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

In [3]:
```
data1 = {'Name':['Mahesh','Kajal','Prabhas','Priya','Ramcharan','Samnatha'],
         'Marks':[98,89,99,87,90,83],
         'Gender': ['Male','Female','Male','Female','Male','Female']
        }
df1 = pd.DataFrame(data1)
df1
```

Out[3]:

	Name	Marks	Gender
0	Mahesh	98	Male
1	Kajal	89	Female
2	Prabhas	99	Male
3	Priya	87	Female
4	Ramcharan	90	Male
5	Samnatha	83	Female

1. Display Top 3 Rows of the Dataset

In [4]:
```
df1.head(3)
```

Out[4]:

	Name	Marks	Gender
0	Mahesh	98	Male
1	Kajal	89	Female
2	Prabhas	99	Male

2. Display last 3 Rows of the Dataset

In [5]:
```
df1.tail(3)
```

Out[5]:

	Name	Marks	Gender
3	Priya	87	Female
4	Ramcharan	90	Male
5	Samnatha	83	Female

3. Find Shape of Our Dataset (Rows & Columns)

In [6]:
```
df1.shape
```

Out[6]:
```
(6, 3)
```

In [9]:
```
df1.shape[0] # Rows
```

Out[9]:
```
6
```

In [10]:
```
df1.shape[1] # columns
```

Out[10]:
```
3
```

4. Get information About Our Dataset

In [11]:
```
df1.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6 entries, 0 to 5
Data columns (total 3 columns):
 #   Column  Non-Null Count  Dtype 
---  ------  --------------  ----- 
 0   Name    6 non-null      object
 1   Marks   6 non-null      int64 
 2   Gender  6 non-null      object
dtypes: int64(1), object(2)
memory usage: 276.0+ bytes
```

5. Check Null Values In the Dataset

In [12]:
```
df1.isnull()
```

Out[12]:

	Name	Marks	Gender
0	False	False	False
1	False	False	False
2	False	False	False
3	False	False	False
4	False	False	False
5	False	False	False

In [15]:
```
df1.isnull().sum(axis = 0)
```

Out[15]:
```
Name      0
Marks     0
Gender    0
dtype: int64
```

6. Get Overall Statistics About the DataFrame

In [16]:
```
df1.describe()
```

Out[16]:

	Marks
count	6.000000
mean	91.000000
std	6.292853
min	83.000000
25%	87.500000
50%	89.500000
75%	96.000000
max	99.000000

In [17]:
```
df1.describe(include='all')
```

Out[17]:

	Name	Marks	Gender
count	6	6.000000	6
unique	6	NaN	2
top	Mahesh	NaN	Male
freq	1	NaN	3
mean	NaN	91.000000	NaN
std	NaN	6.292853	NaN
min	NaN	83.000000	NaN
25%	NaN	87.500000	NaN
50%	NaN	89.500000	NaN
75%	NaN	96.000000	NaN
max	NaN	99.000000	NaN

7. Find the Unique Values from the Gender column

In [20]:
```
df1
```

Out[20]:

	Name	Marks	Gender
0	Mahesh	98	Male
1	Kajal	89	Female
2	Prabhas	99	Male
3	Priya	87	Female
4	Ramcharan	90	Male
5	Samnatha	83	Female

In [21]:
```
df1['Gender'].unique()
```

Out[21]:
```
array(['Male', 'Female'], dtype=object)
```

8. Find the Number of Unique Values from the Gender column

In [22]:
```
df1['Gender'].nunique()
```

Out[22]:
```
2
```

9. Display Count Of Unique Values in Gender Column

In [25]:
```
df1['Gender'].value_counts()
```

Out[25]:
```
Gender
Male      3
Female    3
Name: count, dtype: int64
```

10. Find the Total Number of Students Having Marks Between 90 to 100

In [27]:
```
df1[df1['Marks'].between(90,100)]
```

Out[27]:

	Name	Marks	Gender
0	Mahesh	98	Male
2	Prabhas	99	Male
4	Ramcharan	90	Male

11. Find Average Marks

In [28]:
```
df1['Marks']
```

Out[28]:
```
0    98
1    89
2    99
3    87
4    90
5    83
Name: Marks, dtype: int64
```

In [29]:
```
df1['Marks'].mean()
```

Out[29]:
```
91.0
```

12. Apply Method

In [32]:
```
def marks(x):
    return x//2
```

In [33]:
```
df1['Marks'].apply(marks)
```

Out[33]:
```
0    49
1    44
2    49
3    43
4    45
5    41
Name: Marks, dtype: int64
```

In [34]:
```
df1['Half_marks'] = df1['Marks'].apply(marks)
```

In [35]:
```
df1
```

Out[35]:

	Name	Marks	Gender	Half_marks
0	Mahesh	98	Male	49
1	Kajal	89	Female	44
2	Prabhas	99	Male	49
3	Priya	87	Female	43
4	Ramcharan	90	Male	45
5	Samnatha	83	Female	41

In [37]:
```
df1['Marks'].apply(lambda x:x//2)
```

Out[37]:
```
0    49
1    44
2    49
3    43
4    45
5    41
Name: Marks, dtype: int64
```

In [38]:
```
df1['Name'].apply(len)
```

Out[38]:
```
0    6
1    5
2    7
3    5
4    9
5    8
Name: Name, dtype: int64
```

13. Map Function

In [39]:
```
df1
```

Out[39]:

	Name	Marks	Gender	Half_marks
0	Mahesh	98	Male	49
1	Kajal	89	Female	44
2	Prabhas	99	Male	49
3	Priya	87	Female	43
4	Ramcharan	90	Male	45
5	Samnatha	83	Female	41

In [44]:
```
df1['Gender'].map({'Male':1, 'Female':0})
```

Out[44]:
```
0    1
1    0
2    1
3    0
4    1
5    0
Name: Gender, dtype: int64
```

In [45]:
```
df1['Male_Female'] = df1['Gender'].map({'Male':1, 'Female':0})
```

In [46]:
```
df1
```

Out[46]:

	Name	Marks	Gender	Half_marks	Male_Female
0	Mahesh	98	Male	49	1
1	Kajal	89	Female	44	0
2	Prabhas	99	Male	49	1
3	Priya	87	Female	43	0
4	Ramcharan	90	Male	45	1
5	Samnatha	83	Female	41	0

14. Drop Name of the Columns

In [59]:
```
df1.drop(['Male_Female'],axis=1)
```

Out[59]:

	Name	Marks	Gender	Half_marks
0	Mahesh	98	Male	49
1	Kajal	89	Female	44
2	Prabhas	99	Male	49
3	Priya	87	Female	43
4	Ramcharan	90	Male	45
5	Samnatha	83	Female	41

In [60]:
```
df1.drop(['Half_marks'],axis=1)
```

Out[60]:

	Name	Marks	Gender	Male_Female
0	Mahesh	98	Male	1
1	Kajal	89	Female	0
2	Prabhas	99	Male	1
3	Priya	87	Female	0
4	Ramcharan	90	Male	1
5	Samnatha	83	Female	0

15. Print Name of the Columns

In [61]:
```
df1.columns
```

Out[61]:
```
Index(['Name', 'Marks', 'Gender', 'Half_marks', 'Male_Female'], dtype='object')
```

In [62]:
```
df1.index
```

Out[62]:
```
RangeIndex(start=0, stop=6, step=1)
```

16. Sort The DataFrame

In [63]:
```
df1
```

Out[63]:

	Name	Marks	Gender	Half_marks	Male_Female
0	Mahesh	98	Male	49	1
1	Kajal	89	Female	44	0
2	Prabhas	99	Male	49	1
3	Priya	87	Female	43	0
4	Ramcharan	90	Male	45	1
5	Samnatha	83	Female	41	0

In [57]:
```
df1.sort_values(by='Marks')
```

Out[57]:

	Name	Marks	Gender	Half_marks	Male_Female
5	Samnatha	83	Female	41	0
3	Priya	87	Female	43	0
1	Kajal	89	Female	44	0
4	Ramcharan	90	Male	45	1
0	Mahesh	98	Male	49	1
2	Prabhas	99	Male	49	1

In [58]:
```
df1.sort_values(by='Marks', ascending=False)
```

Out[58]:

	Name	Marks	Gender	Half_marks	Male_Female
2	Prabhas	99	Male	49	1
0	Mahesh	98	Male	49	1
4	Ramcharan	90	Male	45	1
1	Kajal	89	Female	44	0
3	Priya	87	Female	43	0
5	Samnatha	83	Female	41	0

In [66]:
```
df1.drop(['Half_marks','Male_Female'],axis=1)
```

Out[66]:

	Name	Marks	Gender
0	Mahesh	98	Male
1	Kajal	89	Female
2	Prabhas	99	Male
3	Priya	87	Female
4	Ramcharan	90	Male
5	Samnatha	83	Female

In [67]:
```
df1.sort_values(by='Marks', ascending=False)
```

Out[67]:

	Name	Marks	Gender	Half_marks	Male_Female
2	Prabhas	99	Male	49	1
0	Mahesh	98	Male	49	1
4	Ramcharan	90	Male	45	1
1	Kajal	89	Female	44	0
3	Priya	87	Female	43	0
5	Samnatha	83	Female	41	0

In [68]:
```
df1.sort_values(by=['Marks','Gender'], ascending=False)
```

Out[68]:

	Name	Marks	Gender	Half_marks	Male_Female
2	Prabhas	99	Male	49	1
0	Mahesh	98	Male	49	1
4	Ramcharan	90	Male	45	1
1	Kajal	89	Female	44	0
3	Priya	87	Female	43	0
5	Samnatha	83	Female	41	0

17. Display Name & Marks of The Female Students

In [69]:
```
df1
```

Out[69]:

	Name	Marks	Gender	Half_marks	Male_Female
0	Mahesh	98	Male	49	1
1	Kajal	89	Female	44	0
2	Prabhas	99	Male	49	1
3	Priya	87	Female	43	0
4	Ramcharan	90	Male	45	1
5	Samnatha	83	Female	41	0

In [70]:
```
df1['Gender']
```

Out[70]:
```
0      Male
1    Female
2      Male
3    Female
4      Male
5    Female
Name: Gender, dtype: object
```

In [75]:
```
df1[df1['Gender']=='Female'][['Name', 'Marks']]
```

Out[75]:

	Name	Marks
1	Kajal	89
3	Priya	87
5	Samnatha	83

In [77]:
```
df1[df1['Gender'].isin(['Female'])][['Name','Marks']]
```

Out[77]:

	Name	Marks
1	Kajal	89
3	Priya	87
5	Samnatha	83

-> Completed