```
In [1]: import pandas as pd
        import numpy as np
        import matplotlib.pyplot as plt
```

```
In [2]: df=pd.read_csv("D:\ml Projects\mi_data.csv")
```

```
In [3]: df.head()
```

Out[3]:

	model_names	ratings	price	imgURL	storage_ram	os_processor	network	ba
0	REDMI 10 Power (Sporty Orange, 128 GB)	4.2	₹13,500	https://rukminim2.flixcart.com/image/312/312/x...	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating SystemAndroid 13Processor CoreOcta C...	Network Type4G VOLTESupported Networks4G LTE	B Capacity
1	REDMI 10 Power (Power Black, 128 GB)	4.2	₹12,840	https://rukminim2.flixcart.com/image/312/312/x...	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating SystemAndroid 13Processor CoreOcta C...	Network Type4G VOLTESupported Networks4G VoLTE	B Capacity
2	Redmi 9A Sport (Metallic Blue, 32 GB)	4.1	₹7,520	https://rukminim2.flixcart.com/image/312/312/x...	Internal Storage32 GBRAM2 GBMemory Card Slot T...	Operating SystemAndroid Q 10Processor CoreOcta...	Network Type4G VOLTE, 4GSupported Networks4G LTE	B Capacity
3	Redmi 9A Sport (Coral Green, 32 GB)	4.2	₹8,450	https://rukminim2.flixcart.com/image/312/312/x...	Internal Storage32 GBRAM3 GBMemory Card Slot T...	Operating SystemAndroid Q 10Processor CoreOcta...	Network Type4G VOLTE, 4GSupported Networks4G V...	B Capacity
4	Xiaomi 11Lite NE (Vinyl Black, 128 GB)	4.2	₹21,644	https://rukminim2.flixcart.com/image/312/312/x...	Internal Storage128 GBRAM6 GBExpandable Storag...	Operating SystemAndroid 11Processor TypeQualco...	Network Type5G, 4G VOLTESupported Networks5G, ...	B Capacity mAhB Type

In [4]: `df.shape`

Out[4]: `(548, 8)`

In [5]: `df.info()`

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 548 entries, 0 to 547
Data columns (total 8 columns):
 #   Column        Non-Null Count  Dtype
---  ------        --------------  -----
 0   model_names   548 non-null    object
 1   ratings       548 non-null    float64
 2   price         548 non-null    object
 3   imgURL        548 non-null    object
 4   storage_ram   548 non-null    object
 5   os_processor  548 non-null    object
 6   network       548 non-null    object
 7   battery       548 non-null    object
dtypes: float64(1), object(7)
memory usage: 34.4+ KB
```

In [6]: `df.storage_ram`

```
Out[6]: 0      Internal Storage128 GBRAM8 GBMemory Card Slot ...
        1      Internal Storage128 GBRAM8 GBMemory Card Slot ...
        2      Internal Storage32 GBRAM2 GBMemory Card Slot T...
        3      Internal Storage32 GBRAM3 GBMemory Card Slot T...
        4      Internal Storage128 GBRAM6 GBExpandable Storag...
                                     ...
        543    Internal Storage32 GBRAM3 GBExpandable Storage...
        544    Internal Storage32 GBRAM3 GBMemory Card Slot T...
        545                      Internal Storage128 GBRAM6 GB
        546    Internal Storage64 GBRAM4 GBExpandable Storage...
        547    Internal Storage64 GBRAM4 GBExpandable Storage...
        Name: storage_ram, Length: 548, dtype: object
```

In [7]: `# Data Cleaning`

```
In [8]: df.isnull().sum()
        # no null values
```

```
Out[8]: model_names     0
        ratings         0
        price           0
        imgURL          0
        storage_ram     0
        os_processor    0
        network         0
        battery         0
        dtype: int64
```

```
In [9]: # -->splitting the columns and cleaning the data
```

```
In [10]: df.drop(["imgURL"],axis='columns',inplace=True)
```

```
In [11]: def split_dat(x):
             currency_symbol,value=x.split("₹")
             value=int(value)
             return value
```

```
In [12]: df["price"]=df["price"].apply(lambda x:int(x.split("₹")[1].replace(",","")))
```

In [13]: `df.head()`

Out[13]:

	model_names	ratings	price	storage_ram	os_processor	network	battery
0	REDMI 10 Power (Sporty Orange, 128 GB)	4.2	13500	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating SystemAndroid 13Processor CoreOcta C...	Network Type4G VOLTESupported Networks4G LTE	Battery Capacity6000 mAh
1	REDMI 10 Power (Power Black, 128 GB)	4.2	12840	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating SystemAndroid 13Processor CoreOcta C...	Network Type4G VOLTESupported Networks4G VoLTE	Battery Capacity6000 mAh
2	Redmi 9A Sport (Metallic Blue, 32 GB)	4.1	7520	Internal Storage32 GBRAM2 GBMemory Card Slot T...	Operating SystemAndroid Q 10Processor CoreOcta...	Network Type4G VOLTE, 4GSupported Networks4G LTE	Battery Capacity5000 mAh
3	Redmi 9A Sport (Coral Green, 32 GB)	4.2	8450	Internal Storage32 GBRAM3 GBMemory Card Slot T...	Operating SystemAndroid Q 10Processor CoreOcta...	Network Type4G VOLTE, 4GSupported Networks4G V...	Battery Capacity5000 mAh
4	Xiaomi 11Lite NE (Vinyl Black, 128 GB)	4.2	21644	Internal Storage128 GBRAM6 GBExpandable Storag...	Operating SystemAndroid 11Processor TypeQualco...	Network Type5G, 4G VOLTESupported Networks5G, ...	Battery Capacity4250 mAhBattery TypeLi-Po

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

Out[14]:

	model_names	ratings	price	storage_ram	os_processor	network	battery
0	REDMI 10 Power (Sporty Orange, 128 GB)	4.2	13500	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating SystemAndroid 13Processor CoreOcta C...	Network Type4G VOLTESupported Networks4G LTE	Battery Capacity6000 mAh
1	REDMI 10 Power (Power Black, 128 GB)	4.2	12840	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating SystemAndroid 13Processor CoreOcta C...	Network Type4G VOLTESupported Networks4G VoLTE	Battery Capacity6000 mAh
2	Redmi 9A Sport (Metallic Blue, 32 GB)	4.1	7520	Internal Storage32 GBRAM2 GBMemory Card Slot T...	Operating SystemAndroid Q 10Processor CoreOcta...	Network Type4G VOLTE, 4GSupported Networks4G LTE	Battery Capacity5000 mAh
3	Redmi 9A Sport (Coral Green, 32 GB)	4.2	8450	Internal Storage32 GBRAM3 GBMemory Card Slot T...	Operating SystemAndroid Q 10Processor CoreOcta...	Network Type4G VOLTE, 4GSupported Networks4G V...	Battery Capacity5000 mAh
4	Xiaomi 11Lite NE (Vinyl Black, 128 GB)	4.2	21644	Internal Storage128 GBRAM6 GBExpandable Storag...	Operating SystemAndroid 11Processor TypeQualco...	Network Type5G, 4G VOLTESupported Networks5G, ...	Battery Capacity4250 mAhBattery TypeLi-Po

In [15]: `df["battery"]=df["battery"].apply(lambda x:(x.split("ity")[1]))`

In [16]: `df["battery"]=df["battery"].apply(lambda x:int(x.split(" ")[0]))`

In [17]: `df.head()`

Out[17]:

	model_names	ratings	price	storage_ram	os_processor	network	battery
0	REDMI 10 Power (Sporty Orange, 128 GB)	4.2	13500	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating SystemAndroid 13Processor CoreOcta C...	Network Type4G VOLTESupported Networks4G LTE	6000
1	REDMI 10 Power (Power Black, 128 GB)	4.2	12840	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating SystemAndroid 13Processor CoreOcta C...	Network Type4G VOLTESupported Networks4G VoLTE	6000
2	Redmi 9A Sport (Metallic Blue, 32 GB)	4.1	7520	Internal Storage32 GBRAM2 GBMemory Card Slot T...	Operating SystemAndroid Q 10Processor CoreOcta...	Network Type4G VOLTE, 4GSupported Networks4G LTE	5000
3	Redmi 9A Sport (Coral Green, 32 GB)	4.2	8450	Internal Storage32 GBRAM3 GBMemory Card Slot T...	Operating SystemAndroid Q 10Processor CoreOcta...	Network Type4G VOLTE, 4GSupported Networks4G V...	5000
4	Xiaomi 11Lite NE (Vinyl Black, 128 GB)	4.2	21644	Internal Storage128 GBRAM6 GBExpandable Storag...	Operating SystemAndroid 11Processor TypeQualco...	Network Type5G, 4G VOLTESupported Networks5G, ...	4250

In [18]: `df.info()`

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 548 entries, 0 to 547
Data columns (total 7 columns):
 #   Column        Non-Null Count   Dtype
---  ------        --------------   -----
 0   model_names   548 non-null     object
 1   ratings       548 non-null     float64
 2   price         548 non-null     int64
 3   storage_ram   548 non-null     object
 4   os_processor  548 non-null     object
 5   network       548 non-null     object
 6   battery       548 non-null     int64
dtypes: float64(1), int64(2), object(4)
memory usage: 30.1+ KB
```

In [19]: `df["network"]=df["network"].apply(lambda x:int(x.split("Type")[1].split("G")[0]))`

In [20]: `df.head()`

Out[20]:

	model_names	ratings	price	storage_ram	os_processor	network	battery
0	REDMI 10 Power (Sporty Orange, 128 GB)	4.2	13500	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating System Android 13Processor CoreOcta C...	4	6000
1	REDMI 10 Power (Power Black, 128 GB)	4.2	12840	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating System Android 13Processor CoreOcta C...	4	6000
2	Redmi 9A Sport (Metallic Blue, 32 GB)	4.1	7520	Internal Storage32 GBRAM2 GBMemory Card Slot T...	Operating System Android Q 10Processor CoreOcta...	4	5000
3	Redmi 9A Sport (Coral Green, 32 GB)	4.2	8450	Internal Storage32 GBRAM3 GBMemory Card Slot T...	Operating System Android Q 10Processor CoreOcta...	4	5000
4	Xiaomi 11Lite NE (Vinyl Black, 128 GB)	4.2	21644	Internal Storage128 GBRAM6 GBExpandable Storag...	Operating System Android 11Processor TypeQualco...	5	4250

In [21]: `df.network.value_counts()`

Out[21]:
```
4    237
5    150
3    146
2     15
Name: network, dtype: int64
```

In [ ]:

In [22]: `df.head()`

Out[22]:

	model_names	ratings	price	storage_ram	os_processor	network	battery
0	REDMI 10 Power (Sporty Orange, 128 GB)	4.2	13500	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating SystemAndroid 13Processor CoreOcta C...	4	6000
1	REDMI 10 Power (Power Black, 128 GB)	4.2	12840	Internal Storage128 GBRAM8 GBMemory Card Slot ...	Operating SystemAndroid 13Processor CoreOcta C...	4	6000
2	Redmi 9ASport (Metallic Blue, 32 GB)	4.1	7520	Internal Storage32 GBRAM2 GBMemory Card Slot T...	Operating SystemAndroid Q 10Processor CoreOcta...	4	5000
3	Redmi 9ASport (Coral Green, 32 GB)	4.2	8450	Internal Storage32 GBRAM3 GBMemory Card Slot T...	Operating SystemAndroid Q 10Processor CoreOcta...	4	5000
4	Xiaomi 11Lite NE (Vinyl Black, 128 GB)	4.2	21644	Internal Storage128 GBRAM6 GBExpandable Storag...	Operating SystemAndroid 11Processor TypeQualco...	5	4250

In [ ]: