Binary Search using Recursion!

Given a sorted array, return the index of an element x in the array. Use binary search to find the element in the array !
Return -1 if the element is not present.

Input Format

In the function an integer vector is passed.

Output Format

Return an integer denoting index of the element to be find.

Sample Input

```
{1, 3, 5, 7, 9}, x = 3
```

Sample Output

```
1
```

Solution: recBinarySearch.cpp

2D Array Merge

Implement merge sort for a two-dimensional array. In case of odd dimension, the first division contains more number of elements than the second one. The complete execution of merge sort arranges the elements in increasing order either moving row-wise or column-wise.

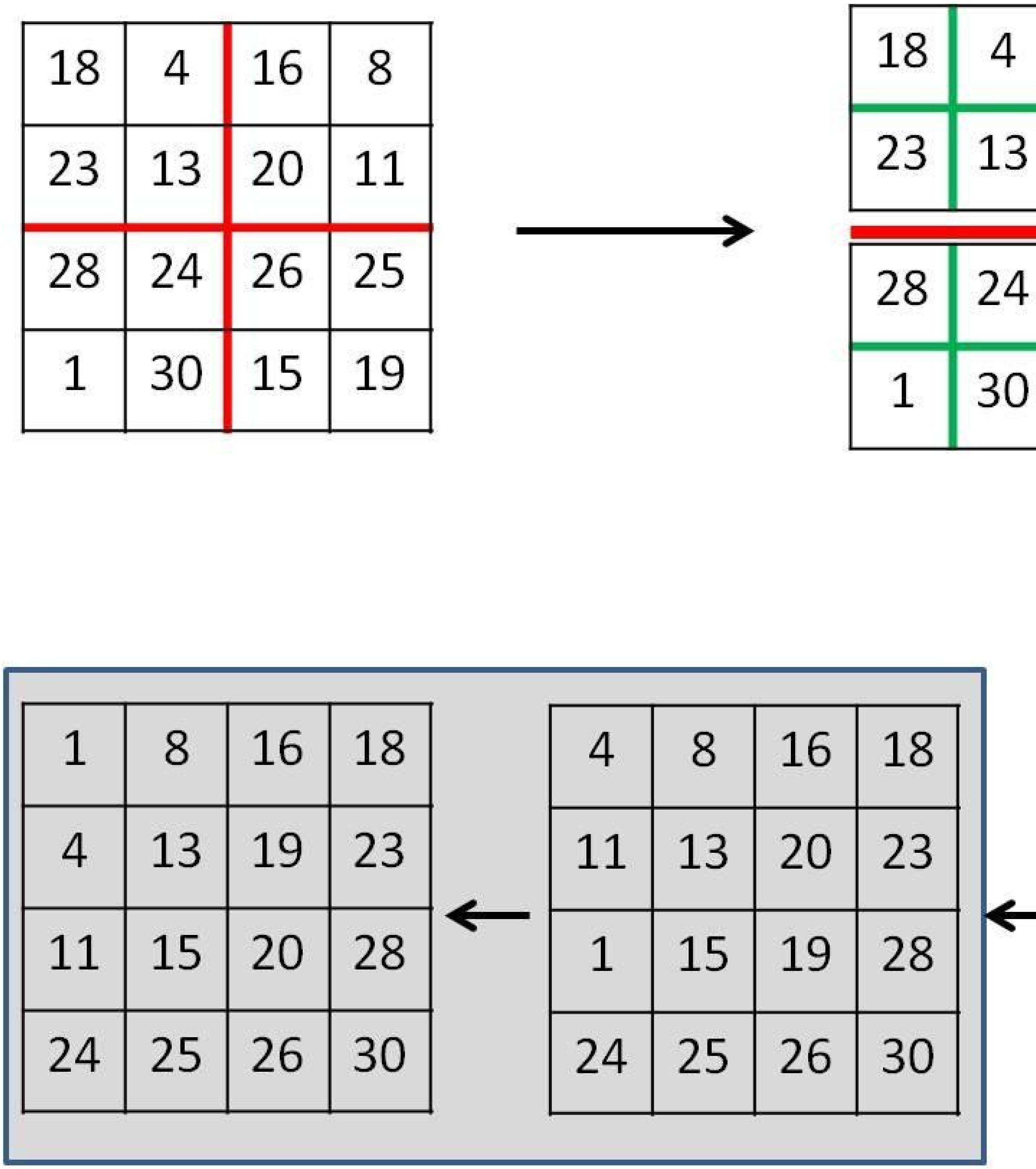
For example, let there be a

4×4

4×4 two dimensional array. The complete process to be implemented is illustrated in Fig. 1. Similarly, Fig. 2 demonstrates the scenario for a

3×3

3×3 two dimensional array. One has to keep on dividing till a single element is remaining. During merging, first the row elements get sorted in increasing order followed by sorting of elements lying in the same column.

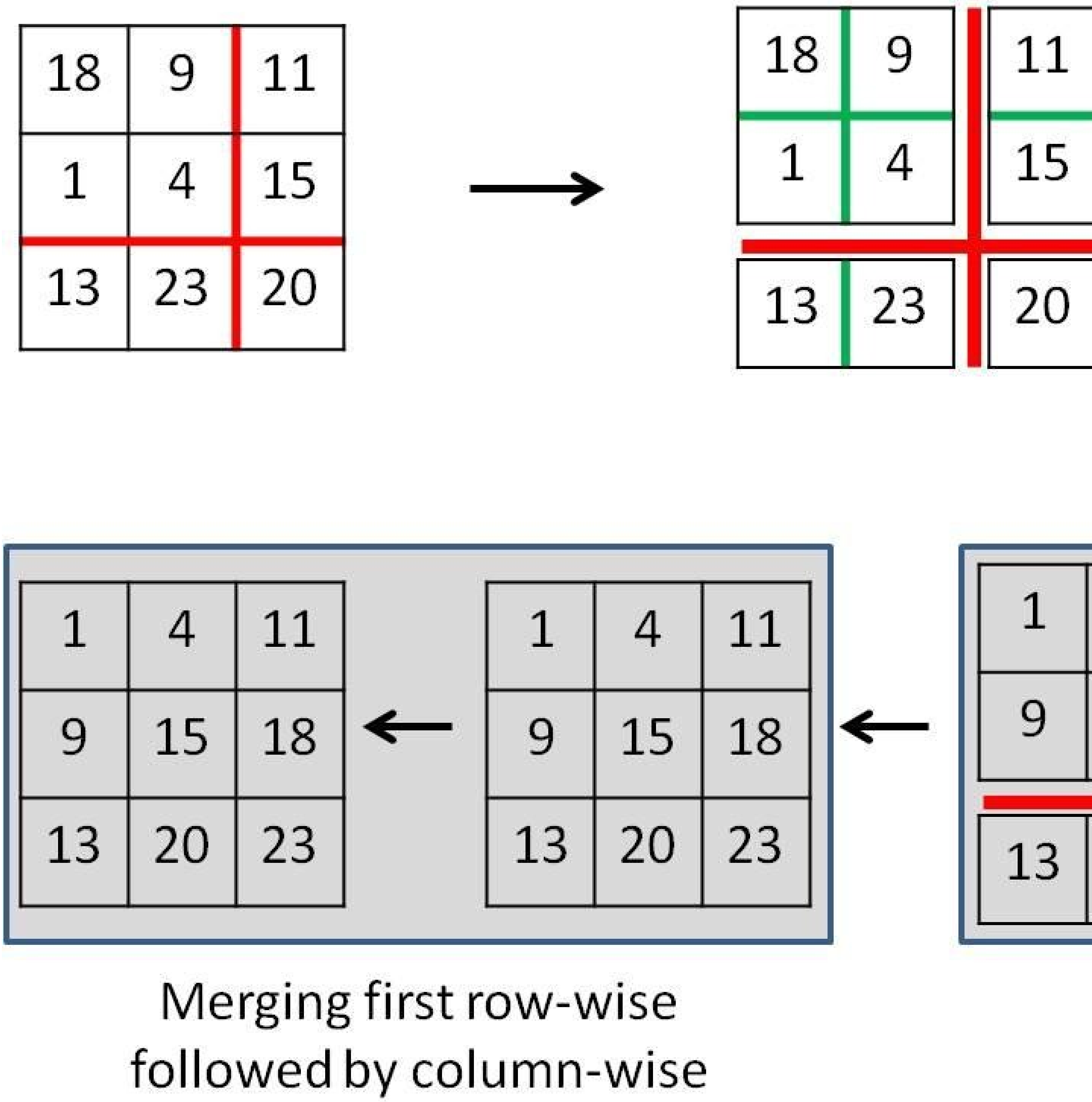


Merging first row-wise followed by column-wise

Fig.1 - 2D Mergesort on a

4×4

4×4 two dimensional array.



Solution: mergeSort.cpp

Game of Greed

You are playing a game with your `'k'` friends. You have an array of N coins, at each index i you have a coin of value `a[i].`
Your task is to divide the coins, among a group of K friends by doing consecutive segments (k-subarrays) of the array.
Each friend will get a total sum of the coins in that subarray. Since all your friends are greedy, and they will pick the largest `k-1` segments and you will get the smallest segment. Find out the maximum value you can make by making an optimal partition.

Note : The coins array may or may not be sorted!

(Refer Hints at the end if needed)

Input

```
K = 3

coins = {1,2,3,4};
```

Output

3

Explanation
The ideal partition looks like this -

{1 + 2} = 3

{3} = 3

{4} = 4

You will get a maximum of 3 coins in the best case.

Solution: gameOfGreed.cpp