphia	United States	Mick Brown	Avery	05-01-2020	US-2020-141817	1
...
10187	Office Supplies	Columbus	United States	Chuck Clark	Eureka	30-12-2023	US-2023-126221	4
10188	Office Supplies	Fairfield	United States	Erica Bern	Cardinal	30-12-2023	US-2023-115427	9
10189	Office Supplies	New York City	United States	Patrick O'Donnell	Wilson Jones	30-12-2023	US-2023-143259	1
10190	Office Supplies	Fairfield	United States	Erica Bern	GBC	30-12-2023	US-2023-115427	9

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	P
10191	Office Supplies	Loveland	United States	Jill Matthias	Other	30-12-2023	US-2023-156720	8

10192 rows × 19 columns

```
In [16]: store[:]
```


Out[16]:

	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 [17]: `store[:, -1]`

Out[17]:

	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 [18]: store[1:12:3]
```

Out[18]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	Postal Code
1	Office Supplies	Naperville	United States	Phillina Ober	GBC	04-01-2020	US-2020-112326	6054
4	Office Supplies	Philadelphia	United States	Mick Brown	Avery	05-01-2020	US-2020-141817	1914
7	Office Supplies	Athens	United States	Jack O'Briant	Dixon	06-01-2020	US-2020-106054	3060
10	Office Supplies	Henderson	United States	Maria Etezadi	Southworth	06-01-2020	US-2020-167199	4242

```
In [20]: 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 [21]: store['Postal Code']
```

```
Out[21]: 0      77015
1      60540
2      60540
3      60540
4      19143
...
10189  10009
10190  94533
10191  80538
10192  10009
10193   C0A
Name: Postal Code, Length: 10194, dtype: object
```

```
In [22]: store[['Category', 'Profit']]
```

Out[22]:

	Category	Profit
0	Office Supplies	5.5512
1	Office Supplies	-5.4870
2	Office Supplies	4.2717
3	Office Supplies	-64.7748
4	Office Supplies	4.8840
...
10189	Office Supplies	19.7910
10190	Office Supplies	6.4750
10191	Office Supplies	-0.6048
10192	Technology	2.7279
10193	Office Supplies	-0.6048

10194 rows × 2 columns

In [23]: `store.dtypes`

```
Out[23]: Category      object
City                object
Country/Region      object
Customer Name       object
Manufacturer         object
Order Date          object
Order ID            object
Postal Code         object
Product Name        object
Region              object
Segment             object
Ship Date           object
Ship Mode           object
State/Province      object
Sub-Category        object
Discount            float64
Profit              float64
Quantity            int64
Sales               float64
dtype: object
```

In [25]: `id(store)`

Out[25]: 960283924176

In [27]: `len(store)`

Out[27]: 10194

```
In [29]: store.columns
```

```
Out[29]: 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 [31]: len(store.columns)
```

```
Out[31]: 19
```

```
In [33]: type(store)
```

```
Out[33]: pandas.core.frame.DataFrame
```

```
In [39]: store.isnull().sum()
```

```
Out[39]: 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 [41]: store.tail(-2)
```

Out[41]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID
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
5	Furniture	Henderson	United States	Maria Etezadi	Global	06-01-2020	US-2020-167199
6	Office Supplies	Henderson	United States	Maria Etezadi	Rogers	06-01-2020	US-2020-167199
...
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

10192 rows × 19 columns




```
In [43]: store[:-1]
```

Out[43]:

	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
...
10188	Office Supplies	Fairfield	United States	Erica Bern	Cardinal	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
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 rows × 19 columns

```
In [47]: store[2:9]
```

Out[47]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID	Postal Code
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

```
In [49]: store[2:-1]
```

Out[49]:

	Category	City	Country/Region	Customer Name	Manufacturer	Order Date	Order ID
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
5	Furniture	Henderson	United States	Maria Etezadi	Global	06-01-2020	US-2020-167199
6	Office Supplies	Henderson	United States	Maria Etezadi	Rogers	06-01-2020	US-2020-167199
...
10188	Office Supplies	Fairfield	United States	Erica Bern	Cardinal	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
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

10191 rows × 19 columns

In [51]: `store.columns`

```
Out[51]: 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 [61]: `store_numerical = store[['Quantity', 'Sales', 'Profit', 'Discount']]`In [63]: `store_numerical`

```
Out[63]:
```

	Quantity	Sales	Profit	Discount
0	2	16.448	5.5512	0.2
1	2	3.540	-5.4870	0.8
2	3	11.784	4.2717	0.2
3	3	272.736	-64.7748	0.2
4	3	19.536	4.8840	0.2
...
10189	3	52.776	19.7910	0.2
10190	2	20.720	6.4750	0.2
10191	3	3.024	-0.6048	0.2
10192	7	90.930	2.7279	0.0
10193	3	3.024	-0.6048	0.2

10194 rows × 4 columns

```
In [67]: store_categorical = store[['Category', 'City', 'Country/Region', 'Customer Name', '
              'Order Date', 'Order ID', 'Postal Code', 'Product Name', 'Region',
              'Segment', 'Ship Date', 'Ship Mode', 'State/Province', 'Sub-Category']]
store_categorical
```

Out[67]:

	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 × 15 columns

In [83]:

store[4:5]

Out[83]:

	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

In [89]:

store[-1:]

Out[89]:

	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

In [91]:

store[:-1]

Out[91]:

	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
...
10188	Office Supplies	Fairfield	United States	Erica Bern	Cardinal	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
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 rows × 19 columns

In []: