14.MERGE SORT

#include <stdio.h>

void merge(int arr[], int left, int mid, int right)

{

int n1 = mid - left + 1;

int n2 = right - mid;

int leftArr[n1], rightArr[n2],i,j,k;

for ( i = 0; i < n1; i++)

{

leftArr[i] = arr[left + i];

}

for ( j = 0; j < n2; j++)

{

rightArr[j] = arr[mid + 1 + j];

}

i = 0, j = 0, k = left;

while (i < n1 && j < n2)

{

if (leftArr[i] >= rightArr[j])

{

arr[k] = leftArr[i];

i++;

}

else

{

arr[k] = rightArr[j];

j++;

}

k++;

}

while (i < n1)

{

arr[k] = leftArr[i];

i++;

k++;

}

while (j < n2)

{

arr[k] = rightArr[j];

j++;

k++;

}

}

void mergeSort(int arr[], int left, int right)

{

if (left < right)

{

int mid = left + (right - left) / 2;

mergeSort(arr, left, mid);

mergeSort(arr, mid + 1, right);

merge(arr, left, mid, right);

}

}

int main()

{

int m, n,i;

printf("Enter the number of elements in the first array: ");

scanf("%d", &m);

int nums1[m];

printf("Enter the elements of the first array in non-increasing order:\n");

for (i = 0; i < m; i++)

{

scanf("%d", &nums1[i]);

}

printf("Enter the number of elements in the second array: ");

scanf("%d", &n);

int nums2[n],j,k;

printf("Enter the elements of the second array in non-increasing order:\n");

for (i = 0; i < n; i++)

{

scanf("%d", &nums2[i]);

}

mergeSort(nums1, 0, m - 1);

mergeSort(nums2, 0, n - 1);

int mergedArray[m + n];

i = 0, j = 0, k = 0;

while (i < m && j < n)

{

if (nums1[i] >= nums2[j])

{

mergedArray[k] = nums1[i];

i++;

}

else

{

mergedArray[k] = nums2[j];

j++;

}

k++;

}

while (i < m)

{

mergedArray[k] = nums1[i];

i++;

k++;

}

while (j < n)

{

mergedArray[k] = nums2[j];

j++;

k++;

}

printf("Merged and sorted array: ");

for (i = 0; i < m + n; i++)

{

printf("%d ", mergedArray[i]);

}

printf("\n");

return 0;

}

OUTPUT

