

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

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

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

```
In [7]: Apple=pd.read_csv(r'C:\Users\mdtan\Downloads\apple_products.csv')  
Apple
```

Out[7]:

	Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number Of Ratings
0	APPLE iPhone 8 Plus (Gold, 64 GB)	https://www.flipkart.com/apple-iphone-8-plus-g...	Apple	49900	49900	0	3431
1	APPLE iPhone 8 Plus (Space Grey, 256 GB)	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900	84900	0	3431
2	APPLE iPhone 8 Plus (Silver, 256 GB)	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900	84900	0	3431
3	APPLE iPhone 8 (Silver, 256 GB)	https://www.flipkart.com/apple-iphone-8-silver...	Apple	77000	77000	0	11202
4	APPLE iPhone 8 (Gold, 256 GB)	https://www.flipkart.com/apple-iphone-8-gold-2...	Apple	77000	77000	0	11202
...
57	APPLE iPhone SE (Black, 64 GB)	https://www.flipkart.com/apple-iphone-se-black...	Apple	29999	39900	24	95909
58	APPLE iPhone 11 (Purple, 64 GB)	https://www.flipkart.com/apple-iphone-11-purpl...	Apple	46999	54900	14	43470
59	APPLE iPhone 11 (White, 64 GB)	https://www.flipkart.com/apple-iphone-11-white...	Apple	46999	54900	14	43470
60	APPLE iPhone 11 (Black, 64 GB)	https://www.flipkart.com/apple-iphone-11-black...	Apple	46999	54900	14	43470
61	APPLE iPhone	https://www.flipkart.com/apple-iphone-11-red-6...	Apple	46999	54900	14	43470

Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number Of Ratings
11 (Red, 64 GB)						

62 rows × 11 columns

```
In [13]: len(Apple)
```

```
Out[13]: 62
```

```
In [15]: Apple.columns
```

```
Out[15]: Index(['Product Name', 'Product URL', 'Brand', 'Sale Price', 'Mrp',  
              'Discount Percentage', 'Number Of Ratings', 'Number Of Reviews', 'Upc',  
              'Star Rating', 'Ram'],  
              dtype='object')
```

```
In [17]: Apple.shape
```

```
Out[17]: (62, 11)
```

```
In [19]: Apple.isnull()
```

```
Out[19]:
```

	Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number Of Ratings	Number Of Reviews	Upc	Star Rating
0	False	False	False	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False	False	False	False
...
57	False	False	False	False	False	False	False	False	False	False
58	False	False	False	False	False	False	False	False	False	False
59	False	False	False	False	False	False	False	False	False	False
60	False	False	False	False	False	False	False	False	False	False
61	False	False	False	False	False	False	False	False	False	False

62 rows × 11 columns



```
In [21]: Apple.isnull().sum()
```

```
Out[21]: Product Name      0
Product URL      0
Brand            0
Sale Price       0
Mrp              0
Discount Percentage  0
Number Of Ratings  0
Number Of Reviews  0
Upc              0
Star Rating      0
Ram              0
dtype: int64
```

```
In [23]: Apple.isna()
```

```
Out[23]:
```

	Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number Of Ratings	Number Of Reviews	Upc	Star Rating
0	False	False	False	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False	False	False	False
...
57	False	False	False	False	False	False	False	False	False	False
58	False	False	False	False	False	False	False	False	False	False
59	False	False	False	False	False	False	False	False	False	False
60	False	False	False	False	False	False	False	False	False	False
61	False	False	False	False	False	False	False	False	False	False

62 rows × 11 columns



```
In [25]: Apple.isna().sum()
```

```
Out[25]: Product Name      0
Product URL      0
Brand            0
Sale Price       0
Mrp              0
Discount Percentage  0
Number Of Ratings  0
Number Of Reviews  0
Upc              0
Star Rating      0
Ram              0
dtype: int64
```

```
In [27]: Apple.head()
```

Out[27]:

	Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number Of Ratings
0	APPLE iPhone 8 Plus (Gold, 64 GB)	https://www.flipkart.com/apple-iphone-8-plus-g...	Apple	49900	49900	0	3431
1	APPLE iPhone 8 Plus (Space Grey, 256 GB)	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900	84900	0	3431
2	APPLE iPhone 8 Plus (Silver, 256 GB)	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900	84900	0	3431
3	APPLE iPhone 8 (Silver, 256 GB)	https://www.flipkart.com/apple-iphone-8-silver...	Apple	77000	77000	0	11202
4	APPLE iPhone 8 (Gold, 256 GB)	https://www.flipkart.com/apple-iphone-8-gold-2...	Apple	77000	77000	0	11202

In [29]: `Apple.tail()`

Out[29]:

	Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number Of Ratings
57	APPLE iPhone SE (Black, 64 GB)	https://www.flipkart.com/apple-iphone-se-black...	Apple	29999	39900	24	95909
58	APPLE iPhone 11 (Purple, 64 GB)	https://www.flipkart.com/apple-iphone-11-purpl...	Apple	46999	54900	14	43470
59	APPLE iPhone 11 (White, 64 GB)	https://www.flipkart.com/apple-iphone-11-white...	Apple	46999	54900	14	43470
60	APPLE iPhone 11 (Black, 64 GB)	https://www.flipkart.com/apple-iphone-11-black...	Apple	46999	54900	14	43470
61	APPLE iPhone 11 (Red, 64 GB)	https://www.flipkart.com/apple-iphone-11-red-6...	Apple	46999	54900	14	43470

In [31]: Apple.describe()


Out[31]:

	Sale Price	Mrp	Discount Percentage	Number Of Ratings	Number Of Reviews	Star Rating
count	62.000000	62.000000	62.000000	62.000000	62.000000	62.000000
mean	80073.887097	88058.064516	9.951613	22420.403226	1861.677419	4.575806
std	34310.446132	34728.825597	7.608079	33768.589550	2855.883830	0.059190
min	29999.000000	39900.000000	0.000000	542.000000	42.000000	4.500000
25%	49900.000000	54900.000000	6.000000	740.000000	64.000000	4.500000
50%	75900.000000	79900.000000	10.000000	2101.000000	180.000000	4.600000
75%	117100.000000	120950.000000	14.000000	43470.000000	3331.000000	4.600000
max	140900.000000	149900.000000	29.000000	95909.000000	8161.000000	4.700000

In [35]: Apple[0:5]

Out[35]:

	Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number Of Ratings
0	APPLE iPhone 8 Plus (Gold, 64 GB)	https://www.flipkart.com/apple-iphone-8-plus-g...	Apple	49900	49900	0	3431
1	APPLE iPhone 8 Plus (Space Grey, 256 GB)	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900	84900	0	3431
2	APPLE iPhone 8 Plus (Silver, 256 GB)	https://www.flipkart.com/apple-iphone-8-plus-s...	Apple	84900	84900	0	3431
3	APPLE iPhone 8 (Silver, 256 GB)	https://www.flipkart.com/apple-iphone-8-silver...	Apple	77000	77000	0	11202
4	APPLE iPhone 8 (Gold, 256 GB)	https://www.flipkart.com/apple-iphone-8-gold-2...	Apple	77000	77000	0	11202



In [37]: Apple[45:]

Out[37]:

	Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number of Ratings
45	APPLE iPhone 12 Mini (Black, 64 GB)	https://www.flipkart.com/apple-iphone-12-mini-...	Apple	59900	69900	14	74
46	APPLE iPhone 12 Pro (Pacific Blue, 128 GB)	https://www.flipkart.com/apple-iphone-12-pro-p...	Apple	110900	119900	7	54
47	APPLE iPhone 12 Pro Max (Pacific Blue, 128 GB)	https://www.flipkart.com/apple-iphone-12-pro-m...	Apple	120900	129900	6	58
48	APPLE iPhone 12 Pro Max (Silver, 256 GB)	https://www.flipkart.com/apple-iphone-12-pro-m...	Apple	130900	139900	6	58
49	APPLE iPhone 12 Pro Max (Gold, 256 GB)	https://www.flipkart.com/apple-iphone-12-pro-m...	Apple	130900	139900	6	58
50	APPLE iPhone 11 (White, 128 GB)	https://www.flipkart.com/apple-iphone-11-white...	Apple	54999	59900	8	4370
51	APPLE iPhone 11 (Red, 128 GB)	https://www.flipkart.com/apple-iphone-11-red-1...	Apple	54999	59900	8	4370
52	APPLE iPhone SE (White, 64 GB)	https://www.flipkart.com/apple-iphone-se-white...	Apple	29999	39900	24	9580
53	APPLE iPhone SE (Black, 128 GB)	https://www.flipkart.com/apple-iphone-se-black...	Apple	34999	44900	22	9590

	Product Name	Product URL	Brand	Sale Price	Mrp	Discount Percentage	Number of Ratings
54	APPLE iPhone SE (White, 128 GB)	https://www.flipkart.com/apple-iphone-se-white...	Apple	34999	44900	22	9580
55	APPLE iPhone SE (Red, 128 GB)	https://www.flipkart.com/apple-iphone-se-red-1...	Apple	34999	44900	22	9590
56	APPLE iPhone 11 (Black, 128 GB)	https://www.flipkart.com/apple-iphone-11-black...	Apple	54999	59900	8	4347
57	APPLE iPhone SE (Black, 64 GB)	https://www.flipkart.com/apple-iphone-se-black...	Apple	29999	39900	24	9590
58	APPLE iPhone 11 (Purple, 64 GB)	https://www.flipkart.com/apple-iphone-11-purpl...	Apple	46999	54900	14	4347
59	APPLE iPhone 11 (White, 64 GB)	https://www.flipkart.com/apple-iphone-11-white...	Apple	46999	54900	14	4347
60	APPLE iPhone 11 (Black, 64 GB)	https://www.flipkart.com/apple-iphone-11-black...	Apple	46999	54900	14	4347
61	APPLE iPhone 11 (Red, 64 GB)	https://www.flipkart.com/apple-iphone-11-red-6...	Apple	46999	54900	14	4347

In [39]: `Apple.info()`

```

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 62 entries, 0 to 61
Data columns (total 11 columns):
 #   Column                Non-Null Count  Dtype
---  -
 0   Product Name          62 non-null     object
 1   Product URL           62 non-null     object
 2   Brand                 62 non-null     object
 3   Sale Price            62 non-null     int64
 4   Mrp                  62 non-null     int64
 5   Discount Percentage   62 non-null     int64
 6   Number Of Ratings     62 non-null     int64
 7   Number Of Reviews     62 non-null     int64
 8   Upc                  62 non-null     object
 9   Star Rating           62 non-null     float64
10   Ram                  62 non-null     object
dtypes: float64(1), int64(5), object(5)
memory usage: 5.5+ KB

```

```
In [59]: Apple[['Product Name', 'Brand']]
```

```
Out[59]:
```

	Product Name	Brand
0	APPLE iPhone 8 Plus (Gold, 64 GB)	Apple
1	APPLE iPhone 8 Plus (Space Grey, 256 GB)	Apple
2	APPLE iPhone 8 Plus (Silver, 256 GB)	Apple
3	APPLE iPhone 8 (Silver, 256 GB)	Apple
4	APPLE iPhone 8 (Gold, 256 GB)	Apple
...
57	APPLE iPhone SE (Black, 64 GB)	Apple
58	APPLE iPhone 11 (Purple, 64 GB)	Apple
59	APPLE iPhone 11 (White, 64 GB)	Apple
60	APPLE iPhone 11 (Black, 64 GB)	Apple
61	APPLE iPhone 11 (Red, 64 GB)	Apple

62 rows × 2 columns

```
In [71]: Apple_numerical = Apple[['Sale Price', 'Upc', 'Mrp', 'Ram', 'Discount Percentage']]
Apple_numerical
```

Out[71]:

	Sale Price	Upc	Mrp	Ram	Discount Percentage	Star Rating	Number Of Reviews
0	49900	MOBEXRGV7EHHTGUH	49900	2 GB	0	4.6	356
1	84900	MOBEXRGVAC6TJT4F	84900	2 GB	0	4.6	356
2	84900	MOBEXRGVGETABXWZ	84900	2 GB	0	4.6	356
3	77000	MOBEXRGVMZWUHCBA	77000	2 GB	0	4.5	794
4	77000	MOBEXRGVPK7PFEJZ	77000	2 GB	0	4.5	794
...
57	29999	MOBFWQ6BR3MK7AUG	39900	4 GB	24	4.5	8161
58	46999	MOBFWQ6BTFFJKGKE	54900	4 GB	14	4.6	3331
59	46999	MOBFWQ6BVWVEH3XE	54900	4 GB	14	4.6	3331
60	46999	MOBFWQ6BXGJCEYNY	54900	4 GB	14	4.6	3331
61	46999	MOBFWQ6BYV3FCU7	54900	4 GB	14	4.6	3331

62 rows × 7 columns

In []: