

/*C Program to implement Merge Sort

Input : 1. Size of the array

2. Array elements

Output : Sorted array elements in ascending order

***/**

```
#include<stdio.h>
```

```
#define MAX 50
```

```
void mergeSort(int arr[],int low,int mid,int high);
```

```
void partition(int arr[],int low,int high);
```

```
int main(){
```

```
    int merge[MAX],i,n;
```

```
    printf("\n Enter the size of the array: ");
```

```
    printf("\n");
```

```
    scanf("%d",&n);
```

```
    printf("\n");
```

```
    printf("\n Enter the array elements :\n ");
```

```
    for(i=0;i<n;i++){
```

```
        scanf("%d",&merge[i]);
```

```
    }
```

```
    printf("\n");
```

```
    partition(merge,0,n-1);
```

```
    printf(" Sorted elements are:\n\n ");
```

```
    for(i=0;i<n;i++){
```

```
        printf("%d ",merge[i]);
```

```
}  
printf("\n\n ");  
return 0;  
}
```

```
void partition(int arr[],int low,int high){  
    int mid;  
    if(low<high){  
        mid=(low+high)/2;  
        partition(arr,low,mid);  
        partition(arr,mid+1,high);  
        mergeSort(arr,low,mid,high);  
    }  
}
```

```
void mergeSort(int arr[],int low,int mid,int high){
```

```
    int i,m,k,l,temp[MAX];
```

```
    l=low;
```

```
    i=low;
```

```
    m=mid+1;
```

```
    while((l<=mid)&&(m<=high)){
```

```
        if(arr[l]<=arr[m]){
```

```
            temp[i]=arr[l];
```

```
            l++;
```

```
        }
```

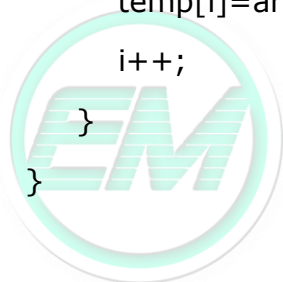
```
        else{
```

```
            temp[i]=arr[m];
```

```
        m++;
    }
    i++;
}

if(l>mid){
    for(k=m;k<=high;k++){
        temp[i]=arr[k];
        i++;
    }
}
else{
    for(k=l;k<=mid;k++){
        temp[i]=arr[k];
        i++;
    }
}

for(k=low;k<=high;k++){
    arr[k]=temp[k];
}
}
```



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Sample Input and Output:

```
Enter the size of the array:
5

Enter the array elements :
10 24 6 4 16

Sorted elements are:
4 6 10 16 24

Press any key to continue..._
```



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