

Sliding Window

Sliding Window Technique: What is it?

- computation technique
- wants to reduce using nested loops and replace with a single loop
- aims to reduce time complexity

Sliding Window Technique: How to use

Step 1: find the size of the window required

Step 2: compute result for first window (from start of data structure)

Step 3: then use a loop to slide the window by 1, and keep computing the result window by window

Sliding Window Technique: Example

Given an array of integers of size n , calculate maximum sum of k consecutive elements in the array.

Time complexity for the naive approach is $O(n*k)$ bc two nested for loops

Time complexity for the better approach is $O(n)$ because there are no nested loops

Sliding Window Technique: Leetcode problems

<https://leetcode.com/problems/longest-substring-without-repeating-characters/>

solution: HashMap, completed

<https://leetcode.com/problems/minimum-size-subarray-sum/>

solution: two pointers i and j, revisit again, completed

<https://leetcode.com/problems/minimum-window-substring/>

solution: two pointers and hashmap, revisit again, completed