

Product of Array Except Self

For this problem we must compute product of all elements except $\text{nums}[i]$ in $O(n)$ time, no division and ideally $O(1)$ extra space (excluding result array).

Approach: Prefix and Suffix Products:

Idea: $\text{answer}[i] = \text{product of all elements to the left of } i \times \text{product of all elements to the right of } i$.

Steps: 1. First pass (left products):

Fill $\text{answer}[i]$ with product of all elements to the left of i .

2. Second pass (right products):

Multiply $\text{answer}[i]$ by product of elements to the right (maintained in a variable).

Complexity:

Time: $O(n)$ (2 passes)

Space: $O(1)$ extra space (output array not counted).