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## Python | Pandas Dataframe.rank()

Python is a great language for doing data analysis, primarily because of the fantastic ecosystem of data-centric python packages. **Pandas** is one of those packages and makes importing and analyzing data much easier.

Pandas `Dataframe.rank()` method returns a rank of every respective index of a series passed. The rank is returned on the basis of position after sorting.

### Syntax:

```
DataFrame.rank(axis=0, method='average', numeric_only=None, na_option='keep', ascending=True, pct=False)
```

### Parameters:

**axis:** 0 or 'index' for rows and 1 or 'columns' for Column.

**method:** Takes a string input('average', 'min', 'max', 'first', 'dense') which tells pandas what to do with same values. Default is average which means assign average of ranks to the similar values.

**numeric\_only:** Takes a boolean value and the rank function works on non-numeric value only if it's False.

**na\_option:** Takes 3 string input('keep', 'top', 'bottom') to set position of Null values if any in the passed Series.

**ascending:** Boolean value which ranks in ascending order if True.

**pct:** Boolean value which ranks percentage wise if True.

**Return type:** Series with Rank of every index of caller series.



For link to CSV file Used in Code, click [here](#).

### Example #1: Ranking Column with Unique values

In the following example, a new rank column is created which ranks the Name of every Player. All the values in `Name` column are unique and hence there is no need to describe a method.

```
# importing pandas package
import pandas as pd

# making data frame from csv file
data = pd.read_csv("nba.csv")
```



```
# creating a rank column and passing the returned rank series
data["Rank"] = data["Name"].rank()

# display
data

# sorting w.r.t name column
data.sort_values("Name", inplace = True)

# display after sorting w.r.t Name column
data
```

**Output:**

As shown in the image, a column rank was created with rank of every Name. After the sort\_value function sorted the data frame with respect to name, it can be seen that the rank was also sorted since those were ranking of Names only.

**Before Sorting –**

	Name	Team	Number	Position	Age	Height	Weight	College	Salary	Rank
0	Avery Bradley	Boston Celtics	0.0	PG	25.0	6-2	180.0	Texas	7730337.0	35.0
1	Jae Crowder	Boston Celtics	99.0	SF	25.0	6-6	235.0	Marquette	6796117.0	172.0
2	John Holland	Boston Celtics	30.0	SG	27.0	6-5	205.0	Boston University	NaN	212.0
3	R.J. Hunter	Boston Celtics	28.0	SG	22.0	6-5	185.0	Georgia State	1148640.0	356.0
4	Jonas Jerebko	Boston Celtics	8.0	PF	29.0	6-10	231.0	NaN	5000000.0	217.0
5	Amir Johnson	Boston Celtics	90.0	PF	29.0	6-9	240.0	NaN	12000000.0	17.0
6	Jordan Mickey	Boston Celtics	55.0	PF	21.0	6-8	235.0	LSU	1170960.0	226.0
7	Kelly Olynyk	Boston Celtics	41.0	C	25.0	7-0	238.0	Gonzaga	2165160.0	242.0
8	Terry Rozier	Boston Celtics	12.0	PG	22.0	6-2	190.0	Louisville	1824360.0	412.0
9	Marcus Smart	Boston Celtics	36.0	PG	22.0	6-4	220.0	Oklahoma State	3431040.0	293.0
10	Jared Sullinger	Boston Celtics	7.0	C	24.0	6-9	260.0	Ohio State	2569260.0	185.0
11	Isaiah Thomas	Boston Celtics	4.0	PG	27.0	5-9	185.0	Washington	6912869.0	162.0

**After Sorting –**

	Name	Team	Number	Position	Age	Height	Weight	College	Salary	Rank
152	Aaron Brooks	Chicago Bulls	0.0	PG	31.0	6-0	161.0	Oregon	2250000.0	1.0
356	Aaron Gordon	Orlando Magic	0.0	PF	20.0	6-9	220.0	Arizona	4171680.0	2.0
328	Aaron Harrison	Charlotte Hornets	9.0	SG	21.0	6-6	210.0	Kentucky	525093.0	3.0
404	Adreian Payne	Minnesota Timberwolves	33.0	PF	25.0	6-10	237.0	Michigan State	1938840.0	4.0
312	Al Horford	Atlanta Hawks	15.0	C	30.0	6-10	245.0	Florida	12000000.0	5.0
330	Al Jefferson	Charlotte Hornets	25.0	C	31.0	6-10	289.0	NaN	13500000.0	6.0
428	Al-Farouq Aminu	Portland Trail Blazers	8.0	SF	25.0	6-9	215.0	Wake Forest	8042895.0	7.0
368	Alan Anderson	Washington Wizards	6.0	SG	33.0	6-6	220.0	Michigan State	4000000.0	8.0
135	Alan Williams	Phoenix Suns	15.0	C	23.0	6-8	260.0	UC Santa Barbara	83397.0	9.0
444	Alec Burks	Utah Jazz	10.0	SG	24.0	6-6	214.0	Colorado	9463484.0	10.0
128	Alex Len	Phoenix Suns	21.0	C	22.0	7-1	260.0	Maryland	3807120.0	11.0

**Example #2: Sorting Column with some similar values**

In the following example, data frame is first sorted with respect to *team name* and first the method is default (i.e. average) and hence the rank of same Team players is average. After that min method is also used to see the output.

```
# importing pandas package
import pandas as pd

# making data frame from csv file
data = pd.read_csv("nba.csv")

# sorting w.r.t team name
data.sort_values("Team", inplace = True)

# creating a rank column and passing the returned rank series
# change method to 'min' to rank by minimum
data["Rank"] = data["Team"].rank(method = 'average')

# display
data
```

**Output:**

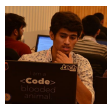
***With method='average'***

	Name	Team	Number	Position	Age	Height	Weight	College	Salary	Rank
317	Lamar Patterson	Atlanta Hawks	13.0	SG	24.0	6-5	225.0	Pittsburgh	525093.0	8.0
309	Kent Bazemore	Atlanta Hawks	24.0	SF	26.0	6-5	201.0	Old Dominion	2000000.0	8.0
310	Tim Hardaway Jr.	Atlanta Hawks	10.0	SG	24.0	6-6	205.0	Michigan	1304520.0	8.0
311	Kirk Hinrich	Atlanta Hawks	12.0	SG	35.0	6-4	190.0	Kansas	2854940.0	8.0
312	Al Horford	Atlanta Hawks	15.0	C	30.0	6-10	245.0	Florida	12000000.0	8.0
313	Kris Humphries	Atlanta Hawks	43.0	PF	31.0	6-9	235.0	Minnesota	1000000.0	8.0
314	Kyle Korver	Atlanta Hawks	26.0	SG	35.0	6-7	212.0	Creighton	5746479.0	8.0
315	Paul Millsap	Atlanta Hawks	4.0	PF	31.0	6-8	246.0	Louisiana Tech	18671659.0	8.0
316	Mike Muscala	Atlanta Hawks	31.0	PF	24.0	6-11	240.0	Bucknell	947276.0	8.0
318	Dennis Schroder	Atlanta Hawks	17.0	PG	22.0	6-1	172.0	NaN	1763400.0	8.0
319	Mike Scott	Atlanta Hawks	32.0	PF	27.0	6-8	237.0	Virginia	3333333.0	8.0
320	Thabo Sefolosha	Atlanta Hawks	25.0	SF	32.0	6-7	220.0	NaN	4000000.0	8.0
321	Tiago Splitter	Atlanta Hawks	11.0	C	31.0	6-11	245.0	NaN	9756250.0	8.0

**With method='min'**

	Name	Team	Number	Position	Age	Height	Weight	College	Salary	Rank
317	Lamar Patterson	Atlanta Hawks	13.0	SG	24.0	6-5	225.0	Pittsburgh	525093.0	1.0
309	Kent Bazemore	Atlanta Hawks	24.0	SF	26.0	6-5	201.0	Old Dominion	2000000.0	1.0
310	Tim Hardaway Jr.	Atlanta Hawks	10.0	SG	24.0	6-6	205.0	Michigan	1304520.0	1.0
311	Kirk Hinrich	Atlanta Hawks	12.0	SG	35.0	6-4	190.0	Kansas	2854940.0	1.0
312	Al Horford	Atlanta Hawks	15.0	C	30.0	6-10	245.0	Florida	12000000.0	1.0
313	Kris Humphries	Atlanta Hawks	43.0	PF	31.0	6-9	235.0	Minnesota	1000000.0	1.0
314	Kyle Korver	Atlanta Hawks	26.0	SG	35.0	6-7	212.0	Creighton	5746479.0	1.0
315	Paul Millsap	Atlanta Hawks	4.0	PF	31.0	6-8	246.0	Louisiana Tech	18671659.0	1.0
316	Mike Muscala	Atlanta Hawks	31.0	PF	24.0	6-11	240.0	Bucknell	947276.0	1.0
318	Dennis Schroder	Atlanta Hawks	17.0	PG	22.0	6-1	172.0	NaN	1763400.0	1.0

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