Experiment – 18

Aim: Import any CSV file to Pandas DataFrame and perform the given operations.

Program:

```
#Creating a Sample DataFrame
import pandas as pd
df = {
       "Name":["Ram","Sam","Scott","Ann","John"],
       "Mathematics" :[80,90,85,70,95],
       "Science" :[85,95,80,90,75],
       "English" :[90,85,80,70,95]
              }
index_labels=['r1','r2','r3','r4','r5']
df = pd.DataFrame(df ,index=index_labels)

print(df)
```

(1) Extract the first 3 records

```
print(df.head(3))
```

(2) Extract the last 3 records

```
print(df.tail(3))
```

(3) Find the Shape of the DataFrame

```
print(df.shape)
```

(4) Get the index Details

```
print(df.index)
```

(5) Get the columns Details

```
print(df.columns)
```

(6) Select rows and columns using loc[]

```
print(df.loc['r1':'r4', 'Name':'English'])
```

(7) Select rows and columns using iloc[]

```
print(df.iloc[1:4, 1:4])
```

(8) Delete the rows

```
print(df.drop(index=['r1','r2']))
```

(9) Delete the column

```
print(df.drop(columns=['English'], axis = 1))
```

(10) Sort By Rows

```
print(df.sort_index(axis = 0))
```

(11) Sort By Columns

```
print(df.sort_values(by = ["Name","Science"], inplace = False, na_position ='last'))
```

(12) Apply any ranking method

```
df["Rank"] =df["Science"].rank(method ='average')
```

(13) Filtering records based on conditions

```
print(df.where((df.Mathematics>=90) & (df.Science>=90) & (df.English>=70), other='NA'))
```

(14) Add new column to the existing DataFrame

```
df['Total'] = df[['Mathematics','Science','English']].sum(axis=1)

print(df)
```

(15) Rename a Column

```
print(df.rename(columns = {'Total':'Result'}))
```

Output:

1)

	Name	Mathematics	Science	English
r1	Ram	80	85	90
r2	Sam	90	95	85
r3	Scott	85	80	80
r4	Ann	70	90	70
r5	John	95	75	95

2)

	Name	Mathematics	Science	English
r1	Ram	80	85	90
r2	Sam	90	95	85
r3	Scott	85	80	80

3)

	Name	Mathematics	Science	English
r3	Scott	85	80	80
r4	Ann	70	90	70
r5	John	95	75	95

4)

```
(5, 4)
```

5)

```
Index(['r1', 'r2', 'r3', 'r4', 'r5'], dtype='object')
```

6)

```
Index(['Name', 'Mathematics', 'Science', 'English'], dtype='object')
```

7)

	Name	Mathematics	Science	English
r1	Ram	80	85	90
r2	Sam	90	95	85
r3	Scott	85	80	80
r4	Ann	70	90	70

8)

	Mathematics	Science	English
r2	90	95	85
r3	85	80	80
r4	70	90	70

9)

	Name	Mathematics	Science	English
r3	Scott	85	80	80
r4	Ann	70	90	70
r5	John	95	75	95

10)

	Name	Mathematics	Science
r1	Ram	80	85
r2	Sam	90	95
r3	Scott	85	80
r4	Ann	70	90
r5	John	95	75

11)

	Name	Mathematics	Science	English
r1	Ram	80	85	90
r2	Sam	90	95	85
r3	Scott	85	80	80
r4	Ann	70	90	70
r5	John	95	75	95

12)

	Name	Mathematics	Science	English
r4	Ann	70	90	70
r5	John	95	75	95
r1	Ram	80	85	90
r2	Sam	90	95	85
r3	Scott	85	80	80

13)

	Name	Mathematics	Science	English	Rank
r1	NA	NA	NA	NA	NA
r2	Sam	90	95	85	5.0
r3	NA	NA	NA	NA	NA
r4	NA	NA	NA	NA	NA
r5	NA	NA	NA	NA	NA

14)

	Name	Mathematics	Science	English	Rank	Total
r1	Ram	80	85	90	3.0	255
r2	Sam	90	95	85	5.0	270
r3	Scott	85	80	80	2.0	245
r4	Ann	70	90	70	4.0	230
r5	John	95	75	95	1.0	265

15)

	Name	Mathematics	Science	English	Rank	Result
r1	Ram	80	85	90	3.0	255
r2	Sam	90	95	85	5.0	270
r3	Scott	85	80	80	2.0	245
r4	Ann	70	90	70	4.0	230
r5	John	95	75	95	1.0	265