Arrays - 4

In This Lecture

Minimum Sum Subarray

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Given an array of positive integers A and a positive integer K, return the minimal length of a Subarray whose sum is greater than or equal to the target. If there is no such subarray, return 0 instead.

Input
0 1 2 3 4 5
A[] = {1, 2, 5, 6, 7, 2} , k = 7
Output
1

3+1

// Preprocessing → $cs[]$

$for (i = 0 \longrightarrow n)$

$for (j = i+1 \longrightarrow n)$

$for (i \longrightarrow j) \times$

$length = j - i + 1$

$(i , j) \rightarrow$

Minimum Sum Subarray

$$a = [\overset{0}{1}, \overset{1}{2}, \overset{2}{5}, \overset{3}{6}, \overset{4}{7}, \overset{5}{2}]$$

$$\smile \quad CS = [1, 3, 8, 14, 21, 23]$$

$(2, 3)$

$CS[3] - CS[2]$

$14 - 3 = 11$

$(1, 4)$

$CS[4] - CS[1-1]$

$21 - 1 = 20$

$$\left[\begin{array}{l} \text{Sum}(i, j) \\ = CS[j] - CS[i-1] \end{array} \right]$$

Minimum Sum Subarray

$$a = [\; 1, 2, 5, 6, 7, 2\;]$$

Indices: 0 1 2 3 4 5

$K = 7$

$$\boxed{O(n)}$$

$minSize = \cancel{8}\; \cancel{2}\; 1$