

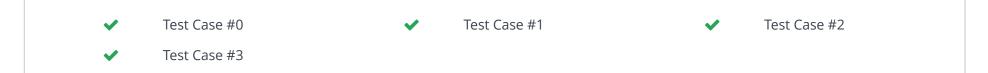
All Contests > HW1 > Merge Sort





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Submitted Code

```
Language: C++

//program on merge sort
//using array
#include<stdio.h>
#include<stdlib.h> //for allocating the memory dynamically
#include<time.h>
```

Status: Accepted

```
7 //function to merge the sub array in ascending order
 8 void merge(int array[], int lower, int mid, int upper){
9 //array to store sub sorted array
10 int a[mid-lower+1], b[upper-mid];
12 //copy the data in the temporary array
13 int i=0;
14 for(; i<mid-lower+1; i++){
       a[i]=array[lower+i];
15
16 }
17 i = 0;
18 for(;i<upper-mid;i++){
      b[i]=array[mid+1+i];
20 }
21
22 //pointers to point the array a and b's current element
23 int p=0, q=0;
24 //pointer to point the current element of the actual array
25 i=lower;
26
27 while(p<mid-lower+1 && q<upper-mid){</pre>
       if(a[p]<b[q]){
28
           array[i]=a[p];
29
           //increment the value of p and i
30
31
           p++; i++;
32
33
       else{
           array[i]=b[q];
34
           //increment the value of g and i
35
           q++; i++;
36
37
38 }
39 //add the remaining element
40 while(p<mid-lower+1){
       array[i]=a[p];
41
       p++; i++;
42
43 }
44 while(q<upper-mid){
```

```
array[i]=b[q];
45
       q++; i++;
46
47 }
48 }
49 //function to sort the array
50 void merge_sort(int array[], int lower, int upper)
51 {
       if(lower<upper)</pre>
52
53
       {
54
           int mid=(lower+upper)/2; //divide
55
           merge_sort(array,lower,mid ); //conquer
           merge_sort(array,mid+1,upper); //conquer
56
57
           merge(array,lower,mid,upper); //combine
58
59
60
       }
61 }
62
64 int main(void)
65 {
66
       int size=0;
       scanf("%d",&size);
67
68
      //allocating the memory for the array
69
       int* array=(int*)calloc(size,sizeof(int)); //calloc initializes all the element with 0
70
71
72
       //input the elements
       int i=0;
73
       for(int i=0; i<size; i++){</pre>
74
           scanf("%d",&array[i]);
75
      }
76
77
78
      //calling the function merge_sort
79
       merge_sort(array,0,size-1);
80
       printf("[");
81
82
       i=0;
```

```
//print the sorted array
83
84
       for(;i<size;i++){</pre>
           if(i!=size-1){
85
                printf("%d,",array[i]);
86
87
           else{
88
                printf("%d]",array[i]);
89
90
91
       }
92
       //free the array pointer
93
       free(array);
94
95
       return 0;
96
97 }
98
```

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