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

Operations on Rows and Columns

1. Adding a new column to a DataFrame
2. Adding a new row to a DataFrame
3. Deleting rows from a DataFrame
4. Deleting columns from a DataFrame
5. Renaming row labels of a DataFrame
6. Renaming column labels of a DataFrame

In [2]:
```
# DataFrame from dictionary of lists

dfrc = pd.DataFrame({"Ramu":[50,60,70],"Samu":[45,65,95],"Rani":[89, 99, 79]}, index = ["Maths","Physics","Chemistry"])
dfrc
```

Out[2]:

	Ramu	Samu	Rani
Maths	50	45	89
Physics	60	65	99
Chemistry	70	95	79

1. Adding a new column to a DataFrame

In [3]:
```
# Adding a new column

dfrc["kishor"] = [50, 55, 54]
dfrc
```

Out[3]:

	Ramu	Samu	Rani	kishor
Maths	50	45	89	50
Physics	60	65	99	55
Chemistry	70	95	79	54

In [4]:
```
# Modifying the values of existing column

dfrc["Rani"] = [70, 45, 67]
dfrc
```

Out[4]:

	Ramu	Samu	Rani	kishor
Maths	50	45	70	50
Physics	60	65	45	55
Chemistry	70	95	67	54

In [5]:
```
# Assigning the same value to entire column

dfrc["kishor"] = "AB"
dfrc
```

Out[5]:

	Ramu	Samu	Rani	kishor
Maths	50	45	70	AB
Physics	60	65	45	AB
Chemistry	70	95	67	AB

2. Adding a new row to a DataFrame

- **pandas.DataFram.loc["row_label"] = [list_of_values]** --> adds a new row with a given row_label and a list of its values.

In [6]:
```
# Adding a new row

dfrc.loc["English"] = [45, 76, 85, "AB"]
dfrc
```

Out[6]:

	Ramu	Samu	Rani	kishor
Maths	50	45	70	AB
Physics	60	65	45	AB
Chemistry	70	95	67	AB
English	45	76	85	AB

In [7]:
```
# Modifying existing row

dfrc.loc["English"] = [43, 74, 83, "AB"]
dfrc
```

Out[7]:

	Ramu	Samu	Rani	kishor
Maths	50	45	70	AB
Physics	60	65	45	AB
Chemistry	70	95	67	AB
English	43	74	83	AB

In [8]:
```
# Assigining a same value to entire row

dfrc.loc["Chemistry"] = 50
dfrc
```

Out[8]:

	Ramu	Samu	Rani	kishor
Maths	50	45	70	AB
Physics	60	65	45	AB
Chemistry	50	50	50	50
English	43	74	83	AB

3. Deleting rows or columns of a DataFrame

pandas.DataFrame.drop(labels, axis = 0/1) method returns a new DataFrame by removing specified rows/columns.

- axis = 0 to delete rows (default)
- axis = 1 to delete columns

In [9]:
```
dfrc
```

Out[9]:

	Ramu	Samu	Rani	kishor
Maths	50	45	70	AB
Physics	60	65	45	AB
Chemistry	50	50	50	50
English	43	74	83	AB

In [10]:
```
# Deleting a row
dfdr1 = dfrc.drop("Chemistry", axis = 0)

dfdr1
```

Out[10]:

	Ramu	Samu	Rani	kishor
Maths	50	45	70	AB
Physics	60	65	45	AB
English	43	74	83	AB

In [11]:
```
dfrc
```

Out[11]:

	Ramu	Samu	Rani	kishor
Maths	50	45	70	AB
Physics	60	65	45	AB
Chemistry	50	50	50	50
English	43	74	83	AB

In [12]:
```
# Deleting multiple rows
dfdr2 = dfrc.drop(["Chemistry", "English"], axis = 0)

dfdr2
```

Out[12]:

	Ramu	Samu	Rani	kishor
Maths	50	45	70	AB
Physics	60	65	45	AB

In [13]:
```
dfrc
```

Out[13]:

	Ramu	Samu	Rani	kishor
Maths	50	45	70	AB
Physics	60	65	45	AB
Chemistry	50	50	50	50
English	43	74	83	AB

In [14]:
```
# Deleting a column
dfdc1 = dfrc.drop("kishor", axis = 1)

print(dfdc1)

print(dfrc)
```

```
           Ramu  Samu  Rani
Maths        50    45    70
Physics      60    65    45
Chemistry    50    50    50
English      43    74    83
           Ramu  Samu  Rani kishor
Maths        50    45    70     AB
Physics      60    65    45     AB
Chemistry    50    50    50     50
English      43    74    83     AB
```

In [15]:
```
# Deleting multiple columns
dfdc2 = dfrc.drop(["kishor", "Samu"], axis = 1)
print(dfdc2)
```

```
           Ramu  Rani
Maths        50    70
Physics      60    45
Chemistry    50    50
English      43    83
```

4. Renaming rows or columns of a DataFrame

pandas.DataFrame.rename(dictionary_of_old_new_labels, axis = 0/1) method returns a new DataFrame after renaming rows/columns.

In [20]:
```
dfrc
```

Out[20]:

	Ramu	Samu	Rani	kishor
Maths	50	45	70	AB
Physics	60	65	45	AB
Chemistry	50	50	50	50
English	43	74	83	AB

In [21]:
```
#Renaming a row
dfr1 = dfrc.rename({"Maths":"Mathematics"}, axis = 0)

print(dfr1)
print(dfrc)
```

```
             Ramu  Samu  Rani kishor
Mathematics    50    45    70     AB
Physics        60    65    45     AB
Chemistry      50    50    50     50
English        43    74    83     AB
           Ramu  Samu  Rani kishor
Maths        50    45    70     AB
Physics      60    65    45     AB
Chemistry    50    50    50     50
English      43    74    83     AB
```

In [22]:
```
#Renaming multiple rows
dfr2 = dfrc.rename({"Maths":"Mathematics", "Physics":"Physical Science"}, axis = 0)

print(dfr2)
print(dfrc)
```

```
                  Ramu  Samu  Rani kishor
Mathematics         50    45    70     AB
Physical Science    60    65    45     AB
Chemistry           50    50    50     50
English             43    74    83     AB
           Ramu  Samu  Rani kishor
Maths        50    45    70     AB
Physics      60    65    45     AB
Chemistry    50    50    50     50
English      43    74    83     AB
```

In [23]:
```
# Renaming a column
dfc1 = dfrc.rename({"Ramu":"Ramam"}, axis = 1)

print(dfc1)
print(dfrc)
```

```
           Ramam  Samu  Rani kishor
Maths         50    45    70     AB
Physics       60    65    45     AB
Chemistry     50    50    50     50
English       43    74    83     AB
           Ramu  Samu  Rani kishor
Maths        50    45    70     AB
Physics      60    65    45     AB
Chemistry    50    50    50     50
English      43    74    83     AB
```

In [24]:
```
# Renaming multiple columns

dfc2 = dfrc.rename({"Samu":"Somesh", "kishor":"Ratnakishor"}, axis = 1)

print(dfc2)
print(dfrc)
```

```
           Ramu  Somesh  Rani Ratnakishor
Maths        50      45    70          AB
Physics      60      65    45          AB
Chemistry    50      50    50          50
English      43      74    83          AB
           Ramu  Samu  Rani kishor
Maths        50    45    70     AB
Physics      60    65    45     AB
Chemistry    50    50    50     50
English      43    74    83     AB
```

In [ ]: