Darshan UNIVERSITY

योग: कर्मसु कौशलम्

Python for Data Science - 2305CS303

Lab - 9

Roll No. : 135

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1. Create a Pandas Series containing names of 5 students.

In [2]:
```
import pandas as pd
stu = pd.Series(['abc','xyz','pqr','tuv','lop'])
stu
```

Out[2]:
```
0    abc
1    xyz
2    pqr
3    tuv
4    lop
dtype: object
```

2. Create a Series with student roll numbers as index and their IAT scores as values..

In [3]:
```
import numpy as np
stu1 = pd.Series([89,78,61,13,23],[1,2,3,4,5])
stu1
```

Out[3]:
```
1    89
2    78
3    61
4    13
5    23
dtype: int64
```

3. Create a time series (daily) from 2025-08-01 to 2025-08-10 representing attendance tracking for a student.

In [8]:
```
date='2025-08-01'
c = pd.to_datetime(date)
temp = c + pd.to_timedelta(range(10),unit='D')
pd.Series(['A','P','P','P','A','P','A','A','P','P',],temp)
```

Out[8]:
```
2025-08-01    A
2025-08-02    P
2025-08-03    P
2025-08-04    P
2025-08-05    A
2025-08-06    P
2025-08-07    A
2025-08-08    A
2025-08-09    P
2025-08-10    P
dtype: object
```

4. Create a DataFrame for 10 students with the following columns: Roll No, Name, PDS, CA, CN, IAT.

(Use NumPy random module to generate scores)

In [42]:
```
studets = {101:"nikhil",102:"ajay",103:"harsh",104:"ronak",105:"uday"}
data = pd.DataFrame(np.random.randint(50,100,20).reshape(5,4),range(0,5),['PDS',
data["Roll"] = studets.keys()
data["Name"] = studets.values()
data
```

Out[42]:

	PDS	CA	CN	IAT	Roll	Name
0	63	54	81	73	101	nikhil
1	89	81	98	85	102	ajay
2	87	53	80	60	103	harsh
3	76	59	86	80	104	ronak
4	82	78	88	79	105	uday

5. Display the first 3 rows of the DataFrame.

In [43]:
```
data.head(3)
```

Out[43]:

	PDS	CA	CN	IAT	Roll	Name
0	63	54	81	73	101	nikhil
1	89	81	98	85	102	ajay
2	87	53	80	60	103	harsh

6. Display the last 2 rows of the DataFrame.

In [44]:
```
data.tail(2)
```

Out[44]:

	PDS	CA	CN	IAT	Roll	Name
3	76	59	86	80	104	ronak
4	82	78	88	79	105	uday

7. Use .describe() to summarize the numeric data.

In [46]:
```
data.describe()
```

Out[46]:

	PDS	CA	CN	IAT	Roll
count	5.000000	5.000000	5.000000	5.000000	5.000000
mean	79.400000	65.000000	86.600000	75.400000	103.000000
std	10.454664	13.472194	7.197222	9.607289	1.581139
min	63.000000	53.000000	80.000000	60.000000	101.000000
25%	76.000000	54.000000	81.000000	73.000000	102.000000
50%	82.000000	59.000000	86.000000	79.000000	103.000000
75%	87.000000	78.000000	88.000000	80.000000	104.000000
max	89.000000	81.000000	98.000000	85.000000	105.000000

8. Select only the Name column.

In [47]:
```
data['Name']
```

Out[47]:
```
0    nikhil
1      ajay
2     harsh
3     ronak
4      uday
Name: Name, dtype: object
```

9. Select the columns PDS, CN, and IAT.

In [49]:
```
data[['PDS','CN','IAT']]
```

Out[49]:

	PDS	CN	IAT
0	63	81	73
1	89	98	85
2	87	80	60
3	76	86	80
4	82	88	79

10. Select the row with Roll No = 105 using loc.

In [52]:
```
data.loc[4]
```

Out[52]:
```
PDS       82
CA        78
CN        88
IAT       79
Roll     105
Name    uday
Name: 4, dtype: object
```

11. Select the 4th row using iloc.

In [53]:
```
data.iloc[4]
```

Out[53]:
```
PDS       82
CA        78
CN        88
IAT       79
Roll     105
Name    uday
Name: 4, dtype: object
```

12. Select students with marks in PDS > 80.

In [55]:
```
data.loc[data['PDS']>80]
```

Out[55]:

	PDS	CA	CN	IAT	Roll	Name
1	89	81	98	85	102	ajay
2	87	53	80	60	103	harsh
4	82	78	88	79	105	uday

13. Select students with marks in CA < 70.

In [56]:
```
data.loc[data['CA']>70]
```

Out[56]:

	PDS	CA	CN	IAT	Roll	Name
1	89	81	98	85	102	ajay
4	82	78	88	79	105	uday

14. Select students with marks in CN > 85 and PDS > 80

In [57]:
```
data.loc[(data['CN']>85) & (data['PDS']>80)]
```

Out[57]:

	PDS	CA	CN	IAT	Roll	Name
1	89	81	98	85	102	ajay
4	82	78	88	79	105	uday

15. Add a new column Total Marks = PDS + CA + CN + IAT.

In [59]:
```
data['total']=data['PDS']+data['CA']+data['CN']+data['IAT']
data
```

Out[59]:

	PDS	CA	CN	IAT	Roll	Name	total
0	63	54	81	73	101	nikhil	271
1	89	81	98	85	102	ajay	353
2	87	53	80	60	103	harsh	280
3	76	59	86	80	104	ronak	301
4	82	78	88	79	105	uday	327

16. Create a new DataFrame of students with Total Marks > 320.

In [60]:
```
data.loc[data['total']>320]
```

Out[60]:

	PDS	CA	CN	IAT	Roll	Name	total
1	89	81	98	85	102	ajay	353
4	82	78	88	79	105	uday	327