Divide and conquer 2

1. Segregate positive and negative numbers using merge sort method

Given an array of positive and negative numbers, arrange them such that all negative integers appear before all the positive integers in the array without using any additional data structure like a hash table, arrays, etc. The order of appearance should be maintained.

2. Find peak element in array.

Given an array arr[] of integers. Find a peak element i.e. an element that is not smaller than its neighbors. For corner elements, consider only one neighbor.

3. Find max and min element in array

Given an integer array, find the minimum and maximum element present in it by making minimum comparisons by using the divide-and-conquer technique.

4. Ternary search

Divide the given array into three parts and determine which has the key

5. Skyline problem

Given n rectangular buildings in a 2-dimensional city, computes the skyline of these buildings, eliminating hidden lines. The main task is to view buildings from a side and remove all sections that are not visible.

All buildings share common bottom and every building is represented by triplet (left, ht, right)

'left': is x coordinated of left side (or wall).

'right': is x coordinate of right side

'ht': is height of building.

A skyline is a collection of rectangular strips. A rectangular strip is represented as a pair (left, ht) where left is x coordinate of left side of strip and ht is height of strip.

6. Find element closest to a target, in array

Given an array of sorted integers. We need to find the closest value to the given number. Array may contain duplicate values and negative numbers.

Order of difficulty of questions – 4, 2, 3, 1, 6, 5 (highest)