

CSC 554 2.0 Net-centric Computing and System Administration (Intake VI) – Assignment Report

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Reg No. – GS/COMP/230

Intake – VI

Project Title: - Student Management App

Links

GitHub - https://github.com/KavinduNuwandika/CSC_554.git

Docker Hub - https://hub.docker.com/r/kavib/student_management

Docker composer to run with test data -

https://drive.google.com/file/d/13C7r0DuTtaCqbTqchKTbk4Uy8Smc_-lj/view?usp=sharing

Project Overview

The goal of this project is to develop a user management and grade tracking system using Spring Boot, where users can register and access different functionalities based on their roles (Admin, Teacher, Student). The system is designed to handle three main user types:

1. **Admin:**

- The admin has overall control of the system. They can manage users, assign roles (Admin, Teacher, Student), Enroll Students to classes and oversee all activities within the application.

2. **Teacher:**

- Teachers can create classes and assign grades to students.

- The grading system allows teachers to input scores for students.

3. Student:

- Students can view their own results. They can track their performance over time, but do not have the ability to modify their own grades or class data.
- Students can also manage their personal account details and view relevant class information.

Core Features

- **User Registration and Login:** Users can create an account with their personal information (name, email, password), and their default role will be Student
- **Role-based Access Control:** Different users have different permissions.
- **Class Management:** Teachers can create classes. Admins can assign/reassign students to classes.
- **Grading System:** Teachers can input marks for students in their classes.
- **Grade Viewing:** Students can view their Marks and performance history within the system.

Technologies Used

Backend:

- **Spring Boot:** A powerful framework for building Java-based applications. It simplifies the development of RESTful web services and provides robust support for authentication and authorization, making it ideal for managing different user roles (Admin, Teacher, Student).
- **JPA (Java Persistence API):** Used for database interaction, allowing seamless integration with MySQL to store and retrieve data related to users, classes, and grades.

Frontend:

- **HTML:** A simple, lightweight approach for presenting the application's user interface. Basic forms and pages will allow users to interact with the system (e.g., user registration, login, viewing grades).

Database:

- **MySQL:** A relational database system used to store user information (Admin, Teacher, Student), class data, grades, and other relevant information. The system uses JPA to interact with MySQL, ensuring easy CRUD operations.

Version Control:

- **GitHub:** GitHub is used for version control, allowing for easy code management, and maintaining a history of changes. Regular commits and meaningful comments will ensure smooth progress tracking and enable you to revert to previous versions if necessary.

Deployment:

- **Docker:** Docker will be used to containerize the application, ensuring that it can be easily deployed across various environments. It simplifies the process of packaging the application along with all necessary dependencies, allowing for consistent deployment on different machines or cloud services.

Testing:

- **Postman:** Postman is a powerful tool used for testing and interacting with the RESTful APIs of the application. It allows developers to easily send HTTP requests, check responses, and automate tests to ensure that the application's backend behaves as expected. Postman is particularly useful for testing CRUD operations, ensuring proper authentication, and validating error handling.

System Demonstration

Login Page:

Welcome to Our Website!

We're glad to have you here. Explore and enjoy our content.

If you're a returning user, please login to continue.

[Login with Email](#)[Login with Phone](#)

Login with Email

Email:

Password:

Login

Don't have an account? [Sign Up](#)

Sign Up:

Enter Your Details

Please fill in the form below:

First Name:

Last Name:

Date of Birth:

Gender:

Male

Year of Registration:

Phone Number:

Email:

Password:

Submit

Already have an account? [Login](#)

Student View:

Welcome, John Doe

As a student, you can view your registered courses and results, as well as update your personal information.

User Details

Name: John Doe

Email: john.doe@example.com

Phone: 0712345678

Date of Birth: 1985-02-15

Change Details

Change Password

Update your password for better security.

Change Password

Registered Courses

View Results

Log Out

Registered Courses

Back to Dashboard

Main Subject	Course Code	Course Name	Academic Year	Teacher Name	Teacher Email	Credits
Maths	MT100	Basic Maths	2024	Isuri Herath	isuridh@gmail.com	2
Chemistry	CH100	Basic Chemistry	2024	William Jackson	william.jackson@example.com	2
Physics	PH100	Basic Physics	2024	Isuri Herath	isuridh@gmail.com	2

Student Results

Marked Subjects

Course Name	Main Subject	Course Code	Academic Year	Credits	Marks
Basic Physics	Physics	PH100	2024	2	83
Basic Maths	Maths	MT100	2024	2	80

Unmarked Subjects

Main Subject	Course Code	Course Name	Academic Year	Credits	Marks
Chemistry	CH100	Basic Chemistry	2024	2	No Marks

Go to Homepage

Teacher View:

Admin View:

Welcome to the Admin Panel

User Details

Welcome, Kavindu Wijekoon

Email: kavindunuwandika@gmail.com

Phone: 0714672020

Date of Birth: 1996-10-16

Change Details

Change Password

Go to User List

View All Courses

Log Out

Admin Panel - User List

Filter by Role: Select All Filter

Back to Admin Home

First Name	Last Name	Email	Phone	Date of Birth	Role	Action
Kavindu	Wijekoon	kavindunuwandika@gmail.com	0714672020	1996-10-16	Admin Save	Delete
John	Doe	john.doe@example.com	0712345678	1985-02-15	Student Save	Delete
Jane	Smith	jane.smith@example.com	0755678123	1992-06-30	Admin Save	Delete
Emily	Johnson	emily.johnson@example.com	0788765234	1990-09-20	Student Save	Delete
Michael	Brown	michael.brown@example.com	0701122334	1987-01-10	Student Save	Delete
Sarah	Williams	sarah.williams@example.com	0783344556	1995-04-05	Student Save	Delete
Robert	Davis	robert.davis@example.com	0775566778	1983-11-25	Student Save	Delete
Laura	Martinez	laura.martinez@example.com	0727788990	2000-03-15	Student Save	Delete
James	Miller	james.miller@example.com	0799001122	1998-12-22	Student Save	Delete
Olivia	Wilson	olivia.wilson@example.com	0799993344	1984-08-30	Student Save	Delete

All Courses

Course Code	Course Name	Academic Year	Teacher	Change Teacher	Actions	Enroll Students
PH100	Basic Physics	2024	Isuri Herath	William Jackson Update Teacher	Delete	Enroll Students
CH100	Basic Chemistry	2024	William Jackson	William Jackson Update Teacher	Delete	Enroll Students
MT100	Basic Maths	2024	Isuri Herath	William Jackson Update Teacher	Delete	Enroll Students

Enroll Students

Selected Course

Course Name	Academic Year	Credits
Basic Physics	2024	2

Enrolled Students

Student Name	Year of Registration	Email	Action
John Doe	2024	john.doe@example.com	<button>Unenroll</button>
Isabella White	2024	isabella.white@example.com	<button>Unenroll</button>
Elijah Harris	2024	elijah.harris@example.com	<button>Unenroll</button>
Chloe Clark	2024	chloe.clark@example.com	<button>Unenroll</button>
Ethan Lewis	2024	ethan.lewis@example.com	<button>Unenroll</button>
Ava Walker	2024	ava.walker@example.com	<button>Unenroll</button>
New Test	2024	teststudent11@example.com	<button>Unenroll</button>

Unenrolled Students

<input type="checkbox"/> Select All	Student Name	Year of Registration	Email
<input type="checkbox"/>	Emily Johnson	2023	emily.johnson@example.com
<input type="checkbox"/>	Michael Brown	2023	michael.brown@example.com
<input type="checkbox"/>	Sarah Williams	2023	sarah.williams@example.com
<input type="checkbox"/>	Robert Davis	2023	robert.davis@example.com
<input type="checkbox"/>	Laura Martinez	2023	laura.martinez@example.com
<input type="checkbox"/>	James Miller	2023	james.miller@example.com
<input type="checkbox"/>	Olivia Wilson	2023	olivia.wilson@example.com
<input type="checkbox"/>	Daniel Moore	2023	daniel.moore@example.com
<input type="checkbox"/>	Sophia Taylor	2023	sophia.taylor@example.com
<input type="checkbox"/>	David Anderson	2023	david.anderson@example.com
<input type="checkbox"/>	Lily Thomas	2023	lily.thomas@example.com

[Enroll Selected Students](#)

[Back to Admin Home](#)

[Back to Course Selection](#)

Change details:

Edit User

First Name:

Kavindu

Last Name:

Wijekoon

Phone:

0714672020

Date of Birth:

10/16/1996

Registration Year:

2023

[Update Details](#)

Change Password:

Change Password for: kavindunuwandika@gmail.com

Old Password

New Password

Confirm New Password

Change Password

Teacher View:

Welcome, Isuri Herath

As a teacher, you can create new classes, manage your courses, and interact with students.

User Details

Name: Isuri Herath
Email: isuridh@gmail.com
Phone: 0769208398
Date of Birth: 1996-04-25

Change Details

Change Password

Create New Class

View Classes

Log Out

Create a New Class

Main Subject

Physics

Class Code

Course Name

Academic Year

Credits

Create Class

MY CLASSES

#	Course Code	Course Name	Academic Year	Credits	Main Subject	Grade Class
1	PH100	Basic Physics	2024	2	Physics	Grade
2	MT100	Basic Maths	2024	2	Maths	Grade

Go to Teacher Home

Create New Class

Selected Course

Course Name	Academic Year	Credits
Bass Physics	2024	2

Marked Students

Student Name	Year of Registration	Email	Marks	Grade
Isabella White	2024	isabella.white@example.com	60	C
Elijah Harris	2024	elijah.harris@example.com	60	C
Chloe Clark	2024	chloe.clark@example.com	60	C
Ethan Lewis	2024	ethan.lewis@example.com	70	B
Ava Walker	2024	ava.walker@example.com	80	A
Johnny Doe	2024	john.doe@example.com	83	A

Edit Marks

Delete Marks

Unmarked Students

Student Name	Year of Registration	Email	Marks	Grade
New Test	2024	teststudent1@example.com	No Marks	No Grade

Mark Students

View Course

Teacher Home