```
Tut 1: Getting started with pandas

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Year - SY

Branch - CSE(AI)

Div - B

Roll no. - 60

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```

### → Importing Libraries

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

# Object Creation

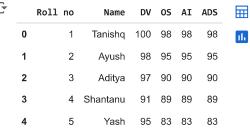
```
# df = pd.Series()
# print(df)
a = [1,2,3,4,5,6,7,8,9]
DF = pd.Series(a)
print(DF)
₹
          1
          2
     1
     2
          3
     3
          4
     4
     5
          6
     6
          7
     7
          8
     8
          9
     dtype: int64
dataFrame = {'Roll no': [1,2,3,4,5] ,
             'Name': ['Tanishq', 'Ayush', 'Aditya', 'Shantanu', 'Yash'],
'DV': ['100', '98', '97', '91', '95'],
'OS': ['98', '95', '90', '89', '83'],
              'AI' : ['98', '95', '90', '89', '83'],
              'ADS': ['98', '95', '90', '89', '83']
}
df = pd.DataFrame(dataFrame)
print(df)
# calories = {"day1": 420, "day2": 380, "day3": 390}
# myvar = pd.Series(calories, index = ["day1", "day2"])
# print(myvar)
₹
        Roll no
                       Name
                             DV OS AI ADS
                   Tanishq 100 98 98 98
              1
     1
                     Ayush 98 95 95
                                           95
     2
               3
                    Aditya
                              97
                                  90
               4 Shantanu
                             91 89 89
     3
                                           89
                       Yash
                             95 83 83
df.dtypes
    Roll no
                  int64
     Name
                 object
     DV
                 object
                 object
```

AI object ADS object dtype: object

# Viewing Data

```
df.head()

→ Ro
```



```
print(df.loc[0])
```

```
Roll no 1
Name Tanishq
DV 100
OS 98
AI 98
ADS 98
Name: 0, dtype: object
```

print(df.iloc[ 0 : 1])
dataFrame = df

Roll no Name DV OS AI ADS 0 1 Tanishq 100 98 98 98

# print(df.loc['0'])

dataFrame.isnull()



dataFrame.dropna()

<del></del>		Roll no	Name	DV	os	ΑI	ADS	
	0	1	Tanishq	100	98	98	98	ılı
	1	2	Ayush	98	95	95	95	
	2	3	Aditya	97	90	90	90	
	3	4	Shantanu	91	89	89	89	
	4	5	Yash	95	83	83	83	

print(dataFrame.loc[0])

Roll no 1
Name Tanishq

 $\overline{2}$ 

New interactive sheet

```
DV
                     100
     0S
                      98
     ΑI
                      98
                      98
     ADS
     Name: 0, dtype: object
dataFrame
         Roll no
                      Name
      0
               1
                    Tanishq
```

```
1
        2
                      98
                         95
                             95
                                  95
              Ayush
2
        3
                         90
                                  90
              Aditya
                      97
                            90
3
        4
           Shantanu
                      91
                         89
                             89
                                  89
4
                      95
                         83 83
                                  83
               Yash
```

Generate code with dataFrame

dates = pd.date\_range("20130101", periods=6) dates

```
dtype='datetime64[ns]', freq='D')
```

DV OS AI ADS

98 98

100 98

 $\blacksquare$ 

View recommended plots

#### dataFrame

Next steps:

<del>_</del>		Roll	no	Name	DV	os	ΑI	ADS	
	0		1	Tanishq	100	98	98	98	ılı
	1		2	Ayush	98	95	95	95	+/
	2		3	Aditya	97	90	90	90	
	3		4	Shantanu	91	89	89	89	
	4		5	Yash	95	83	83	83	

Generate code with dataFrame Next steps:

New interactive sheet View recommended plots

#### dataFrame.dtypes

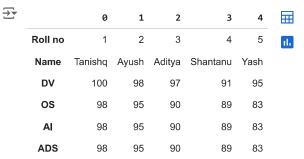
```
Roll no
                int64
₹
                object
    Name
    DV
                object
    os
                object
    ΑI
                object
    ADS
                object
    dtype: object
```

# df = dataFrame

df.dtypes

 $\overline{2}$ Roll no int64 Name object DV object 0S object ΑI object ADS object dtype: object

df.T



#### df.describe()



#### df.isnull()

<b>→</b>		Roll no	Name	DV	os	AI	ADS	$\blacksquare$
	0	False	False	False	False	False	False	ıl.
	1	False	False	False	False	False	False	
	2	False	False	False	False	False	False	
	3	False	False	False	False	False	False	
	4	False	False	False	False	False	False	

# Selection

#TO sort by values in DV Subject
df.sort\_values(by='DV')

<del>_</del>		Roll	no	Name	DV	os	ΑI	ADS	
	0		1	Tanishq	100	98	98	98	ılı
	3		4	Shantanu	91	89	89	89	
	4		5	Yash	95	83	83	83	
	2		3	Aditya	97	90	90	90	
	1		2	Ayush	98	95	95	95	

#### df['DV']

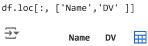
98 100 2 97 3 91 4 95

Name: DV, dtype: object

df[0:3]

<b>₹</b>		Roll no	Name	DV	os	ΑI	ADS	
	0	1	Tanishq	100	98	98	98	ılı
	1	2	Ayush	98	95	95	95	
	2	3	Aditva	97	90	90	90	

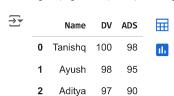
### Selection by label



0	Tanishq	100	ıl.

- **1** Ayush 98
- 2 Aditya 97
- 3 Shantanu 91
- 4 Yash 95

### df.loc[0:2, ['Name','DV', 'ADS']]

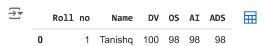


# Selection by position

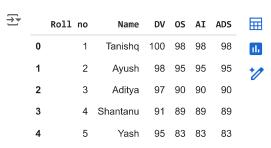
### df.iloc[3]

Roll no 4
Name Shantanu
DV 91
OS 89
AI 89
ADS 89
Name: 3, dtype: object

### df.iloc[0:1,:]



### df



Next steps: Generate code with dataFrame View recommended plots

New interactive sheet

```
#A python function to assign DV Subject grade
def grade_dv(marks):
   marks = int(marks)
   if marks > 95:
       return 'A+'
   elif marks > 90 :
       return 'A'
   else:
       return 'B'
# Apply the grading function to the DV marks
df['DV Grade'] = df['DV'].apply(grade_dv)
# Display the updated DataFrame
print(df)
\overline{z}
       Roll no
                    Name
                          DV OS AI ADS DV Grade
    0
                Tanishq 100 98 98 98
             1
    1
                   Ayush
                          98 95 95
                                      95
    2
             3
                  Aditya
                          97 90 90
                                      90
                                               Α+
    3
                          91 89 89
             4
                Shantanu
                                      89
                                                Α
                          95 83 83 83
                    Yash
                                                Α
```

# Getting

```
df["Name"]
```

```
0 Tanishq
1 Ayush
2 Aditya
3 Shantanu
4 Yash
```

Name: Name, dtype: object

#### df[0:3]

<b>→</b>		Roll no	Name	DV	os	ΑI	ADS	DV Grade	
	0	1	Tanishq	100	98	98	98	A+	ıl.
	1	2	Ayush	98	95	95	95	A+	
	2	3	Aditya	97	90	90	90	A+	

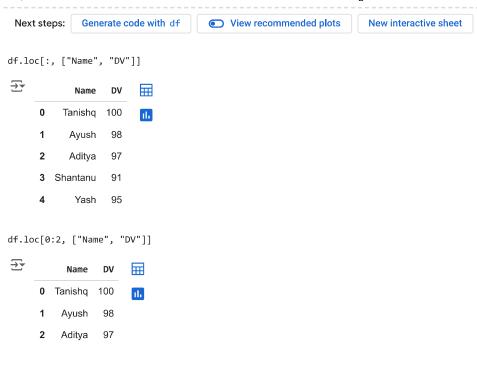
# df[0:4]

<b>→</b>		Roll no	Name	DV	os	ΑI	ADS	DV Grade	
	0	1	Tanishq	100	98	98	98	A+	11.
	1	2	Ayush	98	95	95	95	A+	
	2	3	Aditya	97	90	90	90	A+	
	3	4	Shantanu	91	89	89	89	А	

### ✓ Selection by label

df.head() #having a look at the dataframe

<del>_</del>		Roll no	Name	DV	os	ΑI	ADS	DV Grade	
	0	1	Tanishq	100	98	98	98	A+	11.
	1	2	Ayush	98	95	95	95	A+	
	2	3	Aditya	97	90	90	90	A+	
	3	4	Shantanu	91	89	89	89	Α	
	4	5	Yash	95	83	83	83	А	

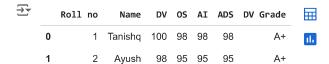


# Selection by position

```
df.iloc[0]
```

```
Roll no 1
Name Tanishq
DV 100
OS 98
AI 98
ADS 98
DV Grade A+
Name: 0, dtype: object
```

#### df.iloc[0:2, :]



#### df.iloc[:, 1:3]



Practise of some python functions

Hello world practice

```
def say_hello():
   print("Hello, World!")
```

say\_hello()

```
→ Hello, World!
say_hello()
say_hello()
say_hello()
say_hello()
say_hello()
\overline{z}
    Hello, World!
     Hello, World!
     Hello, World!
     Hello, World!
     Hello, World!
Square of a user entered number
def square(i):
  print(i*i)
n=int(input("Enter number:"))
square(n)
₹
    Enter number:6
     36
Practice of methods
append, copy, clear, count, extend, insert, pop, remove, reverse, sort, min, max
colours=['Red','Blue','Green']
capacities=[100,200,300]
append adds to the list (at last)
capacities.append(400)
print(capacities)
→ [100, 200, 300, 400]
colours.append('Yellow')
print(colours)
→ ['Red', 'Blue', 'Green', 'Yellow']
insert() takes 2 input values first => position on which value is to be inserted, second => value to be inserted
capacities.insert(1,200)
print(capacities)
100, 200, 200, 300, 400
what you want to remove
colours.remove('Red')
print(colours)

    ['Blue', 'Green', 'Yellow']
```

gives the postion of the input value

```
capacities.index(400)
→ 4
if there are 2 same values then it returns the position of the first one
capacities.index(200)
<u>→</u> 1
Copies the content of one list to another
a=colours.copy()
print(a)
→ ['Blue', 'Green', 'Yellow']
Clears the given list completely
a.clear()
print(a)
→ []
Counts how many times the given input is repeated in the list
capacities.count(200)
→ 2
Removes the last item from the list
print(colours)
colours.pop()
print(colours)
    ['Blue', 'Green', 'Yellow']
     ['Blue', 'Green']
Sorts the list in ascending order
capacities.sort()
print(capacities)
→ [100, 200, 200, 300, 400]
Maximum and minimum
print(min(capacities))
print(max(capacities))
<del>_</del>
    100
     400
```

Extend merges two lists

```
7/26/24, 10:35 AM
```

```
print(colours)
print(capacities)
colours.extend(capacities)
print(colours)
→ ['Blue', 'Green']
     [100, 200, 200, 300, 400]
     ['Blue', 'Green', 100, 200, 200, 300, 400]
Type of data
a=-1
b='hello'
c='g'
d=10.345
print(type(a))
print(type(b))
print(type(c))
print(type(d))
<class 'str'>
     <class 'str'>
     <class 'float'>
if-else
num1=eval(input('Enter a number:'))
num2=eval(input('Enter another number:'))
if num1==num2:
 print('both are same')
elif num1>num2:
 print('1st is greater than 2nd')
elif num2>num1:
 print('2nd is greater than 1st')
   Enter a number:9
     Enter another number:10
     2nd is greater than 1st
Slicing practice
print(capacities)
→ [100, 200, 200, 300, 400]
print(capacities[:])
→ [100, 200, 200, 300, 400]
print(capacities[2:])
→ [200, 300, 400]
print(capacities[:3])
print(capacities[-4:])
1 [200, 200, 300, 400]
```