# GIT Department of Computer Engineering

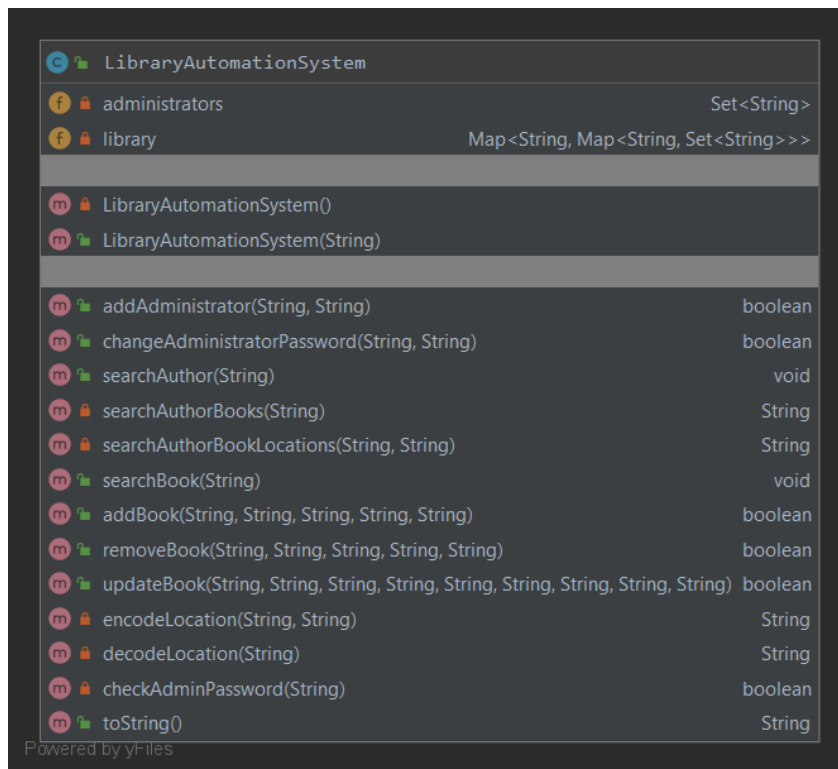## CSE 222/505 – Spring 2020

## Homework #06 Part 3 Report

**Abdullah ÇELİK**

**171044002**

## Class Diagram



## Problem Solution Approach

First of all, I created a field of set data structure type for passwords, since only the administrator can do some operations in the system. In this way, some methods will not be available to users. Secondly, different authors may have books of the same name, or multiple books on the same corridor and shelf. I designed my system accordingly. The remaining process was to correctly implement the library system with the metods offered by the HashSet and HashMap classes.

## Test Cases

| Test ID | Scenerio | Test Data | Expected Results | Actual Results | Pass/Fail |
|---------|----------|-----------|------------------|----------------|-----------|
| TEST01 | Testing constructor of LibraryAutomationSystem when password is null | password: null | Expected NoSuchElement exception | As expected | Pass |
| TEST02 | Testing constructor of LibraryAutomationSystem when password is valid | password: pswrd | Successfully created library system | As expected | Pass |
| TEST03 | addBook method called when admin password is wrong | password: wrongpassword | Did not sign in and method returned false | As expected | Pass |
| TEST04 | addBook method called when admin password is true and author, book, location aren't available | password: pswrd author: Abdullah book: Data Structure Location: Corridor 1 Shelf 1 | Succesfully added and method returned true | As expected | Pass |

| | | | | | |
|---|---|---|---|---|---|
| TEST05 | addBook method called when admin password is true and author, book are available location isn't available | password: pswrd author: Abdullah book: Data Structure Location: Corridor 1 Shelf 2 | Succesfully added and method returned true | As expected | Pass |
| TEST06 | addBook method called when admin password is true and author is available book, location aren't available | password: pswrd author: Abdullah book: System Programming Location: Corridor 2 Shelf 1 | Succesfully added and method returned true | As expected | Pass |
| TEST07 | addBook method called when admin password is true and author, book, location are available | password: pswrd author: Abdullah book: System Programming Location: Corridor 2 Shelf 1 | Did not add and method returned false | As expected | Pass |
| TEST08 | removeBook method called when admin password is wrong | password: wrongpassword | Did not sign in and method returned false | As expected | Pass |
| TEST09 | removeBook method called when admin password is true and author, book, location are available | password: pswrd author: Abdullah book: System Programming location: Corridor 2 Shelf 1 | Successfully removed from library and method returned true | As expected | Pass |
| TEST10 | removeBook method called when admin password is true and author, book are available location isn't available | password: pswrd author: Halit book: C Programming location: Corridor 4 Shelf 0 | Did not remove and method returned false | As expected | Pass |
| TEST11 | removeBook method called when admin password is true and author is available book isn't available | password: pswrd author: Halit book: wrongbook location: Corridor 4 Shelf 1 | Did not remove and method returned false | As expected | Pass |
| TEST12 | removeBook method called when admin password is true and author isn't available | password: pswrd author: wrongauthor book: C Programming location: Corridor 4 Shelf 1 | Did not remove and method returned false | As expected | Pass |
| TEST13 | updateBook method called when admin password is wrong | password: wrongpassword | Did not sign in and method returned false | As expected | Pass |

| | | | | | |
|---|---|---|---|---|---|
| TEST14 | updateBook method called when admin password is true and book that exist | password: pswrd<br>old author: Abdullah<br>old book: Data Structure<br>old location: Corridor 1 Shelf 1<br>new author: Ismail<br>new book: Data Structure 2<br>new location: Corridor 1 Shelf 5 | Successfully updated and method returned true | As expected | Pass |
| TEST15 | updateBook method called when admin password is true and book that doesn't exist | password: pswrd<br>old author: wrong<br>old book: wrong<br>old location: wrong<br>new author: Ismail<br>new book: Data Structure 3<br>new location: Corridor 1 Shelf 6 | Did not update and method returned false | As expected | Pass |
| TEST16 | searchAuthor method called when author is available. Then a book was chosen | author: Abdullah | Successfully found. Then print location of selected book | As expected | Pass |
| TEST17 | searchAuthor method called when author isn't available | author: wrong | Did not find | As expected | Pass |
| TEST18 | searchBook method called when book that exist | book: Data Structure | Successfully found and printed information | As expected | Pass |
| TEST19 | searchBook method called when book that doesn't exist | book: wrong | Did not find | As expected | Pass |

## Running and Results

```
TEST01
Constructor called when password is null
NullPointerException was caught!
Password should be passed!

TEST02
Constructor called when password is valid
Password: pswrd
Library system was created successfully.
```

TEST03
addBook method will be called with wrong admin password
Trial password: wrongpassword
Adding: false

TEST04
addBook method will be called with correct password
        author, book, location aren't available
Password: pswrd
Author: Abdullah
Book title: Data Structure
Location: Corridor 1 Shelf 1
Before adding, library:
{}
Adding: true
After adding, library:
{Abdullah={Data Structure=[c1s1]}}

TEST05
addBook method will be called with correct password
        author, book are available and location aren't available
Password: pswrd
Author: Abdullah
Book title: Data Structure
Location: Corridor 1 Shelf 2
Before adding, library:
{Abdullah={Data Structure=[c1s1]}}
Adding: true
After adding, library:
{Abdullah={Data Structure=[c1s2, c1s1]}}

TEST06
addBook method will be called with correct password
        author is avaialble and book, location aren't available
Password: pswrd
Author: Abdullah
Book title: System Programming
Location: Corridor 2 Shelf 1
Before adding, library:
{Abdullah={Data Structure=[c1s2, c1s1]}}
Adding: true
After adding, library:
{Abdullah={System Programming=[c2s1], Data Structure=[c1s2, c1s1]}}

```
TEST07
addBook method will be called with correct password
        author, book, location are available
Password: pswrd
Author: Abdullah
Book title: System Programming
Location: Corridor 2 Shelf 1
Before adding, library:
{Abdullah={System Programming=[c2s1], Data Structure=[c1s2, c1s1]}}
Adding: false
After adding, library:
{Abdullah={System Programming=[c2s1], Data Structure=[c1s2, c1s1]}}

TEST08
removeBook method will be called with wrong admin password
Trial password: wrongpassword
Removing: false

TEST09
removeBook method will be called with correct password
        author, book, location are available
Password: pswrd
Author: Abdullah
Book title: System Programming
Location: Corridor 2 Shelf 1
Before removing, library:
{Abdullah={System Programming=[c2s1], Data Structure=[c1s2, c1s1, c1s4]}}
Removing: true
After removing, library:
{Abdullah={Data Structure=[c1s2, c1s1, c1s4]}}

TEST10
removeBook method will be called with correct password
            author, book are available and location isn't available
Password: pswrd
Author: Halit
Book title: C Programming
Location: Corridor 4 Shelf 0
Before removing, library:
{Abdullah={Data Structure=[c1s2, c1s1, c1s4]}}
Removing: false
After removing, library:
{Abdullah={Data Structure=[c1s2, c1s1, c1s4]}}
```

TEST11
removeBook method will be called with correct password
        author is available and book isn't available
Password: pswrd
Author: Halit
Book title: wrongbook
Location: Corridor 4 Shelf 1
Before removing, library:
{Abdullah={Data Structure=[c1s2, c1s1, c1s4]}}
Removing: false
After removing, library:
{Abdullah={Data Structure=[c1s2, c1s1, c1s4]}}

TEST12
removeBook method will be called with correct password
        author isn't available
Password: pswrd
Author: wrongauthor
Book title: C Programming
Location: Corridor 4 Shelf 1
Before removing, library:
{Abdullah={Data Structure=[c1s2, c1s1, c1s4]}}
Removing: false
After removing, library:
{Abdullah={Data Structure=[c1s2, c1s1, c1s4]}}

TEST13
updateBook method will be called with wrong admin password
Trial password: wrongpassword
Updating: false

TEST14
updateBook method will be called with correct password
        book is available
Password : pswrd
Old book author: Abdullah
Old book title: Data Structure
Old book location: Corridor 1 Shelf 1
New book author: Ismail
New book title: Data Structure 2
New book location: Corridor 1 Shelf 5
Before updating, library:
{Abdullah={Data Structure=[c1s2, c1s1, c1s4]}}
Updating: true
After updating, library:
{Ismail={Data Structure 2=[c1s5]}, Abdullah={Data Structure=[c1s2, c1s4]}}

TEST15
updateBook method will be called with correct password
        book isn't available
Password : pswrd
Old book author: wrong
Old book title: wrong
Old book location: wrong
New book author: Celik
New book title: Data Structure 3
New book location: Corridor 1 Shelf 6
Before updating, library:
{Ismail={Data Structure 2=[c1s5]}, Abdullah={Data Structure=[c1s2, c1s4]}}
Updating: false
After updating, library:
{Ismail={Data Structure 2=[c1s5]}, Abdullah={Data Structure=[c1s2, c1s4]}}

TEST16
searchAuthor method will be called with author that exist
Author: Abdullah
Before searching, library:
{Ismail={Data Structure 2=[c1s5]}, Abdullah={Data Structure=[c1s2, c1s4]}}
[Data Structure]
Which book do you want to see?
Data Structure
[c1s2, c1s4]

TEST17
searchAuthor method will be called with author that doesn't exist
Author: wrong
Before searching, library:
{Ismail={Data Structure 2=[c1s5]}, Abdullah={Data Structure=[c1s2, c1s4]}}
Author couldn't be founded!

TEST18
searchBook method will be called with book that exist
Book title: Data Structure
Before searching, library:
{Celik={Data Structure=[c5s1]}, Ismail={Data Structure 2=[c1s5]},
        Abdullah={Data Structure=[c1s2, c1s4]}}
Title: Data Structure
Author: Celik
Location:
        Corridor: 5 Shelf: 1

Title: Data Structure
Author: Abdullah
Location:
        Corridor: 1 Shelf: 2
        Corridor: 1 Shelf: 4

TEST19
searchBook method will be called with book that doesn't exist
Book title: wrong
Before searching, library:
{Celik={Data Structure=[c5s1]}, Ismail={Data Structure 2=[c1s5]},
        Abdullah={Data Structure=[c1s2, c1s4]}}
The book couldn't be founded!