

# pandas-1

November 11, 2025

## 1 Pandas

- It introduces two key objects Series, DataFrames
- A series is a sequence of data like list in python or 1D array in NumPy
- DataFrame is the multiple series of common length with common index, bound together in a single tabular object

[2]: # Installing pandas

```
! pip install pandas --break-system-packages
```

```
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: pandas in /home/bsh/.local/lib/python3.13/site-
packages (2.2.3)
Requirement already satisfied: numpy>=1.26.0 in
/home/bsh/.local/lib/python3.13/site-packages (from pandas) (2.2.2)
Requirement already satisfied: python-dateutil>=2.8.2 in
/usr/lib/python3.13/site-packages (from pandas) (2.9.0)
Requirement already satisfied: pytz>=2020.1 in /usr/lib/python3.13/site-packages
(from pandas) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in
/home/bsh/.local/lib/python3.13/site-packages (from pandas) (2025.1)
Requirement already satisfied: six>=1.5 in /usr/lib/python3.13/site-packages
(from python-dateutil>=2.8.2->pandas) (1.17.0)
```

[3]: import pandas as pd

[4]: from pandas import Series, DataFrame

[5]: # Series using list

```
s1 = Series([1, 2, 3, 4, 5])
s1
```

[5]: 0 1
 1 2
 2 3
 3 4

```
4      5  
dtype: int64
```

```
[6]: s2 = Series(["Ram", "Shyam", "Hari", "Gopal"])  
s2
```

```
[6]: 0      Ram  
1      Shyam  
2      Hari  
3      Gopal  
dtype: object
```

```
[7]: # Using custom index
```

```
idx = pd.Index(["Kathmandu", "Lalitpur", "Bhaktapur", "Pokhara", "Chitwan"])  
idx
```

```
[7]: Index(['Kathmandu', 'Lalitpur', 'Bhaktapur', 'Pokhara', 'Chitwan'],  
         dtype='object')
```

```
[20]: population = Series([88888, 12345, 42342, 42312, 52311], index=idx,  
                         name="Population")  
population
```

```
[20]: Kathmandu    88888  
Lalitpur       12345  
Bhaktapur     42342  
Pokhara        42312  
Chitwan        52311  
Name: Population, dtype: int64
```

```
[9]: population["Kathmandu"]
```

```
[9]: np.int64(88888)
```

```
[11]: # Series using dictionary (district and its area)  
  
area = Series({  
    "Kathmandu": 123.5,  
    "Lalitpur": 312.1,  
    "Chitwan": 2131  
  
area
```

```
[11]: Kathmandu    123.5  
Lalitpur       312.1  
Chitwan        2131.0
```

```
Name: Area, dtype: float64
```

```
[14]: # DataFrame using matrix
```

```
import numpy as np
import pandas as pd

m = np.arange(9).reshape(3, 3)
print(m)

df = pd.DataFrame(m)
print(df)
```

```
[[0 1 2]
 [3 4 5]
 [6 7 8]]
 0   1   2
0   0   1   2
1   3   4   5
2   6   7   8
```

```
[16]: # Adding index and columns
```

```
# index = left column
# columns = top row

df = pd.DataFrame(
    m,
    index = ["a", "b", "c"],
    columns = ["p", "q", "r"]
)
df
```

```
[16]:   p   q   r
      a   0   1   2
      b   3   4   5
      c   6   7   8
```

```
[17]: # Q. Make a dataframe having index names and columns age, weight, height
```

```
[22]: # Using series
```

```
df = pd.DataFrame([population, area])
df
```

```
[22]:          Kathmandu  Lalitpur  Bhaktapur  Pokhara  Chitwan
Population     88888.0    12345.0    42342.0    42312.0    52311.0
Area           123.5      312.1       NaN        NaN      2131.0
```

```
[23]: df = pd.DataFrame([population, area])
df.T
```

```
[23]:      Population    Area
Kathmandu     88888.0   123.5
Lalitpur      12345.0   312.1
Bhaktapur     42342.0     NaN
Pokhara       42312.0     NaN
Chitwan       52311.0  2131.0
```

```
[ ]:
```