

Heap sort

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#include<stdio.h>

void create(int []);
void down_adjust(int [],int);

void main()
{
    int heap[30],n,i,last,temp;
    printf("Enter no. of elements:");
    scanf("%d",&n);
    printf("\nEnter elements:");
    for(i=1;i<=n;i++)
        scanf("%d",&heap[i]);

    //create a heap
    heap[0]=n;
    create(heap);

    //sorting
    while(heap[0] > 1)
    {
        //swap heap[1] and heap[last]
        last=heap[0];
        temp=heap[1];
        heap[1]=heap[last];
        heap[last]=temp;
        heap[0]--;
        down_adjust(heap,1);
    }

    //print sorted data
    printf("\nArray after sorting:\n");
    for(i=1;i<=n;i++)
        printf("%d ",heap[i]);
}

void create(int heap[])
{
    int i,n;
    n=heap[0]; //no. of elements
    for(i=n/2;i>=1;i--)
        down_adjust(heap,i);
}
```

```

void down_adjust(int heap[],int i)
{
    int j,temp,n,flag=1;
    n=heap[0];

    while(2*i<=n && flag==1)
    {
        j=2*i;  //j points to left child
        if(j+1<=n && heap[j+1] > heap[j])
            j=j+1;
        if(heap[i] > heap[j])
            flag=0;
        else
        {
            temp=heap[i];
            heap[i]=heap[j];
            heap[j]=temp;
            i=j;
        }
    }
}

```