Department of Computer Science & Informatics (CSIS6809)

Personal Scheduling Assistant fo Classes and Practicals

User Manual

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Personal Scheduling Assistant for Classes and Practicals

CSIS6809 HONOURS PROJECT

User Manual

by

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Submitted in partial fulfilment of the requirements in respect of the degree

BACHELOR OF SCIENCE HONOURS WITH SPECIALISATION IN COMPUTER SCIENCE AND INFORMATICS

in the Department of Computer Science and Informatics

in the Faculty of Natural and Agricultural Sciences

at the University of the Free State

UNIVERSITY OF THE **FREE STATE**
UNIVERSITEIT VAN DIE **VRYSTAAT**
YUNIVESITHI YA **FREISTATA**

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Chapter 1 - Introduction

The Personal Scheduling Assistant for Classes and Practicals is a web-based scheduling system designed to automate and simplify the allocation of students and demmies to class sessions. It assists lecturers, demmies and administrators in managing schedules efficiently while minimizing manual work and reducing scheduling conflicts.

1.1. System Roles

The system defines specific interfaces and privileges for three main user categories:

Administrator

- Responsible for overseeing the overall system.
- Manages user accounts (Lecturers, Demmies, Students).
- Monitors activity logs and maintains system data integrity.

Lecturer

- Manages student allocations to class and practical sessions.
- Detects and resolves conflicts automatically.
- Sends personalized timetables to students.
- Monitors demmie workloads and module progress.

1.3.3 Demmie

- Assists lecturers by supporting allocated sessions.
- Tracks and updates weekly working hours.
- Manages personal availability.
- Receives real-time notifications about session assignments or alerts.

Chapter 2 – Installation

This prototype has an easy and straightforward installation process designed for quick deployment in both development and testing environments. The system is built using ASP.NET Core MVC with Entity Framework Core for database operations, which allows it to run on any machine equipped with the .NET SDK and a supported SQL Server database. This chapter provides a detailed, step-by-step procedure for installing, configuring and running the Personal Scheduling Assistant for Classes and Practicals system.

2.1. System Requirements

Hardware Requirements:

Requirement	Minimum	Recommended
Processor	2.0 GHz Dual-Core	2.5 GHz Quad-Core
RAM	4 GB	8 GB
Disk Space	2 GB free	4 GB free
Display	1366x768	1920x1080

Table 1: Hardware Requirements

Software Requirements:

Component	Version
Operating System	Windows 10 or later
Framework	.NET 8.0 SDK or higher
Database	SQL Server (LocalDB or Express)
IDE	Visual Studio 2022 / Visual Studio Code
Browser	Chrome, Edge, or Firefox (latest versions)

Table 2: Software Requirements

2.2 Installation Steps

1. **Clone or Download the Project**
    - Obtain the source code from the GitHub repository: https://github.com/SirTeachh/PersonalSchedulingAssistant
    - Extract the downloaded ZIP file to a local directory.
2. **Configure the Database**

- Open the project in **Visual Studio**.
- In *appsettings.json*, update the connection string to your local machine.
- Open the Package Manager Console and run:
  update-database

3. **Run the Application**
   - Press Ctrl + F5 or click Run Without Debugging
   - The web application will open automatically in your browser

Chapter 3 – Using The System

This chapter serves as a complete user guide for interacting with the Personal Scheduling Assistant for Classes and Practicals system. It explains how each type of user, Administrator, Lecturer and Demmie can access, navigate and use the system's features effectively.

Each user has a dedicated dashboard designed to provide role-specific tools. This ensures that users interact only with functionalities relevant to their responsibilities, thereby improving security, usability and workflow efficiency

1.1. System Access

Upon successful installation and running of the system, you will be directed to the following landing page.

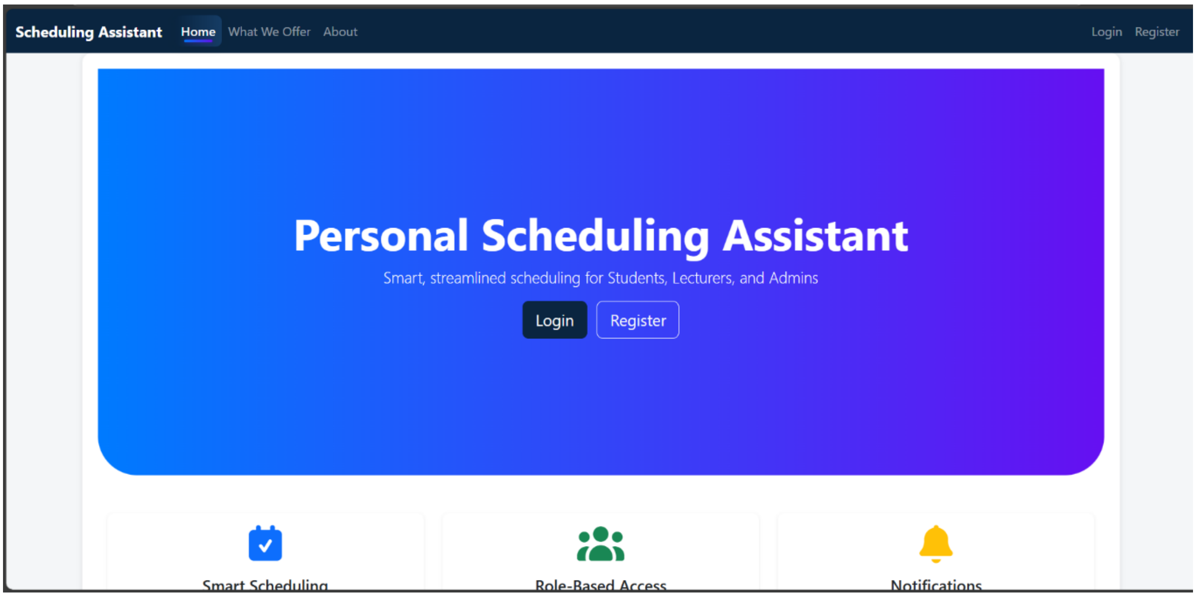

Figure 1: Landing Page

Here, users can:

- View the **About Us** section to learn more about the system's purpose and developers.
- Navigate to the **What We Offer** page to explore system features.
- Proceed to **Register** or **Login** to access the main system dashboard.

This landing interface provides a professional and welcoming entry point for all users.

Registration

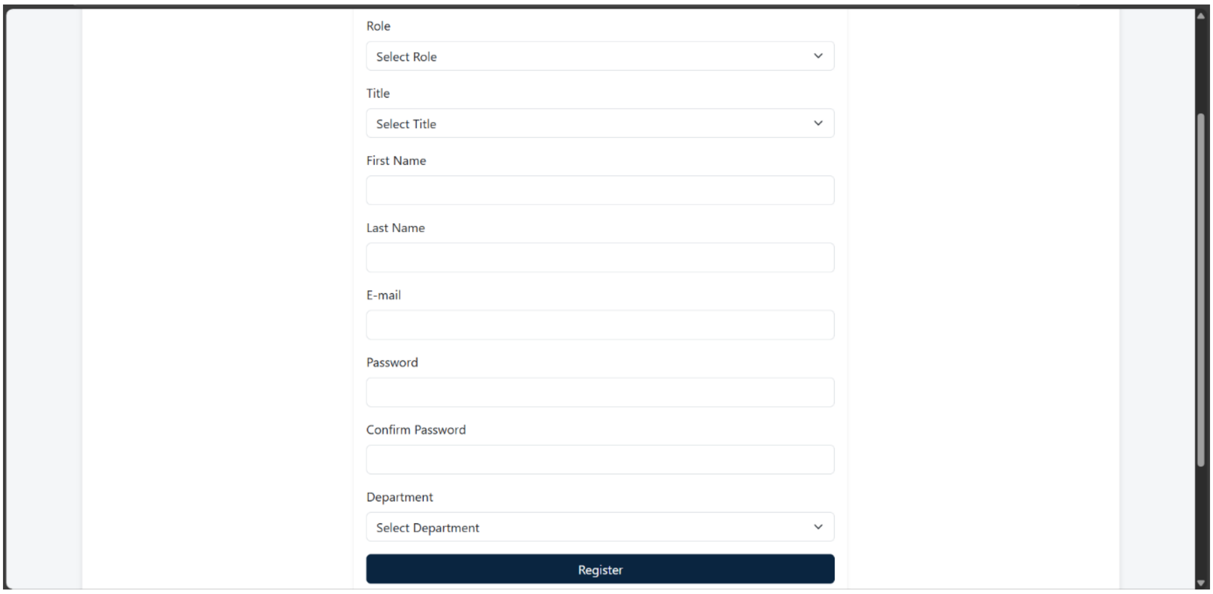

Figure 2: Registration

New users must first register a profile before gaining access.

Steps:

1. On the landing page, click **Register**.
2. Select your **role type** (Lecturer, Demmie).
3. Enter your personal details including:
   - Title
   - Full Name
   - Email Address
   - Password (minimum 8 characters)
   - Department
4. Click **Register**.
5. You will receive a confirmation email to activate your account.
6. Once verified, return to the login page to access the system.

Note:

Only administrators can approve lecturer and demmie registrations to ensure data integrity and authorized access.

Logging Into the system

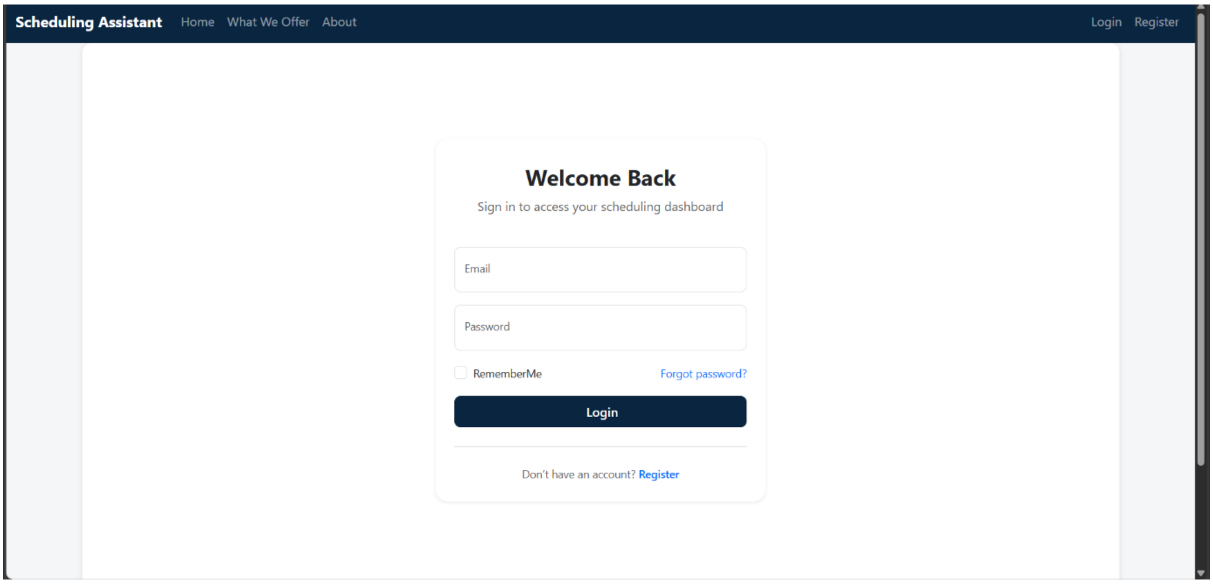

Figure 3: Login

Steps:

1. On the landing page, click **Login**.
2. Enter your registered **Email Address** and **Password**.
3. Click **Sign In**.
4. Depending on your role, the system will redirect you to your personalized dashboard.

If login fails:

- Ensure your credentials are correct.
- If forgotten, click **Forgot Password** to receive a reset link via email.

1.2. Lecturer Functionalities

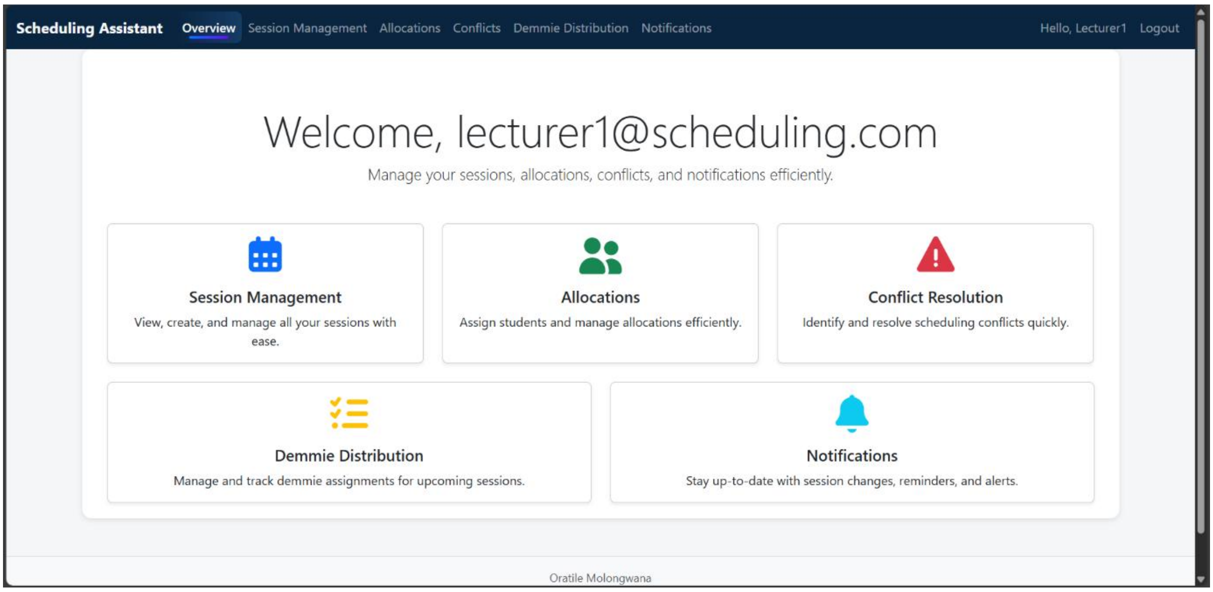

Figure 4: Lecturer Dashboard

After logging in as a Lecturer, you will be directed to a personalized dashboard displaying different navigation tiles. The navigation tiles provide access to essential scheduling and communication tools.

Creating and Managing Sessions

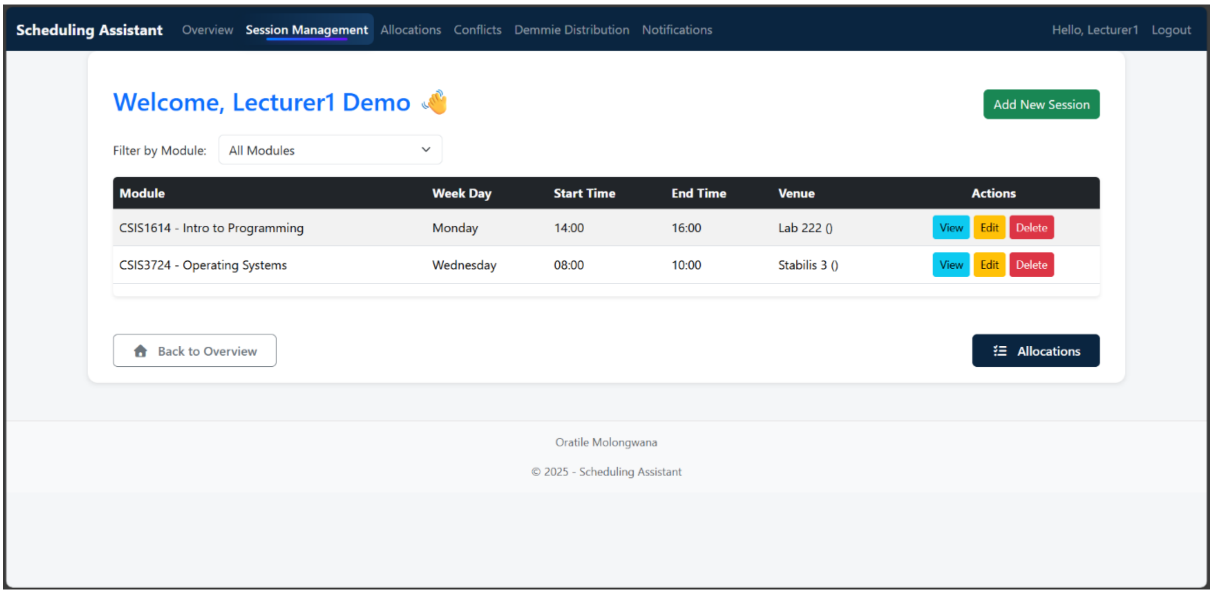

Figure 5: Session Management

Steps:

1. Navigate to **Session Management**.

2. You will be able to see all the sessions that have been created in the past for all of your modules
3. If you wish to add a new session, click **Add New Session**.
4. Fill in the session details:
    - Module Code (e.g., CSIS1614)
    - Weekday (e.g., Monday)
    - Start Time and End Time
    - Venue (select from the dropdown)
5. Click **Save Session**.
6. Existing sessions can be edited or deleted by selecting the corresponding options.

Tip:

Always verify that session times and venues do not overlap before saving.

Student Allocation

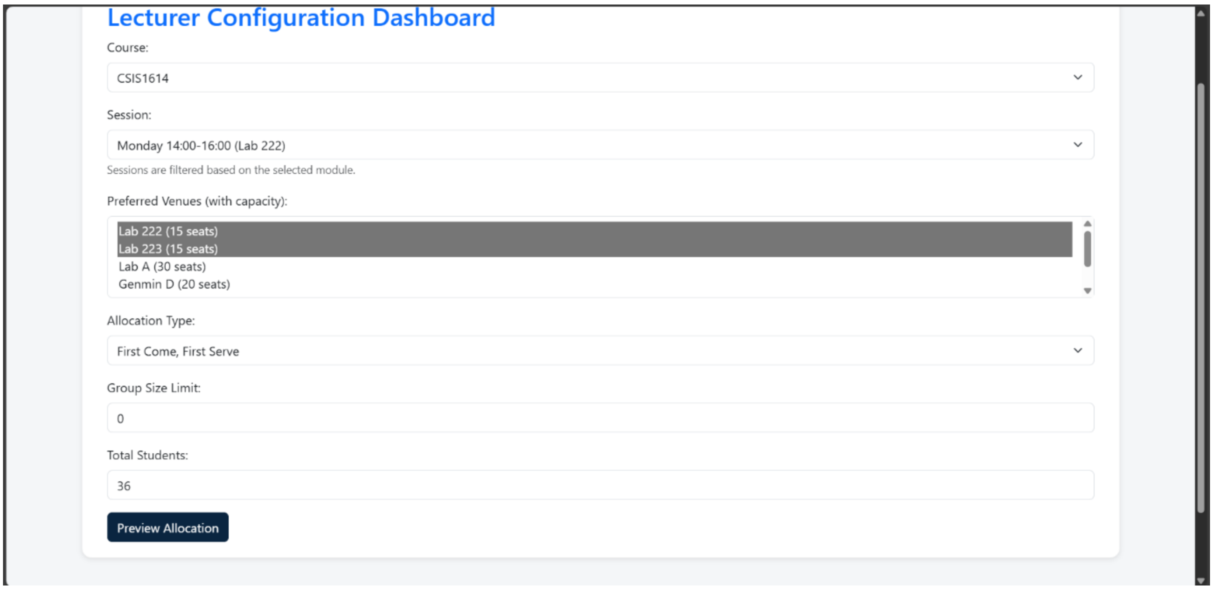

Figure 6: Allocations

Steps:

1. Go to **Allocations** → **Configure Allocations**.
2. Select the module for which you want to allocate students.
3. Choose the desired **allocation strategy**, such as:
    - *First Come, First Serve*
    - *Balanced*

- *Round Robin*
- *Venue Capacity-Based*
- *Random*

4. Click **Run Allocation**.
5. Review the results displayed per venue.
6. Adjust manually if needed, then click **Confirm Allocation** to finalize.

Outcome:

Students are automatically grouped, ensuring even distribution and space optimization.

Send Timetables

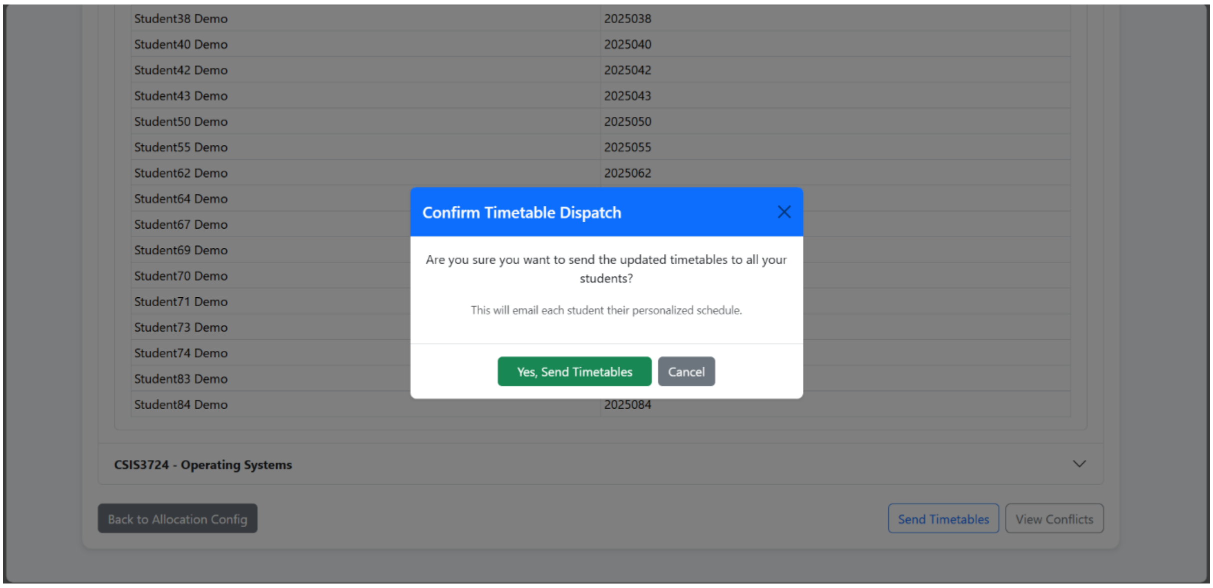

Figure 7: Send Timetables

Steps:

1. Navigate to **Finalised Schedules**.
2. Click **Send Timetables**.
3. A confirmation modal will appear; review and confirm.
4. The system generates HTML-based personalized timetables and emails them via SendGrid.

Note:

Each student receives only their assigned sessions, ensuring clarity and accuracy.

Detecting and Resolving Conflicts

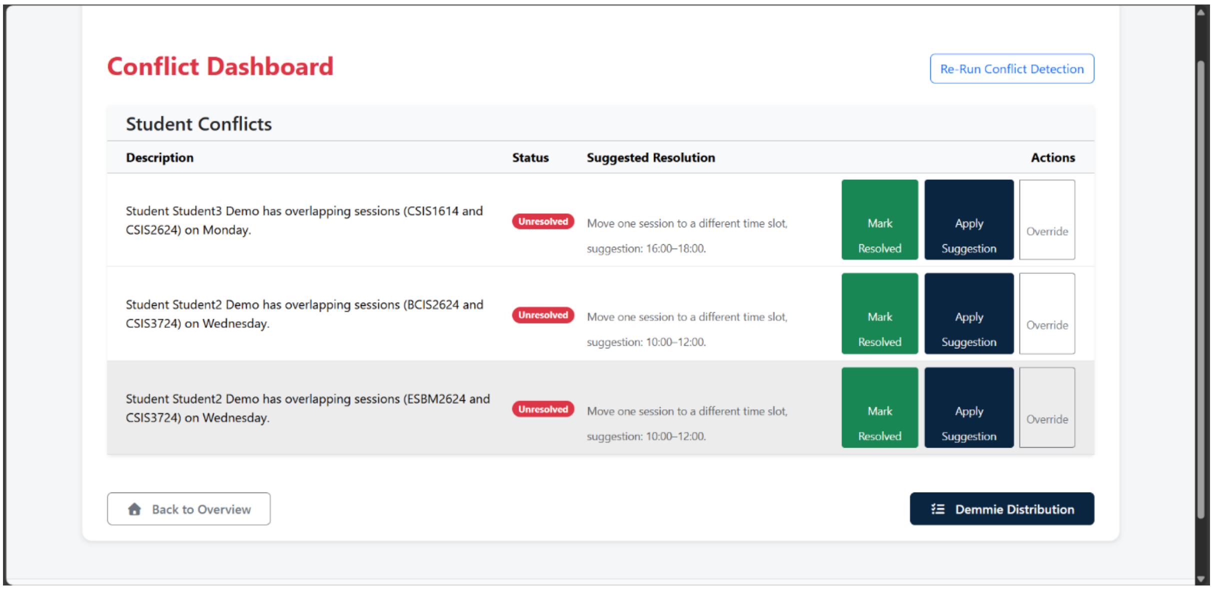

Figure 8: Conflict Management

Steps:

1. Navigate to the **Conflicts Dashboard**.
2. Click **Run Conflict Detection**.
3. The system will analyze all sessions and allocations.
4. Results will display any detected conflicts under three types:
   - Venue Conflicts
   - Student Conflicts
   - Demmie Conflicts
5. Each conflict includes a **description** and **suggested resolution**.
6. Once addressed, mark conflicts as **Resolved**.

Outcome:

This ensures schedule integrity and minimizes human scheduling errors.

Assigning Demmies to Sessions

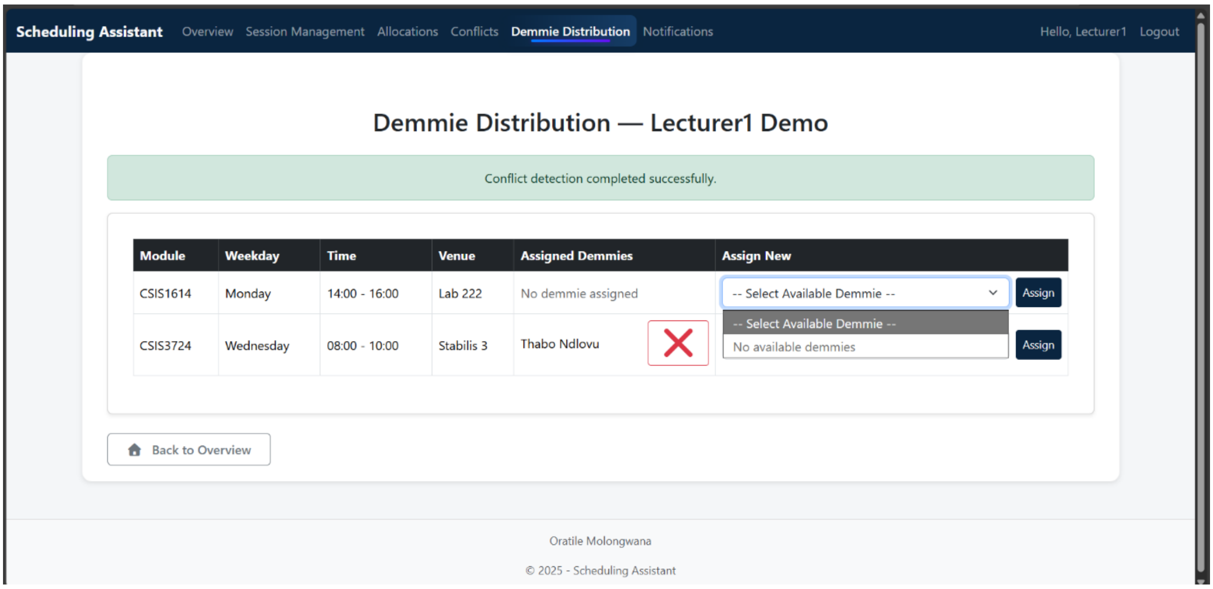

Figure 9: Demmie Distribution

Steps:

1. Navigate to **Demmies** → **Assign Demmie**.
2. Select the desired **Session** and **Demmie** from the dropdown lists.
3. Click **Assign**.
4. A confirmation message will appear, and the demmie will receive a notification.

To unassign a demmie:

- Go to the **Assigned Demmies** list.
- Click **Unassign** next to the demmie's name.

1.3. Demmie Functionalities

When logged in as a Demmie, your dashboard provides access to your assigned sessions, total working hours, notifications, and availability management.

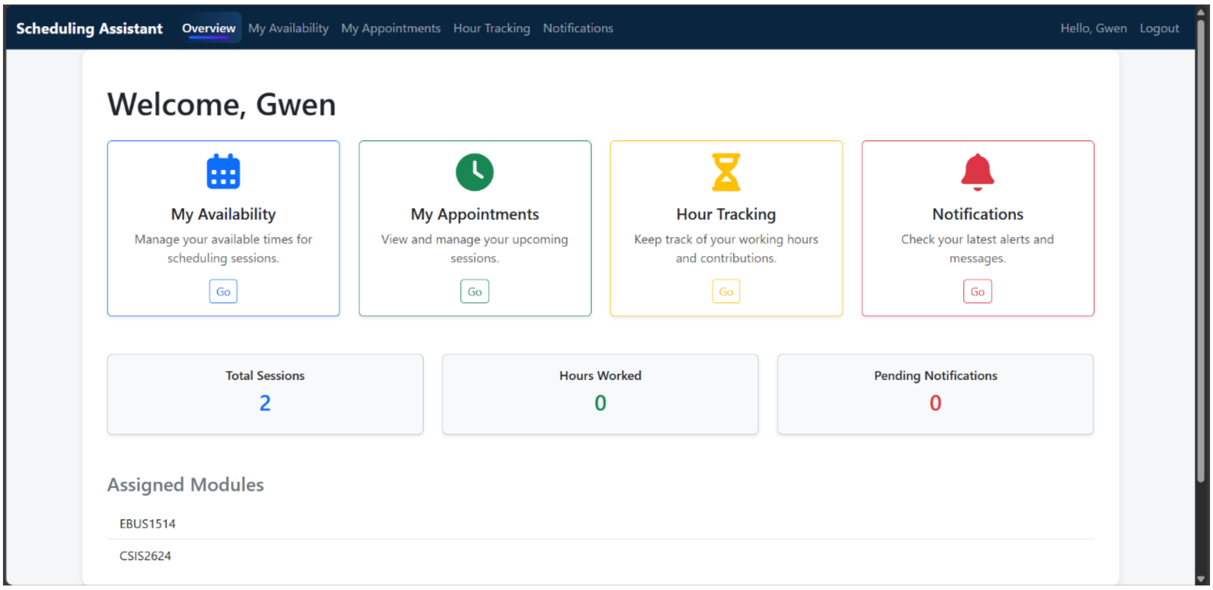

Figure 10: Demmie Landing Page

Viewing Assigned Sessions

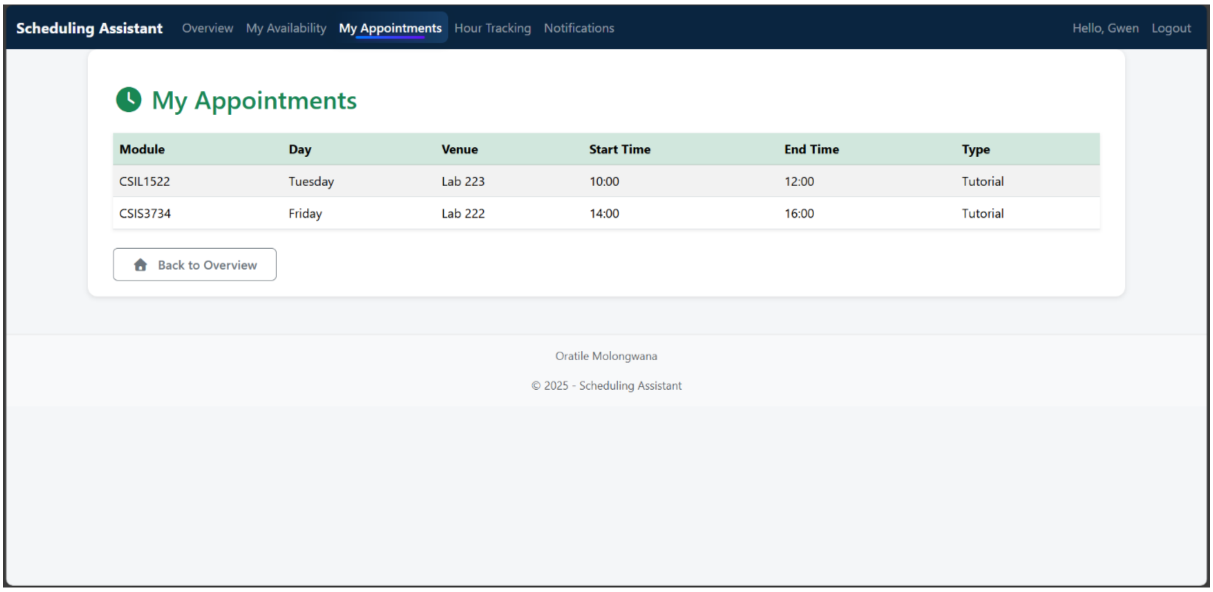

Figure 11: Demmie Appointments

Steps:

1. From the navigation bar, select **My Appointments**.
2. The dashboard lists all sessions assigned to you, showing:

- Module Code
- Day and Time
- Venue
- Session Type

Note:

Sessions are automatically updated when a lecturer reassigns or modifies them.

Managing Availability

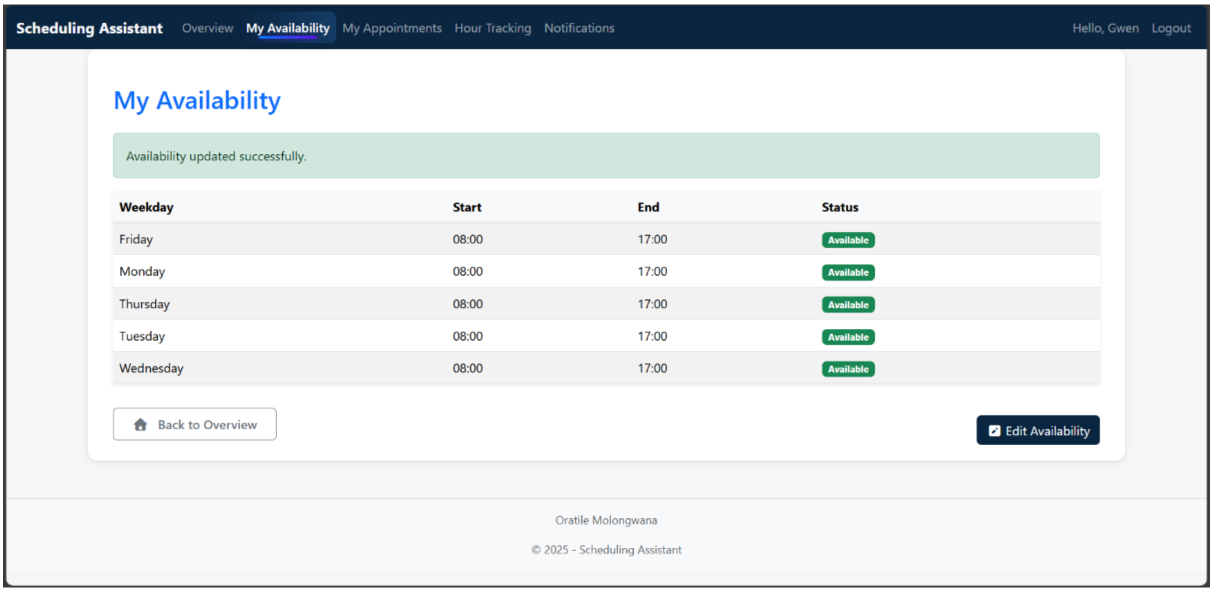

Figure 12: Demmie Availability

Steps:

1. Navigate to **My Availability**.
2. Select available days and times using the weekly calendar view.
3. Click **Save Availability**.
4. Lecturers will only see you as available during the times you've selected.

Tip:

Keep your availability up-to-date to avoid scheduling conflicts.

Tracking Hours Worked

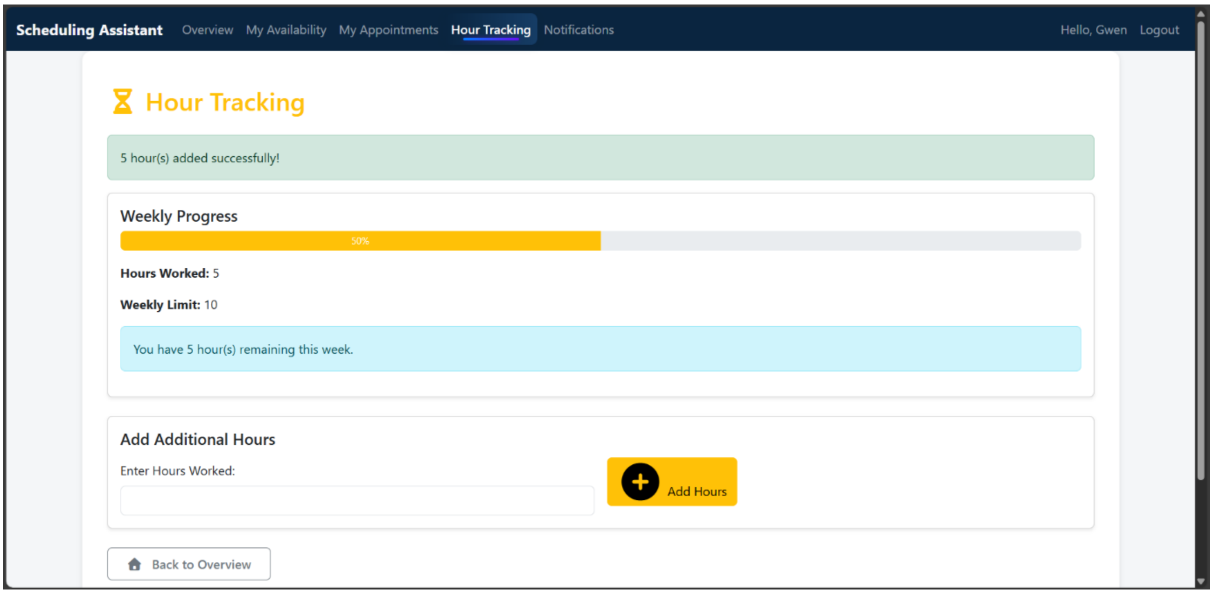

Figure 13: Demmie Hours

Steps:

1. Go to **Hour Tracking**.
2. The system displays weekly progress which is the total hours per week.
3. Export your work report as a PDF for submission or record keeping.

Managing Notifications

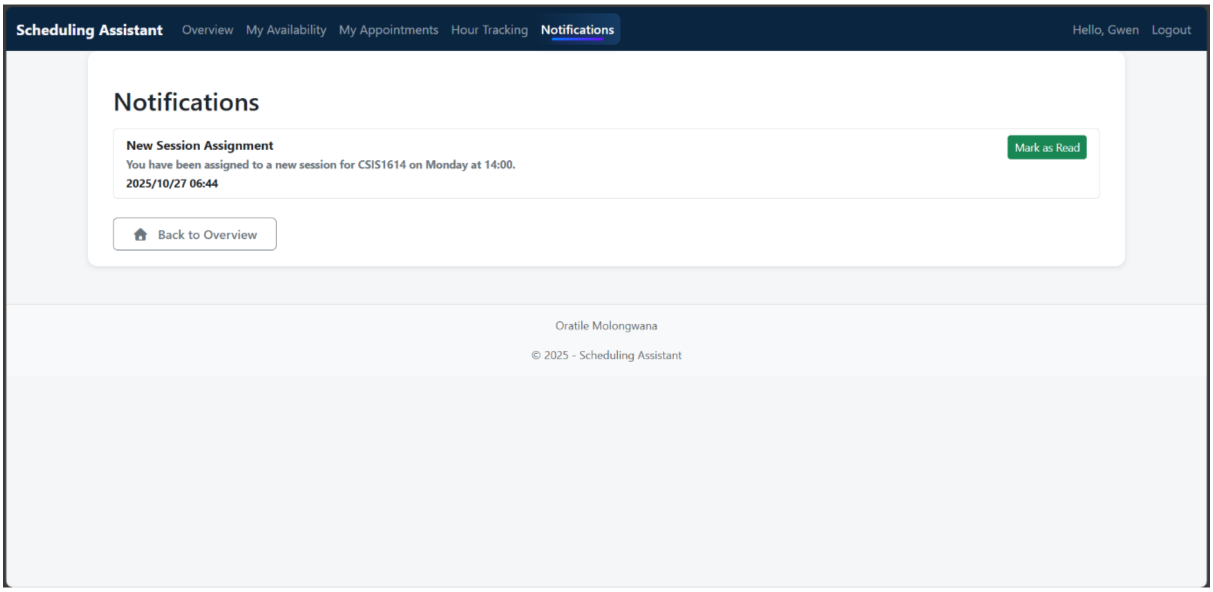

Figure 14: Demmie Notifications

Steps:

1. Click the **Notifications** link on the navbar.

2. Notifications such as new assignments, timetable updates or conflict resolutions will appear.
3. Click **Mark as Read** to remove the notification from your active list.

1.4. Admin Functionalities

After logging in as an Administrator, the dashboard provides access to system-wide management tools, including user management and institutional reporting.

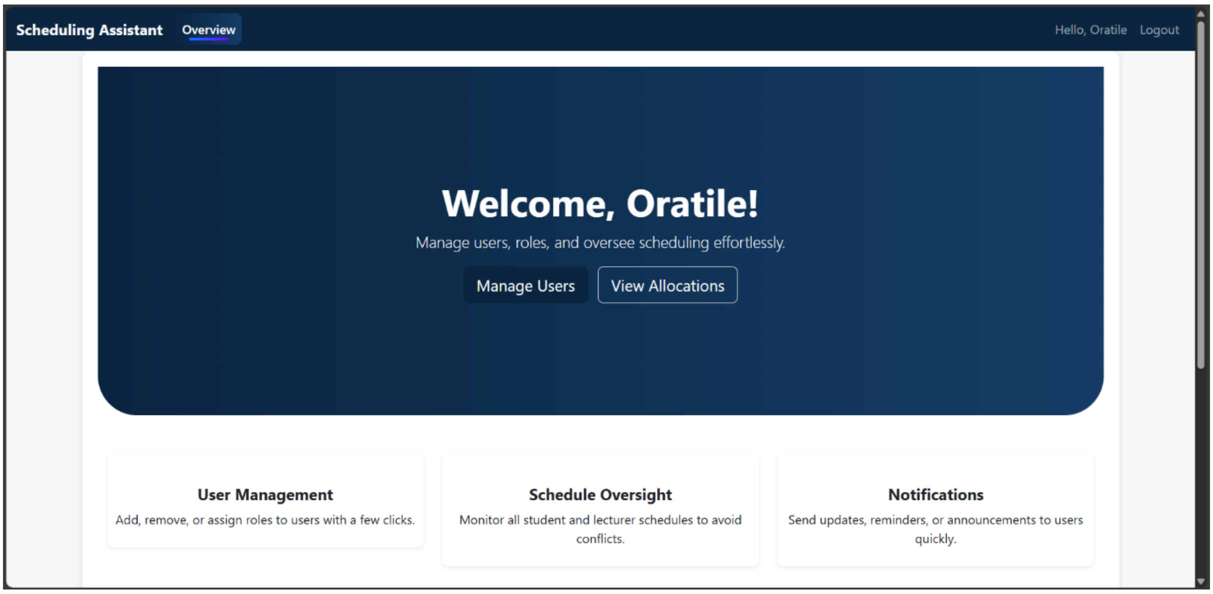

Figure 15: Admin Dashboard

Managing Users

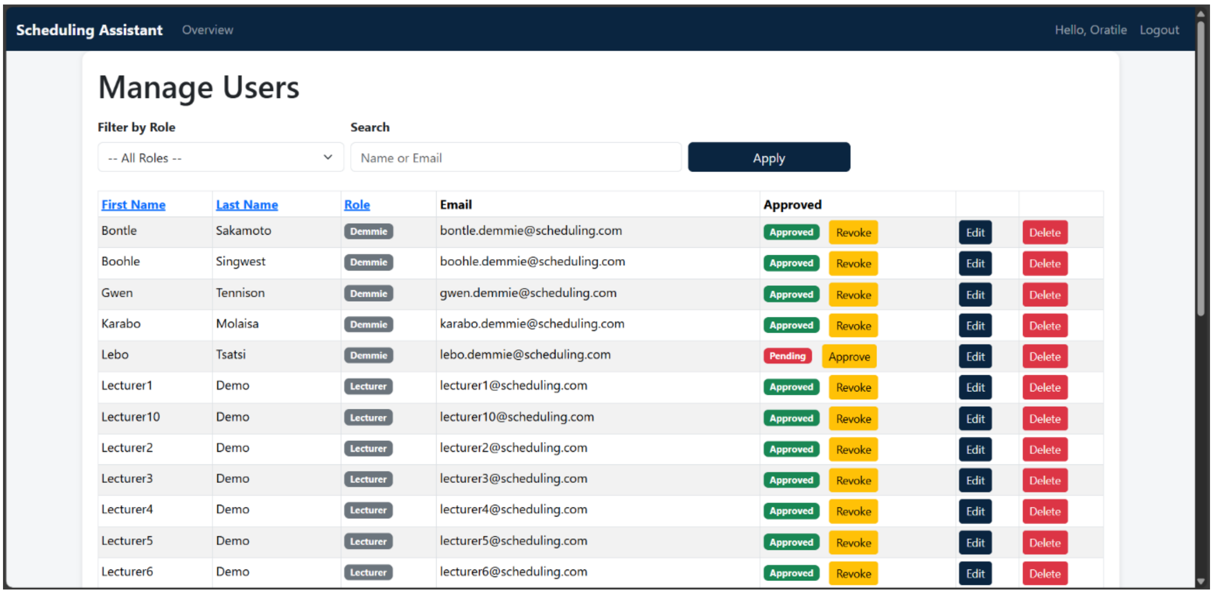

Figure 16: Manage Users

Steps:

1. Navigate to **Admin → Manage Users**.
2. View all registered users categorized by role (Lecturer, Demmie, Student).
3. To add a new user:
    - Click **Add User**.

- Fill in user details and select role.
- Click **Save**.

4. To edit user details, click **Edit** next to the user's record.
5. To remove a user, click **Delete**.

Note:

Deleted users are deactivated but retained for audit purposes.

Conflict Management

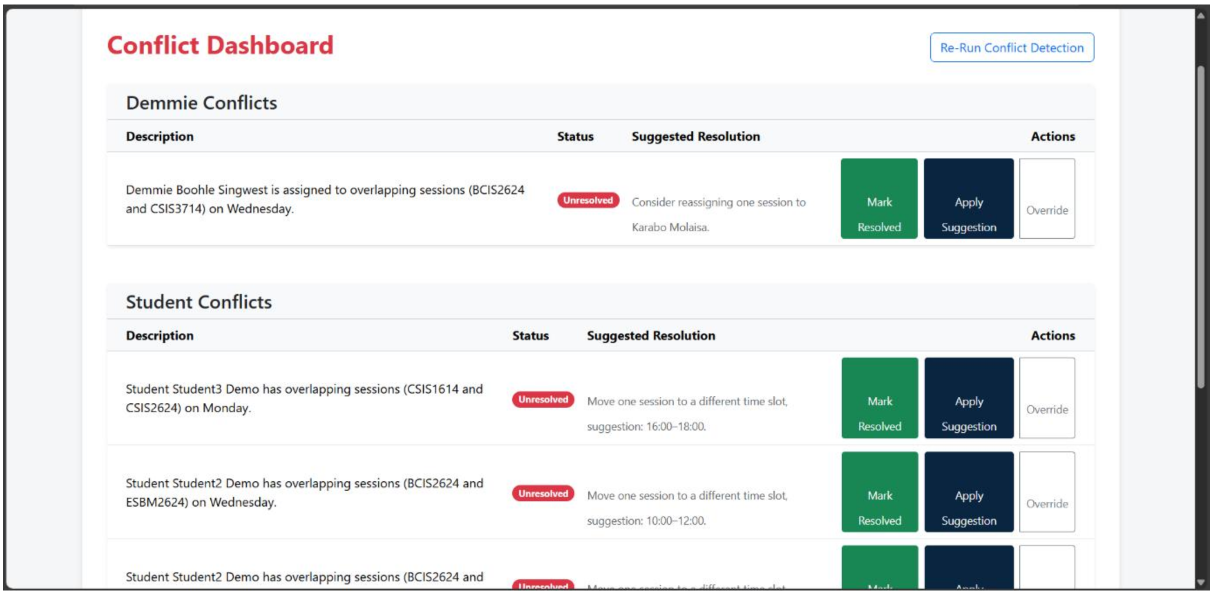

Figure 17: Conflict Management

Steps:

1. Navigate to **View Conflicts.**
2. Review all existing conflicts logged by the system.
3. Filter by conflict type (Venue, Student, Demmie).
4. Verify corrective action and mark as **Resolved**.

Viewing Reports

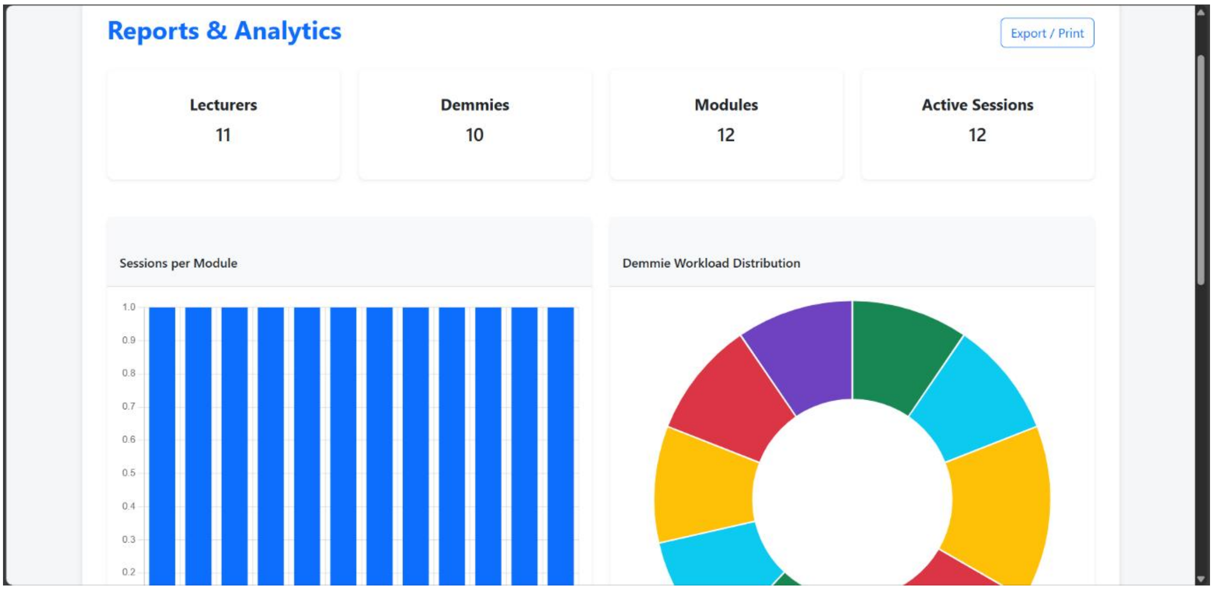

Figure 18: Reports And Analytics

Steps:

1. Navigate to **Reports & Analytics**.
2. Generate or export reports on:
   - Allocations
   - Active Sessions
   - Conflicts Detected
   - Demmie Work Load
3. Use these reports to support audits and data-driven decision-making.