

1. Create a pandas dataframe (DataFrame name as 'df') with numpy random values (4 features and 4 observation)

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

```
data = np.random.randn(4, 4)
```

```
df = pd.DataFrame(data, columns=['Feature1', 'Feature2', 'Feature3', 'Feature4'])
print(df)
```

```
   Feature1  Feature2  Feature3  Feature4
0  1.533463  0.794252 -0.550936 -0.278315
1 -0.298576 -0.488182  0.609604  0.870409
2 -0.025690  1.013421  0.722952 -0.253719
3 -0.262180 -0.539625 -0.859384 -0.781713
```

2. Rename the task - 1 'df' dataframe column names to 'Random value 1', 'Random value 2', 'Random value 3' & 'Random value 4'

```
df = df.rename(columns={'Feature1': 'Random value 1',
                        'Feature2': 'Random value 2',
                        'Feature3': 'Random value 3',
                        'Feature4': 'Random value 4'})
print(df)
```

```
   Random value 1  Random value 2  Random value 3  Random value 4
0    1.533463    0.794252    -0.550936    -0.278315
1   -0.298576   -0.488182     0.609604     0.870409
2   -0.025690    1.013421     0.722952    -0.253719
3   -0.262180   -0.539625    -0.859384    -0.781713
```

3. Find the descriptive statistics of the 'df' dataframe.

```
statistics = df.describe()
print(statistics)
```

```
   Random value 1  Random value 2  Random value 3  Random value 4
count    4.000000    4.000000    4.000000    4.000000
mean     0.236754     0.194967    -0.019441    -0.110834
std      0.872897     0.823676     0.803085     0.697945
min     -0.298576   -0.539625    -0.859384    -0.781713
25%     -0.271279   -0.501042    -0.628048    -0.404165
50%     -0.143935     0.153035     0.029334    -0.266017
75%      0.364098     0.849045     0.637941     0.027313
max      1.533463     1.013421     0.722952     0.870409
```

4. Check for the null values in 'df' and find the data type of the columns.

```
null_values = df.isnull().sum()
print("Null values:")
print(null_values)
```

```
Null values:
Random value 1    0
Random value 2    0
Random value 3    0
Random value 4    0
dtype: int64

Data types:
Random value 1    float64
Random value 2    float64
Random value 3    float64
Random value 4    float64
dtype: object
```

```
data_types = df.dtypes
print("\nData types:")
print(data_types)
```

```
Data types:
Random value 1    float64
Random value 2    float64
Random value 3    float64
```

```
Random value 4    float64  
dtype: object
```

5. Display the 'Random value 2' & 'Random value 3' columns with location method and index location method.

```
columns_loc = df.loc[:, ['Random value 2', 'Random value 3']]  
print("Columns using the location method:")  
print(columns_loc)
```

```
Columns using the location method:  
Random value 2  Random value 3  
0      0.794252    -0.550936  
1     -0.488182     0.609604  
2      1.013421     0.722952  
3     -0.539625    -0.859384
```

```
columns_iloc = df.iloc[:, [1, 2]]  
print("\nColumns using the index location method:")  
print(columns_iloc)
```

```
Columns using the index location method:  
Random value 2  Random value 3  
0      0.794252    -0.550936  
1     -0.488182     0.609604  
2      1.013421     0.722952  
3     -0.539625    -0.859384
```