

NAME : TANISHQ GUPTA

CLASS : SE

BATCH : A4

ROLL NO.: SEAD21168

Problem statement: 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

CODE:

```
#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:

```

```

PS C:\Users\tanis\OneDrive\Desktop\tanishq_gupta_21168> g++ .\heap_e22.cpp
PS C:\Users\tanis\OneDrive\Desktop\tanishq_gupta_21168> .\a.exe

Menu
1.Read marks of the student
2.Display Min heap
3.Find Max Marks
4.Find Min Marks
Enter Choice
1
how many students3
enter marks30
enter marks43
enter marks32

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 Choice2

30

43 32
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 Choice3
Max marks:43
do u want to continue?(1 for continue)
0
PS C:\Users\tanis\OneDrive\Desktop\tanishq_gupta_21168> |

```