

Project on School Management System

Department of Computer Science and Engineering
Object-Oriented Programming Lab
CSE 2112
University of Dhaka

Authors:

H.M. Mehedi Hasan (Roll 13)
Md.Abu Bakar Siddique (Roll 47)

Team Contribution

H.M. Mehedi Hasan(13)

- Login authentication and registration.
- Database handling.
- Payment system, fee setup and receipt generation.
- User management (create, update, delete).
- Student Functionalities.
- Real-time chat system.

MD. Abu Bakar Siddique(47)

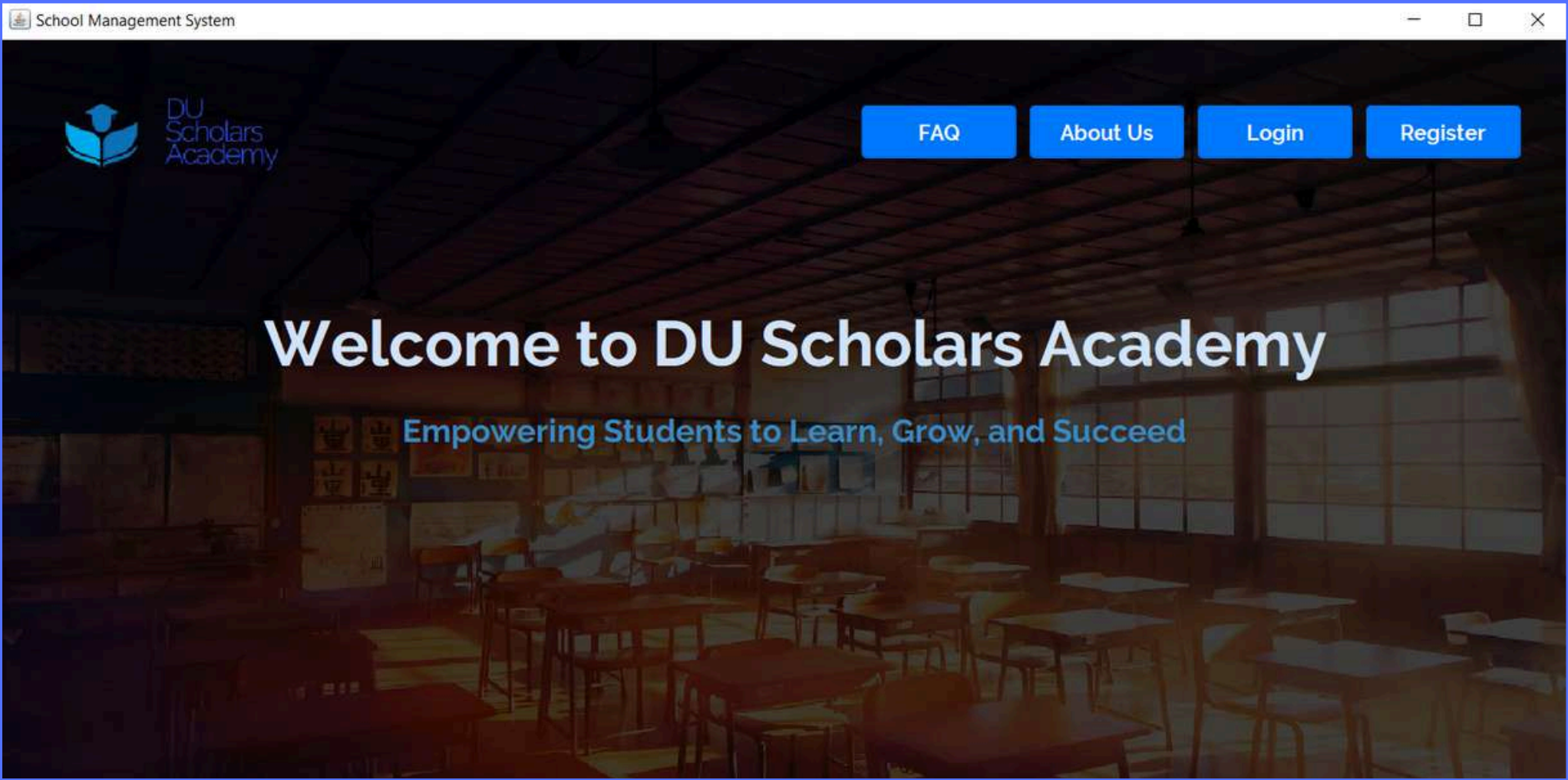
- Landing page
- FAQ Chatbot section.
- Admin functionalities.
- Teacher functionalities.
- Frontend(UI/UX, logo)

Introduction

The **School Management System** is designed to assist **administrators, teachers, and students** in managing various school operations efficiently. It provides **dashboards for each role**, enabling them to **handle student records, attendance, fee payments, study materials, and real-time communication**. By integrating these features into one platform, **our system simplifies school administration and enhances academic interaction.**

Tools

- IDE: NetBeans
- Database: MySQL
- GUI(Graphical User Interface): Java Swing
- Programming Language: Java
- Testing Method: Manual testing



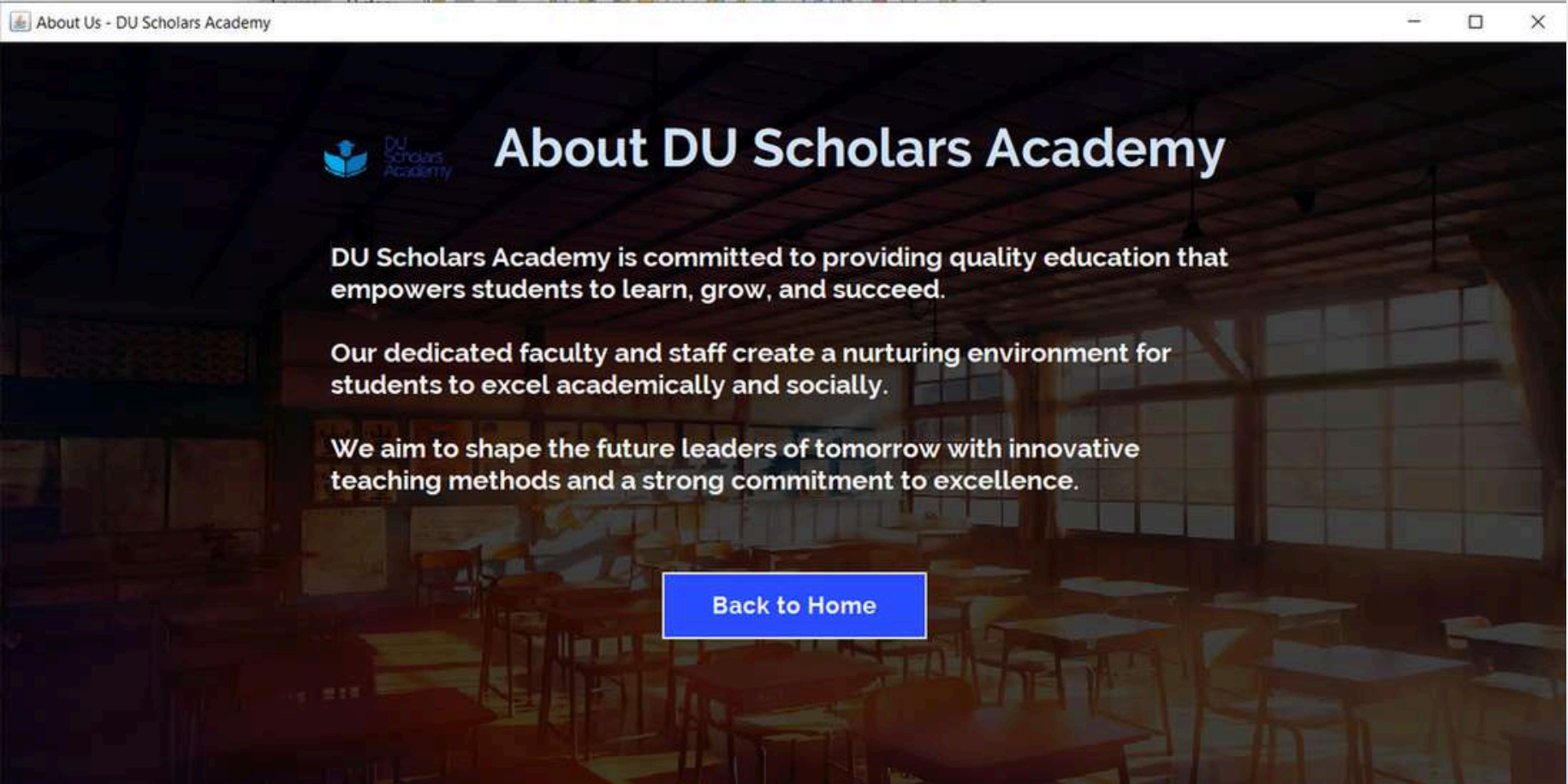
Homepage



Logo

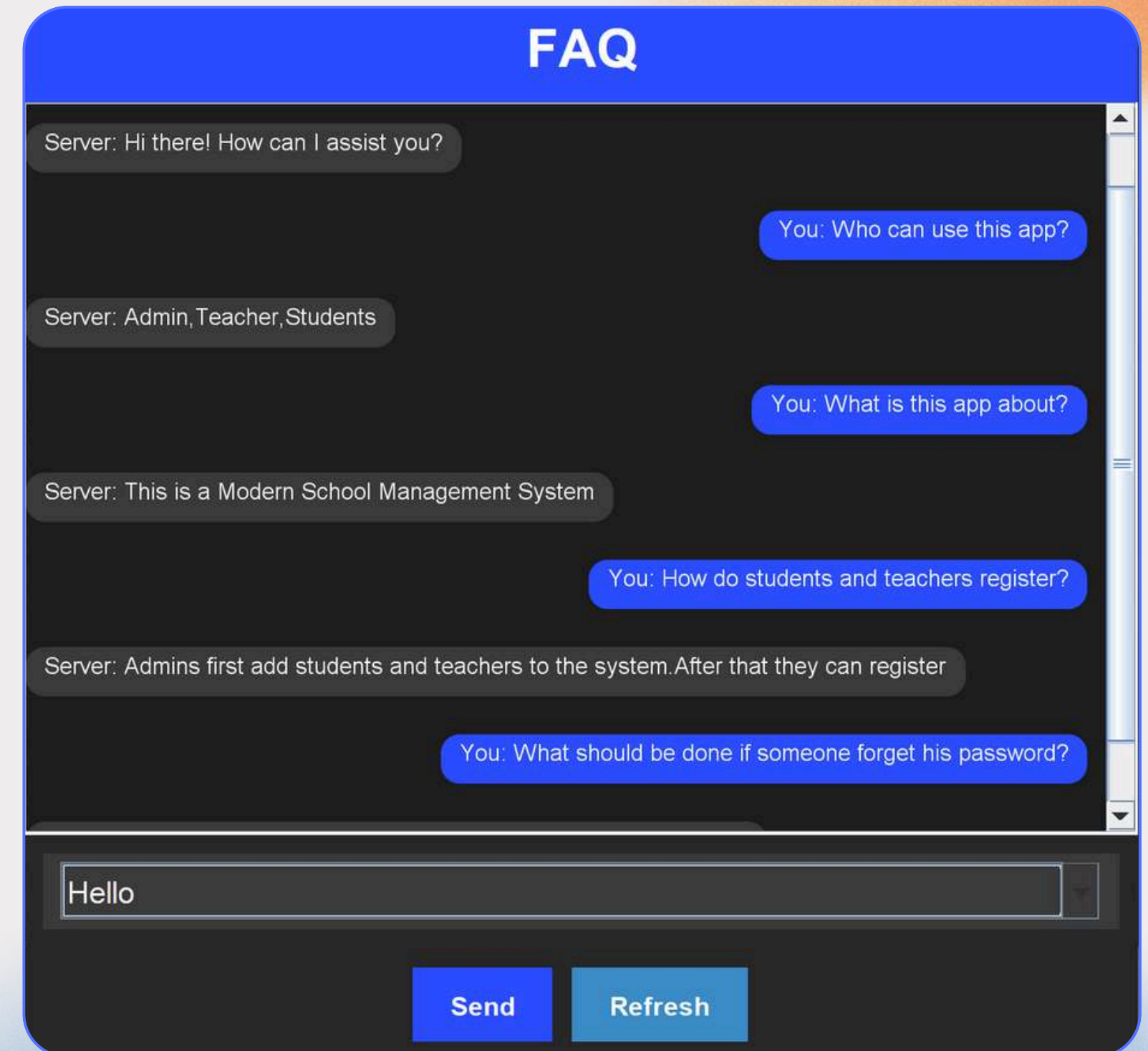
User Interface

About Us



FAQ Section (Socket-Based Chatbot)

- Built using **socket programming** for **real-time question handling**.
- Provides **instant responses** to **common questions** related to application, registration, login etc.



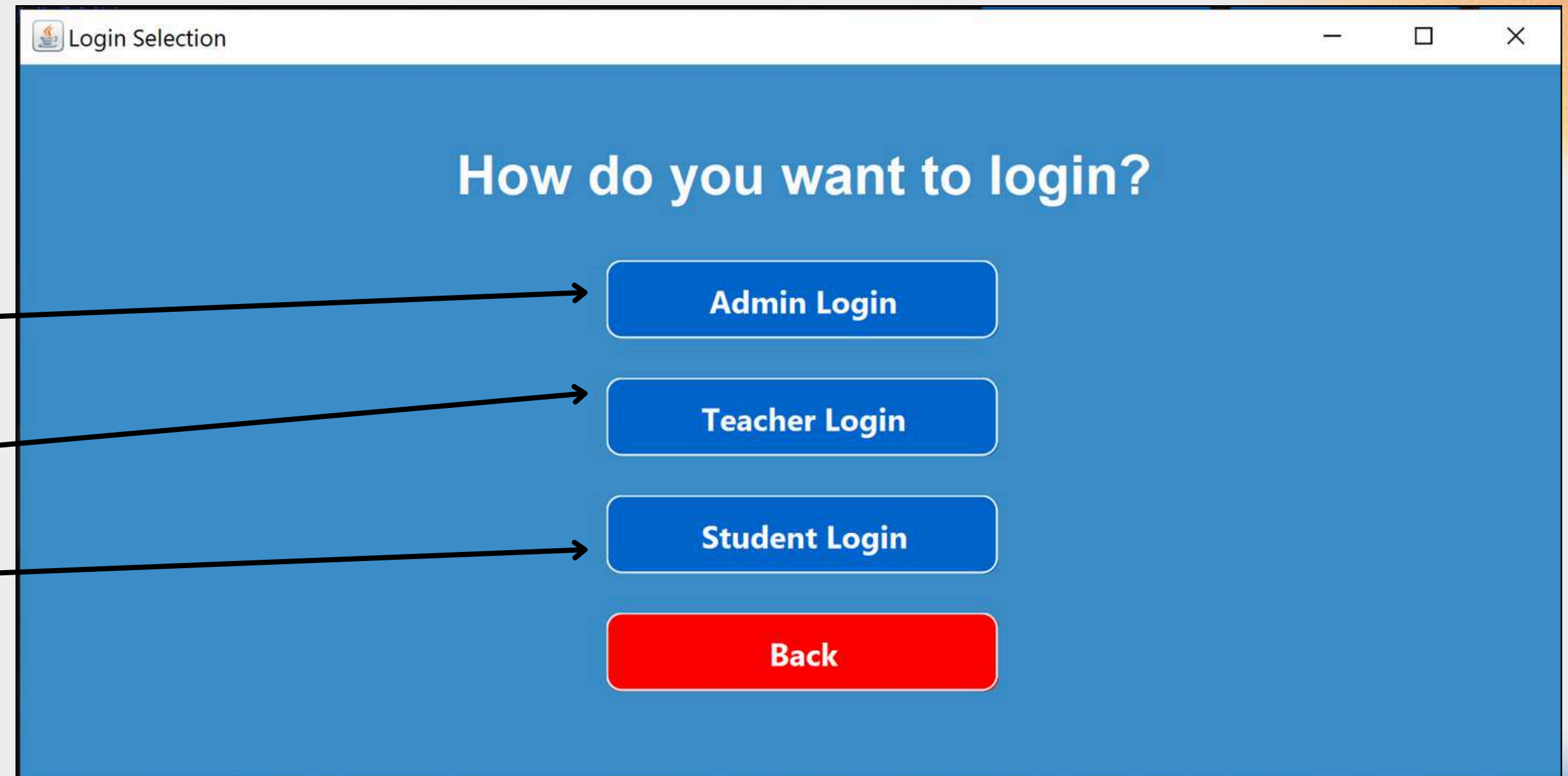
Features:

Roles:

Admin

Teacher

Student



Admin Section

Admin log in using username and password for authentication.

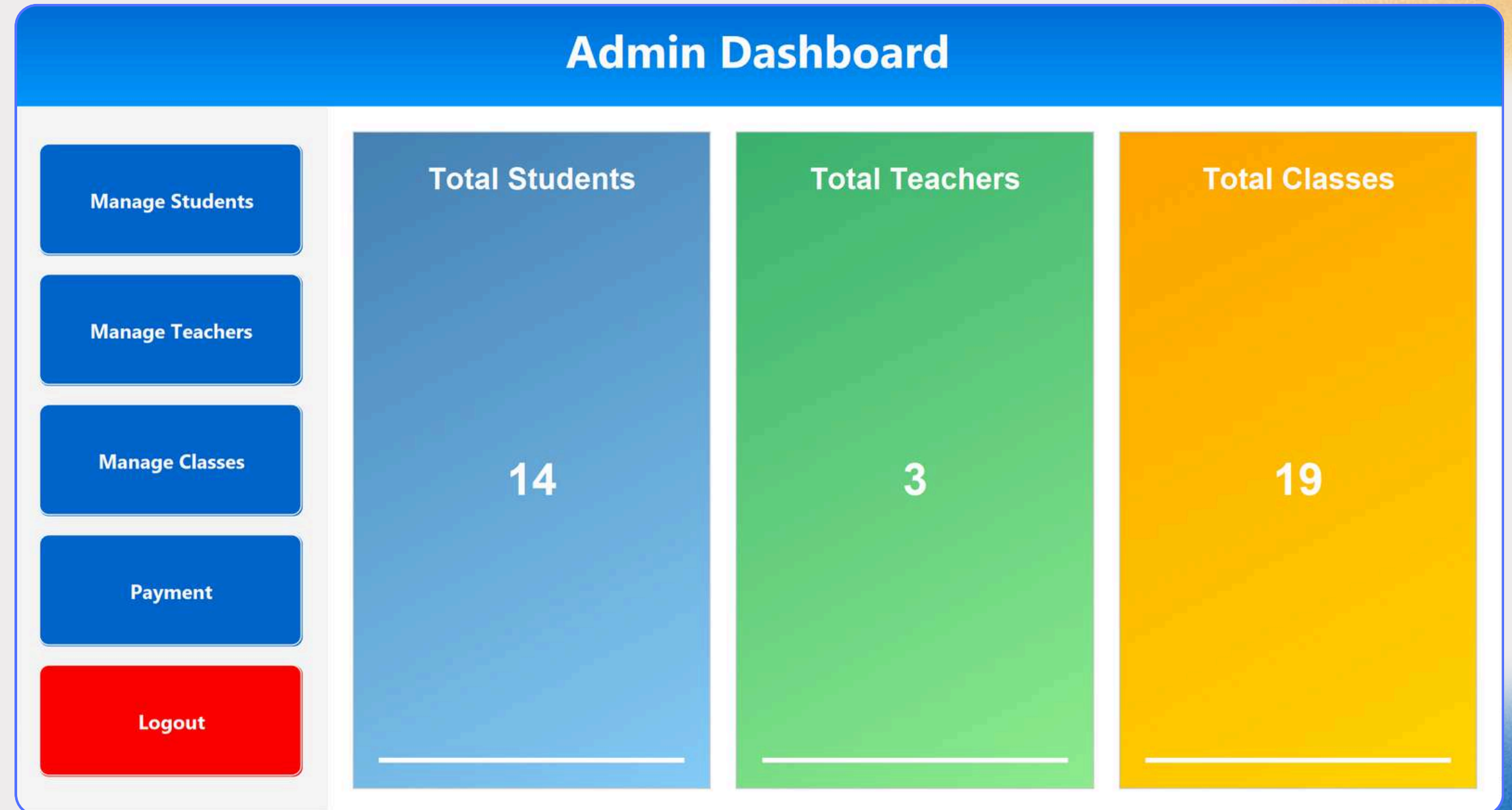
Login as admin

Username:

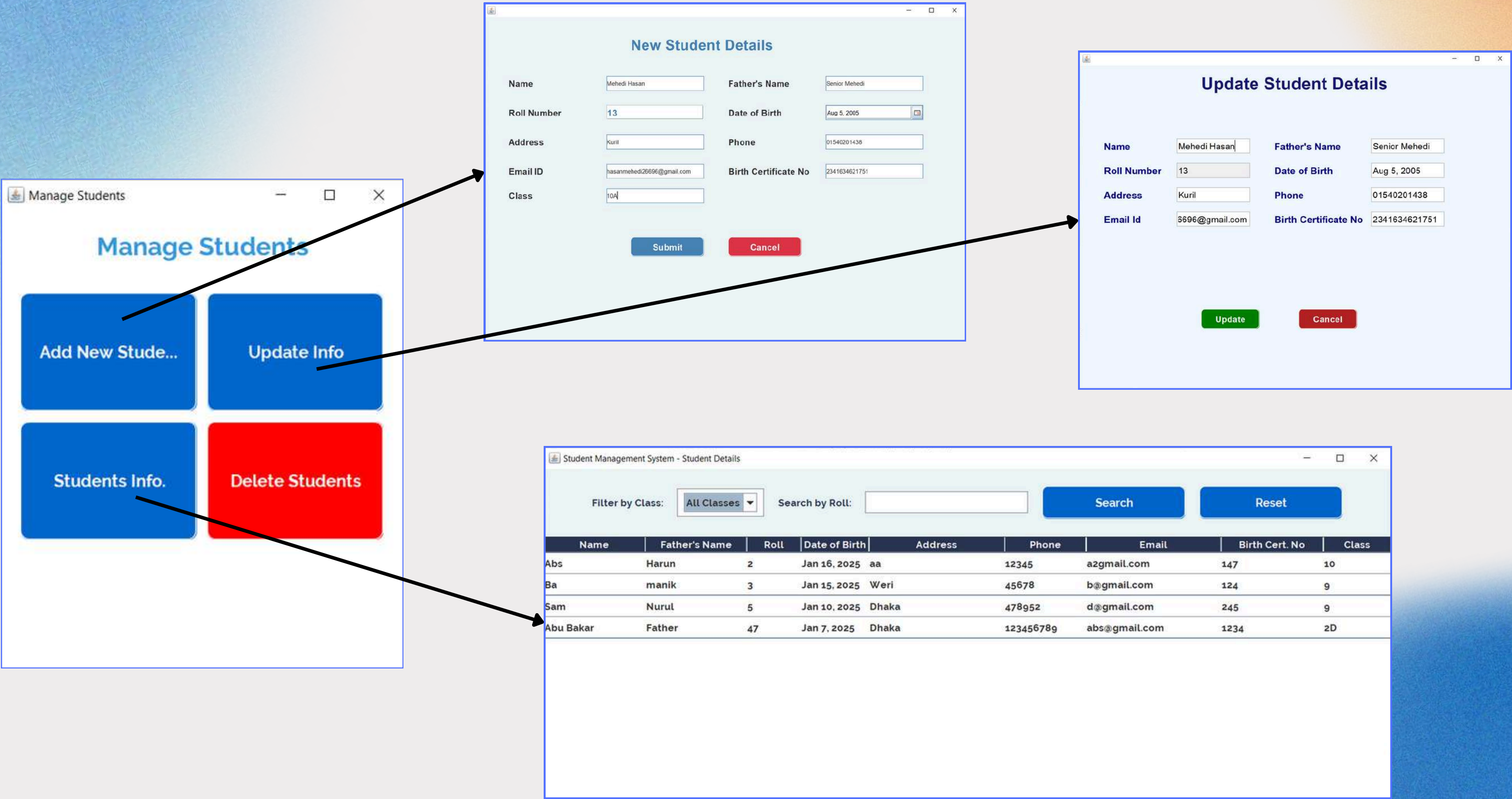
Password:

Admin Dashboard

Once logged in, Admin can manage students, teachers, classes, and payments.



Admin Section - Managing Students



Admin Section - Managing Teachers

Manage Teachers

Manage Teachers

Add New Teach...

Update Info

Teachers Info.

Delete Teachers

New Teacher Details

Name

Hasan Mahmud

Father's Name

Senior Hasan

ID Number

11

Date of Birth

Jan 13, 1997

Address

Banani

Phone

01319926696

Email ID

hasan@gmail.com

NID No

3123516237

Submit

Cancel

Update Teacher Details

Name

Hasan Mahmud

Father's Name

Senior Hasan

ID Number

11

Date of Birth

Jan 13, 1997

Address

Banani

Phone

01319926696

Email Id

asan@gmail.com

NID Card No

3123516237

Update

Cancel

Teacher Management System - Teacher Details

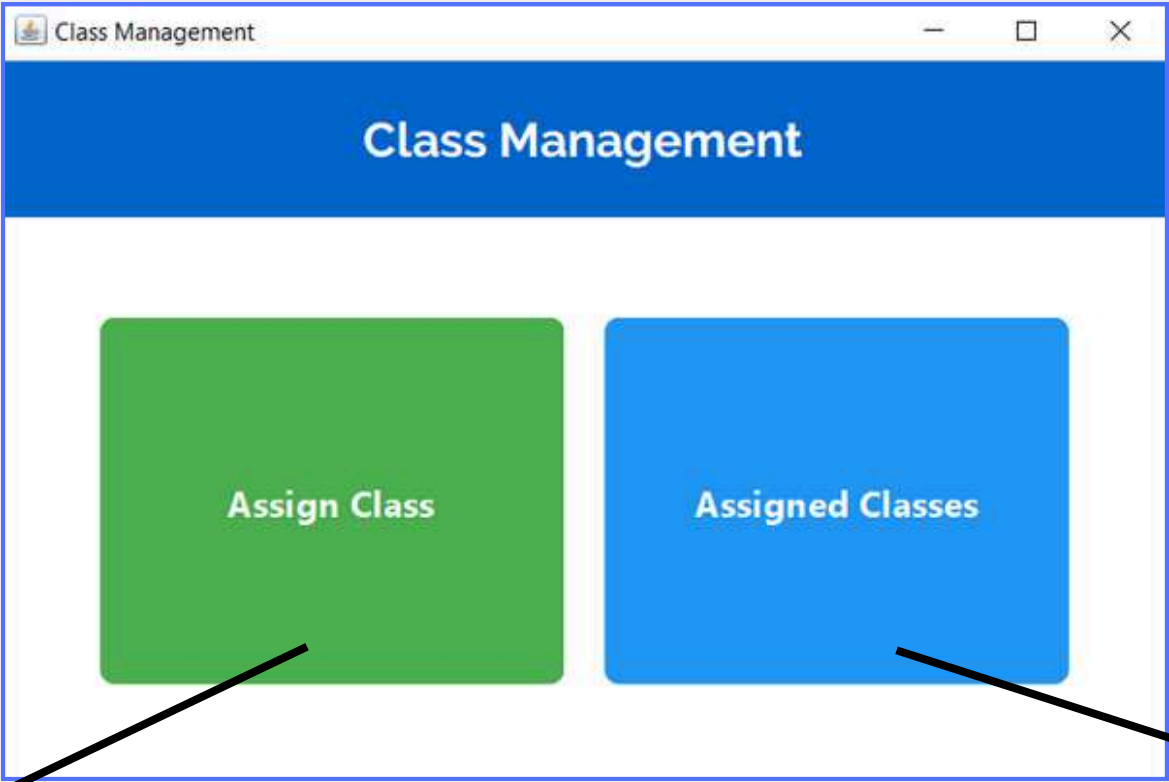
Search Teacher by ID:

Search

Reset

Name	Father's Name	ID	Date of Birth	Address	Phone	Email	NID
Hasan Mahmud	Senior Hasan	11	Jan 13, 1997	Banani	01319926696	hasan@gmail.com	3123516237
Tuhin	Senior	45	Jan 21, 2025	Madaripur	31547265412	shdjfhsj@gmail.com	2141231652
Mr.David	Senior David	11114280	Jan 15, 2025	Gulshan	2315341526	xyz@gmail.com	412351763
Allan	Senior Allan	11117584	Jan 7, 2025	Gulshan	215624352	fhsja@gmail.com	3421563416253

Admin Section - Managing Classes



Teacher Assignment System

Teachers

- Hasan Mahmud - 11
- Tuhin - 45
- Mr.David - 11114280
- Allan - 11117584

Assignment Details

Assigned Subjects

<input type="checkbox"/> Chemistry	Class:	10A	Time:	08:00 AM	Room:	Room 101
<input checked="" type="checkbox"/> Mathematics	Class:	10A	Time:	02:30 PM	Room:	Room 202
<input checked="" type="checkbox"/> Biology	Class:	9A	Time:	01:00 PM	Room:	Lab 1
<input type="checkbox"/> Physics	Class:	10A	Time:	08:00 AM	Room:	Room 101

Save Changes

Teacher Class Assignment System

Teacher Class Assignments

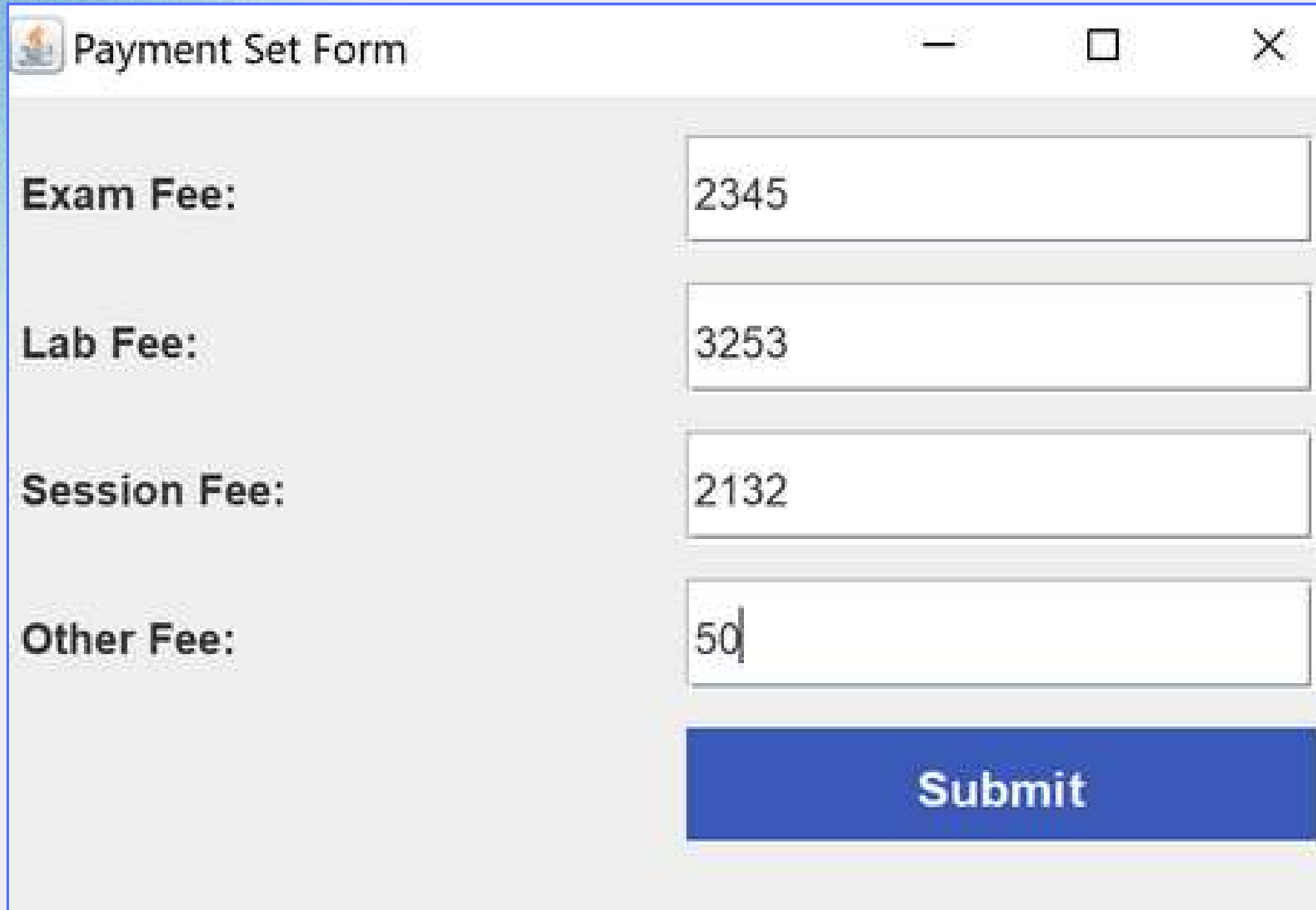
Enter Teacher ID: **Search**

Assigned Classes

Class	Subject	Time	Classroom
9A	Biology	01:00 PM	Lab 1
10A	Mathematics	02:30 PM	Room 202

Back to Dashboard

Admin Section - Setting Payment



A screenshot of a web application window titled "Payment Set Form". The window has a standard title bar with a minimize button, a maximize button, and a close button. The form contains four input fields, each with a label to its left: "Exam Fee:" with the value "2345", "Lab Fee:" with the value "3253", "Session Fee:" with the value "2132", and "Other Fee:" with the value "50". At the bottom of the form is a blue button with the text "Submit".

Fee Type	Amount
Exam Fee:	2345
Lab Fee:	3253
Session Fee:	2132
Other Fee:	50

Submit


Admin can set and update fee structures for students.

Teacher Section - Register

- Admin will at first add teachers to the system with their details.
- Teachers can register by providing personal details (name, email, ID, etc.).
- Create username & password

Welcome to Registration Portal

Full Name:	<input type="text" value="Aurnob The Ahil"/>
Roll/ID:	<input type="text" value="46"/>
Date of Birth:	<input type="text" value="Jan 2, 2025"/>
Address:	<input type="text" value="Village"/>
Phone:	<input type="text" value="01987456"/>
Email:	<input type="text" value="ahil@gmail.com"/>
Birth Cert./NID:	<input type="text" value="456"/>
Username:	<input type="text" value="ahil"/>
Password:	<input type="password" value="...."/>



Teacher Section - Login

After registration, teachers can log in to access their dashboard.

Login as teacher

Username:

Password:

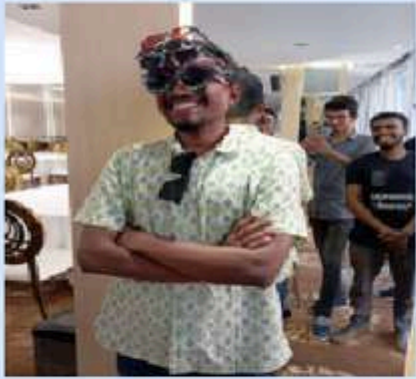
LoginCancel

RegisterForget Password

Teacher Section - Dashboard

- Teacher can submit attendance, view classes, upload materials.
- Update profile information as needed.
- Use real-time chat to communicate with students.

Teacher Dashboard



Name: Aurnob The Ahil
ID: 46
Email: ahil@gmail.com
Date of Birth: Jan 2, 2025
Phone: 01987456
Address: Vilage

[Submit Attendance](#)
[View My Classes](#)
[Upload Materials](#)
[Update Profile](#)
[Chat Room](#)
[Logout](#)

Teacher Section - Dashboard Features

Submit Attendance

Class: 10A

Subject: Math

Date: Jan 12, 2025

Fetch Students

Mark Attendance

Roll Number	Student Name	Attendance (P/A)
1	Dale Steyn	A
13	Mehedi Hasan	P
10101	Alice Johnson	P
10102	Bob Smith	A
10103	Isla Brown	P
20225395	Mehedi Hasan	P

Submit Attendance

Submit attendance

Teacher Class Assignment System

Teacher Class Assignments

Assigned Classes

Class	Subject	Time	Classroom
9A	Biology	01:00 PM	Lab 1
10A	Mathematics	02:30 PM	Room 202

Back to Dashboard

View assigned classes

Teacher Section - Dashboard Features

Update Teacher Details

Name	<input type="text" value="Hasan Mahmud"/>	Father's Name	<input type="text" value="Senior Hasan"/>
ID Number	<input type="text" value="11"/>	Date of Birth	<input type="text" value="Jan 13, 1997"/>
Address	<input type="text" value="Banani"/>	Phone	<input type="text" value="01319926696"/>
Email Id	<input type="text" value="asan@gmail.com"/>	NID Card No	<input type="text" value="3123516237"/>

UpdateCancel

Update details

Upload Study Materials

Material Details

Class:	<input type="text" value="10A"/>
Subject:	<input type="text" value="Mathematics"/>
File Type:	<input type="text" value="PDF"/>
Drive Link:	<input type="text" value="https://drive.google.com/file/d/1N6YQIhgy4X5wHGFOaZxiCyS0AbICyBaM/view?usp=sharing"/>
Description:	<input type="text" value="Chapter-8 Circle MCQ"/>

Upload Material

Uploaded Materials

[Wed Jan 29 10:22:00 BDT 2025] Mathematics - PDF
<https://drive.google.com/file/d/1N6YQIhgy4X5wHGFOaZxiCyS0AbICyBaM/view?usp=sharing>


Upload study materials

Student Section - Register

- Admin will at first add students to the system with their details.
- Students can register by providing personal details (name, email, ID, etc.).
- Create username & password

Welcome to Registration Portal

Full Name:	<input type="text" value="Mehedi"/>
Roll/ID:	<input type="text" value="13"/>
Date of Birth:	<input type="text" value="Jan 1, 2025"/>
Address:	<input type="text" value="Kuril"/>
Phone:	<input type="text" value="123456789"/>
Email:	<input type="text" value="mehedi@gmail.com"/>
Birth Cert./NID:	<input type="text" value="789"/>
Username:	<input type="text" value="mehedi"/>
Password:	<input type="password" value="*****"/>



Student Section - Login

After registration, students can log in to access their dashboard.

Login as student

Username:

Password:

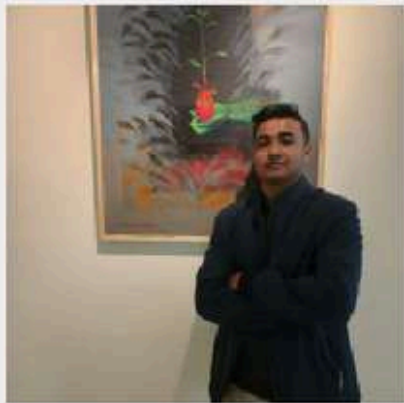
LoginCancel

RegisterForget Password

Student Section - Dashboard

- Students can access attendance records, and study materials.
- View fee payment details and receipts.
- Update profile information as needed.
- Use real-time chat to communicate with teachers.

Student Dashboard



Name: Mehedi Hasan
Roll:13
Email: mm@gmail.com
Date of Birth: Jan 1, 2025
Phone No: 0123456789
Address: Dhaka

[View Attendance](#)[Payment](#)[Study Materials](#)[Update Profile](#)[Chat Room](#)[Logout](#)

Student Section - Dashboard Features

Student Attendance Checker

Enter Student Details

Student Roll Number:

Attendance Results

Subject: Math
Total Classes: 3
Present Classes: 3
Attendance Percentage: 100.00%

Subject: Chemistry
Total Classes: 2
Present Classes: 1
Attendance Percentage: 50.00%

Subject: Physics
Total Classes: 2
Present Classes: 1
Attendance Percentage: 50.00%

Subject: Biology
Total Classes: 1
Present Classes: 1
Attendance Percentage: 100.00%

Check Attendance

Student Study Materials

Select Class:

Select Subject:

Description	Link	Type
Chapter 1 MCQ	https://drive.google.com/drive/u/0/folders/1cOdLn_Rb_9VnrD44BC02J_ya_8T_kAxq	PDF
Chapter-8 Circle MCQ	https://drive.google.com/file/d/1N6YQlhqy4X5wHGFOaZxiCyS0AbICyBaM/view?usp=sharing	PDF

Check Study Materials

Student Fee Payment

Student Name:

Roll Number:

Class:

Total Due Amount:

Given Amount:

Remaining Amount:

Payment Fee

Student Section - Dashboard Features

The image shows two screenshots of a web application. The left screenshot is a form titled 'Student Fee Payment' with a light blue background. It contains input fields for 'Student Name' (Mehedi Hasan), 'Roll Number' (13), 'Class' (10A), 'Total Due Amount' (80.00), 'Given Amount' (7700), and 'Remaining Amount' (80.00). At the bottom are three blue buttons: 'Calculate', 'Pay', and 'Print Receipt'. An arrow points from the 'Print Receipt' button to the right screenshot. The right screenshot shows a PDF receipt titled 'Fee Payment Receipt' with the same student information and payment details. The receipt is displayed in a dark-themed PDF viewer interface with a sidebar on the left and a top navigation bar.

Field	Value
Student Name	Mehedi Hasan
Roll Number	13
Class	10A
Total Due Amount	80.00
Given Amount	7700
Remaining Amount	80.00

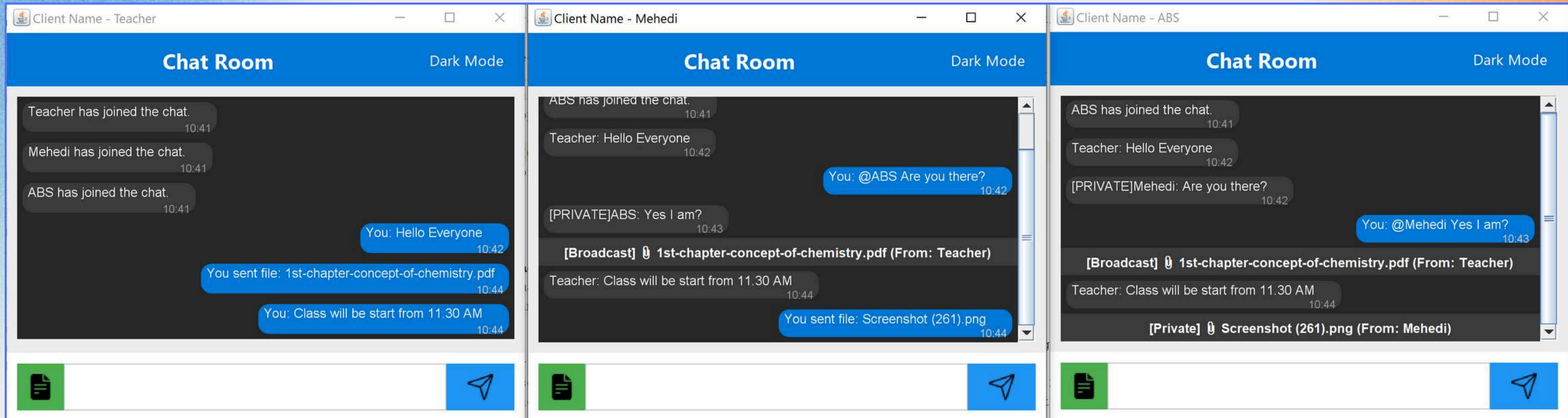
Fee Payment Receipt

Student Name: Mehedi Hasan
Roll Number: 20225638
Class: 9A
Total Due Amount: 58023.00
Given Amount: 1321.00
Remaining Amount: 58023.00

Thank you for your payment!

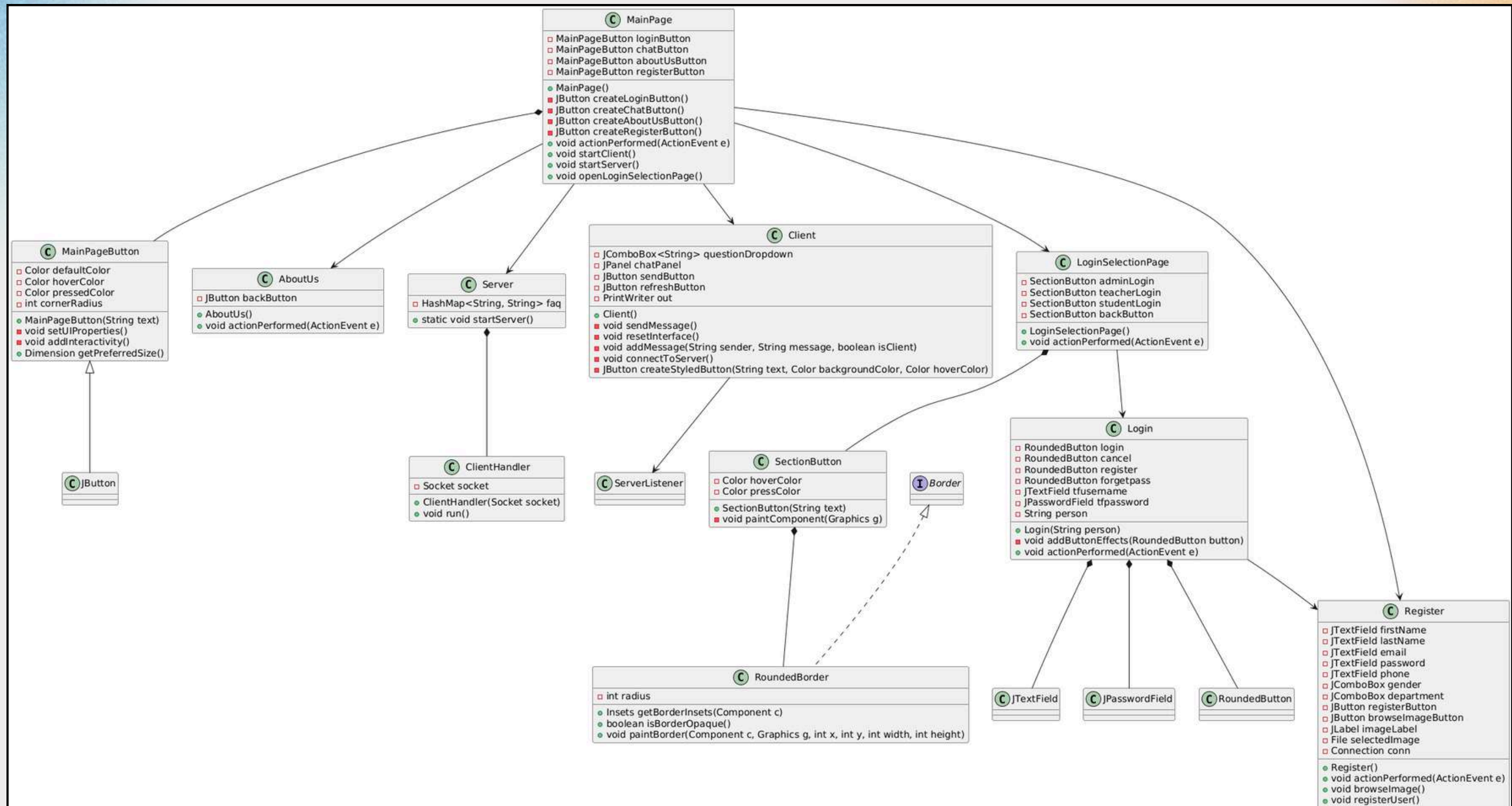
- Automatically **calculates total fees, including tuition and additional charges.**
- Displays due amount, paid amount, and pending balance.
- Generates and **provides an option to download a digital receipt after payment confirmation.**

Teacher-Student Chat & File Sharing

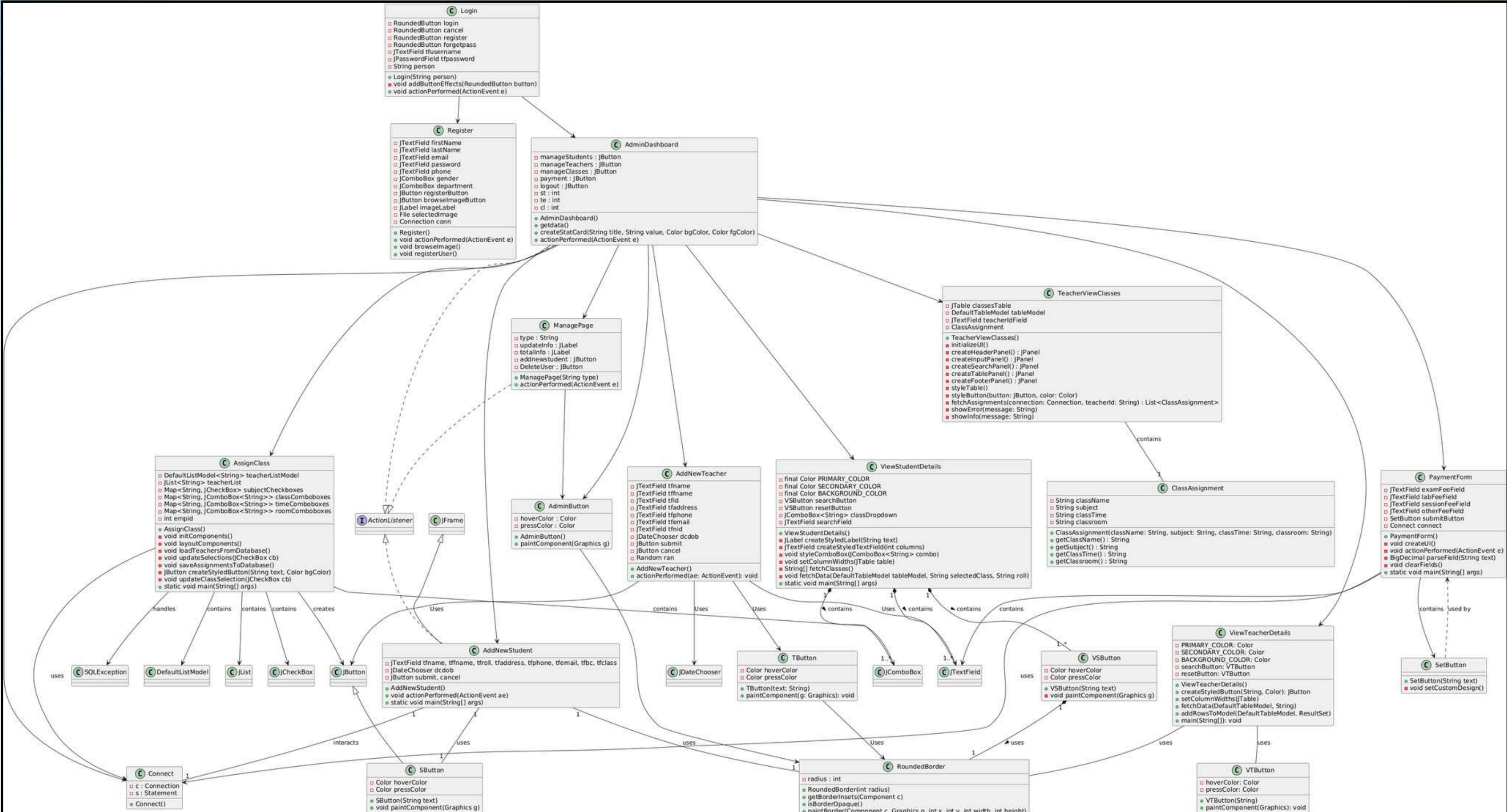


- **Real-time chat feature** for direct communication between **teachers and students**.
- Supports **uploading and sharing of PDFs, images, and drive links** for study materials.
- Teachers can **share assignments, notes, and important announcements**.
- Students can **submit queries, request clarifications, and receive guidance**.

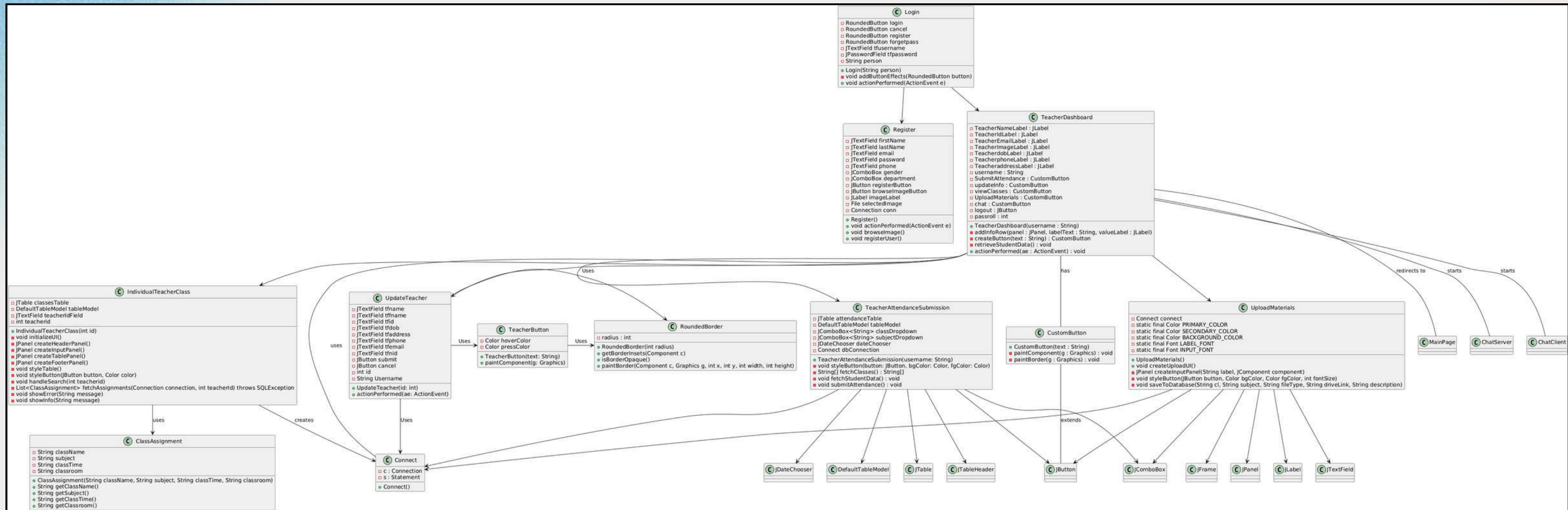
UML Diagram - MainPage



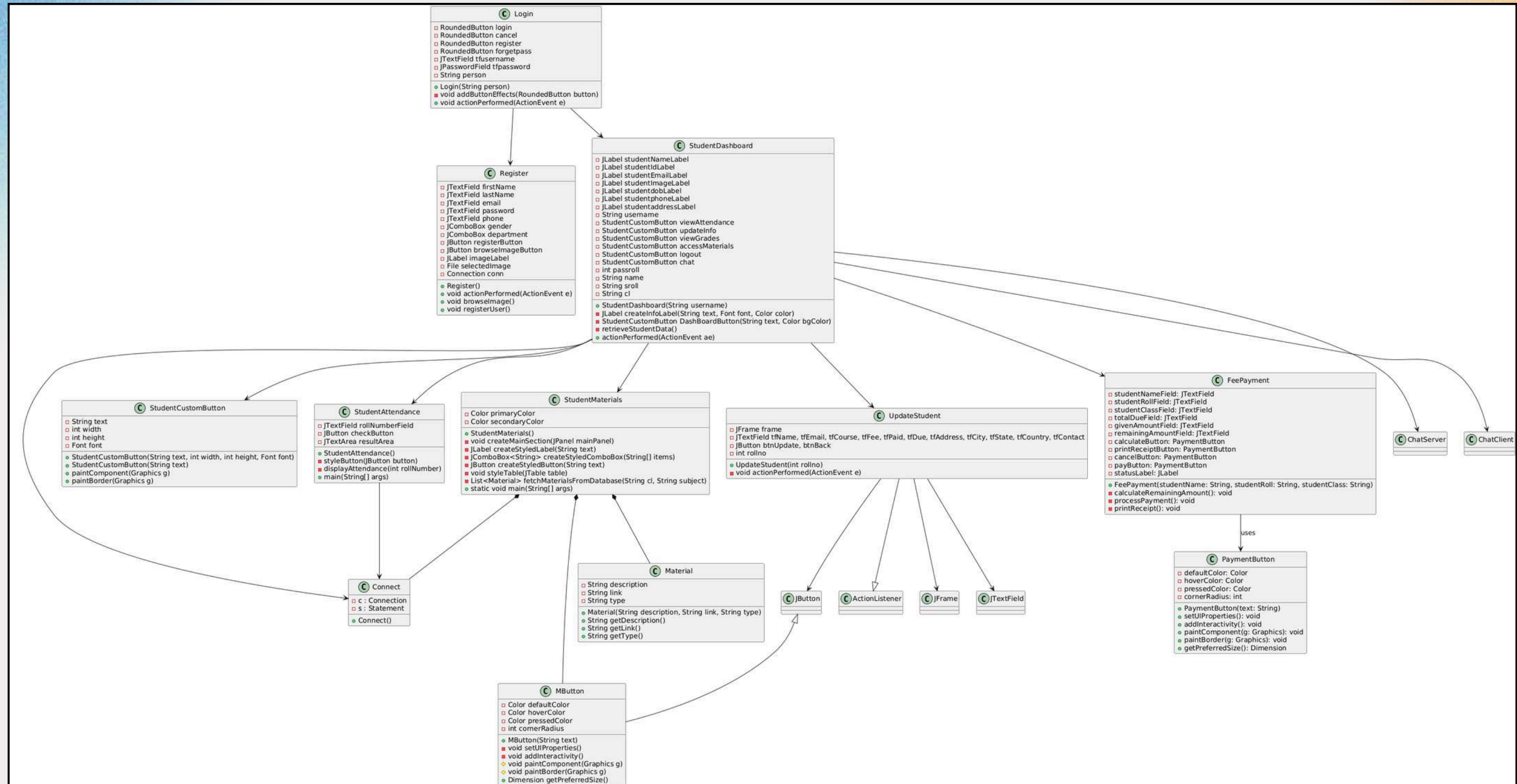
UML Diagram - Admin



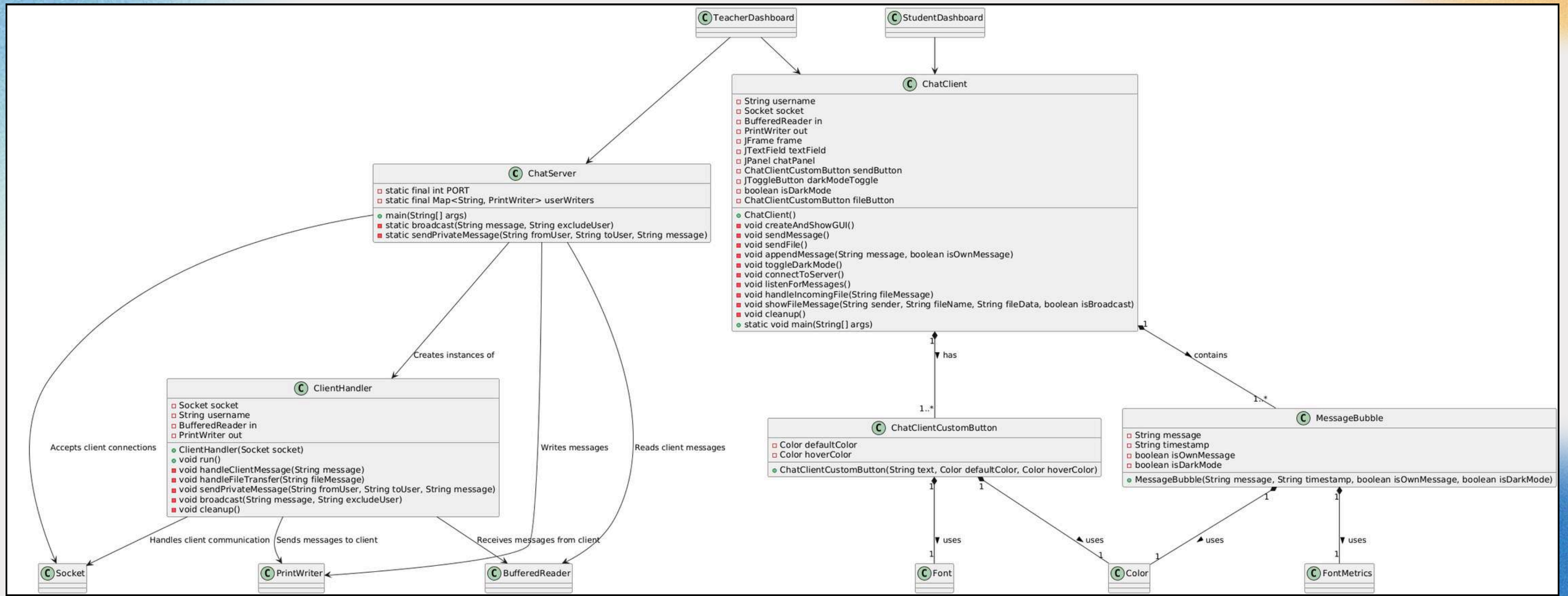
UML Diagram - Teacher



UML Diagram - Student



UML Diagram - Realtime Chatting



Implementation of OOP and Design Principles

- **Encapsulation:** Created a custom button class to enhance modularity and efficiently manage UI components.
- **Abstraction:** Implemented Runnable for threads and ActionListener for event handling, simplifying logic and improving maintainability.
- **Inheritance:** Extended JFrame, JPanel, and JButton to create reusable UI components.
- **Polymorphism:** Overrode actionPerformed() to enable dynamic event handling.
- **Open-Closed Principle:** Designed components to be easily extendable without modifying existing code.
- **Thread & Socket:** Utilized threads for asynchronous message reception and sockets for real-time chat communication.

Conclusion

Our **School Management System** provides a **structured** and **efficient** way to handle school operations. During development, we **faced challenges such as implementing real-time chat**, and ensuring a modular design. By **automating administrative tasks**, **improving student-teacher communication**, and ensuring secure data management, we have built a system that benefits both academic institutions and learners.

Thank You!
