

Experiment E22

```
#include<iostream>
#define SIZE 100
using namespace std;

int heap[SIZE];
void create(int heap[],int n);
void buildheapmax(int heap[],int i);
void create1(int heap[],int n);
void buildheapmin(int heap[],int i);

int main()

{
    int n,i,j,k;

    cout<<"Enter the no of Students appeared For ADS online examination"<<endl;
    cin>>n;
    heap[0]=n;
    cout<<"\nEnter the Marks of the students"<<endl;
    for(k=1;k<=n;k++)
    {
        cin>>heap[k];
    }
    create(heap,n);
    cout<<"\nDisplay max heap"<<endl;
    for(k=0;k<=n;k++)
    {
        cout<<heap[k]<<"\t";
    }

    cout<<"\nThe Maximum marks in the subject is ";
    cout<<heap[1];
    create1(heap,n);
    cout<<"\nDisplay min heap"<<endl;
    for(k=0;k<=n;k++)
    {
        cout<<heap[k]<<"\t";
    }

    cout<<"\nThe Minimum marks in the subject is ";
    cout<<heap[1];

    return 0;
}
```

```

void create(int heap[],int n)
{
    int i,k;

    for(i=n/2;i>=1;i--)
    {
        buildheapmax(heap,i);
    }

}

```

```

void buildheapmax(int heap[],int i)
{

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```

    int j,temp,m;
    int q=1;
    m=heap[0];
    while(2*i<=m&&q==1)
    {
        j=2*i;
        if(j+1<=m&&heap[j+1]>heap[j])
            {j=j+1;}

        if(heap[i]>heap[j])
            {q=0;}
        else
        {
            temp=heap[i];
            heap[i]=heap[j];
            heap[j]=temp;
            i=j;
        }

    }
}

```

```

}

void create1(int heap[],int n)
{
    int i,k;

    for(i=n/2;i>=1;i--)
    {
        buildheapmin(heap,i);
    }

}

```

```

void buildheapmin(int heap[],int i)
{

int j,temp,m;
int q=1;
m=heap[0];
while(2*i<=m&&q==1)
{
j=2*i;
if(j+1<=m&&heap[j+1]<heap[j])
{j=j+1;}

if(heap[i]<heap[j])
{q=0;}
else
{
temp=heap[i];
heap[i]=heap[j];
heap[j]=temp;
i=j;
}

}

}

```