

# 238. Product of Array Except Self

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▼ Difficulty	Medium
☰ LC Url	<a href="https://leetcode.com/problems/product-of-array-except-self/">https://leetcode.com/problems/product-of-array-except-self/</a>
▼ Importance	
☰ Tag	Array&Sorting NEET
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Given an integer array `nums`, return an array `answer` such that `answer[i]` is equal to the product of all the elements of `nums` except `nums[i]`.

The product of any prefix or suffix of `nums` is **guaranteed** to fit in a **32-bit** integer.

You must write an algorithm that runs in  $O(n)$  time and without using the division operation.

## Example 1:

```
Input: nums = [1,2,3,4]
Output: [24,12,8,6]
```

## Example 2:

```
Input: nums = [-1,1,0,-3,3]
Output: [0,0,9,0,0]
```

## Constraints:

- $2 \leq \text{nums.length} \leq 10^5$
- $-30 \leq \text{nums}[i] \leq 30$
- The product of any prefix or suffix of `nums` is **guaranteed** to fit in a **32-bit** integer.

**Follow up:** Can you solve the problem in `O(1)` extra space complexity? (The output array **does not** count as extra space for space complexity analysis.)

## Solution

```
class Solution:
    def productExceptSelf(self, nums: List[int]) -> List[int]:
        res = [1] * (len(nums))

        prefix = 1
        for i in range(len(nums)):
            res[i] = prefix
            prefix *= nums[i]
        postfix = 1
        for i in range(len(nums) - 1, -1, -1):
            res[i] *= postfix
            postfix *= nums[i]
        return res
```