



Tool & Technique Laboratory (T&T Lab.)

[CS-3096]

Individual Work

Lab. No:8 , Date:21-03-2023 , Day:tuesday

Topic:

Roll Number:	20051939	Branch/Section:	CSE/CSE-17
Name in Capital:	SHASHIKANT SHAH		

(Instruction: Rename this file as r-LAB-x where r is your roll number & x is your lab. number & Suppose your roll number is 1905123 & you want to submit lab-2 programs, then file name should be 1905123-LAB-2. Finally delete all texts inside parentheses, also parenthesis)

Program No: (1)

Program Title:

(Write a Pandas program to add, subtract, multiple and divide two Pandas Series.)

Input/Output Screenshots:

RUN-1:

(Paste here the screenshots of first run)

```
PS C:\Users\KIIT\Desktop\6th sem\Tools and Techniques Laboratory\lab 8> python -u "c:\Users\KIIT\Desktop\Tools and Techniques Laboratory\lab 8\iq.py"
Original Series:
[2, 4, 6, 8, 10]
[1, 3, 5, 7, 9]
Add two Series: [3, 7, 11, 15, 19]
Subtract two Series: [1, 1, 1, 1, 1]
Multiply two Series: [2, 12, 30, 56, 90]
Divide Series1 by Series2: [2.0, 1.3333333333333333, 1.2, 1.1428571428571428, 1.1111111111111112]
PS C:\Users\KIIT\Desktop\6th sem\Tools and Techniques Laboratory\lab 8>
```

Source code

```
import pandas as pd
import numpy as np
d1 = pd.Series([2, 4, 6, 8, 10])
d2 = pd.Series([1, 3, 5, 7, 9])
print("Original Series:")
print(d1.tolist() )
print(d2.tolist() )
print("Add two Series:", (d1 + d2).tolist() )
print("Subtract two Series:", (d1 - d2).tolist() )
print("Multiply two Series:", (d1 * d2).tolist() )
print("Divide Series1 by Series2:", (d1 / d2).tolist() )
```

Conclusion/Observation

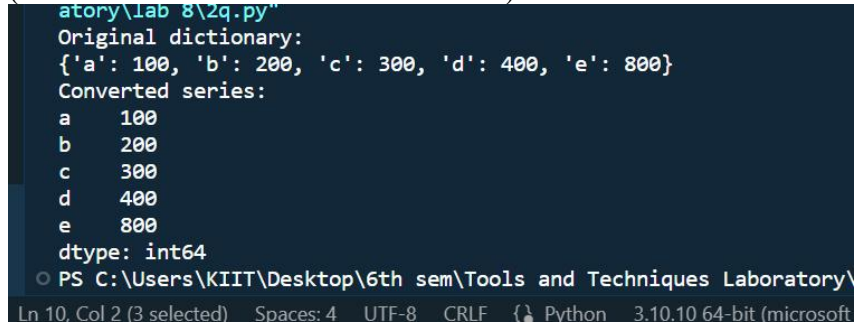
Successfully compile the program

Program No: (2)**Program Title:**

(Write a Pandas program to convert a dictionary to a Pandas series.)

Input/Output Screenshots:**RUN-1:**

(Paste here the screenshots of first run)



```
atory\lab 8\2q.py"
Original dictionary:
{'a': 100, 'b': 200, 'c': 300, 'd': 400, 'e': 800}
Converted series:
a    100
b    200
c    300
d    400
e    800
dtype: int64
PS C:\Users\KIIT\Desktop\6th sem\Tools and Techniques Laboratory\
Ln 10, Col 2 (3 selected)  Spaces: 4  UTF-8  CRLF  {a} Python  3.10.10 64-bit (microsoft
```

Source code

(Paste here the source code)

```
import pandas as pd
d1 = {'a': 100, 'b': 200, 'c': 300, 'd': 400, 'e': 800}
print("Original dictionary:")
print(d1)
new_series = pd.Series(d1)
print("Converted series:")
print(new_series)
```

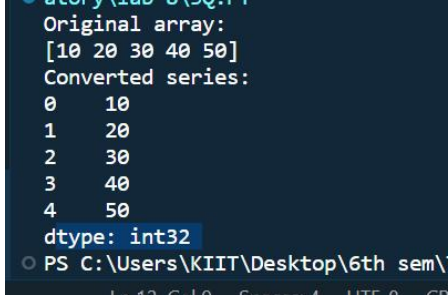
Conclusion/Observation**Successfully compile the program**

Program No: (3)**Program Title:**

(Write a Pandas program to convert a NumPy array to a Pandas series.)

Input/Output Screenshots:**RUN-1:**

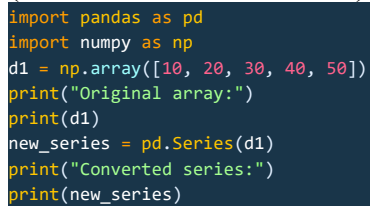
(Paste here the screenshots of first run)



```
Original array:
[10 20 30 40 50]
Converted series:
0    10
1    20
2    30
3    40
4    50
dtype: int32
PS C:\Users\KIIT\Desktop\6th sem\
Python 3.9.6 -> Run
```

Source code

(Paste here the source code)



```
import pandas as pd
import numpy as np
d1 = np.array([10, 20, 30, 40, 50])
print("Original array:")
print(d1)
new_series = pd.Series(d1)
print("Converted series:")
print(new_series)
```

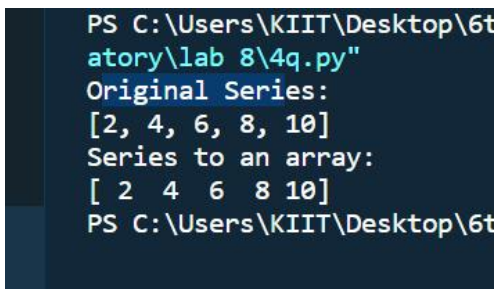
Conclusion/Observation**Successfully compile the program**

Program No: (4)**Program Title:**

(Write a Pandas program to convert a given Series to an array.)

Input/Output Screenshots:**RUN-1:**

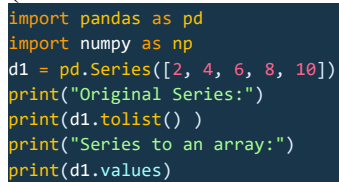
(Paste here the screenshots of first run)



```
PS C:\Users\KIIT\Desktop\6t
atory\lab 8\4q.py
Original Series:
[2, 4, 6, 8, 10]
Series to an array:
[ 2 4 6 8 10]
PS C:\Users\KIIT\Desktop\6t
```

Source code

(Paste here the source code)



```
import pandas as pd
import numpy as np
d1 = pd.Series([2, 4, 6, 8, 10])
print("Original Series:")
print(d1.tolist() )
print("Series to an array:")
print(d1.values)
```

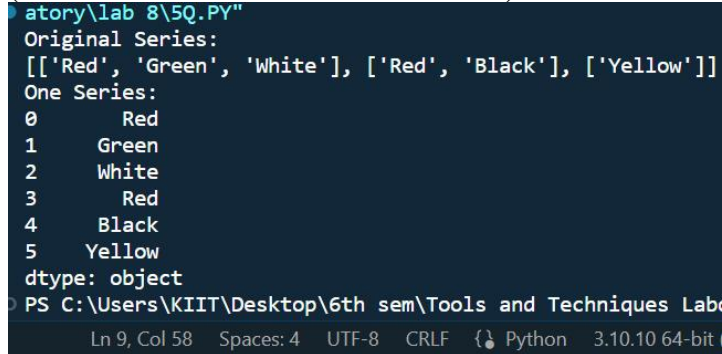
Conclusion/Observation**Successfully compile the program**

Program No: (5)**Program Title:**

(Write a Pandas program to convert Series of lists to one Series.)

Input/Output Screenshots:**RUN-1:**

(Paste here the screenshots of first run)



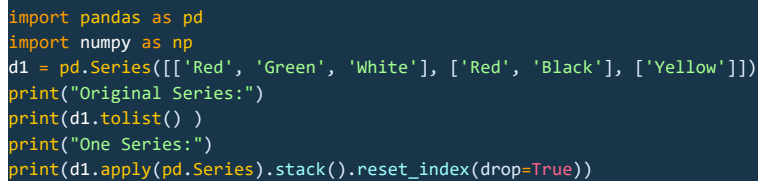
```

atory\lab 8\5Q.PY"
Original Series:
[['Red', 'Green', 'White'], ['Red', 'Black'], ['Yellow']]
One Series:
0      Red
1    Green
2    White
3      Red
4    Black
5    Yellow
dtype: object
PS C:\Users\KIIT\Desktop\6th sem\Tools and Techniques Lab
Ln 9, Col 58  Spaces: 4  UTF-8  CRLF  {Python 3.10.10 64-bit

```

Source code

(Paste here the source code)



```

import pandas as pd
import numpy as np
d1 = pd.Series(['Red', 'Green', 'White'], ['Red', 'Black'], ['Yellow'])
print("Original Series:")
print(d1.tolist() )
print("One Series:")
print(d1.apply(pd.Series).stack().reset_index(drop=True))

```

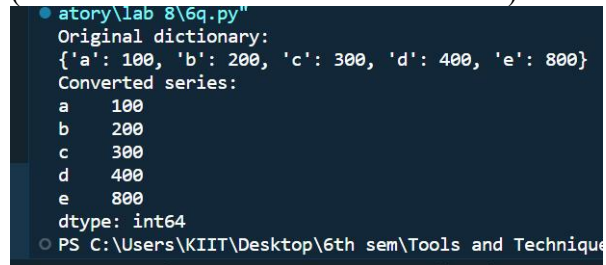
Conclusion/Observation**Successfully compile the program**

Program No: (6)**Program Title:**

(Write a Pandas program to create a dataframe from a dictionary and display it.)

Input/Output Screenshots:**RUN-1:**

(Paste here the screenshots of first run)



```
atory\lab 8\6q.py"
Original dictionary:
{'a': 100, 'b': 200, 'c': 300, 'd': 400, 'e': 800}
Converted series:
a    100
b    200
c    300
d    400
e    800
dtype: int64
PS C:\Users\KIIT\Desktop\6th sem\Tools and Techniques>
```

Source code

(Paste here the source code)

```
import pandas as pd
d1 = {'a': 100, 'b': 200, 'c':300, 'd':400, 'e':800}

print("Original dictionary:")
print(d1)
new_series = pd.Series(d1)
print("Converted series:")
print(new_series)
```

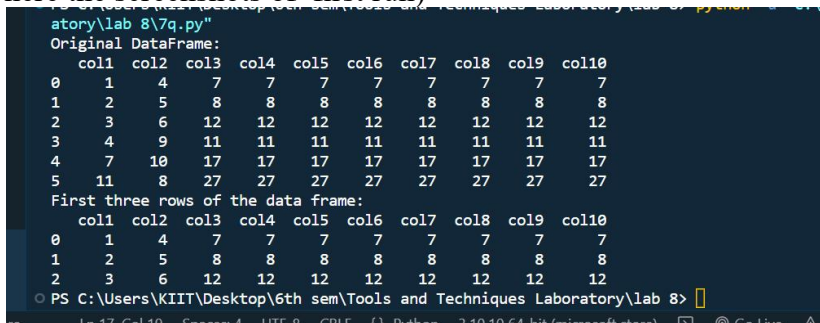
Conclusion/Observation**Successfully compile the program**

Program No: (7)**Program Title:**

(Write a Pandas program to get the first 3 rows of a given DataFrame.)

Input/Output Screenshots:**RUN-1:**

(Paste here the screenshots of first run)



```

atory\lab 8\7q.py"
Original DataFrame:
   col1  col2  col3  col4  col5  col6  col7  col8  col9  col10
0      1      4      7      7      7      7      7      7      7      7
1      2      5      8      8      8      8      8      8      8      8
2      3      6     12     12     12     12     12     12     12     12
3      4      9     11     11     11     11     11     11     11     11
4      7     10     17     17     17     17     17     17     17     17
5     11      8     27     27     27     27     27     27     27     27
First three rows of the data frame:
   col1  col2  col3  col4  col5  col6  col7  col8  col9  col10
0      1      4      7      7      7      7      7      7      7      7
1      2      5      8      8      8      8      8      8      8      8
2      3      6     12     12     12     12     12     12     12     12
PS C:\Users\KIIT\Desktop\6th sem\Tools and Techniques Laboratory\lab 8>

```

Source code

(Paste here the source code)

```

import pandas as pd
df = pd.DataFrame({'col1': [1, 2, 3, 4, 7, 11],
                   'col2': [4, 5, 6, 9, 10, 8],
                   'col3': [7, 8, 12, 11, 17, 27],
                   'col4': [7, 8, 12, 11, 17, 27],
                   'col5': [7, 8, 12, 11, 17, 27],
                   'col6': [7, 8, 12, 11, 17, 27],
                   'col7': [7, 8, 12, 11, 17, 27],
                   'col8': [7, 8, 12, 11, 17, 27],
                   'col9': [7, 8, 12, 11, 17, 27],
                   'col10': [7, 8, 12, 11, 17, 27],})
print("Original DataFrame:")
print(df)
print("First three rows of the data frame:")
print(df.iloc[:3])

```

Conclusion/Observation**Successfully compile the program**

Program No: (8)**Program Title:**

Write a Pandas program to select the 'name' and 'score' columns from the following DataFrame.

Input/Output Screenshots:**RUN-1:**

(Paste here the screenshots of first run)

```

● atory\lab 8\8q.py"
Initial data:

   name gender  attempts  qualify
a  Anas     M         1     yes
b   Mia     F         3     no
c  Kath     F         2     yes
d  John     M         3     no
e Rishab     M         2     no
f Michael     F         3     yes
g Matthew     M         1     yes
h  Laura     F         1     no

*****Selected specific columnsdisplayed:*****

   name gender
a  Anas     M
b   Mia     F
c  Kath     F
d  John     M
e Rishab     M
f Michael     F
g Matthew     M
h  Laura     F
i  Kevin     F
j  Jonas     M
PS C:\Users\KIIT\Desktop\6th sem\Tools and Techniques Laboratory\lab 8>

```


Source code

(Paste here the source code)

```
import pandas as pd
import numpy as np

exam_data = {'name': ['Anas', 'Mia', 'Kath', 'John', 'Rishab', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],
             'gender': ['M', 'F', "F", 'M', 'M', 'F', 'M', 'F', 'F', 'M'],
             'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],
             'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}
labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']
```

```
df = pd.DataFrame(exam_data , index=labels)
print("Initial data: \n")
print(df)
print("\n\n*****Selected specific columnsdisplayed:*****\n")
print(df[['name', 'gender']])
```

Conclusion/Observation**Successfully compile the program**

Program No: (9)**Program Title:**

(Write a Pandas program to select the rows where the score is missing, i.e. is NaN.)

Input/Output Screenshots:**RUN-1:**

(Paste here the screenshots of first run)

```

atory\lab 8\9q.py"
Initial data:

   name gender  attempts  qualify
a   Anas     M        1.0     yes
b    Mia     F        3.0     no
c   Kath     F        2.0     yes
d   John     M        3.0     no
e  Rishab     M        2.0     no
f Michael     F        3.0     yes
g Matthew     M        1.0     yes
h  Laura     F        1.0     no
i  Kevin     F        2.0     no
j  Jonas     M        NaN     yes

Rows where attempts is missing:
   name gender  attempts  qualify
j  Jonas     M        NaN     yes

```

Source code

(Paste here the source code)

```

import pandas as pd

import numpy as np

exam_data = {'name': ['Anas', 'Mia', 'Kath', 'John', 'Rishab', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],
             'gender': ['M', 'F', 'F', 'M', 'M', 'F', 'M', 'F', 'F', 'M'],

```

```
'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, np.nan],  
            'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}  
labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']  
df = pd.DataFrame(exam_data , index=labels)  
  
print("Initial data: \n")  
  
print(df)  
  
print("\nRows where attempts is missing:")  
  
print(df[df['attempts'].isnull()])
```

Conclusion/Observation

Successfully compile the program

Program No: (10)**Program Title:**

(Write a Pandas program to append a new row 'k' to data frame with given values for each column. Now delete the new row and return the original DataFrame.)

Input/Output Screenshots:**RUN-1:**

(Paste here the screenshots of first run)

```

• atory\lab 8\10q.py"
Original rows:
   name gender  attempts qualify
a  Anas      M         1     yes
b   Mia      F         3     no
c  Kath      F         2     yes
d  John      M         3     no
e Rishab      M         2     no
f Michael      F         3     yes
g Matthew      M         1     yes
h  Laura      F         1     no
i  Kevin      F         2     no
j  Jonas      M         1     yes

Append a new row:
Print all records after insert a new record:
   name gender  attempts qualify
a  Anas      M         1     yes
b   Mia      F         3     no
c  Kath      F         2     yes
d  John      M         3     no
e Rishab      M         2     no
f Michael      F         3     yes
g Matthew      M         1     yes
h  Laura      F         1     no
i  Kevin      F         2     no
j  Jonas      M         1     yes
k  Aman      F         2     yes

Delete the new row and display the original rows:
   name gender  attempts qualify
a  Anas      M         1     yes
b   Mia      F         3     no
c  Kath      F         2     yes
d  John      M         3     no
e Rishab      M         2     no
f Michael      F         3     yes
g Matthew      M         1     yes
h  Laura      F         1     no
i  Kevin      F         2     no
j  Jonas      M         1     yes
• PS C:\Users\KIIT\Desktop\6th sem\Tools and Techniques Laboratory\lab 8>

```

Source code

(Paste here the source code)

```

import pandas as pd
import numpy as np
exam_data = {'name': ['Anas', 'Mia', 'Kath', 'John', 'Rishab', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas'],
              'gender': ['M', 'F', 'F', 'M', 'M', 'F', 'M', 'F', 'F', 'M'],
              'attempts': [1, 3, 2, 3, 2, 3, 1, 1, 2, 1],
              'qualify': ['yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes']}
labels = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']
df = pd.DataFrame(exam_data , index=labels)
print("Original rows:")
print(df)
print("\nAppend a new row:")
df.loc['k'] = ['Aman', 'F', 2, 'yes']
print("Print all records after insert a new record:")
print(df)
print("\nDelete the new row and display the original rows:")
df = df.drop('k')
print(df)

```

Conclusion/Observation**Successfully compile the program**