

floyds.c X knapsack.c X heapSort.c X

```
1  #include<stdio.h>
2  #include<conio.h>
3  voidbottom_up_heapify(int n, int a[], int p)
4  {
5      int item,c;
6      item=a[p];
7      c=2*p+1;
8      while(c<=n-1)
9      {
10         if(c+1<=n-1)
11         {
12             if(a[c]<a[c+1])
13                 c++;
14         }
15         if(item<a[c])
16         {
17             a[p]=a[c];
18             p=c;
19             c=2*p+1;
20         }
21         else
22             break;
23     }
24     a[p]=item;
25 }
26
27 voidtop_down_heapify(int n, int a[])
28 {
29     int k,c,key,p;
30     for(k=1;k<n;k++)
31     {
32         key=a[k];
33         c=k;
34         p=(c-1)/2;
35         while(c>0 && key>a[p])
```

```
37 {
38     a[c]=a[p];
39     c=p;
40     p=(c-1)/2;
41 }
42     a[c]=key;
43 }
44 }
45 void heap_sort(int n, int a[])
46 {
47     int i,temp;
48     for(i=n-1;i>0;i--)
49     {
50         temp=a[0];
51
52         a[0]=a[i];
53         a[i]=temp;
54         bottom_up_heapify(i,a,0);
55     }
56 }
57 void main()
58 {
59     int i,n,a[20];
60     printf("Enter the value of n\n");
61     scanf("%d",&n);
62     printf("Enter the elements to sort\n");
63     for(i=0;i<n;i++)
64         scanf("%d",&a[i]);
65     top_down_heapify(n,a);
66     heap_sort(n,a);
67     printf("The sorted vector is\n");
68     for(i=0;i<n;i++)
69         printf("%d",a[i]);
70 }
71
```

Enter the value of n

4

Enter the elements to sort

5

4

3

2

The sorted vector is

2

3

4

5