

Python Applications using Pandas Library



Pandas is a software library written for the Python programming language for data manipulation and analysis.

Application 1:

Below application is used to demonstrate the creation of Data Frames using Pandas library.

There are multiple ways in which we can create Data Frames using Pandas.

```

1 import pandas as pd
2
3 print("Empty data frame")
4 df = pd.DataFrame()
5 print(df)
6
7 print("Dataframe with list")
8 data = [1,2,3,4,5]
9 df = pd.DataFrame(data)
10 print(df)
11
12 print("Dataframe with list")
13 data = [['PPA',4],['LB',3],['Python',3],['Angular',3]]
14 df = pd.DataFrame(data,columns=['Name','Duration'])
15 print(df)
16
17 data = {'Name':['PPA', 'LB', 'Python', 'Angular'],'Duration':[4,3,3,3]}
18 df = pd.DataFrame(data)
19 print(df)
20
21 data = [{'Name': 'PPA', 'Duration': 3, 'Fees':10500},{'Name': 'Angular',
22   'Duration': 3,'Fees':10500},{'Name': 'Python', 'Fees':10500}]
23 df = pd.DataFrame(data)
24 print(df)
25
26 d = {'one' : pd.Series([1, 2, 3], index=['a', 'b', 'c']),
27   'two' : pd.Series([1, 2, 3, 4], index=['x', 'y', 'z', 'w'])}
28
29 df = pd.DataFrame(d)
30 print(df['one'])
  
```

Output of above application :

```
(base) MacBook-Pro-de-MARVELLOUS:abc marvellous$ python3 PandasDataFrame.py
Empty DataFrame
Empty DataFrame
Columns: []
Index: []
Datatype with list
0
0 1
1 2
2 3
3 4
4 5
Datatype with list
      Name Duration
0      PPA        4
1      LB         3
2    Python        3
3  Angular        3
      Name Duration
0      PPA        4
1      LB         3
2    Python        3
3  Angular        3
      Duration Fees      Name
0      3.0  10500      PPA
1      3.0  10500  Angular
2      NaN  10500    Python
a      1.0
b      2.0
c      3.0
w      NaN
x      NaN
y      NaN
z      NaN
Name: one, dtype: float64
```

Application 2:

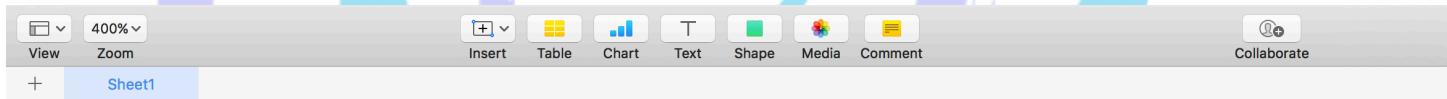
Below application creates DataFrame using Pandas and writes the contents of that DataFrame in xlsx file using ExcelWriter.

```

1 import pandas as pd
2
3 data = [ {'Name': 'PPA', 'Duration': 3, 'Fees':10500},{'Name': 'Angular',
4   'Duration': 3},{ 'Name': 'Python', 'Fees':10500}]
5 df = pd.DataFrame(data)
6 print(df)
7
8 writer = pd.ExcelWriter('MarvellousPandas.xlsx', engine='xlsxwriter')
9 df.to_excel(writer, sheet_name='Sheet1')
10
11 writer.save()
12

```

Excel file which is generated by above application is :



	Duration	Fees	Name	
0	3	10500	PPA	
1	3		Angular	
2		10500	Python	

Application 3:

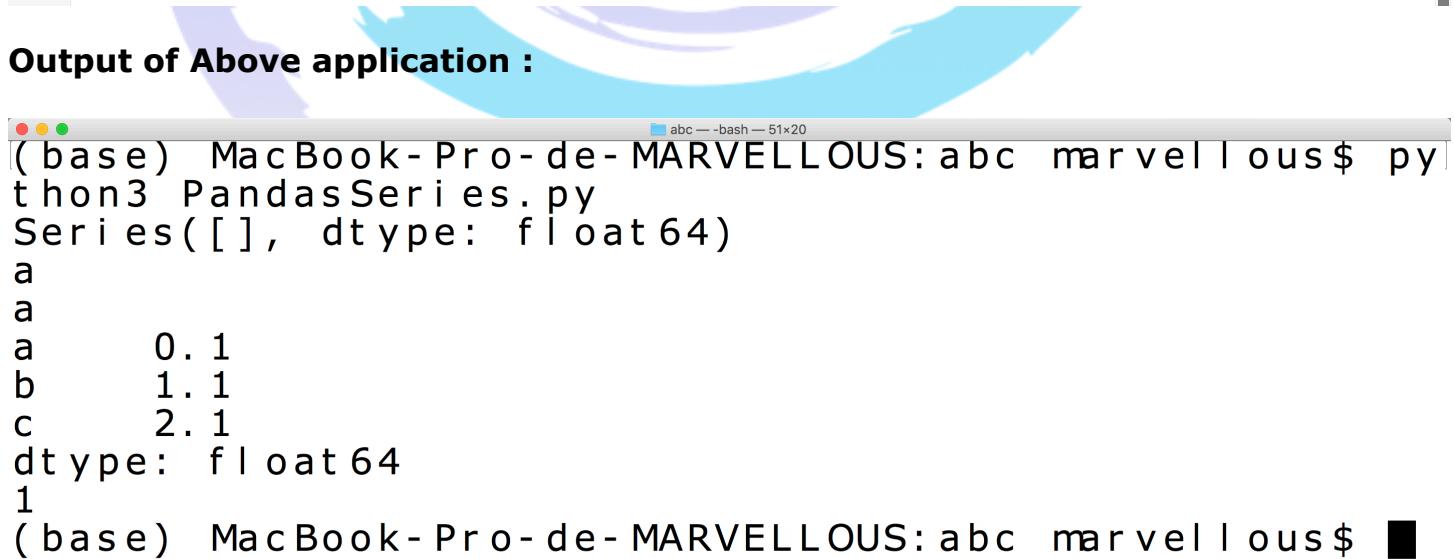
Below application is used to demonstrates creation of Series using Pandas. There are different ways in which we can create Series using Pandas.

```

1 import pandas as pd
2 import numpy as np
3
4 s = pd.Series()
5 print(s)
6
7 data = np.array(['a','b','c','d'])
8 s = pd.Series(data)
9 print(s[0])
10
11 data = np.array(['a','b','c','d'])
12 s = pd.Series(data,index=[100,101,102,103])
13 print(s[100])
14
15 data = {'a' : 0.1, 'b' : 1.1, 'c' : 2.1}
16 s = pd.Series(data)
17 print(s)
18
19 s = pd.Series([1,2,3,4,5],index = ['a','b','c','d','e'])
20 print(s['a'])
21

```

Output of Above application :



```

(base) MacBook-Pro-de-MARVELLOUS:abc marvellous$ python3 PandasSeries.py
Series([], dtype: float64)
a
a
a    0.1
b    1.1
c    2.1
dtype: float64
1
(base) MacBook-Pro-de-MARVELLOUS:abc marvellous$ █

```

Application 4:

Below application is used to demonstrates creation of Panel using Pandas.

```

1 import pandas as pd
2
3 import numpy as np
4
5 df1 = {'one' : pd.Series([1, 2, 3], index=['a', 'b', 'c']),
6        'two' : pd.Series([1, 2, 3, 4], index=['a', 'b', 'c', 'd'])}
7
8 df2 = {'one' : pd.Series([1, 2, 3], index=['a', 'b', 'c']),
9        'two' : pd.Series([1, 2, 3, 4], index=['a', 'b', 'c', 'd'])}
10
11 data = {'Item1' : df1,'Item2' : df2}
12
13 p = pd.Panel(data)
14 print(p)
15

```

Output of above Application :

```

<class 'pandas.core.panel.Panel'>
Dimensions: 2 (items) x 4 (major_axis) x 2 (minor_axis)
Items axis: Item1 to Item2
Major_axis axis: a to d
Minor_axis axis: one to two
(base) MacBook-Pro-de-MARVELLOUS:abc marvellous$ █

```

Application 5:

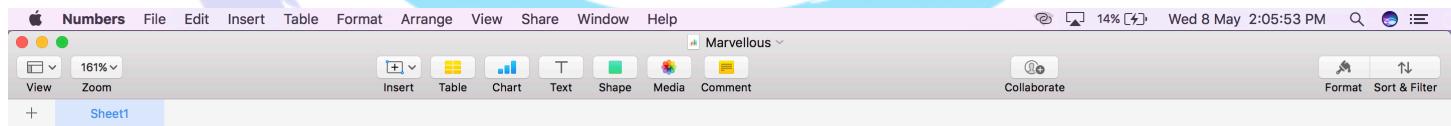
Below application is used to demonstrates operations on Excel file using Pandas Library.

```

1 import pandas as pd
2
3 excel_file = 'Marvellous.xlsx'
4 batches = pd.read_excel(excel_file)
5
6 print(batches.head())
7
8 batches_sheet1 = pd.read_excel(excel_file, sheet_name=0, index_col=0)
9 print(batches_sheet1.head())
10
11 xlsx = pd.ExcelFile(excel_file)
12 batches_sheets = []
13
14 for sheet in xlsx.sheet_names:
15     print(sheet)
16     batches_sheets.append(xlsx.parse(sheet))
17
18 batches = pd.concat(batches_sheets)
19 print(batches)

```

Excel file which is referred in above application is :



Name	College	Mail ID	Age	
Amit	PVG	123@gmail.com	23	
Omkar	Indira	omkar@gmail.com	21	
Hitesh	Pune University	hitesh@gmail.com	32	
Jayesh	Singhagad	123@gmail.com	12	
Sagar	FC	sagar@ymail.com	23	
Sushil	Modern	123@gmail.com	32	
Ketan	PVG	123@gmail.com	32	
Bhushan	DY Patil	123@gmail.com	12	
Piyush	PVG	123@gmail.com	22	
Deven	Indira	123@gmail.com	33	
Umesh	Mumbai University	123@gmail.com	24	

Output of above application :

```
abc -- bash -- 51x20
(base) MacBook-Pro-de-MARVELLOUS: abc marvellous$ python3 Excel Operations.py
      Name          College      Mail ID   Age
0     Amit           PVG       123@gmail.com    23
1    Omkar          Indira    omkar@gmail.com   21
2   Hitesh          Pune Uni versity hitesh@gmail.com  32
3   Jayesh          Singhagad 123@gmail.com    12
4    Sagar           FC        sagar@mail.com   23
      Name          College      Mail ID   Age
Name
Amit           PVG       123@gmail.com    23
Omkar          Indira    omkar@gmail.com   21
Hitesh          Pune Uni versity hitesh@gmail.com  32
Jayesh          Singhagad 123@gmail.com    12
Sagar           FC        sagar@mail.com   23
Sheet 1
      Name    . . .  Age
0     Amit    . . .  23
1     Omkar   . . .  21
2    Hitesh   . . .  32
3    Jayesh   . . .  12
4    Sagar    . . .  23
5   Sushil    . . .  32
6   Ketan    . . .  32
7  Bhushan   . . .  12
8   Piyush   . . .  22
9   Deven    . . .  33
10  Umesh    . . .  24
[ 11 rows x 4 columns ]
(base) MacBook-Pro-de-MARVELLOUS: abc marvellous$
```

Application 6 :

Below application is used to demonstrates operations on Excel file using xlsxwriter.

```

1 import os
2 import fnmatch
3 from sys import *
4 import xlsxwriter
5
6 def ExcelCreate(name):
7     workbook = xlsxwriter.Workbook(name)
8
9     worksheet = workbook.add_worksheet()
10
11    worksheet.write('A1', 'Name')
12    worksheet.write('B1', 'College')
13    worksheet.write('C1', 'Mail ID')
14    worksheet.write('D1', 'Mobile')
15
16    workbook.close()
17
18 def main():
19     print("---- Marvellous Infosystems by Piyush Khairnar-----")
20
21     print("Application name : " +argv[0])
22
23     if (len(argv) != 2):
24         print("Error : Invalid number of arguments")
25         exit()
26
27     if (argv[1] == "-h") or (argv[1] == "-H"):
28         print("This Script is used to create excel file and write data into it")
29         exit()
30
31     if (argv[1] == "-u") or (argv[1] == "-U"):
32         print("usage : ApplicationName Name_Of_File")
33         exit()
34
35     try:
36         ExcelCreate(argv[1])
37
38     except Exception:
39         print("Error : Invalid input")
40
41 if __name__ == "__main__":
42     main()
43

```

File which is created by above application :

The screenshot shows a spreadsheet application interface with a toolbar at the top containing various icons for View, Zoom, Insert, Table, Chart, Text, Shape, Media, Comment, Collaborate, Format, and Sort & Filter. The main area displays a table with four columns: Name, College, Mail ID, and Mobile. The 'Name' column has 10 rows, while the other three columns have 9 rows each. The first row of the 'Name' column is highlighted in blue.

Name	College	Mail ID	Mobile

