

> ### **Assignment 2 - Numpy Array Operations** - function np.concatenate - function np.median - function np.var - function np.ptp - function np.percentile The recommended way to run this notebook is to click the "Run" button at the top of this page, and select "Run on Binder". This will run the notebook on mybinder.org, a free online service for running Jupyter notebooks.

```
In [1]: !pip install jovian --upgrade -q

In [2]: import jovian

In [3]: jovian.commit(project='numpy-array-operations')

[jovian] Creating a new project "omkar123/numpy-array-operations"
[jovian] Committed successfully! https://jovian.ai/omkar123/numpy-array-operations
'https://jovian.ai/omkar123/numpy-array-operations'

Let's begin by importing Numpy and listing out the functions covered in this notebook.

In [4]: import numpy as np

In [ ]: # List of functions explained
function1 = np.concatenate # (change this)
function2 = ???
function3 = ???
function4 = ???
function5 = ???
```

Function 1 - np.concatenate

Add some explanation about the function in your own words

```
In [14]: # Example 1 - working (change this)
arr1 = [[1, 2],
        [3, 4.]]

arr2 = [[5, 6, 7],
        [8, 9, 10]]

np.concatenate((arr1, arr2), axis=1)

Out[14]: array([[ 1.,  2.,  5.,  6.,  7.],
               [ 3.,  4.,  8.,  9., 10.]])

Explanation about example

In [32]: arr3=np.identity(2)
arr4=[[3,4],
      [5,6]]
np.concatenate((arr3,arr4),axis=1)

Out[32]: array([[1., 0., 3., 4.],
               [0., 1., 5., 6.]])

Explanation about example

In [34]: # Example 3 - breaking (to illustrate when it breaks)
arr1 = [[1, 2, 7],
        [3, 4, 8]]

arr2 = [[5, 6, 7],
        [8, 9, 10]]

np.concatenate((arr1, arr2), axis=0)

Out[34]: array([[ 1,  2,  7],
               [ 3,  4,  8],
               [ 5,  6,  7],
               [ 8,  9, 10]])

Explanation about example (why it breaks and how to fix it)

Some closing comments about when to use this function.

In [35]: jovian.commit()
```

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[jovian] Updating notebook "omkar123/numpy-array-operations" on https://jovian.ai
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'https://jovian.ai/omkar123/numpy-array-operations'
```

Function 2 -np.median

Add some explanations

```
In [38]: med=np.array([[1,2,3],[4,5,6],[7,8,9],[10,11,15],[13,16,50]], dtype = np.int16)
med
print("Median in the first example is:",(np.median(med)))

Median in the first example is: 8.0

Explanation about exampl

In [44]: arr6=np.full((2,4),12)
arr6
print("Median in the second example is:",(np.median(arr6)))

Median in the second example is: 12.0

Explanation about example

In [45]: second_example_median = np.array([[1,2,3],[4,8,6],[7,15,9],[10,11,15],[13,16,50]], dtype = np.int8)
print(second_example_median)
print("Median in the second example is:",(np.median(second_example_median,axis=1,keepdims=True)))

[[ 1  2  3]
 [ 4  8  6]
 [ 7 15  9]
 [10 11 15]
 [13 16 50]]
Median in the second example is: [[ 2.]
 [ 6.]
 [ 9.]
 [11.]
 [16.]]

Explanation about example (why it breaks and how to fix it)

Some closing comments about when to use this function.

In [46]: jovian.commit()
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[jovian] Updating notebook "omkar123/numpy-array-operations" on https://jovian.ai
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'https://jovian.ai/omkar123/numpy-array-operations'
```

Function 3 - np.var

Add some explanations

```
In [47]: first_example_variance = np.array([[1,2,9],[4,4,6],[7,8,9],[10,50,10],[0,2,5]], dtype = np.int16)
print(first_example_variance)
variance = np.var(first_example_variance)
print("Variance of first example is: {}".format(variance))

[[ 1  2  9]
 [ 4  4  6]
 [ 7  8  9]
 [10 50 10]
 [ 0  2  5]]
Variance of first example is: 133.44888888888889

Explanation about example

In [48]: second_example_variance = np.array([[1,2,3],[4,5,6],[7,8,9],[10,11,15],[13,16,50]], dtype = np.int16)
print(second_example_variance)
variance = np.var(second_example_variance,axis=0, keepdims=True)
print("Variance of the second example: {}".format(variance))

[[ 1  2  3]
 [ 4  5  6]
 [ 7  8  9]
 [10 11 15]
 [13 16 50]]
Variance of the second example: [[ 18.    23.44 294.64]]

Explanation about example

In [51]: a = np.zeros((2, 2*2), dtype=np.float32)

a[0, :] = 10
a[1, :] = 3

print(a)

print("Third example of variance:",np.var(a))

[[10. 10. 10. 10.]
 [ 3.  3.  3.  3.]]
Third example of variance: 12.25

Explanation about example (why it breaks and how to fix it)

Some closing comments about when to use this function.

In [52]: jovian.commit()
```

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[jovian] Updating notebook "omkar123/numpy-array-operations" on https://jovian.ai
[jovian] Committed successfully! https://jovian.ai/omkar123/numpy-array-operations
'https://jovian.ai/omkar123/numpy-array-operations'
```

```
In [ ]:

In [ ]:

In [ ]:

Explanation about example (why it breaks and how to fix it)

Some closing comments about when to use this function.

In [26]: jovian.commit()
```

```
[jovian] Attempting to save notebook..
[jovian] Updating notebook "aakashns/numpy-array-operations" on https://jovian.ml/
[jovian] Uploading notebook..
[jovian] Capturing environment..
[jovian] Committed successfully! https://jovian.ml/aakashns/numpy-array-operations
'https://jovian.ml/aakashns/numpy-array-operations'
```

Function 4 - np.ptp

Add some explanations

```
In [53]: first_example_ptp = np.array([[1,2,3],[4,5,6],[7,8,12],[55,60,50]])
print(first_example_ptp)
print("np.ptp is:", np.ptp(first_example_ptp))

[[ 1  2  3]
 [ 4  5  6]
 [ 7  8 12]
 [55 60 50]]
np.ptp is: 59

Explanation about example

In [54]: second_example_ptp = np.array([[ -5,2,5],[4,5,6],[7,8,12],[10,10,20]], dtype=np.int8)
print(second_example_ptp)
ptp = np.ptp(second_example_ptp, axis=0, keepdims=True)
print("Ptp in second example is: {}".format(ptp))

[[ -5  2  5]
 [  4  5  6]
 [  7  8 12]
 [10 10 20]]
Ptp in second example is: [[15  8 15]]

Explanation about example

In [55]: third_example_ptp = np.array([[ -5,2,5],[199,5,6],[7,8,12],[10,10,20]], dtype=np.int8)
print(third_example_ptp)
ptp = np.ptp(third_example_ptp, axis=0, keepdims=True)
print("Wrong ptp in third example is: {}".format(ptp))

[[ -5  2  5]
 [-57  5  6]
 [  7  8 12]
 [10 10 20]]
Wrong ptp in third example is: [[67  8 15]]

Explanation about example (why it breaks and how to fix it)

Some closing comments about when to use this function.

In [56]: jovian.commit()
```

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[jovian] Updating notebook "omkar123/numpy-array-operations" on https://jovian.ai
[jovian] Committed successfully! https://jovian.ai/omkar123/numpy-array-operations
'https://jovian.ai/omkar123/numpy-array-operations'
```

Function 5 - np.percentile

Add some explanations

```
In [58]: first_example_percentile = np.array([[1,2,3],[4,5,6],[20,8,9],[10,500,100]])
print(first_example_percentile)
percentile = np.percentile(first_example_percentile, 50)
print("Percentile from the first example is:", percentile)

[[ 1  2  3]
 [ 4  5  6]
 [20  8  9]
 [10 500 100]]
Percentile from the first example is: 7.0

Explanation about example

In [59]: second_example_percentile = np.array([[1,2,3],[4,5,6],[20,8,9],[10,500,100]], dtype = np.int16)
print(second_example_percentile)
percentile = np.percentile(second_example_percentile, 80, axis=0, keepdims=True)
print("Percentile in second example is: {}".format(percentile))

[[ 1  2  3]
 [ 4  5  6]
 [20  8  9]
 [10 500 100]]
Percentile in second example is: [[ 14.    204.8  45.4]]

Explanation about example

In [61]: third_example_percentile = np.array([[1,2,3],[4,5,6],[20,8,9],[10,500,100]], dtype = np.int16)
print(third_example_percentile)
percentile = np.percentile(third_example_percentile, 70, axis=0, keepdims=True)
print("Percentile in second example is: {}".format(percentile))

[[ 1  2  3]
 [ 4  5  6]
 [20  8  9]
 [10 500 100]]
Percentile in second example is: [[11.   57.2 18.1]]

Explanation about example (why it breaks and how to fix it)

Some closing comments about when to use this function.

In [63]: jovian.commit()
```

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[jovian] Updating notebook "omkar123/numpy-array-operations" on https://jovian.ai
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'https://jovian.ai/omkar123/numpy-array-operations'
```

Conclusion

Summarize what was covered in this notebook, and where to go next

Reference Links

Provide links to your references and other interesting articles about Numpy arrays:

- Numpy official tutorial : <https://numpy.org/doc/stable/user/quickstart.html>
- ...

```
In [ ]: jovian.commit()
```

```
In [ ]:
```