```
import numpy as np
import pandas as pd
```

1. **Write a Pandas program to create and display a one-dimensional array-like object containing an array of data using Pandas module.**

```
data = pd.Series([1,2,3,4,5])
```

Output:

```
data
0   1
1   2
2   3
3   4
4   5
    dtype: int64
```

2. **Write a pandas program to convert a pandas module series to python list.**

```
data.tolist()
```

Output:

```
[1, 2, 3, 4, 5]
```

3. **Write a pandas program to add, subtract, multiple and divide two pandas series.**

```
a = pd.Series([1,2,3,4])
b = pd.Series([5,6,7,8])
print(a+b)
print(a-b)
print(a*b)
print(a/b)
```

Output:

```
0    6
1    8
2   10
3   12
dtype: int64
0   -4
1   -4
2   -4
3   -4
dtype: int64
0    5
1   12
2   21
```

```
3    32
dtype: int64
0    0.200000
1    0.333333
2    0.428571
3    0.500000
dtype: float64
```

4. **Write a Pandas program to convert all the string values to upper, lower cases in a given pandas series. Also find the length of the string values.**

```
arr = pd.Series(['apple','ball','cat'])
print(arr.str.upper())
print(arr.str.lower())
print(arr.str.len())
```

Output:

```
0    APPLE
1     BALL
2      CAT
dtype: object
0    apple
1     ball
2      cat
dtype: object
0    5
1    4
2    3
dtype: int64
```

5. **Write a Pandas program to remove whitespaces, left sided whitespaces and right sided whitespaces of the string values of a given pandas series**

```
arr = pd.Index(['   apple   ','  ball  ',' cat  '])
arr.str.strip()
```

Output:

```
Index(['apple', 'ball', 'cat'], dtype='object')
```

6. **Write a Pandas program to create and display a DataFrame consist of student name, father name , mobile number as columns and register number as index.**

```
data = {'Name':['Shoheb','Ali','Akram'],'Father':['Karimulla','Shabbeer','Kari
mulla'],'No.':[123,786,420]}
label = ['y20cs167','y20cs164','y20cs162']
```

Write a Pandas program to get list from DataFrame column headers.

```
df=pd.DataFrame(data,index=label)
print(df)
```

Output:

```
          Name     Father  No.
y20cs167  Shoheb  Karimulla  123
y20cs164     Ali   Shabbeer  786
y20cs162   Akram  Karimulla  420
```

7. **Write a Pandas program to change the name of the student.**

```
df['Name'] = df['Name'].replace('Ali','Uday')
  df
```

8. **Output:**

```
             Name        Father       No.
y20cs167    Shoheb      Karimulla     123
y20cs164    Uday         Shabbeer    786
y20cs162    Akram        Karimulla    420
```

9. **Write a Pandas program to insert a new column "grade" in existing DataFrame.**

```
df['Grade'] = [9.4,9.5,9.2]
df
```

Output:

	Name	Father	No.	Grade
y20cs167	Shoheb	Karimulla	123	9.4
y20cs164	Ali	Shabbeer	786	9.5
y20cs162	Akram	Karimulla	420	9.2

10. Write a pandas program to create and display a dataframe from a specified dictionary data which has the index labels.

```
data = {'Name':['Shoheb','Ali','Akram'],'Father':['Karimulla','Shabbeer','Karimull
a'],'No.':[123,786,420]}
label = ['y20cs167','y20cs164','y20cs162']

df=pd.DataFrame(data,index=label)
print(df)
```

Output:

```
          Name     Father  No.
y20cs167  Shoheb  Karimulla  123
y20cs164     Ali   Shabbeer  786
y20cs162   Akram  Karimulla  420
```