Placement/Internship - Class 5

Stack, Queue, Heaps and custom comparators

Implementation using array?

Question - 1 (Standard)

1. Given an array A of size N, for each element find the nearest element to its left which is just smaller than it.

1 <= N <= 1e5

0 <= A[i] <= 1e9

Question - 2 (Standard)

1. Given an array A of size N. Each element is a rectangle of dimensions A[i] x 1. Find the area of the largest rectangle.

1 <= N <= 1e5

1 <= A[i] <= 1e9

Question - 3

Given a nxm matrix where cell (i,j) has value aij, find the largest square submatrix where sum of all elements in submatrix <= size of square submatrix.

1 <= n * m <= 1e5

1 <= aij <= n * m

Question - 4

1. Given an array A of size n, you create all possible subarrays of it. Now, for each subarray you find difference of maximum and minimum of that subarray. Find the sum.

   1 <= n <= 1e5

   0 <= A[i] <= 1e9

Deque?

Question - 5

1. Given an array A of size N. You have to answer queries of following form:
    a. min(A[l], A[l + 1], …, A[r])
    b. max(A[l], A[l + 1], …, A[r])

Condition on queries:

li <= lj and ri <= rj

Custom comparators

1. Operator overloading
2. https://codeforces.com/blog/Electron
3. https://cplusplus.com/reference/set/set/