



NumPy Filter Array

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Filtering Arrays

Getting some elements out of an existing array and creating a new array out of them is called *filtering*.

In NumPy, you filter an array using a *boolean index list*.

A *boolean index list* is a list of booleans corresponding to indexes in the array.

If the value at an index is **True** that element is contained in the filtered array, if the value at that index is **False** that element is excluded from the filtered array.

Example

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Create an array from the elements on index 0 and 2:

```
import numpy as np

arr = np.array([41, 42, 43, 44])

x = [True, False, True, False]
```

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The example above will return `[41, 43]` , why?

Because the new array contains only the values where the filter array had the value `True` , in this case, index 0 and 2.

Creating the Filter Array

In the example above we hard-coded the `True` and `False` values, but the common use is to create a filter array based on conditions.

Example

Create a filter array that will return only values higher than 42:

```
import numpy as np

arr = np.array([41, 42, 43, 44])

# Create an empty list
filter_arr = []

# go through each element in arr
for element in arr:
    # if the element is higher than 42, set the value to True, otherwise False:
    if element > 42:
        filter_arr.append(True)
    else:
        filter_arr.append(False)

newarr = arr[filter_arr]
```



Example

Create a filter array that will return only even elements from the original array:

```
import numpy as np

arr = np.array([1, 2, 3, 4, 5, 6, 7])

# Create an empty list
filter_arr = []

# go through each element in arr
for element in arr:
    # if the element is completely divisible by 2, set the value to True,
    # otherwise False
    if element % 2 == 0:
        filter_arr.append(True)
    else:
        filter_arr.append(False)

newarr = arr[filter_arr]

print(filter_arr)
print(newarr)
```

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Creating Filter Directly From Array



it will work just as we expect it to.

Example

Create a filter array that will return only values higher than 42:

```
import numpy as np

arr = np.array([41, 42, 43, 44])

filter_arr = arr > 42

newarr = arr[filter_arr]

print(filter_arr)
print(newarr)
```

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Example

Create a filter array that will return only even elements from the original array:

```
import numpy as np

arr = np.array([1, 2, 3, 4, 5, 6, 7])

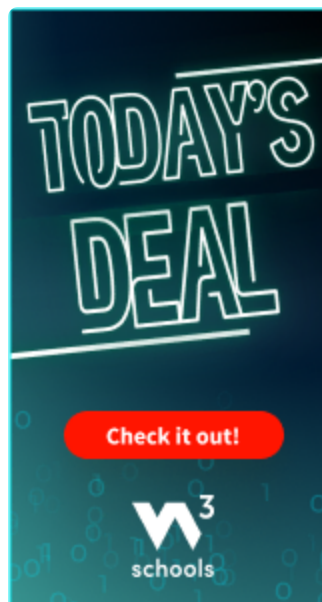
filter_arr = arr % 2 == 0

newarr = arr[filter_arr]

print(filter_arr)
print(newarr)
```

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