

7.8 Maximum length of repeated subarray

Let $dp[i][j]$ be value of max length of repeated subarray in $nums1[0..i]$ and $nums2[0..j]$

if $nums1[i] == nums2[j]$

$$dp(i)(j) = 1 + dp(i-1)(j-1)$$

else

$$dp(i)(j) = 0$$

return max from dp .

eg:

$$\text{nums1} = [1, 2, 3, 2, 1]$$

$$\text{nums2} = [3, 2, 1, 1, 5, 7]$$

	0	1	2	3	4	5	nums1
0	0	0	0	0	0	0	
1	0	0	0	1+0	0	0	
2	0	0	1+0	0	1+1	0	
3	0	0	1	0	2	0	
4	0	1	0	0	0	2+1	
5	0	0	0	0	0	0	
6	0	0	0	0	0	0	

initialize

Answer

Time Complexity

$$O(n_1 \times n_2)$$

A diagram showing the decomposition of the time complexity $O(n_1 \times n_2)$ into two components. Two arrows originate from the expression: one points down and to the left to $len(nums1)$, and the other points down and to the right to $len(nums2)$.

$$len(nums1) \quad len(nums2)$$

Space Complexity

$$O(n_1 \times n_2)$$