Assignment no 10

Input:

```
#include<iostream>
using namespace std;
# define max 20
class stud
{
int mks[max];    //array of marks
public:
   stud()                //constructor
   {
   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";     //accept marks from user
  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<<" ";                          //insert space
    space-=2;
    }
   cout<<" "<<mks[i];i++;

}
}


void stud::showmax(int tot)
{
int max1=mks[1];          //start from 1st entry copy in max1
for(int i=2;i<=tot;i++)
{
 if(max1<mks[i])             // compare with all next elements if max value found then update
max1
  max1= mks[i];
}
cout<<"Max marks:"<<max1;     //after searching finishes print max1
}


void stud::showmin()                //this is min heap so min element will be top/first element
from array
{
cout<<"Min marks:"<<mks[1];
}

int main()
{
int ch,cont,total,tmp;
int n;
stud s1;         //creating object of class
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);                          //call insert function to insert elements
    break;

case 2:
    s1.displayheap(total);                          //call display function
    break;

case 3:    s1.showmax(total);                       //To find max element
    break;

case 4:
    s1.showmin();                                  //To find min element
    break;
}
cout<<endl<<"do u want to continue?(1 for continue)";    //Display menu to users
cin>>cont;
}while(cont==1);
return 0;
}
```

Output:

```
Menu
1.Read marks of the student
2.Display  Min heap
3.Find Max Marks
4.Find Min Marks
Enter Choice 1
how many students 8
enter marks 96
enter marks 52
enter marks 86
enter marks 72
enter marks 63
enter marks 84
enter marks 91
enter marks 79
do u want to continue?(1 for continue)1
Menu
1.Read marks of the student
2.Display  Min heap
3.Find Max Marks
4.Find Min Marks
```

```
Enter Choice 2

       52

     63 84

   79 72 86 91

 96
do u want to continue?(1 for continue)1
Menu
1.Read marks of the student
2.Display  Min heap
3.Find Max Marks
4.Find Min Marks
Enter Choice 3
Max marks:96
do u want to continue?(1 for continue)1
Menu
1.Read marks of the student
2.Display  Min heap
3.Find Max Marks
4.Find Min Marks
Enter Choice 4
Min marks:52
do u want to continue?(1 for continue)0
```