

```
#include <iostream>

using namespace std;

// Function to merge two halves

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

    int n1 = mid - left + 1;
    int n2 = right - mid;

    // Temporary arrays

    int L[n1], R[n2];

    // Copy data

    for (int i = 0; i < n1; i++)
        L[i] = arr[left + i];

    for (int j = 0; j < n2; j++)
        R[j] = arr[mid + 1 + j];

    // Merge the temp arrays back

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

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

        if (L[i] <= R[j])
            arr[k++] = L[i++];

        else
            arr[k++] = R[j++];

    }

}
```

```
}

// Copy remaining elements
while (i < n1)
    arr[k++] = L[i++];

while (j < n2)
    arr[k++] = R[j++];

}

// Merge Sort function
void mergeSort(int arr[], int left, int right) {
    if (left < right) {
        int mid = left + (right - left) / 2;

        // Sort both halves
        mergeSort(arr, left, mid);
        mergeSort(arr, mid + 1, right);

        // Merge sorted halves
        merge(arr, left, mid, right);
    }
}

// Main function
int main() {
```

```
int arr[100], n;  
  
cout << "Enter number of elements: ";  
  
cin >> n;  
  
  
cout << "Enter elements: ";  
  
for (int i = 0; i < n; i++)  
  
    cin >> arr[i];  
  
  
mergeSort(arr, 0, n - 1);  
  
  
cout << "Sorted array: ";  
  
for (int i = 0; i < n; i++)  
  
    cout << arr[i] << " ";  
  
  
return 0;  
}
```