Rajalakshmi Engineering College

Name: Manju Parkavi R
Email: 240801193@rajalakshmi.edu.in
Roll no: 2116240801193
Phone: 7397317293
Branch: REC
Department: I ECE FB
Batch: 2028
Degree: B.E - ECE

Scan to verify results

NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 6_COD_Question 1

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

John and Mary are collaborating on a project that involves data analysis. They each have a set of age data, one sorted in ascending order and the other in descending order. However, their analysis requires the data to be in ascending order.

Write a program to help them merge the two sets of age data into a single sorted array in ascending order using merge sort.

Input Format

The first line of input consists of an integer N, representing the number of age values in each dataset.

The second line consists of N space-separated integers, representing the ages of participants in John's dataset (in ascending order).

The third line consists of N space-separated integers, representing the ages of participants in Mary's dataset (in descending order).

Output Format

The output prints a single line containing space-separated integers, which represents the merged dataset of ages sorted in ascending order.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
1 3 5 7 9
10 8 6 4 2
Output: 1 2 3 4 5 6 7 8 9 10

Answer

```
#include <stdio.h>


void merge(int arr[], int left[], int right[], int left_size, int right_size) {
    int i = 0, j = 0, k = 0;

    // Merge elements into arr[]
    while (i < left_size && j < right_size) {
        if (left[i] <= right[j]) {
            arr[k++] = left[i++];
        } else {
            arr[k++] = right[j++];
        }
    }

    // Copy any remaining elements
    while (i < left_size) {
        arr[k++] = left[i++];
    }

    while (j < right_size) {
```

```
        arr[k++] = right[j++];
    }
}

void mergeSort(int arr[], int n) {
    if (n < 2) return;

    int mid = n / 2;
    int left[20], right[20];  // Assuming max size is 20

    // Copy data to left and right subarrays
    for (int i = 0; i < mid; i++) {
        left[i] = arr[i];
    }
    for (int i = mid; i < n; i++) {
        right[i - mid] = arr[i];
    }

    mergeSort(left, mid);
    mergeSort(right, n - mid);
    merge(arr, left, right, mid, n - mid);
}




int main() {
    int n, m;
    scanf("%d", &n);
    int arr1[n], arr2[n];
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr1[i]);
    }
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr2[i]);
    }
    int merged[n + n];
    mergeSort(arr1, n);
    mergeSort(arr2, n);
    merge(merged, arr1, arr2, n, n);
    for (int i = 0; i < n + n; i++) {
```

```
        printf("%d ", merged[i]);
    }
    return 0;
}
```

Status : Correct *Marks : 10/10*