

	Department of Computer Science and Engineering Faculty of Engineering, South Eastern University of Sri Lanka			
	Subject	CS53003: Data Structure and Algorithms		
	Batch	E18	Semester	5

Lab no and title : Lab 03: Merge Function
Name : G.W.P.R.R. Wijesinghe
Reg No : SEU-IS-18-EG-013
Submission Date : 14-01-2022

```

Start here X Merge.cpp X BubbleSorting.cpp X
1  #include<iostream>
2
3  using namespace std;
4
5  int printArray(int Arr[], int size){
6      int i;
7      for (i = 0; i < size; i++){
8          cout << Arr[i] << " ";
9      }
10 }
11
12 void merge(int arr[],int left, int mid, int right){
13     int len1 = mid -left + 1;
14     int len2 = right - mid;
15
16     int leftArr[len1], rightArr[len2];
17
18     for (int i =0; i < len1; i++){
19         leftArr[i] = arr[left + i];
20     }
21     for (int j =0; j < len2; j++){
22         rightArr[j] = arr[mid + 1 + j];
23     }
24
25     int i,j,k;
26     i = 0;
27     j = 0;
28     k = left;

```

```

29
30 while (i < len1 && j < len2){
31     if (leftArr[i] <= rightArr[j]){
32         arr[k] = leftArr[i];
33         i++;
34     }
35     else {
36         arr[k] = rightArr[j];
37         j++;
38     }
39     k++;
40 }
41 while (i < len1){
42     arr[k] = leftArr[i];
43     i++;
44     k++;
45 }
46 while (j < len2){
47     arr[k] = rightArr[j];
48     j++;
49     k++;
50 }
51 }
52 }
53
54 void mergeSort(int arr[],int left, int right){
55     if (left < right){
56         int mid = left + (right - left)/2;
57
58         mergeSort(arr,left,mid);
59         mergeSort(arr,mid +1,right);
60
61         merge(arr,left,mid,right);
62     }
63 }
64
65
66 int main(){
67     int arr[] = {26,-47,89,100,1,69,78,-20,0,196,25,-30};
68     int size = sizeof(arr)/sizeof(arr[0]);
69
70     cout << "UnSorted array : ";
71     printArray(arr,size);
72     mergeSort(arr,0,size -1);
73
74     cout << "\nSorted array : ";
75     printArray(arr,size);
76
77 }
78

```

```
"E:\Campus Semseters\5th Semester\CS 53003 Data Structure and Algorithms\Lab\03\...  
UnSorted array : 26 -47 89 100 1 69 78 -20 0 196 25 -30  
Sorted array : -47 -30 -20 0 1 25 26 69 78 89 100 196  
Process returned 0 (0x0)   execution time : 0.091 s  
Press any key to continue.
```
