



NumPy sum()

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Summary: in this tutorial, you'll learn how to use the numpy `sum()` function to return the sum of all elements in an array.

Introduction to the numpy sum() function

The numpy `sum()` function is an aggregate function that takes an array and returns the sum of all elements.

The following example uses the `sum()` function to calculate the sum of all elements of a 1-D array:

```
import numpy as np

a = np.array([1, 2, 3])
total = np.sum(a)
print(total)
```

Output:

```
6
```

How it works.

First, [create a new numpy array](https://www.pythontutorial.net/python-numpy/create-numpy-array/) (<https://www.pythontutorial.net/python-numpy/create-numpy-array/>) that has three numbers 1, 2, and 3:

```
a = np.array([1, 2, 3])
```

Second, calculate the sum of all elements in array a by using the `sum()` function:

```
total = np.sum(a)
```

Third, display the result:

```
print(total)
```

The following example uses the `sum()` function to calculate the sum of all elements of a 2-D array:

```
import numpy as np

a = np.array([
    [1, 2, 3],
    [4, 5, 6]
])

total = np.sum(a)
print(total)
```

Output:

```
21
```

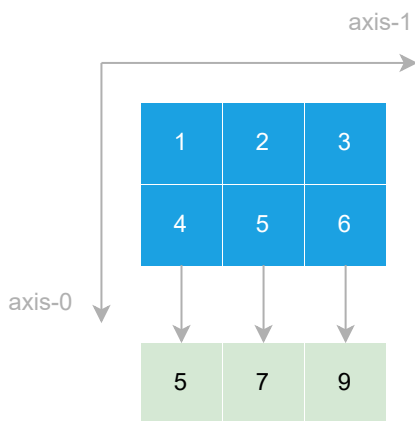
In this example, the `sum()` adds up all the numbers of the array a.

The `sum()` function also accepts the axis argument that allows you to return the sum of elements of an axis. For example:

```
import numpy as np

a = np.array([
    [1, 2, 3],
    [4, 5, 6]
])

total = np.sum(a, axis=0)
print(total)
```



Output:

```
[5 7 9]
```

In this example, the `sum()` function returns a new array where each element is the sum of elements of the array `a` on axis-0.

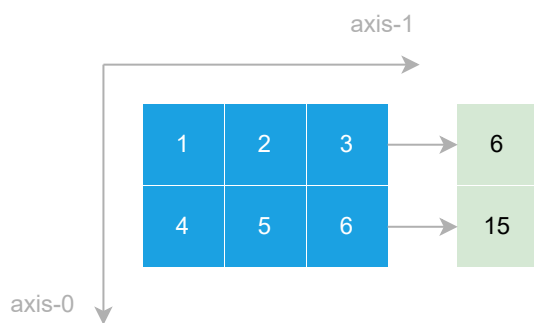
Similarly, you can sum elements on axis-1 like this:

```
import numpy as np

a = np.array([
    [1, 2, 3],
    [4, 5, 6]
])
```

```
total = np.sum(a, axis=1)  
print(total)
```

Output:



```
[ 6 15]
```

Summary

- Use the `sum()` function to get the sum of all elements of an array.
- Use the axis argument to specify the axis that you want to sum up.