

```
#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;

}
```