/\*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.

Analyze 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;

}

/\* 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 5

Enter marks 56

Enter marks 25

Enter marks 12

Enter marks 10

Enter marks 55

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

10

12 25

56 55

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:56

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:10

do u want to continue?(1 for continue) n

Process returned 0 (0x0) execution time : 113.496 s

Press any key to continue.\*/