

Conference and Session Management System

Final Project Report

Team: Team 5

Project Type: Web-Based Conference Management System

Architecture: Spring Boot MVC

Authentication: JWT (Stateless)

Template Engine: Thymeleaf

 **Group Report:**

[Google Docs – Team 5 Report](#)

Project overview

The **Conference Management System** is a secure, role-based web application designed to manage conference sessions, rooms, and participant scheduling. The system enforces strict access control using **JWT authentication** and supports **three roles only: ADMIN, CHAIR, and ATTENDEE**.

It enables administrators to configure the system, chairs to manage sessions, and attendees to register and view personalized schedules. The application uses **Spring Security**, **MVC architecture**, and **database migration using Flyway**.

Implemented Roles

The system supports **only three roles**:

- **ADMIN**
- **CHAIR**
- **ATTENDEE**

 Roles such as **Speaker** or **Author** were **not implemented**.

1. Security & Authentication

Contributor: Kea

1.1 JWT-Based Authentication

- Implemented **Spring Security with JWT**
- Users authenticate using **username and password**
- On successful login:
 - A **JWT token** is generated
 - Token contains:
 - User identity (email)
 - User role

- JWT is validated for **every protected request**
- Application is **stateless** (no server-side session)

1.2 Security Configuration

- Custom `SecurityConfig` class
- Defines:
 - Public endpoints
 - Role-protected routes
- Unauthorized users:
 - Are redirected or
 - Shown **403 Forbidden / Unauthorized** messages

1.3 Password Protection

- Passwords are encrypted using **BCrypt**
 - No plaintext passwords stored in the database
 - Follows Spring Security best practices
-

2. Core Entities: Sessions & Rooms

Contributor: Vatanak

This module manages the **core conference data model**.

2.1 Session Entity

- Represents a conference session
- Attributes include:
 - Title
 - Topic
 - Assigned room
 - Time slot
 - Chair
- Acts as the **primary scheduling unit**

2.2 Room Entity

- Represents physical rooms
- Used to prevent scheduling conflicts

2.3 CRUD Operations

- Sessions and Rooms support:
 - Create
 - Read
 - Update
 - Delete
- Managed by **ADMIN** and **CHAIR** roles

2.4 Time Slot Validation

- Ensures valid start and end times
- Prevents overlapping sessions within the same room

2.5 Search & Assignment

- Search functionality for sessions and rooms
 - Chairs can be assigned to sessions
 - Enables role-based responsibility separation
-

3. Conference Management

Contributor: Mesa

This module handles **user participation and scheduling logic**.

3.1 Conference Registration

- Users can register or cancel their registration for the conference

3.2 Room & Time Slot Management

- Rooms are assigned to sessions
- Validation ensures:
 - No double-booking of rooms
 - No overlapping time slots

3.3 Validation Rules

Prevents:

- Duplicate conference registrations
- Room scheduling conflicts
- Invalid session times

3.4 My Schedule Dashboard

- Logged-in users can view:
 - Their registered sessions
 - Personalized conference schedule

4. Frontend & UI/UX (Thymeleaf)

Contributor: Kakda

This module focuses on **user experience and interface consistency**.

4.1 Thymeleaf Layout System

- Uses fragments for:
 - Header
 - Footer
 - Navigation
- Ensures consistent UI across pages

4.2 Role-Based UI Rendering

- Uses `sec:authorize`
- UI elements are shown/hidden based on role
- Admin features are hidden from attendees

4.3 Reusable Forms

- Login, registration, and CRUD forms reuse layouts
- Reduces duplication and improves maintainability

4.4 Form Validation

- Validation errors displayed using `th:errors`
 - Improves feedback and usability
-

5. Database & DevOps

Contributor: Kong

This module manages **persistence, migrations, and system setup**.

5.1 Database Design

- ER Diagram includes:
 - Users
 - Sessions
 - Rooms
 - Registrations
 - Roles

5.2 Flyway Migrations

- `V1_init.sql`
 - Creates tables and relationships
- `V2_seed_data.sql`
 - Seeds initial data

5.3 Data Seeding

- Default **Admin** account
- Sample sessions and rooms for testing

5.4 Custom Queries

- JPQL used for:
 - Filtered searches
 - Relationship-based queries

5.5 Git & Collaboration

- Git used for version control
- Merge conflicts handled during collaboration
- Pull request workflow practiced

5.6 Login, Logout & Authorization

- Login returns JWT token
- Logout handled client-side (token removal)

5.7 Role-Based Access Rules

| Role | Permissions |
|----------|---------------------------------|
| ADMIN | Full system access |
| CHAIR | Session management |
| ATTENDEE | Registration & schedule viewing |

5.8 User Registration

- Public registration allowed for **ATTENDEE only**
 - ADMIN accounts created via migration
-

Challenges Faced

During development, the team encountered several challenges:

- Understanding **JWT authentication and stateless security**
 - Implementing **role-based access control**
 - Time synchronization issues across different operating systems
 - Integrating backend logic with Thymeleaf templates
 - Git workflow challenges:
 - Pull requests
 - Merge strategies
 - Conflict resolution
 - Balancing academic workload with project development
-

Users

- Login/Registration page are public but user can only register as attendee

The screenshot shows two pages of the Research Conference 2025 website:

- Login Page:** The title is "Welcome Back" and the subtitle is "Sign in to your conference account". It features fields for "Email Address" (placeholder: "Enter your email") and "Password" (placeholder: "Enter your password"), a "Remember me" checkbox, and a blue "Sign In" button.
- Create Account Page:** The title is "Create Account" and the subtitle is "Join the conference community". It features fields for "Username" (placeholder: "John"), "Email Address" (placeholder: "name@example.com"), and "Password" (placeholder: "Min. 8 characters"). Below these is a blue "Create Account" button. A link "Already have an account? [Sign In](#)" is located at the bottom.

The top navigation bar includes a logo, the text "Research Conference 2025", and links for "Home", "About", and "Contact". The top right corner has "Login" and "Register" buttons. The footer contains links for "Research Conference 2025", "Quick Links", and "Contact Information".

Attendee

- browse conference

The screenshot shows the homepage of the "Research Conference 2025" website. At the top, there is a navigation bar with links for Home, About, Schedule & Attendance, and Contact. On the right side of the header, there is a user icon and the email address "user@gmail.com". Below the header, a section titled "Available Conferences" displays five conference cards. The first card is for "Tech Conference 2024", which is completed. The second card is for "Data Science Summit", also completed. The third card is for "Web Development Workshop", which is scheduled. The fourth card is for "olo", which is completed. The fifth card is for "AI impact on privacy of the consumer", which is scheduled. Each card includes a "View Details" button.

- register or cancel registration for conference and session
- after register for conference, user can register session that is available in the conference

The screenshot shows the details page for the "AI impact on privacy of the consumer" conference. At the top, it says "Date: 14 Jan 2026 – 15 Jan 2026". Below that is a section titled "About this conference" with the text "With how fast ai is evolving, there emerge a concern about the consumer's privacy.". There are two buttons at the bottom: "Cancel Registration" (in red) and "Back to Conferences".

The screenshot shows the "Conference Sessions" section for the "AI impact on privacy of the consumer" conference. It lists one session titled "techonology" with the following details: Time: 14 Jan 2026 12:43 – 12:48, Room: Room A, Chair: mesa. The status is "SCHEDULED". There is a "Register Session" button at the bottom. At the very bottom of the page, there are links for "Research Conference 2025", "Quick Links", and "Contact Information".

- view schedule

The screenshot shows the 'My Schedule' section of the website. At the top, there's a navigation bar with links for Home, About, Schedule & Attendance, and Contact. On the right, there's a user profile icon and the email address 'kea@gmail.com'. Below the navigation is a table titled 'My Schedule' with columns for Session, Date, Time, Status, and Attendance. The table contains three rows of data:

| Session | Date | Time | Status | Attendance |
|------------------|--------|---------------|-----------|------------|
| Angular workshop | 13 Jan | 20:53 - 21:51 | Completed | PRESENT |
| Machine Learning | 13 Jan | 22:25 - 22:23 | Ongoing | ABSENT |
| Technology Panel | 14 Jan | 12:43 - 12:48 | Completed | ABSENT |

At the bottom of the page, there's a footer with sections for 'Research Conference 2025', 'Quick Links' (Home, About Conference, Registration, Contact Us), and 'Contact Information' (Conference Center, Academic City, info@researchconf2025.com, +1 (555) 123-4567). The footer also includes copyright information ('© 2025 International Research Conference. All rights reserved.') and links for Privacy Policy and Terms of Service.

Chair

Research Conference 2025 Home About Chair Dashboard Contact mesa@gmail.com

Welcome back, mesa@gmail.com

Here's a summary of your conference activities.

Browse Conferences
Discover and register for upcoming conferences
[View Conferences](#)

Sessions I Chair

| Session Name | Status |
|-------------------------|----------------------------------|
| Opening Keynote | Tech Conference 2024 COMPLETED |
| AI in Modern Web | Tech Conference 2024 COMPLETED |
| Machine Learning Basics | Data Science Summit COMPLETED |
| React Workshop | Web Development Workshop ONGOING |

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My Chaired Sessions

| | |
|---|--|
| Opening Keynote Time: 15 Jun 2024 16:00 – 17:30 Completed Manage Attendance | AI in Modern Web Time: 15 Jun 2024 18:00 – 19:30 Completed Manage Attendance |
| Machine Learning Basics Time: 20 Jul 2024 16:00 – 18:00 Completed Manage Attendance | React Workshop Time: 12 Jan 2026 05:30 – 22:00 Ongoing Manage Attendance |
| Flutter Workshop Time: 12 Jan 2026 16:30 – 22:00 Ongoing Manage Attendance | Angular workshop Time: 13 Jan 2026 20:53 – 21:51 Completed Manage Attendance |
| olo Time: 13 Jan 2026 22:25 – 22:23 Ongoing | |

- can only mark when session is ongoing

Session Capacity Overview

| Room | Registered | Capacity | Available | Status |
|--------|------------|----------|-----------|-----------|
| Room A | 2 | 50 | 48 | Available |

Attendance can only be marked while the session is **Ongoing**.

| Participant | Email | Status | Action |
|-------------|----------------|------------|--|
| kea | kea@gmail.com | Not marked | Present Absent |
| user | user@gmail.com | Not marked | Present Absent |

[Back to Sessions](#)

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- After marking attendance

Session Capacity Overview

| Room | Registered | Capacity | Available | Status |
|--------|------------|----------|-----------|-----------|
| Room A | 2 | 50 | 48 | Available |

| Participant | Email | Status | Action |
|-------------|----------------|----------------------|----------------------------------|
| kea | kea@gmail.com | ABSENT | ABSENT Recorded |
| user | user@gmail.com | PRESENT | PRESENT Recorded |

[Back to Sessions](#)

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Admin

- Dashboard

Admin Dashboard
Manage your conference system

Manage Conferences
Create and edit conferences
[Manage](#)

Manage Sessions
Create and edit sessions
[Manage](#)

Manage Rooms
Manage available rooms
[Manage](#)

Manage Users
Manage available users
[Manage](#)

Session Statistics

| Total Sessions | Scheduled | Ongoing | Completed | Cancelled |
|----------------|-----------|-----------|-----------|-----------|
| 6 | 1 (16.7%) | 1 (16.7%) | 4 | 0 |

- View attendance & Registration

View Registrations

Search by name or email [Search](#) [Clear](#)

| User ID | Name | Email | Registration Date |
|---------|------|----------------|-------------------|
| 1 | user | user@gmail.com | 2026-01-12 16:27 |
| 2 | kea | kea@gmail.com | 2026-01-12 16:27 |
| 3 | user | user@gmail.com | 2026-01-12 18:22 |
| 4 | kea | kea@gmail.com | 2026-01-13 20:52 |
| 5 | kea | kea@gmail.com | 2026-01-13 22:23 |
| 6 | user | user@gmail.com | 2026-01-13 22:24 |

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Quick Links: Home, About Conference, Registration, Contact Us

Contact Information: Conference Center, Academic City, info@researchconf2025.com, +1 (555) 123-4567

View Attendance

| Session ID | User ID | Attendance Status |
|------------|---------|-------------------|
| 1 | 2 | PRESENT |
| 6 | 2 | PRESENT |
| 8 | 2 | PRESENT |
| 1 | 3 | PRESENT |
| 2 | 3 | ABSENT |
| 7 | 3 | PRESENT |
| 8 | 3 | ABSENT |

- Search

The screenshot shows the 'Manage Conferences' section of the admin interface. At the top, there's a search bar with fields for 'Data', 'Search', and 'Reset'. Below the search bar is a table with columns: #, Title, Description, Start Date, End Date, and Action. One event is listed: 'Data Science Summit' (Description: 'Conference about AI and data science'), with dates from 2024-07-20 to 2024-07-22. Action buttons for 'Edit' and 'Delete' are shown next to the last row. The sidebar on the left lists various management options like 'Manage Rooms', 'Manage Sessions', etc.

- CRUD users

The screenshot shows the 'Manage Users' section. It features a table titled 'Users' with columns: ID, Name, Email, Roles, and Actions. Four users are listed: 'admin' (ID 1, Admin), 'user' (ID 2, Attendee), 'kea' (ID 3, Attendee), and 'mesa' (ID 4, Chair). Each user has 'Edit' and 'Delete' buttons. A 'Create User' button is located at the top right of the user list area. The sidebar on the left includes 'Manage Conferences' under the 'ADMIN' section.

The screenshot shows a 'Create User' modal dialog over a dark background. The dialog has fields for 'Name' (cat), 'Email' (cat@gmail.com), 'Password' (three dots), and 'Role' (ATTENDEE). There are 'Cancel' and 'Create' buttons at the bottom. The background shows the 'Manage Users' table with four existing users. The sidebar on the left includes 'Manage Conferences' under the 'ADMIN' section.

Edit User: cat

Name: cat

Email: cat@gmail.com

New Password (optional):

Role: ATTENDEE

Note: this will replace the user's roles with the selected role.

Cancel Save Changes

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**Quick Links**

Home
About Conference
Registration
Contact Us

Contact Information

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info@researchconf2025.com
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localhost:8081 says

Delete this user?

OK Cancel

Manage Users

| ID | Name | Email | Roles | Actions |
|----|-------|-----------------|----------|---|
| 1 | admin | admin@gmail.com | ADMIN | Edit Delete |
| 2 | user | user@gmail.com | ATTENDEE | Edit Delete |
| 3 | kea | kea@gmail.com | ATTENDEE | Edit Delete |
| 4 | mesa | mesa@gmail.com | CHAIR | Edit Delete |
| 9 | cat | cat@gmail.com | ATTENDEE | Edit Delete |

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**Quick Links**

Home
About Conference
Registration
Contact Us

Contact Information

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- CRUD conference

Search conference by title...

Add Conference

Manage Conferences

| # | Title | Description | Start Date | End Date | Action |
|---|--------------------------|---|------------|------------|---|
| 1 | Tech Conference 2024 | Annual technology conference for developers | 2024-06-15 | 2024-06-17 | Edit Delete |
| 2 | Data Science Summit | Conference about AI and data science | 2024-07-20 | 2024-07-22 | Edit Delete |
| 3 | Web Development Workshop | Hands-on web development workshop | 2026-01-10 | 2026-08-11 | Edit Delete |
| 4 | olo | ddddd | 2026-01-13 | 2026-01-15 | Edit Delete |

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**Quick Links**

Home
About Conference
Registration
Contact Us

Contact Information

Conference Center, Academic City
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Add Conference

Title: AI impact on privacy of the consumer

Description: With how fast ai is evolving, there emerge a concern about the consumer's privacy.

Start Date: 01/14/2026

End Date: 01/15/2026

Action

| Date | Action |
|------------|---|
| 2024-06-17 | Edit Delete |
| 2024-07-22 | Edit Delete |
| 2026-08-11 | Edit Delete |
| 2026-01-15 | Edit Delete |

[Save](#) [Cancel](#)

Research Conference 2025

Sharing knowledge through collaboration and innovation in research.

[Home](#) [About Conference](#) [Registration](#) [Contact Us](#)

Contact Information

- Conference Center, Academic City
- info@researchconf2025.com
- +1 (555) 123-4567

Edit Conference

Title: AI impact on privacy of the consumer

Description: With how fast ai is evolving, there emerge a concern about the consumer's privacy.

Start Date: 01/14/2026

End Date: 01/15/2026

Action

| Date | Action |
|------------|---|
| 2024-06-17 | Edit Delete |
| 2024-07-22 | Edit Delete |
| 2026-01-10 | Edit Delete |
| 2026-01-13 | Edit Delete |
| 2026-01-14 | Edit Delete |
| 2026-01-15 | Edit Delete |

Research Conference 2025

localhost:8081 says
Delete this conference?

[OK](#) [Cancel](#)

Manage

Search conference by title... [Search](#) [Reset](#)

[Add Conference](#)

| # | Title | Description | Start Date | End Date | Action |
|---|--------------------------------------|--|------------|------------|---|
| 1 | Tech Conference 2024 | Annual technology conference for developers | 2024-06-15 | 2024-06-17 | Edit Delete |
| 2 | Data Science Summit | Conference about AI and data science | 2024-07-20 | 2024-07-22 | Edit Delete |
| 3 | Web Development Workshop | Hands-on web development workshop | 2026-01-10 | 2026-08-11 | Edit Delete |
| 4 | olo | ddddd | 2026-01-13 | 2026-01-15 | Edit Delete |
| 5 | AI impact on privacy of the consumer | With how fast ai is evolving, there emerge a concern about the consumer's privacy. | 2026-01-14 | 2026-01-15 | Edit Delete |

- CRUD room

The screenshot shows the 'Manage Rooms' page of a conference management system. On the left, a sidebar menu includes 'Manage Rooms' (which is selected and highlighted in blue). The main content area displays five room entries in a grid:

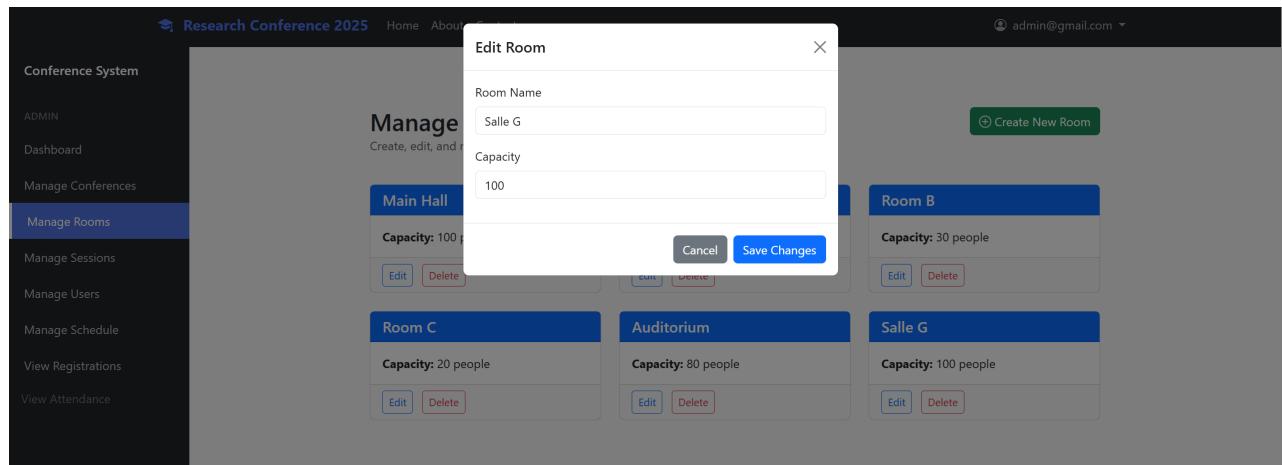
| Main Hall | Room A | Room B |
|---|---|---|
| Capacity: 100 people | Capacity: 50 people | Capacity: 30 people |
| Edit Delete | Edit Delete | Edit Delete |

| Room C | Auditorium |
|---|---|
| Capacity: 20 people | Capacity: 80 people |
| Edit Delete | Edit Delete |

At the top right of the main content area is a green button labeled 'Create New Room'.

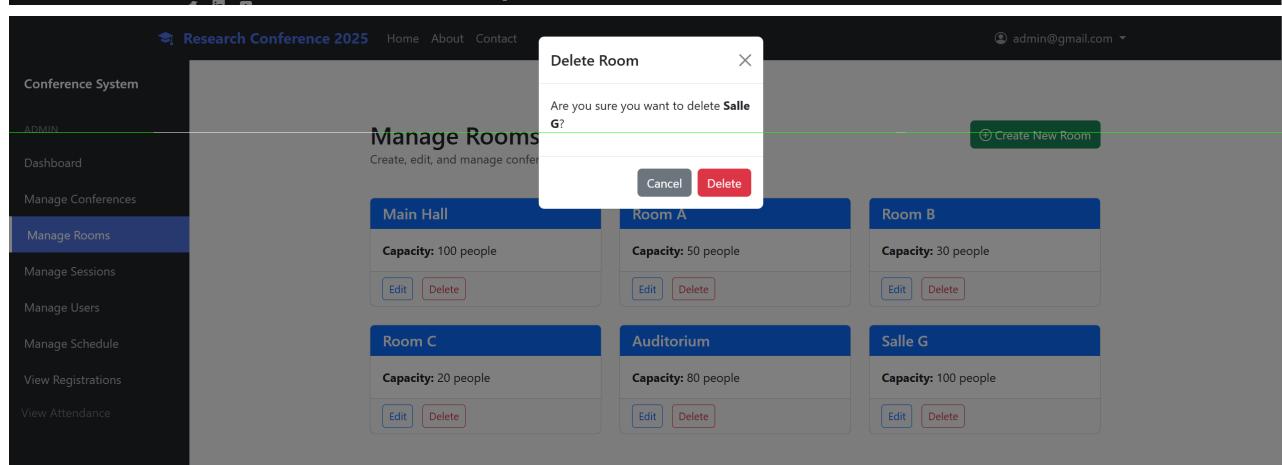
The screenshot shows a modal dialog titled 'Create New Room'. It contains two input fields: 'Room Name' (with 'Salle G' entered) and 'Capacity' (with '100' selected from a dropdown menu). At the bottom of the dialog are 'Cancel' and 'Create Room' buttons.

This screenshot is identical to the one above, showing the 'Create New Room' modal dialog. The main 'Manage Rooms' page is visible in the background, showing the same five room entries and the 'Create New Room' button at the top right.



The footer of the website includes the following sections:

- Arch Conference 2025**: A brief description of the conference.
- Quick Links**: Home, About Conference, Registration.
- Contact Information**: Conference Center, Academic City; info@researchconf2025.com



The footer of the website includes the following sections:

- Arch Conference 2025**: A brief description of the conference.
- Quick Links**: Home, About Conference, Registration.
- Contact Information**: Conference Center, Academic City; info@researchconf2025.com

• CRUD session

| Manage Sessions | | | | | | | | | |
|--|-------------------------|-------|------------|--------------------------|----------------------|----------------------|-----------|---------|---|
| Create, edit, and manage conference sessions | | | | | | | | | |
| ID | Title | Chair | Room | Conference | Start | End | Status | Deleted | Actions |
| 1 | Opening Keynote | mesa | Main Hall | Tech Conference 2024 | 15/06/2024, 16:00:00 | 15/06/2024, 17:30:00 | COMPLETED | Active | <button>Edit</button> <button>Delete</button> |
| 2 | AI in Modern Web | mesa | Room A | Tech Conference 2024 | 15/06/2024, 18:00:00 | 15/06/2024, 19:30:00 | COMPLETED | Active | <button>Edit</button> <button>Delete</button> |
| 3 | Database Optimization | N/A | Room B | Tech Conference 2024 | 16/06/2024, 17:00:00 | 16/06/2024, 18:30:00 | SCHEDULED | Active | <button>Edit</button> <button>Delete</button> |
| 4 | Machine Learning Basics | mesa | Room C | Data Science Summit | 20/07/2024, 16:00:00 | 20/07/2024, 18:00:00 | COMPLETED | Active | <button>Edit</button> <button>Delete</button> |
| 7 | Angular workshop | mesa | Auditorium | Web Development Workshop | 13/01/2026, 20:53:00 | 13/01/2026, 21:51:00 | COMPLETED | Active | <button>Edit</button> <button>Delete</button> |
| 8 | olo | mesa | Auditorium | olo | 13/01/2026, 22:25:00 | 14/01/2026, 22:23:00 | ONGOING | Active | <button>Edit</button> <button>Delete</button> |

Create Session

Title: How to protect your privacy while safely using ai

Chair (Optional): mesa (mesa@...)

Room: Main Hall (cap@...)

Conference: AI impact on

Status: Scheduled

Start Time (24-hour format): 01/14/2026 12:30 PM

End Time (24-hour format): 01/14/2026 01:27 PM

Actions:

- COMPLETED: Active (Edit, Delete)
- COMPLETED: Active (Edit, Delete)
- SCHEDULED: Active (Edit, Delete)
- COMPLETED: Active (Edit, Delete)
- COMPLETED: Active (Edit, Delete)
- ONGOING: Active (Edit, Delete)

Edit Session

Title: Angular workshop

Chair (Optional): mesa (mesa@...)

Room: Auditorium (cap@...)

Conference: Web Develop

Status: Completed

Start Time: 01/13/2026 08:53 PM

End Time: 01/13/2026 09:51 PM

Actions:

- COMPLETED: Active (Edit, Delete)
- COMPLETED: Active (Edit, Delete)
- SCHEDULED: Active (Edit, Delete)
- COMPLETED: Active (Edit, Delete)
- COMPLETED: Active (Edit, Delete)
- ONGOING: Active (Edit, Delete)

Delete Session

Are you sure you want to delete **Angular workshop?**

This is a soft delete. You can restore it later.

Actions:

- Cancel
- Delete

| ID | Title | Chair | Room | Conference | Start | End | Status | Deleted | Actions |
|----|-------------------------|-------|------------|--------------------------|----------------------|----------------------|-----------|---------|----------------|
| 1 | Opening Keynote | mesa | Main Hall | Tech Conference 2024 | 15/06/2024, 16:00:00 | 15/06/2024, 17:30:00 | COMPLETED | Active | (Edit, Delete) |
| 2 | AI in Modern Web | mesa | Room A | Tech Conference 2024 | 15/06/2024, 18:00:00 | 15/06/2024, 19:30:00 | COMPLETED | Active | (Edit, Delete) |
| 3 | Database Optimization | N/A | Room B | Tech Conference 2024 | 16/06/2024, 17:00:00 | 16/06/2024, 18:30:00 | SCHEDULED | Active | (Edit, Delete) |
| 4 | Machine Learning Basics | mesa | Room C | Data Science Summit | 20/07/2024, 16:00:00 | 20/07/2024, 18:00:00 | COMPLETED | Active | (Edit, Delete) |
| 7 | Angular workshop | mesa | Auditorium | Web Development Workshop | 13/01/2026, 20:53:00 | 13/01/2026, 21:51:00 | COMPLETED | Active | (Edit, Delete) |
| 8 | olo | mesa | Auditorium | olo | 13/01/2026, 22:25:00 | 14/01/2026, 22:23:00 | ONGOING | Active | (Edit, Delete) |

Conclusion

The **Conference Management System** successfully fulfills its intended objectives:

Completed task

- JWT-based authentication
- Clear role-based access control
- Clean MVC architecture
- Chair mark attendance in session that are assigned to them
- CRUD for session, room, conference and users
- Search for conference, room, session
- View Registration and Attendance
- Consistent UI with Thymeleaf
- Database versioning using Flyway
- Light input form validation

Not Completed Task

- Speaker role
 - Paper and speaker entity
 - Paper submission
-

References

- Class lectures and materials
- [Spring Boot Documentation](#)
- [Bootstrap Documentation](#)
- [ChatGPT](#)
- [Baeldung guide on springboot](#)