E22-Read the marks obtained by students of second year in an online examination of particular subject. Find out maximum and minimum marks obtained in that subject. Use heap data structure. Analyse the algorithm

```
#include<iostream>
using namespace std;
# define max 20
class stud
{
int mks[max];
public:
   stud()
   {
   for(int i=0;i<max;i++)
     mks[i]=0;
   }
   void insertheap(int tot);
   void displayheap(int tot);
   void showmax(int tot);
   void showmin();
};

void  stud::insertheap(int tot)
{
 for(int i=1;i<=tot;i++)
 {
  cout<<"enter marks";
  cin>>mks[i];
   int j=i;
   int par=j/2;
   while(mks[j]<=mks[par] && j!=0)
    {
       int tmp = mks[j];
       mks[j]=mks[par];
       mks[par]=tmp;
       j=par;
```

```
      par=j/2;
    }
 }
}

void stud::displayheap(int tot)
{
int i=1,space=6;
cout<<endl;
while(i<=tot)
{
   if(i==1 || i==2 || i==4 || i==8 || i==16)
   {
   cout<<endl<<endl;
   for(int j=0;j<space;j++)
       cout<<" ";
   space-=2;
   }
  cout<<" "<<mks[i];i++;

}
}


void stud::showmax(int tot)
{
int max1=mks[1];
for(int i=2;i<=tot;i++)
{
 if(max1<mks[i])
  max1= mks[i];
}
cout<<"Max marks:"<<max1;
}
```

```
void stud::showmin()
{
cout<<"Min marks:"<<mks[1];
}

int main()
{
int ch,cont,total,tmp;
int n;
stud s1;
do
{
cout<<endl<<"Menu";
cout<<endl<<"1.Read marks of the student ";
cout<<endl<<"2.Display  Min heap";
cout<<endl<<"3.Find Max Marks";
cout<<endl<<"4.Find Min Marks";
cout<<endl<<"Enter Choice";
cin>>ch;
switch(ch)
{
case 1:
     cout<<"how many students";
     cin>>total;
    s1.insertheap(total);
    break;
case 2:
    s1.displayheap(total);
    break;
case 3:    s1.showmax(total);
    break;
case 4:
    s1.showmin();
    break;
}
```

```
cout<<endl<<"do u want to continue?(1 for continue)";
cin>>cont;
}while(cont==1);
return 0;
}
```