

How can I subtract two DataFrames in Pandas?"

Authored by
stats writer

June 26, 2024

RECOMMENDED CITATION

stats writer (2024). *How can I subtract two DataFrames in Pandas?"*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=154031>

Pandas is a popular library in Python used for data manipulation and analysis. It offers a variety of functions and methods for performing mathematical operations on data, including the ability to subtract one DataFrame from another. This operation can be achieved by using the built-in subtraction operator or the "sub()" method, both of which work on a row-by-row basis. By leveraging Pandas' efficient data structures and powerful functions, subtracting two DataFrames allows for easy comparison and analysis of data, making it a useful tool for data scientists and analysts.

Pandas: Subtract Two DataFrames

You can use the following syntax to subtract one pandas DataFrame from another:

```
df1.subtract(df2)
```

If you have a character column in each DataFrame, you may first need to move it to the index column of each DataFrame:

```
df1.set_index('char_column').subtract(df2.set_index('char_column'))
```

The following examples show how to use each syntax in practice.

Example 1: Subtract Two Pandas DataFrames (Numerical Columns Only)

Suppose we have the following two pandas DataFrames that only have numerical columns:

```
import pandas as pd
#create first DataFrame
df1 = pd.DataFrame({'points': ,
'assists': })
```

```
print(df1)
```

```
points assists
```

```
0 5 4
```

```
1 17 7
```

```
2 7 7
```

```
3 19 6
```

```
4 12 8
```

```
5 13 7
```

```
6 9 10
```

```
7 24 11
```

```
#create second DataFrame
```

```
df2 = pd.DataFrame({'points': ,
'assists': })
```

```
print(df2)
```

points assists

0 4 3

1 22 5

2 10 5

3 3 4

4 7 7

5 8 14

6 12 9

7 10 5

The following code shows how to subtract the corresponding values between the two DataFrames:

```
#subtract corresponding values between the two  
DataFrames  
df1.subtract(df2)
```

points assists

0 1 1

1 -5 2

2 -3 2

3 16 2

4 5 1

5 5 -7

6 -3 1

7 14 6

Example 2: Subtract Two Pandas DataFrames (Mix of Character & Numerical Columns)

Suppose we have the following two pandas DataFrames that each have a character column called team:

```
import pandas as pd
```

```
#create first DataFrame
```

```
df1 = pd.DataFrame({'team': ,  
'points': ,  
'assists': })
```

```
print(df1)
```

```
team points assists
```

```
0 A 5 4
```

```
1 B 17 7
```

```
2 C 7 7
```

```
3 D 19 6
```

```
4 E 12 8
```

```
5 F 13 7
```

```
6 G 9 10
```

7 H 24 11

```
#create second DataFrame  
df2 = pd.DataFrame({'team': ,  
'points': ,  
'assists': })
```

```
print(df2)
```

```
team points assists
```

```
0 A 4 3
```

```
1 B 22 5
```

```
2 C 10 5
```

```
3 D 3 4
```

```
4 E 7 7
```

```
5 F 8 14
```

```
6 G 12 9
```

```
7 H 10 3
```

The following code shows how to move the team column to the index column of each DataFrame and then subtract the corresponding values between the two DataFrames:

```
#move 'team' column to index of each DataFrame and
```

subtract corresponding values

```
df1.set_index('team').subtract(df2.set_index('team'))
```

points assists

team

A 1 1

B -5 2

C -3 2

D 16 2

E 5 1

F 5 -7

G -3 1

H 14 8

The following tutorials explain how to perform other common tasks in pandas: