

Assignment

Question-1

Given an array arr size N, the task is to print the final array value remaining in the array when the maximum and second maximum element of the array is replaced by their absolute difference in the array, repeatedly.

Note: If the maximum two elements are same, then both are removed from the array, without replacing any value.

Input: arr = [2, 7, 4, 1, 8, 1]

Output: 1

Explanations:

Merging 7 and 8: absolute difference = $7 - 8 = 1$. So the array converted into [2, 4, 1, 1, 1].

Merging 2 and 4: absolute difference = $4 - 2 = 2$. So the array converted into [2, 1, 1, 1].

Merging 2 and 1: absolute difference = $2 - 1 = 1$. So the array converted into [1, 1, 1].

Merging 1 and 1: absolute difference = $4 - 2 = 0$. So nothing will be Merged.

So final array = [1].

Input: arr = [7, 10, 5, 4, 11, 25]

Output: 2

Merging 11 and 25: absolute difference = $25 - 11 = 14$. So the array converted into [7, 10, 5, 4, 14].

Merging 14 and 10: absolute difference = $10 - 14 = 4$. So the array converted into [7, 5, 4, 4].

Merging 7 and 5: absolute difference = $5 - 7 = 2$. So the array converted into [2, 4, 4].

Merging 4 and 4: absolute difference = $4 - 4 = 2$. So the array converted into [2].

Question-2

Given an array arr[] and an integer K, the task is to find the number of merge operation required such that all the elements of the array is greater than or equal to K.

Merge Process of the Element is as per following formula

New Element = $1 * (\text{First Minimum element}) + 2 * (\text{Second Minimum element})$

Input: arr[] = {1, 2, 3, 9, 10, 12}, K = 7

Output: 2

Explanation:

After the first merge operation elements 1 and 2 is removed,
and the element ($1*1 + 2*2 = 5$) is inserted into the array

{3, 5, 9, 10, 12}

After the second merge operation elements 3 and 5 is removed,
and the element ($3*1 + 5*2 = 13$) is inserted into the array

{9, 10, 12, 13}

Thus, 2 operations are required such that all elements are greater than K.

Input: arr[] = {52, 96, 13, 37}, K = 10

Output: 0

Explanation:

All the elements of the array are greater than K already.

Therefore, no merge operation is required.