Cinema Hall Project with Python

Melike Nur DULKADİR & Uğurcan ERDOĞAN

September 6, 2020

1 Problem

In this assignment, we will get familiar with file operations, lists and dictionaries while we implement a real world cinema automation application. Furthermore, we will have a hands- on experience on how to design required data structures to store related data for halls and seats in a movie theater while we do some operations such as selling or canceling tickets.

In this assignment, we will be supposed to design and implement a console based basic movie theater automation which reads an input file (".txt" - will be given by an argument) line by line and executes each line which contains a command and its arguments -if any-. List of available commands is given in next page. In our hypothetic movie theater, arbitrary number of halls can be created with a rectangular layout having the columns named with a sequence of 0, 1, 2, 3, ... while its rows are named with the characters of English alphabet (A, B, C, ..., Z). In Figure 1 this scheme has been illustrated. As a result, number of the rows of any hall is limited up to 26. In our cinema we should apply two types of fares for each seat (i.e. student or full fare). According to these tariffs, price of student and full fare tickets will be sold as 5 and 10 Turkish Liras, respectively.

In the following sections, we will find the descriptions of the commands and their arguments. Before delving into details please note that we program must output the results of the operations to both console and a text file. The name of the output file must be "output.txt" and it must be created at the same folder where we python file exists.

2 Algorithm

Our algorithm in this project is designed with the basic **OOP** techniques of the **Python** programming language. After each created movie theater is defined as an object, these objects are made accessible by keeping them in a main dictionary, a variable type. The necessary changes were executed after the commands from the text file were checked by the relevant condition blocks, and written to the output file.

3 Commands

1. CREATEHALL hallname number_of_rowsxnumber_of_columns

2. SELLTICKET customer_name full|student hall_name seat*

3. CANCELTICKET hall_name seat*

4. BALANCE hall_name*

5. SHOWHALL hall_name*

3 Images and Excerpts

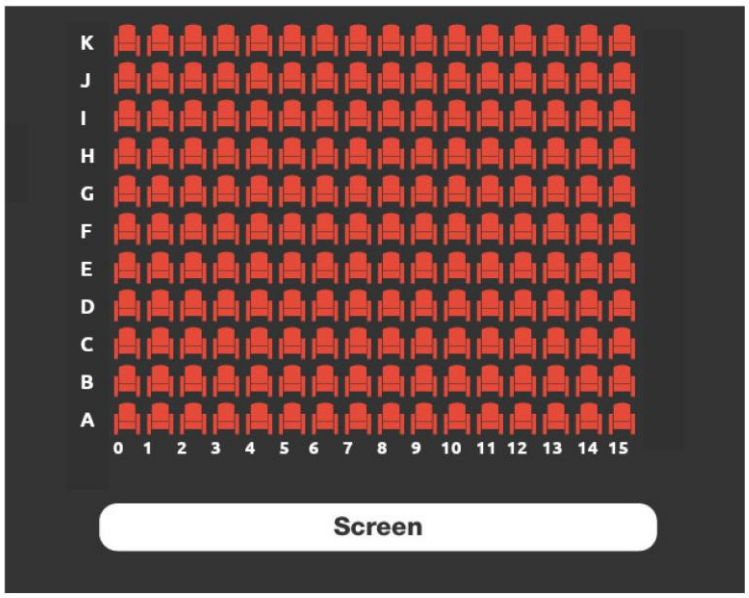

Figure 1: A sample cinema hall with its rows and columns

Commands:

```
The hall 'bluehall' having 300 seats has been created

Warning: Cannot create the hall for the second time. The cinema has already redhall

Error: Not enough parameters for creating a hall!
Error: Too much parameters for creating a hall!

SELLTICKET ahmet full bluehall B12
SELLTICKET mehmet student bluehall B12 C3 B5 D4
SELLTICKET ayse student imax C2-4 D7 A6
SELLTICKET turgut full imax C3-15
SELLTICKET didem student redhall D7-32
```

```
Success: ahmet has bought B12 at bluehall
Warning: The seat B12 cannot be sold to mehmet since it was already sold!
Success: mehmet has bought C5 at bluehall
Success: mehmet has bought B5 at bluehall
Success: mehmet has bought D4 at bluehall
Success: ayse has bought C2-4 at imax
Success: ayse has bought D7 at imax
Success: ayse has bought A6 at imax
Error: The seats C3-15 cannot be sold to turgut due some of them have already been sold!
Error: The hall 'redhall' has less column than the specified index D7-32!
```

```
CANCELTICKET bluehall B12
CANCELTICKET imax C3-4 B5
CANCELTICKET redhall E33
CANCELTICKET bluehall G12-45
```

Output:

```
Success: The seat B12 at 'bluehall' has been canceled and now ready to be sold again
Success: The seats C3-4 at 'imax' have been canceled and now ready to be sold again
Error: The seat B5 at 'imax' has already been free! Nothing to cancel
Error: The hall 'redhall' has less column than the specified index D33!
Error: The hall 'bluehall' has less column than the specified index G12-G45
```

```
Hall report of 'bluehall'
-------------------------
Sum of students = 45, Sum of full fares = 20, Overall = 65

O X  X  X  X  X  X  X  X  X  X  X  X  X  X  X
N X  X  X  X  X  X  X  X  X  X  X  X  X  X  X
M X  X  X  X  X  X  X  X  X  X  X  X  X  X  X
L X  X  X  X  S  X  X  X  X  X  X  S  X  X  X
K X  X  X  S  X  X  X  X  X  X  F  X  X  X  X
J X  X  X  X  X  X  X  X  X  X  X  X  X  X  X
I X  X  X  X  F  F  X  X  X  X  X  X  F  X  X
H X  X  X  X  X  X  X  S  S  X  X  X  F  X  X
G X  X  X  X  X  X  X  X  X  X  X  X  X  X  X
F X  X  X  X  X  X  X  X  X  X  X  X  X  X  X
E X  X  X  X  X  X  F  X  F  X  X  X  S  X  X
D X  X  X  X  X  X  X  X  X  X  X  X  X  X  X
C X  X  S  X  S  S  S  S  S  S  X  X  X  X  X
B X  X  X  S  S  X  X  X  X  X  X  X  X  X  X
A X  X  X  X  X  X  X  X  X  X  X  X  X  X  X
  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14
```

<u>This project and report was made by Melike Nur Dulkadir and Uğurcan Erdoğan.</u>