

How to Count Occurrences of Specific Value in Pandas Column?

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In this article, we will discuss how to count occurrences of a specific column value in the pandas column.

Dataset in use:

	name	subjects	marks	age
0	sravan	java	98	11
1	ojaswi	php	90	23
2	bobby	java	78	23
3	rohit	php	91	21
4	gnanesh	java	87	21
5	sravan	html/css	78	21
6	sravan	python	89	23
7	ojaswi	R	90	21

We can count by using the [value_counts\(\)](#) method. This function is used to count the values present in the entire dataframe and also count values in a particular column.



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Syntax:

```
data['column_name'].value_counts()[value]
```

where

- data is the input dataframe
- value is the string/integer value present in the column to be counted
- column_name is the column in the dataframe

Example: To count occurrences of a specific value

Python3

```
# import pandas module
import pandas as pd

# create a dataframe
# with 5 rows and 4 columns
data = pd.DataFrame({
    'name': ['sravan', 'ojaswi', 'bobby', 'rohith',
             'gnanesh', 'sravan', 'sravan', 'ojaswi'],
    'subjects': ['java', 'php', 'java', 'php', 'java',
                 'html/css', 'python', 'R'],
    'marks': [98, 90, 78, 91, 87, 78, 89, 90],
    'age': [11, 23, 23, 21, 21, 21, 23, 21]
})

count values in name column
```

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Output:

```
3
2
1
```

If we want to count all values in a particular column, then we do not need to mention the value.

Syntax:

```
data['column_name'].value_counts()
```

Example: To count the occurrence of a value in a particular column



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```
import pandas as pd

# create a dataframe
# with 5 rows and 4 columns
data = pd.DataFrame({
    'name': ['sravan', 'ojaswi', 'bobby', 'rohith',
             'gnanesh', 'sravan', 'sravan', 'ojaswi'],
    'subjects': ['java', 'php', 'java', 'php', 'java',
                 'html/css', 'python', 'R'],
    'marks': [98, 90, 78, 91, 87, 78, 89, 90],
    'age': [11, 23, 23, 21, 21, 21, 23, 21]
})

# count all values in name column
print(data['name'].value_counts())

# count all values in subjects column
```

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Output:

```
sravan    3
bobby     1
rohit     1
gnanesh   1
ojaswi   1
ojsawi   1
Name: name, dtype: int64
java      3
php       2
R         1
html/css  1
python    1
Name: subjects, dtype: int64
78       2
90       2
87       1
91       1
98       1
89       1
Name: marks, dtype: int64
```

If we want to get the results in order (like ascending and descending order), we have to specify the parameter

Syntax:

Ascending order:

```
data['column_name'].value_counts(ascending=True)
```

Descending Order:

```
data['column_name'].value_counts(ascending=False)
```

Example: To get results in an ordered fashion

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```

        'gnanesh', 'sravan', 'sravan', 'ojaswi'],
'subjects': ['java', 'php', 'java', 'php', 'java',
            'html/css', 'python', 'R'],
'marks': [98, 90, 78, 91, 87, 78, 89, 90],
'age': [11, 23, 23, 21, 21, 21, 23, 21]
})

# count all values in name column in ascending order
print(data['name'].value_counts(ascending=True))

# count all values in subjects column in ascending order
print(data['subjects'].value_counts(ascending=True))

# count all values in marks column in descending order
print(data['marks'].value_counts(ascending=False))

# count all values in age column in descending order
print(data['age'].value_counts(ascending=False))

```

Output:

```

gnanesh    1
rohith     1
bobby      1
ojsawi     1
ojaswi     1
sravan     3
Name: name, dtype: int64
R          1
html/css   1
python     1
php        2
java       3
Name: subjects, dtype: int64
78         2
90         2
87         1
91         1
98         1
89         1
Name: marks, dtype: int64
21         4
23         3
11         1
Name: age, dtype: int64

```

Dealing with missing values

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Include NA values:

```
data['column_name'].value_counts(dropna=True)
```

Exclude NA Values:

```
data['column_name'].value_counts(dropna=False)
```

Example: Dealing with missing values

Python3

```
# import pandas module
import pandas as pd

#import numpy
import numpy

# create a dataframe
# with 5 rows and 4 columns
data = pd.DataFrame({
    'name': ['sravan', 'ojswi', 'bobby', 'rohith', 'gnanesh',
             'sravan', 'sravan', 'ojaswi', numpy.nan],
    'subjects': ['java', 'php', 'java', 'php', 'java', 'html/css',
                 'python', 'R', numpy.nan],
    'marks': [98, 90, 78, 91, 87, 78, 89, 90, numpy.nan],
    'age': [11, 23, 23, 21, 21, 21, 23, 21, numpy.nan]
})

# count all values in name column including NA
print(data[ 'name'].value_counts(dropna=False))

# count all values in subjects column including NA
print(data[ 'subjects'].value_counts(dropna=False))

# count all values in marks column excluding NA
print(data[ 'marks'].value_counts(dropna=False))
```

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```

ojaswi      1
ojsawi      1
bobby       1
rohit       1
gnanesh     1
NaN          1
Name: name, dtype: int64
java         3
php          2
python       1
html/css     1
R            1
NaN          1
Name: subjects, dtype: int64
78.0         2
90.0         2
NaN          1
89.0         1
87.0         1
91.0         1
98.0         1
Name: marks, dtype: int64
21.0         4
23.0         3
11.0         1
Name: age, dtype: int64

```

Count values with relative frequencies

We are going to add normalize parameter to get the relative frequencies of the repeated data. It is set to True.

Syntax:

```
data['column_name'].value_counts(normalize=True)
```

Example: Count values with relative frequencies

Python3

```

# import pandas module
import pandas as pd

# create a dataframe
# with 5 rows and 4 columns
data = pd.DataFrame({

```

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```
# count all values in name with relative frequencies
print(data['name'].value_counts(normalize=True))
```

Output:

```
sravan      0.375
ojaswi     0.125
ojsawi     0.125
bobby       0.125
rohith      0.125
gnanesh     0.125
Name: name, dtype: float64
```

Get details

If we want to get the details like count, mean, std, min, 25%, 50%, 75%, max, then we have to use `describe()` method.

Syntax:

```
data['column_name'].describe()
```

Example: Get details

Python3

```
# import pandas module
import pandas as pd

# create a dataframe
# with 5 rows and 4 columns
data = pd.DataFrame({
    'name': ['sravan', 'ojsawi', 'bobby', 'rohith',
             'gnanesh'],
    'age': [22, 23, 21, 22, 23],
    'city': ['Delhi', 'Mumbai', 'Delhi', 'Mumbai', 'Chennai'],
    'experience': [2, 3, 2, 3, 2]
})
```

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Output:

```
count      8.000000
mean      20.500000
std       3.964125
min       11.000000
25%       21.000000
50%       21.000000
75%       23.000000
max       23.000000
Name: age, dtype: float64
```

Using size() with groupby()

Here this will return the count of all occurrences in a particular column.

Syntax:

```
data.groupby('column_name').size()
```

Example: Count of all occurrences in a particular column

Python3

```
# import pandas module
import pandas as pd

# create a dataframe
# with 5 rows and 4 columns
data = pd.DataFrame({
    'name': ['sravan', 'ojaswi', 'bobby', 'rohit',
             'ganesh', 'sravan', 'sravan', 'ojaswi'].
```

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Output:

```
name
bobby      1
gnanesh    1
ojaswi     1
ojsawi     1
rohith     1
sravan     3
dtype: int64
```

Using count() with groupby()

Here this will return the count of all occurrences in a particular column across all columns.

Syntax:

```
data.groupby('column_name').count()
```

Example: Count of all occurrences in a particular column

Python3

```
# import pandas module
import pandas as pd

# create a dataframe
# with 5 rows and 4 columns
data = pd.DataFrame({
    'name': ['sravan', 'ojsawi', 'bobby', 'rohith',
             'gnanesh', 'sravan', 'sravan', 'ojaswi']
```

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	subjects	marks	age
name			
bobby	1	1	1
gnanesh	1	1	1
ojaswi	1	1	1
ojsawi	1	1	1
rohith	1	1	1
sravan	3	3	3

Using bins

If we want to get the count in a particular range of values, then the bins parameter is applied. We can specify the number of ranges(bins).

Syntax:

```
(data['column_name'].value_counts(bins))
```

where,

- data is the input dataframe
- column_name is the column to get bins
- bins is the total number of bins to be specified



ample: Get count in particular range of values

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```
'name': ['sravan', 'ojaswi', 'bobby', 'rohith',
          'gnanesh', 'sravan', 'sravan', 'ojaswi'],
'subjects': ['java', 'php', 'java', 'php', 'java',
             'html/css', 'python', 'R'],
'marks': [98, 90, 78, 91, 87, 78, 89, 90],
'age': [11, 23, 23, 21, 21, 21, 23, 21]
})

# get count of age column with 6 bins
print(data['age'].value_counts(bins=6))

# get count of age column with 4 bins
print(data['age'].value_counts(bins=4))
```

Output:

```
(19.0, 21.0]      4
(21.0, 23.0]      3
(10.987, 13.0]    1
(17.0, 19.0]      0
(15.0, 17.0]      0
(13.0, 15.0]      0
Name: age, dtype: int64
(20.0, 23.0]      7
(10.987, 14.0]    1
(17.0, 20.0]      0
(14.0, 17.0]      0
Name: age, dtype: int64
```

Using apply()

If we want to get a count of all columns across all columns, then we have to use `apply()` function. In that we will use `value_counts()` method.

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Python3

```
# import pandas module
import pandas as pd

# create a dataframe
# with 5 rows and 4 columns
data = pd.DataFrame({
    'name': ['sravan', 'bobby', 'sravan', 'sravan', 'ojaswi'],
    'subjects': ['java', 'php', 'java', 'html/css', 'python'],
    'marks': [98, 90, 78, 91, 87],
    'age': [11, 23, 23, 21, 21]
})

# get all count
data.apply(pd.value_counts)
```

Output:

	name	subjects	marks	age
11	NaN	NaN	NaN	1.0
21	NaN	NaN	NaN	2.0
23	NaN	NaN	NaN	2.0
78	NaN	NaN	1.0	NaN
87	NaN	NaN	1.0	NaN
90	NaN	NaN	1.0	NaN
91	NaN	NaN	1.0	NaN
98	NaN	NaN	1.0	NaN
bobby	1.0	NaN	NaN	NaN
html/css	NaN	1.0	NaN	NaN
java	NaN	2.0	NaN	NaN
ojaswi	1.0	NaN	NaN	NaN
php	NaN	1.0	NaN	NaN
python	NaN	1.0	NaN	NaN
sravan	3.0	NaN	NaN	NaN



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