

JAVA LAB DA 2

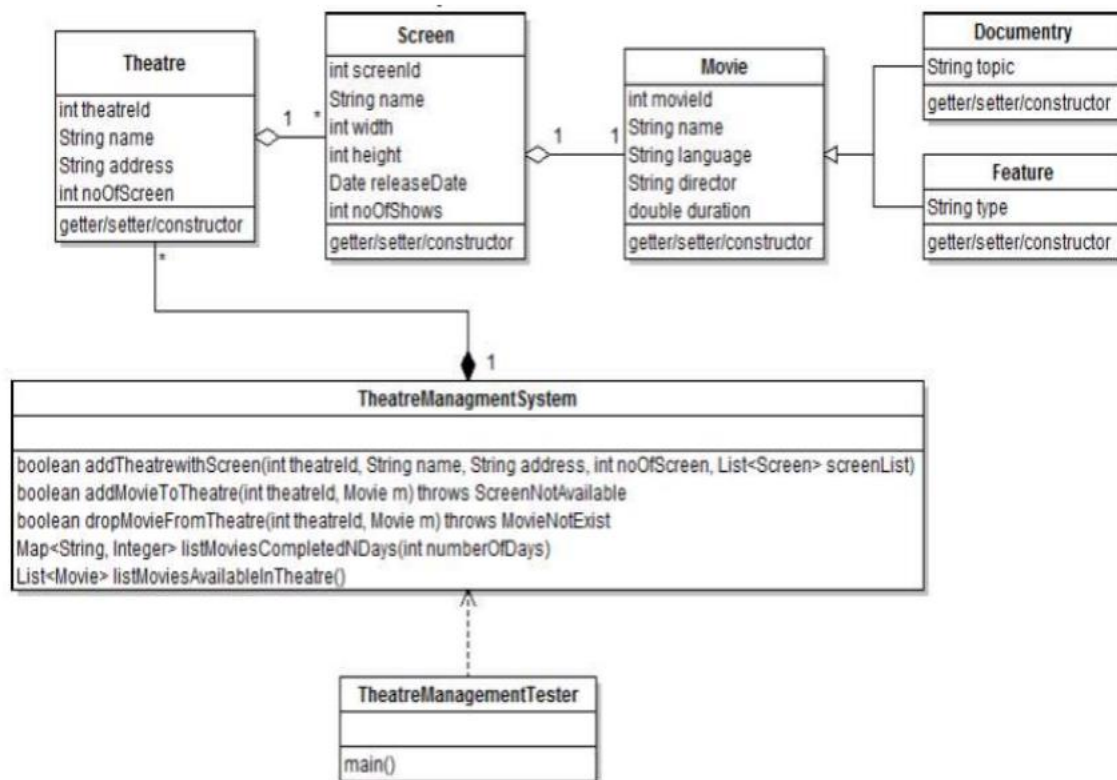
Arshdeep Singh Bhatia

19BCB0086

Question

Problem Statement:

TheatreManagementSystem is an application used to manage theatre complex with multiple screens in it. It will automate the Movie release in the screens and the statistics of the film. Movies can be classified into two category it can be a *Feature Movie* or a *Documentary*. Develop a Java project which serves this system with following guidelines. Class diagram is shared after the guidelines.



Answer

Algorithm

1. Create individual classes.
2. use keywords like implements, extends, this, and super wherever necessary to establish relationships needed between the classes as per the problem diagram
3. create an interface and list the methods (only first 3 as asked by sir)
4. manually create scenarios and run the code.

Code: (VS code ide)

```
import java.util.*;

interface theatremanagementsystem{
    boolean addtheatrewithscreen(int t,String n,String a,int nos,List<screen>s
);
    boolean addmovietotheatre(int t,movie m);
    boolean dropmoviefromtheatre(int t,movie m);
}

class movie{
    int movieid;
    String name,language,director;
    Double duration;
    movie(int m,String n,String l,String d,double time){
        this.movieid=m;
        this.name=n;
        this.language=l;
        this.director=d;
        this.duration=time;
    }
}

class Documentary extends movie{
    String topic;
    Documentary(int m,String n,String l,String d,double time,String t){
        super(m, n, l, d, time);
        this.topic=t;
    }
}

class Feature extends movie{
```

```

        String type;
        Feature(int m,String n,String l,String d,double time,String typ){
            super(m,n, l, d, time);
            this.type=typ;
        }
    }

class screen{
    int screenid;
    String name;
    int width,height;
    Date releaseDate;
    int noofshows;
    movie mov;
    screen(int s,String n,int w,int h,Date r,int no,movie m){
        this.screenid=s;
        this.height=h;
        this.width=w;
        this.name= n;
        this.releaseDate=r;
        this.noofshows=no;
        this.mov=m;
    }
}

class theatre {
    int theatreid;
    String name,address;
    int noofscreens;
    List<screen> screens;
    theatre(int t,String n,String a,int nos,List<screen>s){
        this.address=a;
        this.name=n;
        this.noofscreens=nos;
        this.screens=s;
        this.theatreid=t;
    }
}

class cinemas implements theatremanagementsystem{
    List <theatre> theatres;
    cinemas(List<theatre>t){
        this.theatres=t;
    }

    public boolean addmovietotheatre(int t, movie m) {
        int pos=0;
        for (int i=0;i<theatres.size();i++){

```

```

        theatre k=theatres.get(i);
        if (k.theatreid==t){
            pos=i;
            break;
        }
    }
    theatre k=theatres.get(pos);
    boolean ans=false;
    for(int i=0;i<k.noofscreens;i++){
        screen s=k.screens.get(i);
        Date da2=null;
        if (s.releaseDate==da2){
            ans=true;
            return ans;
        }
    }
    return ans;
}

public boolean addtheatrewithscreen(int t, String n, String a, int nos, List<screen> s) {
    if(nos==s.size()){
        theatre th=new theatre(t,n,a,nos,s);
        this.theatres.add(th);
        return true;
    }
    return false;
}

public boolean dropmoviefromtheatre(int t, movie m) {
    int pos=0;
    for (int i=0;i<this.theatres.size();i++){
        theatre k=this.theatres.get(i);
        if (k.theatreid==t){
            pos=i;
            break;
        }
    }
    theatre k=theatres.get(pos);
    boolean ans=false;
    for(int i=0;i<k.noofscreens;i++){
        screen s=k.screens.get(i);
        if (s.mov==m){
            movie movi=new movie(00, "none", "none", "none", 0.0);
            s.mov=movi;
            ans=true;
            return ans;
        }
    }
}

```

```

    }
    return ans;
}

}

public class labda2{
    public static void main(String[] args) {
        Feature f1=new Feature(1,"featuremov","english","d1",2.35,"thriller");
        Feature f2=new Feature(2,"featuremov2","english","d1",2.35,"romance");
        Documentary d1=new Documentary(3, "docmov", "english","d1",2.35,"animals");
        Documentary d2=new Documentary(4, "docmov2", "english","d1",2.35,"Helen keller");
        Date da1 = new Date();
        screen s1=new screen(1, "scr1", 400, 300, da1 , 5, d1);
        screen s2=new screen(2, "scr2", 400, 300, da1 , 5, f1);
        screen s3=new screen(3, "scr1", 1600, 900, da1 , 5, d2);
        screen s4=new screen(4, "scr2", 1600, 900, da1 , 5, f2);
        Date da2=null;
        screen s5=new screen(5,"scr5",400, 300,da2,0,null);
        List<screen> sl2 = new ArrayList<screen>();
        sl2.add(s5);

        List<screen> sl1 = new ArrayList<screen>();
        sl1.add(s1);
        sl1.add(s2);
        sl1.add(s3);
        sl1.add(s4);
        theatre t1=new theatre(1, "theatre 1", "address 1", 2, sl1);
        List<theatre> t =new ArrayList<theatre>();
        t.add(t1);

        cinemas c= new cinemas(t);
        if(c.addtheatrewithscreen(2, "theatre 2", "address 2", 1, sl2))System.out.println("Theatre added successfully");
        else System.out.println("theatre cant be added size mismatch");
        if(c.addmovietotheatre(2, d2))System.out.println("Movie added successfully");
        else System.out.println("There is no screen available to relase the movie");
        if(c.dropmoviefromtheatre(1, d1))System.out.println("Movie dropped successfully");
        else System.out.println("movie didnt drop because it dont exist in this theatre");
    }
}

```

OUTPUTS

If all declared perfectly(refer 157 -164 lines in code)

```
157     cinemas c= new cinemas(t);
158     if(c.addtheatrewithscreen(2, "theatre 2", "address 2", 1, sl2))System.out.println("Theatre added successfully");
159     else System.out.println("theatre cant be added size mismatch");
160     if(c.addmovietotheatre(2, d2))System.out.println("Movie added succesfully");
161     else System.out.println("There is no screen available to relase the movie");
162     if(c.dropmoviefromtheatre(1, d1))System.out.println("Movie dropped sucessfully");
163     else System.out.println("movie din drop");
164
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

1: Java Process Console

```
PS C:\Users\arshd\Desktop\java> c:; cd 'c:\Users\arshd\Desktop\java'; & 'c:\Users\arshd\.vscode\extensions\vscjava.vscod...
'C:\Program Files\Java\jdk-15.0.2\bin\java.exe' --enable-preview -XX:+ShowCodeDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp 'C:\Users\arshd\AppData\Roaming\Code\User\workspaceStorage\d288d8b2eede9c9dc7c034c0343ce4af\redhat.java\jdt_ws\java_b4059a25\bin' 'labda2'
Theatre added successfully
Movie added succesfully
Movie dropped sucessfully
```

```
PS C:\Users\arshd\Desktop\java> c:; cd 'c:\Users\arshd\Desktop\java'; & 'c:\Users\arshd\.vscode\extensions\vscjava.vscod...
'C:\Program Files\Java\jdk-15.0.2\bin\java.exe' --enable-preview -XX:+ShowCodeDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp 'C:\Users\arshd\AppData\Roaming\Code\User\workspaceStorage\d288d8b2eede9c9dc7c034c0343ce4af\redhat.java\jdt_ws\java_b4059a25\bin' 'labda2'
Theatre added successfully
Movie added succesfully
Movie dropped sucessfully
```

If size mismatch while adding theatre with wrong number of screens

```
158     if(c.addtheatrewithscreen(2, "theatre 2", "address 2", 2, sl2))System.out.println("Theatre added successfully");
159     else System.out.println("theatre cant be added size mismatch");
160     if(c.addmovietotheatre(2, d2))System.out.println("Movie added succesfully");
161     else System.out.println("There is no screen available to relase the movie");
162     if(c.dropmoviefromtheatre(1, d1))System.out.println("Movie dropped sucessfully");
```

(note sl2 has only 1 screen but we entered 2 as to check the error)

(this also causes the movie adding to fail because sl2 had a null screen but since it wasn't added...there is no screen available)

```
theatre cant be added size mismatch
There is no screen available to relase the movie
Movie dropped sucessfully
```

If we try to drop a movie from a theatre (eg t2) where a particular movie is not even there in the first place

```
cinemas c= new cinemas(t);
if(c.addtheatrewithscreen(2, "theatre 2", "address 2", 1, sl2))System.out.println("Theatre added successfully");
else System.out.println("theatre cant be added size mismatch");
if(c.addmovietotheatre(2, d2))System.out.println("Movie added succesfully");
else System.out.println("There is no screen available to relase the movie");
if(c.dropmoviefromtheatre(2, d1))System.out.println("Movie dropped sucessfully");
else System.out.println("movie didnt drop because it dont exist in this theatre");
```

Changed the drop movie to drop d1 movie from theatre 2 (where only d2 is there)

```
'C:\Program Files\Java\jdk-15.0.2\bin\java.exe' '--enable-assertions  
a\Roaming\Code\User\workspaceStorage\d288d8b2eede9c9dc7c034  
Theatre added successfully  
Movie added successfully  
movie didnt drop because it dont exist in this theatre  
PS C:\Users\arshd\Desktop\java> 
```