**Code:**

public class MergeSort {

public void sort(int[] array) {

mergeSort(array, 0, array.length - 1);

}

private void mergeSort(int[] array, int left, int right) {

if (left < right) {

int mid = (left + right) / 2;

// Sort the left and right halves recursively

mergeSort(array, left, mid);

mergeSort(array, mid + 1, right);

// Merge the sorted halves

merge(array, left, mid, right);

}

}

private void merge(int[] array, int left, int mid, int right) {

int n1 = mid - left + 1;

int n2 = right - mid;

// Create temporary arrays for the left and right halves

int[] leftArray = new int[n1];

int[] rightArray = new int[n2];

// Copy data to temporary arrays

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

leftArray[i] = array[left + i];

}

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

rightArray[j] = array[mid + 1 + j];

}

// Merge the temporary arrays back into the original array

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

while (i < n1 && j < n2) {

if (leftArray[i] <= rightArray[j]) {

array[k] = leftArray[i];

i++;

} else {

array[k] = rightArray[j];

j++;

}

k++;

}

// Copy the remaining elements of leftArray (if any)

while (i < n1) {

array[k] = leftArray[i];

i++;

k++;

}

// Copy the remaining elements of rightArray (if any)

while (j < n2) {

array[k] = rightArray[j];

j++;

k++;

}

}

}

**Main:**

package sorting;

import java.util.Arrays;

import java.util.Scanner;

public class Sorting {

/\*\*

\* @param args the command line arguments

\*/

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the number of elements: ");

int n = scanner.nextInt();

int[] array = new int[n];

System.out.println("Enter the elements:");

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

array[i] = scanner.nextInt();

}

System.out.println("Original array: " + Arrays.toString(array));

MergeSort mergeSort = new MergeSort();

mergeSort.sort(array);

System.out.println("Sorted array: " + Arrays.toString(array));

scanner.close();

}

}

**Output:**

