Product of Array Except Itself

Given nums[n], return an array answer, such that answer[i] is equal to the product of all elements of nums except nums[i]

nums[] = {1, 2, 3, 4} → ans[] = {24, 12, 8, 6}

* We have to multiple every index Value Other than Current index for each index

//Algo

① Initialize a Variable "Suffix = 1"

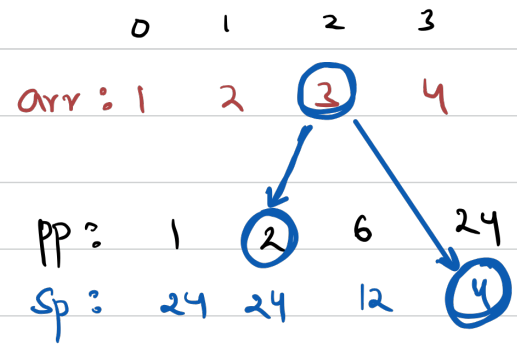
② for (n-1 → 1)

prefixproduct[i] = prefixproduct[i-1] * Suffix

Suffix = Suffix * arr[i]

So, what is going there?

1. Create a prefix product at starting itself
2. Create SuffixProduct



for index : 2

ans = 2 x 4

= 8

At every index in between (1 to n-2)

See → pp[i-1] x sp[i+1]

if (index == 0) → sp[i+1]

if (index == n-1) → pp[i-1]

But... But... But...

Do we really need to main 2 arrays for prefix product & Suffix product

No

we can do the same logic with prefix product and a Variable

* Create a Suffix Variable
  ↳ Initializes to 1
* On every iteration (n-2 to 1) update Suffix ⇒ By Suffix * arr[i]
* Make ans for every index as ⇒ prefixproduct[i] = prefixproduct[i-1] * Suffix
* At last prefixproduct will be our answer

arr[4] : {1, 2, 3, 4}

prefixproduct[] : {1, 2, 6, 24} , Suffix = 1

prefixpooduct[i-1]

i → traverse from n-1 to ~~0~~ 1 (Edge case for i==0)

i	Prefixpooduct[i]	Suffix
(n-1) → 3	6 × 1 = 6	1 × arr[3] = 4
2	2 × 4 = 8	4 × arr[2] = 12
1	1 × 12 = 12	12 × arr[1] = 24
0	24	

at (i==0) prefixproduct[i] = Suffix