



Gym Membership Management System

The objective of this lab is to extend the Gym Membership Management System developed in Lab 4 by building a simple graphical user interface (GUI). This interface should allow users (both admins and trainers) to interact with the system more intuitively. The GUI version of the Gym Membership Management System will be built using NetBeans' GUI Builder, and the classes defined in Lab 4 will now be accessible through this user-friendly interface.

Packages and Class Structure

You will create three packages:

1. backend:

- Contains all the classes from Lab 4, such as `AdminRole`, `TrainerRole`, `Trainer`, `Member`, `Class`, `MemberClassRegistration`, and their respective databases.
- Ensure the access modifiers allow necessary access to the frontend.

2. frontend:

- Contains the GUI components.
- Each GUI class represents a window where users can perform specific operations, such as adding a new member, viewing trainer details, etc.

3. constants:

- Contains two interfaces, `FileNames.java` and `LoginCredentials.java`.
- The "FileNames" interface stores the filenames for trainers, members, classes, and registrations.
- The "LoginCredentials" interface stores the correct credentials for accessing the admin role window in the variables ADMIN_USERNAME and ADMIN_PASSWORD, and the correct credentials for accessing the trainer role window in the variables TRAINER_USERNAME and TRAINER_PASSWORD.

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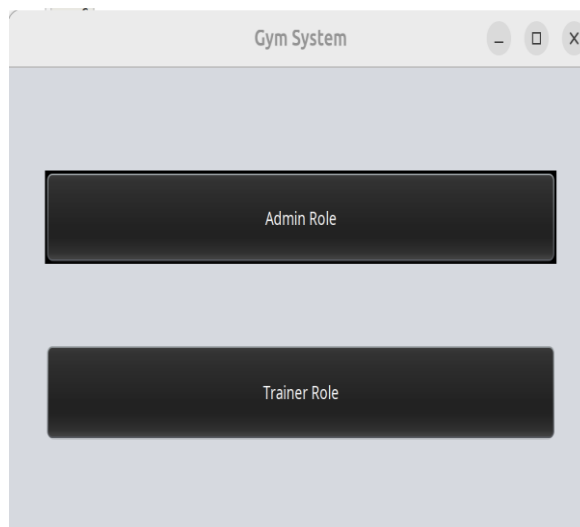
```
public interface FileNames {  
    String TRAINER_FILENAME = "Trainers.txt";  
    String MEMBER_FILENAME = "Members.txt";  
    String CLASS_FILENAME = "Class.txt";  
    String REGISTRATION_FILENAME = "Registration.txt";  
}
```

```
public interface LoginCredentials {  
    String ADMIN_USERNAME = "admin";  
    String ADMIN_PASSWORD = "12345";  
    String TRAINER_USERNAME = "trainer";  
    String TRAINER_PASSWORD = "56789";  
}
```

Task 1: Building the GUI

You are required to build the following GUI windows to support user interactions:

1. Main Window: This window contains two buttons: 'Admin Role' and 'Trainer Role.' When the user clicks either button, the system switches to the appropriate login window for that role.



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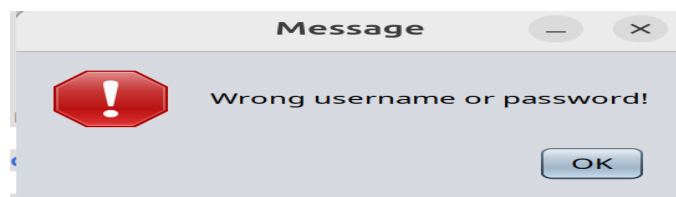


2. Admin Login Window:

- This window allows the admin to log in by providing the correct credentials (defined in the `LoginCredentials` interface).
- Upon successful login, the Admin Role window should open.



- If the user enters the wrong credentials, a pop-up warning window will appear in front of the admin login window.



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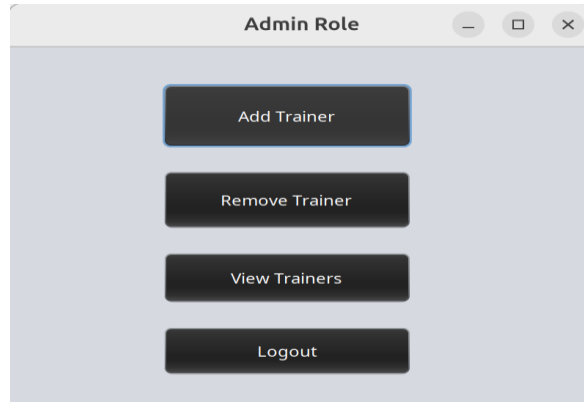
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3. Admin Role Window: After logging in, the admin can perform operations such as:
- Add Trainer
 - View Trainers
 - Remove Trainer
 - Logout (which saves data to the file and returns to the main window)



4. Add Trainer Window: This window allows the admin to input a new trainer's details (ID, name, email, specialty, and phone number) and add them to the system.

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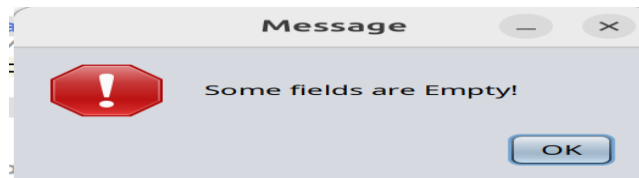
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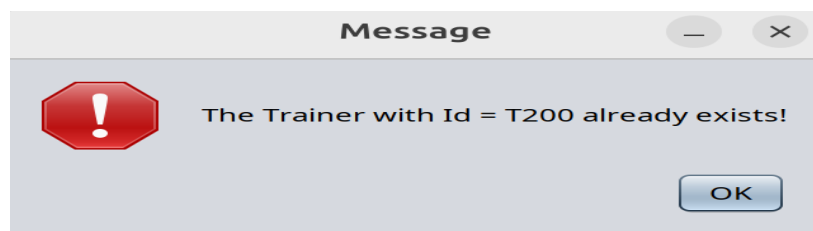
Eng. Mahmoud Ramzy



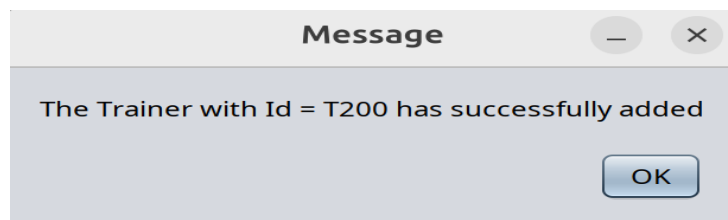
- If any of fields are empty after the user presses Add:



- If the user already exists:



- After adding user successfully:



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5. View Trainers Window: Displays a table showing all trainers in the system.

View Trainers				
Id	Name	Email	Speciality	Phone Number
T1200	Ahmed	ahmed_1999@gmail.com	Yoga	01245434104
T1300	Mohammed	mohammed_1997@gmai...	Boxing	01255434714
T1400	Hany	hany_1996@gmail.com	Zumba	01545414109
T1500	Omar	omar_1995@gmail.com	Spinning	01246436102

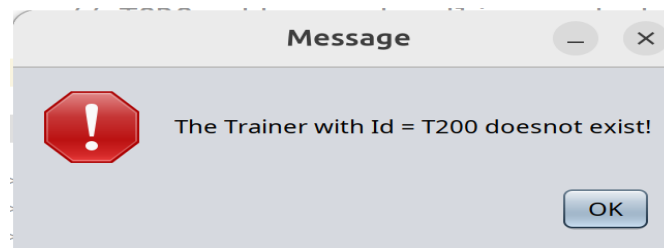
6. Remove Trainer Window: Allows the Admin to remove a trainer by entering the trainer's ID.

Remove Trainer

Trainer Id

Remove

- If the trainer id doesn't exist in database:



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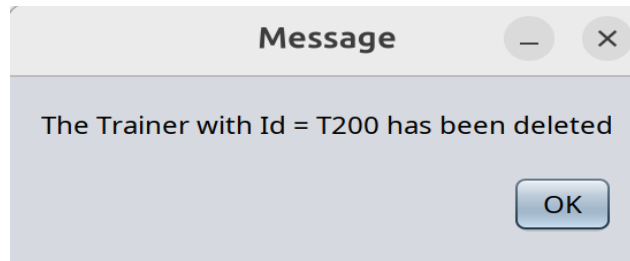
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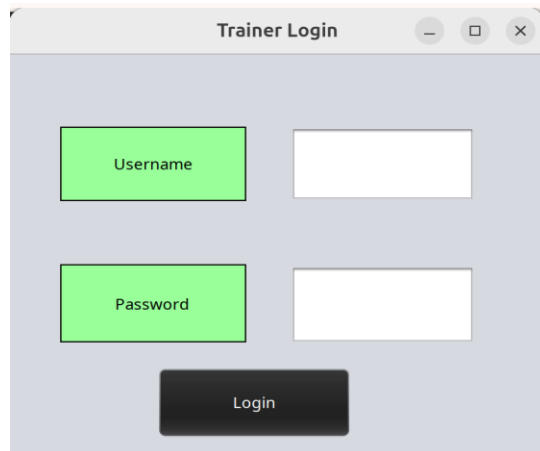
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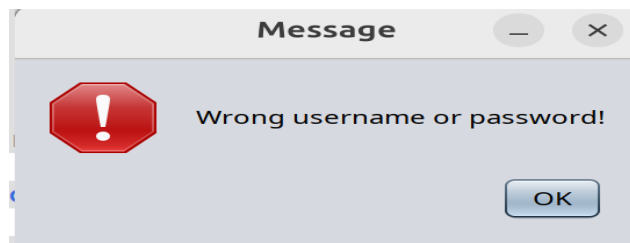
- If the trainer exists the delete it and show :



7. Trainer Login Window: Like the Admin login, the Trainer provides their credentials to access their role.



- If wrong username or password:



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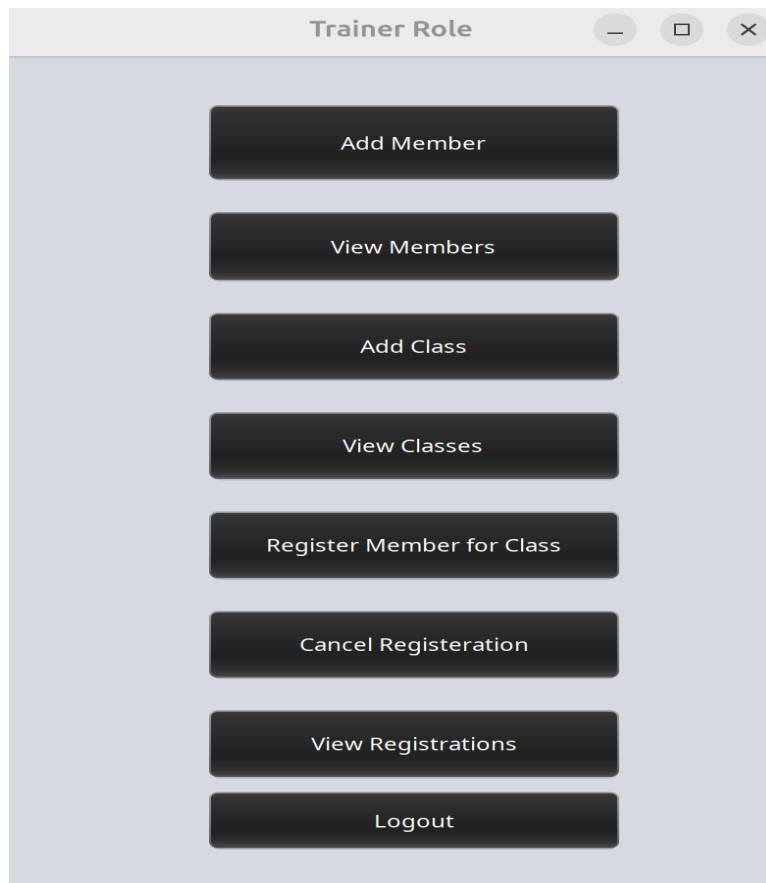
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8. Trainer Role Window: Once logged in, the Trainer can:

- Add Member
- View Members
- Add Class
- View Classes
- Register Member for Class
- Cancel Registration
- View Registrations
- Logout (which saves all updated data to the file)



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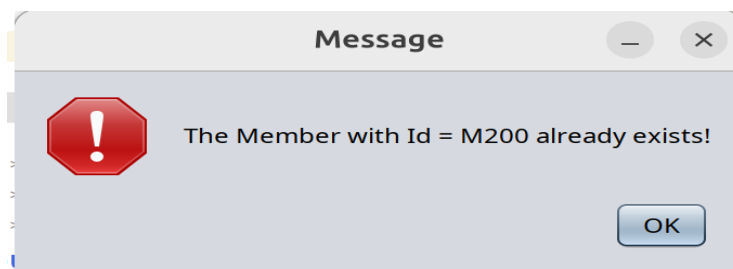
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-
9. Add Member Window: The Trainer can add a new gym member to the system by entering their details.

A screenshot of a software window titled "Add Member". It contains six input fields with labels: "Id", "Name", "Email", "Membership Type", "Phone Number", and "Status". Each label is in a green box. Below the input fields is a black button labeled "Add".

- If the member id already exists in database:



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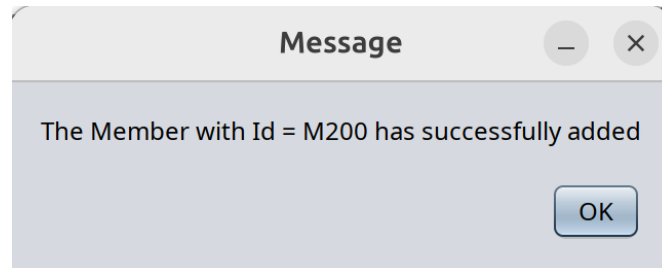
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- After adding member to database:



10. View Members Window: Displays a table of all registered gym members (ID, name, membership type, email, phone number, and status).

View Members					
Id	Name	Email	Membership Type	Phone Number	Status
M1200	Ahmed	ahmed_1999@gmail.com	Yearly	01245434104	Active
M1300	Mohammed	mohammed_1997@gm...	Monthly	01255434714	Expired
M1400	Hany	hany_1996@gmail.com	Yearly	01545414109	Active
M1500	Omar	omar_1995@gmail.com	Premium	01246436102	Expired

11. Add Class Window: Allows the Trainer to add a new class to the system.

Add Class

class Id

class Name

Trainer Id

Duration

Max Participants

Add

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12. View Classes Window: Displays a table of all classes added (ID, name, trainer ID, duration, and available seats).

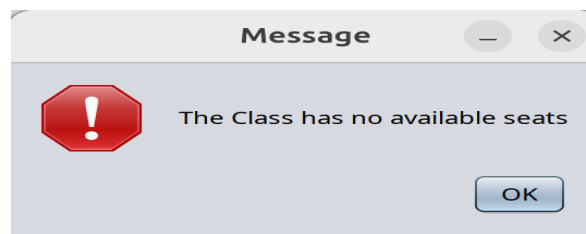
A screenshot of a software window titled "View Classes". It contains a table with the following data:

Class Id	Class Name	Trainer Id	Duration	Max Participants
C1200	Yoga	T1200	60	30
C1300	Boxing	T1300	90	50
C1400	Zumba	T1400	60	40
C1500	Spinning	T1500	120	20

13. Register Member for Class Window: Allows the Trainer to register a member for a class if there are available seats.

A screenshot of a software window titled "Register Member". It contains three input fields with green labels: "Member Id", "Class Id", and "Registration Date". Below these fields is a black button labeled "Register".

- If the class is full:

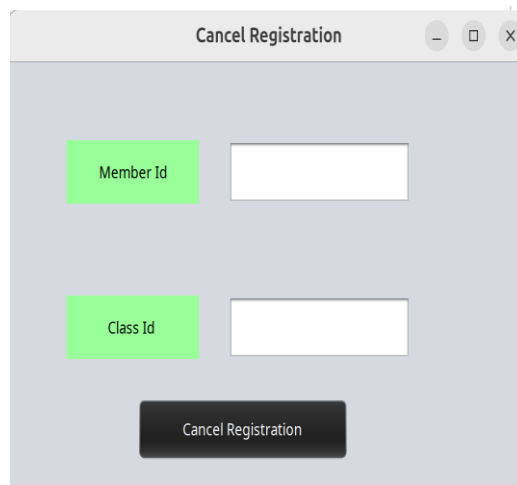




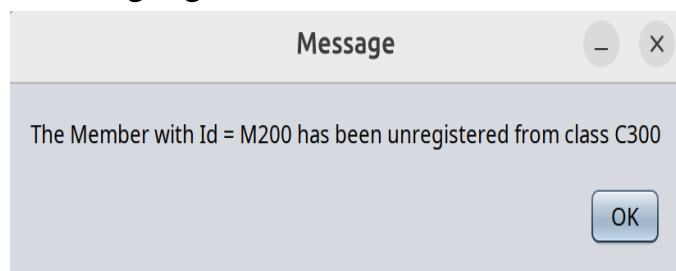
- After registering member to the class:



14. Cancel Registration Window: Allows the Trainer to cancel a member's registration for a class and updates the available seats.



- After cancelling registration of member:



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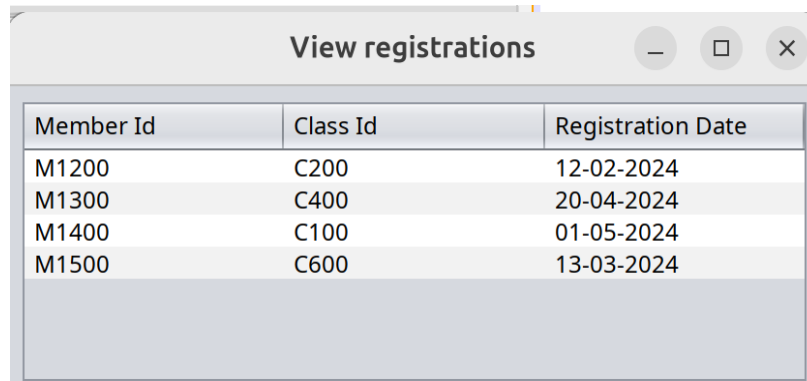
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15. View Registrations Window: Displays a table of all registrations made for members to classes (member ID, class ID, status, and registration date).



Member Id	Class Id	Registration Date
M1200	C200	12-02-2024
M1300	C400	20-04-2024
M1400	C100	01-05-2024
M1500	C600	13-03-2024

Task 2: File Handling

- All trainer, member, class, and registration data should be saved to and read from files (`Trainers.txt`, `Members.txt`, `Class.txt`, `Registration.txt`).
- Use the `FileNames` interface to reference these file names.

Task 3: Implementing Basic Validation

Ensure that the following validations are implemented:

- Only unique trainer IDs can be added.
- Members must be registered with valid details (all fields filled).
- Class registration should only occur if there are available seats.
- Admin and Trainer login must validate credentials.

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Required:

- You are required to solve the above question and deliver a zipped file containing the .java files.
- The deadline for delivery is **Friday, November 1, 2024, at 11:00 PM.**
- A discussion is made with you at your lab time next week on what you have delivered.

Policy:

- You should write the program using java language.
- You must work in the same group as lab4.
- Your code should be clean, readable, and commented on.
- Delivering a copy will be severely penalized for both parties, so delivering nothing is so much better than delivering a copy.
- No late submission is allowed.

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