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Contest Code/Name (e.g. JULY15/PRACTICE)

Problem Code/Name (e.g. TEST)

Select

C (gcc 6.3)



Code gets auto saved every second



```
1 #include<stdio.h>
2
3 void mergesort(int a[],int i,int j);
4 void merge(int a[],int i1,int j1,int i2,int j2);
5
6 int main()
7 {
8     int a[30],n,i;
9     printf("Enter no of elements:");
10    scanf("%d",&n);
11    printf("Enter array elements:");
12
13    for(i=0;i<n;i++)
14        scanf("%d",&a[i]);
15
16    mergesort(a,0,n-1);
17
18    printf("\nSorted array is :");
19    for(i=0;i<n;i++)
20        printf("%d ",a[i]);
21
22    return 0;
23 }
24
25 void mergesort(int a[],int i,int j)
26 {
27     int mid;
28     if(i<j)
```

0.0



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Run

Custom Input

5
38 92 69 54 39

Status Successfully executed Date 2020-07-21 10:57:14 Time 0 sec Mem 9.424 kB



Input

5
38 92 69 54 39

Output

Enter no of elements:Enter array elements:
Sorted array is :38 39 54 69 92



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```
21
22     return 0;
23 }
24
25 void mergesort(int a[],int i,int j)
26 {
27     int mid;
28     if(i<j)
29     {
30         mid=(i+j)/2;
31         mergesort(a,i,mid); //left recursion
32         mergesort(a,mid+1,j); //right recursion
33         merge(a,i,mid,mid+1,j); //merging of two sorted sub-arrays
34     }
35 }
36
37 void merge(int a[],int i1,int j1,int i2,int j2)
38 {
39     int temp[50]; //array used for merging
40     int i,j,k;
41     i=i1; //beginning of the first list
42     j=i2; //beginning of the second list
43     k=0;
44     while(i<=j1 && j<=j2) //while elements in both lists
45     {
46         if(a[i]<a[j])
47             temp[k++]=a[i++];
48         else
49             temp[k++]=a[j++];
50     }
51     while(i<=j1) temp[k++]=a[i++];
52     while(j<=j2) temp[k++]=a[j++];
53     for(i=i1;i<=j2;i++) a[i]=temp[i-i1];
54 }
```

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```
38 void merge(int a[],int i1,int j1,int i2,int j2)
39 {
40     int temp[50]; //array used for merging
41     int i,j,k;
42     i=i1; //beginning of the first list
43     j=i2; //beginning of the second list
44     k=0;
45     while(i<=j1 && j<=j2) //while elements in both lists
46     {
47         if(a[i]<a[j])
48             temp[k++]=a[i++];
49         else
50             temp[k++]=a[j++];
51     }
52     while(i<=j1) //copy remaining elements of the first list
53         temp[k++]=a[i++];
54     while(j<=j2) //copy remaining elements of the second list
55         temp[k++]=a[j++];
56     //Transfer elements from temp[] back to a[]
57     for(i=i1,j=0;i<=j2;i++,j++)
58         a[i]=temp[j];
59 }
60
61
62
63
64
65
```

0.0

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Algorithm

Step 1 :- Start

Step 2 :- Read the value of n .

Step 3 :- set a for loop to read the elements of array for ($i=0; i < n; i++$)

Step 4 :- call the function `split(a, 0, n-1)`

Step 5 :- print the sorted array a .

Step 6 :- Stop.

Flowchart

Start

Void merge

```

int i, j, k;
int n1 = m-1+1;
int n2 = x-m;
int L[n1], R[n2];
i = 0.

```

Decision: $i < n1$?

If false: $j = 0$

If true: $L[i] = arr[m+1+i];$

 $i++$

Decision: $j < n2$?

If false: $i = 0; j = 0; k = 1;$

If true: $R[j] = arr[m+1+j];$

$j++$

Decision: $i < n1 \text{ \& \& } j < n2$?

If false: (goes to $i < n1$ decision)

If true: (goes to $L[i] \leq R[j]$ decision)

Decision: $i < n1$?

If false: (goes to $j < n2$ decision)

If true: $arr[k] = L[i];$
 $i++;$
 $k++;$

Decision: $L[i] \leq R[j]$?

If true: $arr[k] = L[i];$
 $i++;$

If false: $arr[k] = R[j];$
 $j++;$

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

 $k++;$

Stop.