**Date: 17.04.24**

**Task:**

Alice and Bob are two friends. Alice has a sorted list in ascending order of length **N.** On the other hand, Bob has a sorted list in ascending order of length **M**.

Now, they will merge these two sorted lists and sort those again. Can you find the **Kth** smallest element of the merged sorted list?

Come up with a solution which runs in O(k).

**Input**

The first line contains an integer N (1 <= N <= 105), denoting the length of Alice’s sorted list. In the next line, there will be N integers separated by space.

The third line contains another integer M (1 <= M <= 105), denoting the length of Bob’s sorted list. In the next line, there will be M integers separated by space.

The last line contains an integer K (1 <= K <= N+M) the smallest number you have to find from the merged sorted list.

All the numbers given in the input will fit in a 32-bit signed integer.

It is guaranteed that the given lists will be in sorted order.

**Output:**

Find the Kth smallest element after merging the two sorted lists.

**Sample Input/Output:**

| Sample Input 1 | Sample Output 1 |
| --- | --- |
| 4  1 3 5 7  4  2 2 4 8  5 | 4 |
| Sample Input 2 | Sample Output 2 |
| 3  2 10 12  6  3 4 6 7 8 9  8 | 10 |
| Sample Input 3 | Sample Output 3 |
| 4  1 2 3 4  1  10  2 | 2 |
| Sample Input 4 | Sample Output 4 |
| 7  2 3 8 8 10 12 14  9  1 1 4 5 6 8 13 15 16  15 | 15 |