

# Merge k Sorted Arrays

Given **K** sorted arrays arranged in the form of a matrix of size  $K \times K$ . The task is to merge them into one sorted array.

## Example 1:

### Input:

$K = 3$

`arr[][] = {{1,2,3},{4,5,6},{7,8,9}}`

**Output:** 1 2 3 4 5 6 7 8 9

**Explanation:** Above test case has 3 sorted arrays of size 3, 3, 3

`arr[][] = [[1, 2, 3],[4, 5, 6],  
[7, 8, 9]]`

The merged list will be

`[1, 2, 3, 4, 5, 6, 7, 8, 9].`

## Example 2:

### Input:

$K = 4$

`arr[][]={{1,2,3,4},{2,2,3,4},  
          {5,5,6,6},{7,8,9,9}}`

### Output:

1 2 2 2 3 3 4 4 5 5 6 6 7 8 9 9

**Explanation:** Above test case has 4 sorted arrays of size 4, 4, 4, 4

`arr[][] = [[1, 2, 2, 2], [3, 3, 4, 4],  
[5, 5, 6, 6], [7, 8, 9, 9 ]]`

The merged list will be

`[1, 2, 2, 2, 3, 3, 4, 4, 5, 5,  
6, 6, 7, 8, 9, 9].`

**Your Task:**

You do not need to read input or print anything. Your task is to complete **mergeKArrays()** function which takes 2 arguments, an `arr[K][K]` 2D Matrix containing `K` sorted arrays and an integer `K` denoting the number of sorted arrays, as input and returns the merged sorted array ( as a pointer to the merged sorted arrays in **cpp**, as an `ArrayList` in **java**, and list in **python**)

**Expected Time Complexity:**  $O(K^2 \cdot \log(K))$

**Expected Auxiliary Space:**  $O(K^2)$

**Constraints:**

$1 \leq K \leq 100$