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#Aim: Write a program to demonstrate Data Series and Data Frames using Pandas.
# Branch: Computer Engineering
# Year: 2nd year
# Sem: IV
# Subject : SKL Python
# Name: Mohammed Sadriwala
# UIN: 231P073
# Roll No: 28
import pandas as pd
print(pd.__version__)
data_series = pd.Series([10, 20, 30, 40, 50], index=['A', 'B', 'C', 'D', 'E'])
print("Pandas Series:")
print(data_series)
data = {
   'Name': ['Alice', 'Bob', 'Charlie', 'David'],
   'Age': [25, 30, 35, 40],
   'City': ['New York', 'Los Angeles', 'Chicago', 'Houston']
}
data_frame = pd.DataFrame(data)
print("\nPandas DataFrame:")
print(data_frame)
print("\nAccessing the 'Name' column:")
print(data_frame['Name'])
print("\nAccessing row with index 2:")
print(data_frame.loc[2])
data_frame['Salary'] = [50000, 60000, 70000, 80000]
print("\nDataFrame after adding a new column:")
print(data_frame)
print("Name: Mohammed Sadriwala \nUIN: 231P073\nRoll No: 28")
```

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2.2.3
Pandas Series:
A    10
B    20
C    30
D    40
E    50
dtype: int64

Pandas DataFrame:
      Name  Age         City
0    Alice   25     New York
1      Bob   30  Los Angeles
2  Charlie   35      Chicago
3    David   40      Houston

Accessing the 'Name' column:
0      Alice
1        Bob
2    Charlie
3      David
Name: Name, dtype: object

Accessing row with index 2:
Name    Charlie
Age          35
City    Chicago
Name: 2, dtype: object
```

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DataFrame after adding a new column:
      Name  Age         City  Salary
0    Alice   25     New York   50000
1      Bob   30  Los Angeles   60000
2  Charlie   35      Chicago   70000
3    David   40      Houston   80000
Name: Mohammed Sadriwala
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```

Post lab

```
import pandas as pd
# Display pandas version
print("Pandas Version:", pd.__version__)
# Create a Pandas Series
data_series = pd.Series([10, 20, 30, 40, 50], index=['A', 'B', 'C', 'D', 'E'])
print("\nPandas Series:")
print(data_series)
# Create a Pandas DataFrame
data = {
   'Name': ['Alice', 'Bob', 'Charlie', 'David'],
   'Age': [25, 30, 35, 40],
   'City': ['New York', 'Los Angeles', 'Chicago', 'Houston']
}
data_frame = pd.DataFrame(data)
# Add a new column
data_frame['Salary'] = [50000, 60000, 70000, 80000]
# Show the DataFrame
print("\nPandas DataFrame:")
print(data_frame)
# Access a specific column
print("\nAccessing the 'Name' column:")
print(data_frame['Name'])
# Access a specific row
print("\nAccessing row with index 2:")
print(data_frame.loc[2])
# Show first and last 5 rows (frames)
print("\nFirst Five Rows (head):")
print(data_frame.head())  # Default shows 5 rows


print("\nLast Five Rows (tail):")
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print(data_frame.tail())  # Default shows last 5 rows

# Show details of all the attributes
print("\nDataFrame Info:")
data_frame.info()

print("\nStatistical Summary of Numeric Columns:")
print(data_frame.describe())

print("\nName: Mohammed Sadriwala \nUIN: 231P073\nRoll No: 28")
```

output:

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First Five Rows (head):
      Name  Age         City  Salary
0    Alice   25     New York   50000
1      Bob   30  Los Angeles   60000
2  Charlie   35      Chicago   70000
3    David   40      Houston   80000

Last Five Rows (tail):
      Name  Age         City  Salary
0    Alice   25     New York   50000
1      Bob   30  Los Angeles   60000
2  Charlie   35      Chicago   70000
3    David   40      Houston   80000

DataFrame Info:
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4 entries, 0 to 3
Data columns (total 4 columns):
 #   Column  Non-Null Count  Dtype
---  ------  --------------  -----
 0   Name    4 non-null      object
 1   Age     4 non-null      int64
 2   City    4 non-null      object
 3   Salary  4 non-null      int64
dtypes: int64(2), object(2)
memory usage: 260.0+ bytes
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4 entries, 0 to 3
Data columns (total 4 columns):
 #   Column  Non-Null Count  Dtype
---  ------  --------------  -----
 0   Name    4 non-null      object
 1   Age     4 non-null      int64
 2   City    4 non-null      object
 3   Salary  4 non-null      int64
dtypes: int64(2), object(2)
memory usage: 260.0+ bytes

Statistical Summary of Numeric Columns:
             Age        Salary
count   4.000000      4.000000
mean   32.500000  65000.000000
std     6.454972  12909.944487
min    25.000000  50000.000000
25%    28.750000  57500.000000
50%    32.500000  65000.000000
75%    36.250000  72500.000000
max    40.000000  80000.000000

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