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NumPy Differences

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Differences

A discrete difference means subtracting two successive elements.

E.g. for [1, 2, 3, 4], the discrete difference would be [2-1, 3-2, 4-3] = [1, 1, 1]

To find the discrete difference, use the `diff()` function.

Example

Compute discrete difference of the following array:

```
import numpy as np

arr = np.array([10, 15, 25, 5])

newarr = np.diff(arr)

print(newarr)
```

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Returns: [5 10 -20] because 15-10=5, 25-15=10, and 5-25=-20

We can perform this operation repeatedly by giving parameter `n`.

E.g. for [1, 2, 3, 4], the discrete difference with $n = 2$ would be $[2-1, 3-2, 4-3] = [1, 1, 1]$, then, since $n=2$, we will do it once more, with the new result: $[1-1, 1-1] = [0, 0]$

Example

Compute discrete difference of the following array twice:

```
import numpy as np

arr = np.array([10, 15, 25, 5])

newarr = np.diff(arr, n=2)

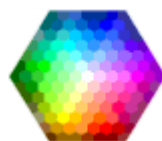
print(newarr)
```

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Returns: [5 -30] because: $15-10=5$, $25-15=10$, and $5-25=-20$ AND $10-5=5$ and $-20-10=-30$

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