Hacettepe University Computer Science

Programming Assignment 4 - HUCS Cinema Reservation System

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Making a cinema reservation system for Hacettepe University with JavaFX and GUI tools.

Index

Define the Problem

In this assignment, we need to develop a Graphical User Interface (GUI) for Cinema Reservation System by using Java programming language. This system needs to contain many elements like; a login screen for users to enter the system, and sign up screen for users to sign up and started to use this system, when they login to a system they need to see a welcome screen that shows many actions like choosing a movie, watch a movie trailer with actions(5 seconds back, 5 seconds forward, stop, etc.) afterward if they like this movie they can buy a ticket and refund a ticket with the help of this app. Also, admin users need to do operations for movies like edit user information like changing the user's club member condition, remove the film from the system, remove hall from the system, etc. Nearly every screen needs to have different operations whether the user is an admin or not. While making all this stuff we need to use many JavaFX tools such as choice box, button, text, text field, media, image, etc. And we need to write and read all movies and users' information from .dat file.

Solution Approach

In order to do this assignment, I first studied the JavaFX slides of Görkem Akyıldız. After I had basic knowledge about JavaFX, I started to do the assignment with the login screen. Even though I didn't complete the login screen completely, seeing the codes I wrote on the screen was very satisfying, and it increased my desire to work on this assignment by putting aside the thought that I could never finish the assignment I had at the beginning. Afterward, I solved the problems I encountered while doing the assignment in the light of the information I got from the internet.

Solution Approach cont. and Problems I Faced and My Solutions for These Problems

In this assignment, while creating the login screen, I first removed the things I needed. These are the text that tells what the user should do on this screen, the Text that this text should be written, the TextField necessary for the user to write the user name, and the registration screen or the buttons that will enable him to go to the next screen. I set these buttons to open the next page with the setOnAction command. I always worked on the primaryStage when making this adjustment because this way I could both close the previous screen and open the new screen. The first of the problems I encountered here was not knowing how to hide the password. For this, I first tried to take the text with for and put as many stars as the number of letters, but this did not work. Then, after searching on google, I realized that there is a class called PasswordField and it turns off the automatically typed password. This function checks all false attempts with if/else if and gives an error accordingly. Later, when I looked at the slide to see if there was anything missing, I saw that we had to prevent the user from trying for a while after a certain wrong login on the login screen. I knew there was a function called Timer, but I didn't have the slightest idea how to use it. By doing some research from Google, I learned how this function works and added it to my code. I just made the signup screen using what I

learned from the login screen. When I got to the welcome screen, I realized that I had to show the movies using the choice box. The biggest problem I encountered here was what would happen if the number of elements was 0 and he pressed the arrow key. I solved this problem using try/catch. Deleting and adding movies was easier than others because I was keeping movies in HashMap and doing the right thing from there. At first, I couldn't find how to control the trailer path in the Add Movie section, but after a long thought, I thought of printing an error if MediaView tried to open and failed, but this method was working very slowly. Although I searched for a better method in the future, unfortunately, I could not find a better one. For the edit users part, I had to search for a long time from google, finally, I saw that a YouTube channel was doing something similar, and I learned it and adapted it to myself and it worked without any problems. When we came to the movie screen, the main problem I encountered was that the movie did not stop when I pressed any key. When I researched this problem on the internet, I realized that there was a pause command and that I had to use it when switching between screens. Another problem was that the slider I found on the slide did not work well enough. No matter how hard I tried, I couldn't do better with that slider, so by researching on the internet, I learned that there is such a thing as a volume slider and it works better, and I applied it. Another problem I encountered on this page was that the Halls I added did not work on the hall screen. Even though I created the hall here, I could not place the seat inside the hall. The first of the problems I ran into with the Hall screen was not being able to adjust the screen size well enough. I realized that I could do this by multiplying a number with a row and a column, and I started experimenting, and when I finally found the number I wanted, this problem was solved.

Benefits of This System

Thanks to JavaFX, I can create a GUI that I can configure almost everything myself using just java without downloading anything extra. Also, I can use JavaFX without learning any extra language or tools. Due to the fact that JavaFX is an old thing, I can solve every issue I encounter on the internet. The Oracle site also has good examples that will be useful to me.

Thanks to this system, any movie theater company can directly add the trailers of current movies to their sites, add a visually supported hall the size of their own movie theater, sell and return tickets at the price they set from there, and even offer discounts to privileged members. With this system, the desired seat in the desired movie theater can be taken and returned. You can watch the trailer to find movies according to our taste, buy a privileged membership and benefit from special discounts.

Benefits of GUI

The biggest thing that the GUI added to me is that the codes I write appear graphically and the feeling of satisfaction that I can use it. The biggest feature of the GUI is that an ordinary user can easily use my applications without any coding knowledge. Another good thing is that when I run the code, it minimizes the problems (incorrect input to the command line, making a letter error) when inputting the code. Another plus is that it does not tire the user with its visual support.

Resources

- https://www.youtube.com/channel/UCJbPGzawDH1njbqV-D5HqKw = thenewboston YouTube channel for TableView

- https://stackoverflow.com/ = Stack Over Flow for timer, add listener and general problems

- http://www.java2s.com/Tutorials/Java/JavaFX/0470__JavaFX_PasswordField.htm = Java2s JavaFX tutorial for PasswordField and more

- https://docs.oracle.com/javafx/2/media/playercontrol.htm = oracle Website MediaPlayer, VolumeSlider and more

- https://piazza.com/hacettepe.edu.tr/spring2022/bbm104/resources = JavaFX Görkem Akyıldız's slides for general knowledge about JavaFX

- https://www.youtube.com/watch?v=fAQB556HtiI = for Javadoc

Appendix

- A strong password (more than 8 letters and including capital letters)

- I added this feature(bottom image), this feature allows users to take only the MediaView screen

- I added fullscreen mode on trailer in film screen