**Code:**

#include <bits/stdc++.h>

using namespace std;

void merge(int\* arr, int low, int mid, int high) {

vector<int> temp;

int left = low;

int right = mid + 1;

while (left <= mid && right <= high) {

if (arr[left] <= arr[right]) temp.push\_back(arr[left++]);

else temp.push\_back(arr[right++]);

}

while (left <= mid) temp.push\_back(arr[left++]);

while (right <= high) {

temp.push\_back(arr[right]);

right++;

}

for (int i = low; i <= high; i++) arr[i] = temp[i - low];

}

void mergeSort(int\* arr, int low, int high) {

if (low >= high) return;

int mid = (low + high) / 2 ;

mergeSort(arr, low, mid);

mergeSort(arr, mid + 1, high);

merge(arr, low, mid, high);

}

int main() {

int n;

cout<<"Enter the number of elements: ";

cin>>n;

int arr[n];

cout<<"Enter the Elements: ";

for(int i = 0; i < n; i++) cin>>arr[i];

mergeSort(arr, 0, n - 1);

cout << "After Sorting Array: " << endl;

for (int i = 0; i < n; i++) cout << arr[i] << " ";

cout << endl;

return 0 ;

}

**Output:**

