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NumPy Summations

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Summations

What is the difference between summation and addition?

Addition is done between two arguments whereas summation happens over n elements.

Example

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Add the values in arr1 to the values in arr2:
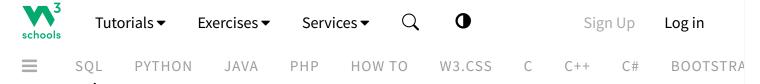
```python
import numpy as np

arr1 = np.array([1, 2, 3])
arr2 = np.array([1, 2, 3])

newarr = np.add(arr1, arr2)

print(newarr)
```

Try it Yourself »

Returns: [2 4 6]

Sum the values in arr1 and the values in arr2:

```python
import numpy as np

arr1 = np.array([1, 2, 3])
arr2 = np.array([1, 2, 3])

newarr = np.sum([arr1, arr2])

print(newarr)
```

Try it Yourself »

Returns: 12

Summation Over an Axis

If you specify `axis=1` , NumPy will sum the numbers in each array.

Example

Perform summation in the following array over 1st axis:

```python
import numpy as np

arr1 = np.array([1, 2, 3])
arr2 = np.array([1, 2, 3])

newarr = np.sum([arr1, arr2], axis=1)
```

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Returns: [6 6]

Cummulative Sum

Cummulative sum means partially adding the elements in array.

E.g. The partial sum of [1, 2, 3, 4] would be [1, 1+2, 1+2+3, 1+2+3+4] = [1, 3, 6, 10].
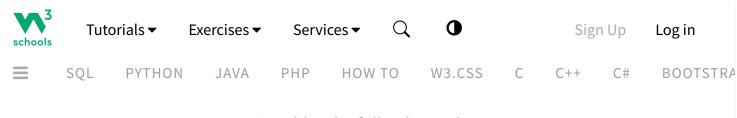
Perfom partial sum with the `cumsum()` function.

Example

Perform cummulative summation in the following array:

```python
import numpy as np

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

newarr = np.cumsum(arr)

print(newarr)
```

Try it Yourself »

Returns: [1 3 6]

Consider the following code:

```
import numpy as np
arr1 = np.array([5, 1, 2])
arr2 = np.array([3, 2, 2])
newarr = np.sum([arr1, arr2])
```

What will be the result of `newarr` **?**

○   [8 3 4]

○   [8 7]

○   15

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