



SNS COLLEGE OF TECHNOLOGY



Coimbatore-35
An Autonomous Institution

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Affiliated to Anna University, Chennai

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

19AMB302-FULL STACK AI

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CREATE A DATAFRAMES IN PYTHON

- A Data Frame is a two-dimension collection of data. It is a data structure where data is stored in tabular form. Datasets are arranged in rows and columns; we can store multiple datasets in the data frame. We can perform various arithmetic operations, such as adding column/row selection and columns/rows in the data frame.
- We can import the DataFrames from the external storage; these storages can be referred to as the [SQL](#) Database, CSV file, and an Excel file. We can also use the lists, dictionary, and from a list of dictionary, etc.
- In this tutorial, we will learn to create the data frame in multiple ways. Let's understand these different ways.
- First, we need to install the [pandas](#) library into the [Python](#) environment.

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AN EMPTY DATAFRAME

- We can create a basic empty Dataframe.
- The dataframe constructor needs to be called to create the DataFrame. Let's understand the following example.

Example -

```
# import pandas as pd  
import pandas as pd
```

```
# Calling DataFrame constructor  
df = pd.DataFrame()
```

```
print(df)
```

Output:

Empty DataFrame Columns: [] Index: []

Method - 2: Create a dataframe using List

We can create dataframe using a single list or list of lists.
Let's understand the following example.

Example -

```
# importing pandas library
```

```
import pandas as pd
```

```
# string values in the list
```

```
lst = ['Java', 'Python', 'C', 'C++',  
       'JavaScript', 'Swift', 'Go']
```

```
# Calling DataFrame constructor on list
```

```
dframe = pd.DataFrame(lst)
```

```
print(dframe)
```

Output:

```
0 Java 1 Python 2 C 3 C++ 4 JavaScript 5 Swift 6 Go
```

Method - 3: Create Dataframe from dict of ndarray/lists

- The dict of ndarray/lists can be used to create a dataframe, all the **ndarray** must be of the same length.
- The index will be a range(n) by default; where n denotes the array length. Let's understand the following example.

Example -

```
import pandas as pd
```

```
# assign data of lists.
```

```
data = {'Name': ['Tom', 'Joseph', 'Krish', 'John'], 'Age': [20, 21,  
19, 18]}
```

```
# Create DataFrame
```

```
df = pd.DataFrame(data)
```


```
# Print the output.
```

```
print(df)
```

Output:

```
Name Age 0 Tom 20 1 Joseph 21 2 Krish 19 3 John 18
```



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Method - 4: Create a indexes Dataframe using arrays
Let's understand the following example to create the indexes dataframe using arrays.

Example -

DataFrame using arrays.

```
import pandas as pd
```

assign data of lists.

```
data = {'Name':['Renault', 'Duster', 'Maruti', 'Honda City'], 'Ra  
tings':[9.0, 8.0, 5.0, 3.0]}
```

Creates pandas DataFrame.

```
df = pd.DataFrame(data, index =['position1', 'position2', 'posit  
ion3', 'position4'])
```

print the data

```
print(df)
```

Output:

```
Name Ratings position1 Renault 9.0 position2 Duster 8.0  
position3 Maruti 5.0 position4 Honda City 3.0
```



Method - 5: Create Dataframe from list of dicts. We can pass the lists of dictionaries as input data to create the Pandas dataframe. The column names are taken as keys by default. Let's understand the following example.

Method - 6: Create Dataframe using the zip() function
The zip() function is used to merge the two lists. Let's understand the following example.

Example -

```
# The example is to create  
# pandas dataframe from lists using zip.
```

```
import pandas as pd
```

```
# List1
```

```
Name = ['tom', 'krish', 'arun', 'juli']
```


```
# List2
```

```
Marks = [95, 63, 54, 47]
```

```
# two lists.
```

```
# and merge them by using zip().
```

```
list_tuples = list(zip(Name, Marks))
```

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```
# Assign data to tuples.  
print(list_tuples)
```

```
# Converting lists of tuples into  
# pandas Dataframe.  
dframe = pd.DataFrame(list_tuples, columns=['Name', 'Marks']  
)
```

```
# Print data.  
print(dframe)
```

Output:

```
[('john', 95), ('krish', 63), ('arun', 54), ('juli', 47)] Name Marks 0  
john 95 1 krish 63 2 arun 54 3 juli 47
```

Method - 7: Create Dataframe from Dicts of series

The dictionary can be passed to create a dataframe. We can use the Dicts of series where the subsequent index is the union of all the series of passed index value. Let's understand the following example.

Example -

Pandas Dataframe from Dicts of series.

```
import pandas as pd
```

```
# Initialize data to Dicts of series.
```

```
d = {'Electronics' : pd.Series([97, 56, 87, 45], index=['John', 'Abhinay', 'Peter', 'Andrew']),
```

```
    'Civil' : pd.Series([97, 88, 44, 96], index=['John', 'Abhinay', 'Peter', 'Andrew'])}
```

```
# creates Dataframe.
```

```
dframe = pd.DataFrame(d)
```

```
# print the data.
```

```
print(dframe)
```

Output:

```
Electronics Civil John 97 97 Abhinay 56 88 Peter 87 44 Andrew
45 96
```





THANKYOU