```cpp
1    /* Merger_Sort Technique ... the cormen's way
2
3    Author: --Ashish Kumar */
4
5    #include<iostream>
6    #include<stdio.h>
7    #include<stdlib.h>
8    #include<cmath>
9    #include<limits.h>
10   #define max 1000
11   #define line cout<<endl;
12   using namespace std;
13
14   void merge_sort(int a[],int p, int r)
15   {
16       int q;
17       if(p<r)
18       {
19           q = ((float)(p+r)/2);
20           merge_sort(a,p,q);
21           merge_sort(a,q+1,r);
22           merge_them(a,p,q,r);
23       }
24
25   }
26
27   void merge_them(int a[], int p, int q, int r)
28   {
29       int n1,n2,i,j,k;
30
31       n1 = q-p+1;
32       n2 = r-q;
33       int ll[n1+2],rr[n2+2];
34       ll[n1+1]=rr[n2+1]= INT_MAX;
35       for(i=1; i<=n1; i++)
36       {
37           ll[i] = a[p+i-1];
38       }
39       for(i=1; i<=n2; i++)
40       {
41           rr[i] = a[q+i];
42       }
43       i=j=1;
44       for(k=p; k<=r; k++)
45       {
46           if(ll[i]<=rr[j] )
47           {
48               a[k] = ll[i];
49               i++;
50           }
51
52           else
53           {
54               a[k] = rr[j];
55               j++;
56           }
57       }
58   }
59
60   int main()
61   {
```

```cpp
62        cout<<"Enter the size of the array\n";
63        int n,p,q,r;
64        cin>>n;
65        int a[n+1];
66        a[0] = 0;
67        for(int i=1; i<=n; i++)
68            cin>>a[i];
69        merge_sort(a,1,n);
70        for(int i=1; i<=n; i++)
71            cout<<a[i]<<" ";
72
73  }
```