PROJECT DOCUMENTATION

LECTURE HALL BOOKING SYSTEM

EC 6060 SOFTWARE ENGINEERING PROJECT

TEAM NEXUS

CONTENTS

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- ✓ Eng. Pirunthapan Yogathasan

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2020/E/187	Dilaksan G.	Designer

GITHUB ACCOUNT

RuwanPradeep0/VenueVista (github.com)

JIRA ACCOUNT

https://ruwanpradeep9911.atlassian.net/jira/software/projects/SCRUM/boards/1

INTRODUCTION

Introducing our Lecture Hall Management System for the Faculty of Engineering at the University of Jaffna. This innovative platform revolutionizes the management of lecture halls, providing a seamless experience for lecturers, course coordinators, and administrators. Our system aims to optimize resource allocation, reduce scheduling conflicts, and enhance overall efficiency within the academic environment.

The Lecture Hall Booking System enables lecturers and course coordinators to easily search, filter, and reserve lecture halls based on location, capacity, and availability. With intelligent conflict-checking capabilities, scheduling clashes are minimized, ensuring smooth operations. Users have access to their booking history, upcoming reservations, and the ability to modify or cancel bookings as required.

Featuring a user-friendly interface and robust administrative tools, our system streamlines operations and enhances resource utilization. Effective communication channels and accessible information empower the University of Jaffna to optimize lecture scheduling and foster academic success.

VISION

Our vision for the Lecture Hall Management System is to establish it as the premier solution for optimizing lecture hall allocation and management within the Faculty of Engineering at the University of Jaffna and to create a platform that sets the standard for efficiency, transparency, and user satisfaction, empowering all stakeholders to maximize their academic experience.

MISION

Our mission is to simplify lecture hall management for the Faculty of Engineering(In Computer Department) at the University of Jaffna by providing an easy-to-use, efficient, and reliable system and to streamline the booking process, minimize conflicts, and enhance overall efficiency, empowering lecturers, course coordinators, and administrators to focus on delivering quality education.

STAKEHOLDERS

Lecturers: As primary users of lecture halls, lecturers play a crucial role in the system. They will interact with the system to book lecture halls for their classes, manage scheduling preferences, and access relevant information regarding their bookings.

Course Coordinators: Course coordinators are responsible for coordinating course activities and logistics. They will use the system to assist lecturers in scheduling lecture halls, resolving conflicts, and ensuring smooth operations during course sessions.

Administrators: Administrators oversee the overall management and administration of the system. They will have administrative privileges to manage user accounts, system configurations, and resolve any technical issues or conflicts that may arise.

Students: While not directly involved in the booking process, students are important stakeholders as they are the end-users of the lecture halls. They rely on the availability and functionality of lecture halls to attend classes, participate in activities, and engage in academic pursuits

ASSUMPTIONS

Technical Assumptions

1. Network Availability: The system will operate over a stable internet connection, with minimal downtime.
2. **Platform Compatibility:** The system will function correctly on modern web browsers (Chrome, Firefox, Safari, Edge).
3. **User Authentication:** User authentication will be handled securely, possibly using OAuth or a similar protocol.
4. **Scalability:** The system architecture will support scaling to accommodate an increasing number of users and reservations.
5. **Data Integrity:** The database will maintain ACID properties to ensure data integrity and consistency.

Business Assumptions

6. **User Registration:** Only lecturers and administrative staff are allowed to register and use the booking functionalities.
7. **Lecture Hall Utilization:** There will be a steady demand for lecture hall bookings, requiring efficient management to avoid conflicts.
8. **Administrative Oversight:** Administrators will actively manage lecture hall data and resolve booking conflicts.
9. **User Support:** There will be support mechanisms in place to assist users with any issues related to the system.

ACCEPTANCE CRITERIA

1. User Registration and Login:

- Lecturers can successfully register and log in to the system.
- The system validates user credentials and grants appropriate access based on user roles.

2. Reservation Calendar:

- The calendar view accurately displays the availability of lecture halls, with booked and available time slots.
- Lecturers can easily navigate and interact with the calendar to view and manage their reservations.

3. Booking Time Slots:

- Lecturers can successfully book available time slots based on their requirements (location, capacity, facilities).
- The system prevents double-booking and notifies users of conflicts.

4. Reservation Management:

- Lecturers can cancel their own reservations, and the system updates the availability accordingly.
- The system notifies users on the waiting list when a slot becomes available.

5. Filtering Facilities:

- Lecturers can filter lecture halls based on the available facilities (e.g., projectors, whiteboards) before making a booking.
- The filtering functionality produces accurate results and helps lecturers find the most suitable lecture halls.

6. Adding/Updating Lecture Halls:

- Administrators can add new lecture hall information, including details such as location, capacity, and available facilities.
- Administrators can update existing lecture hall information as needed.

7. System Reliability and Performance:

- The system maintains high availability, with minimal downtime and quick response times for user actions.
- The system can handle the expected number of users and bookings without performance degradation.

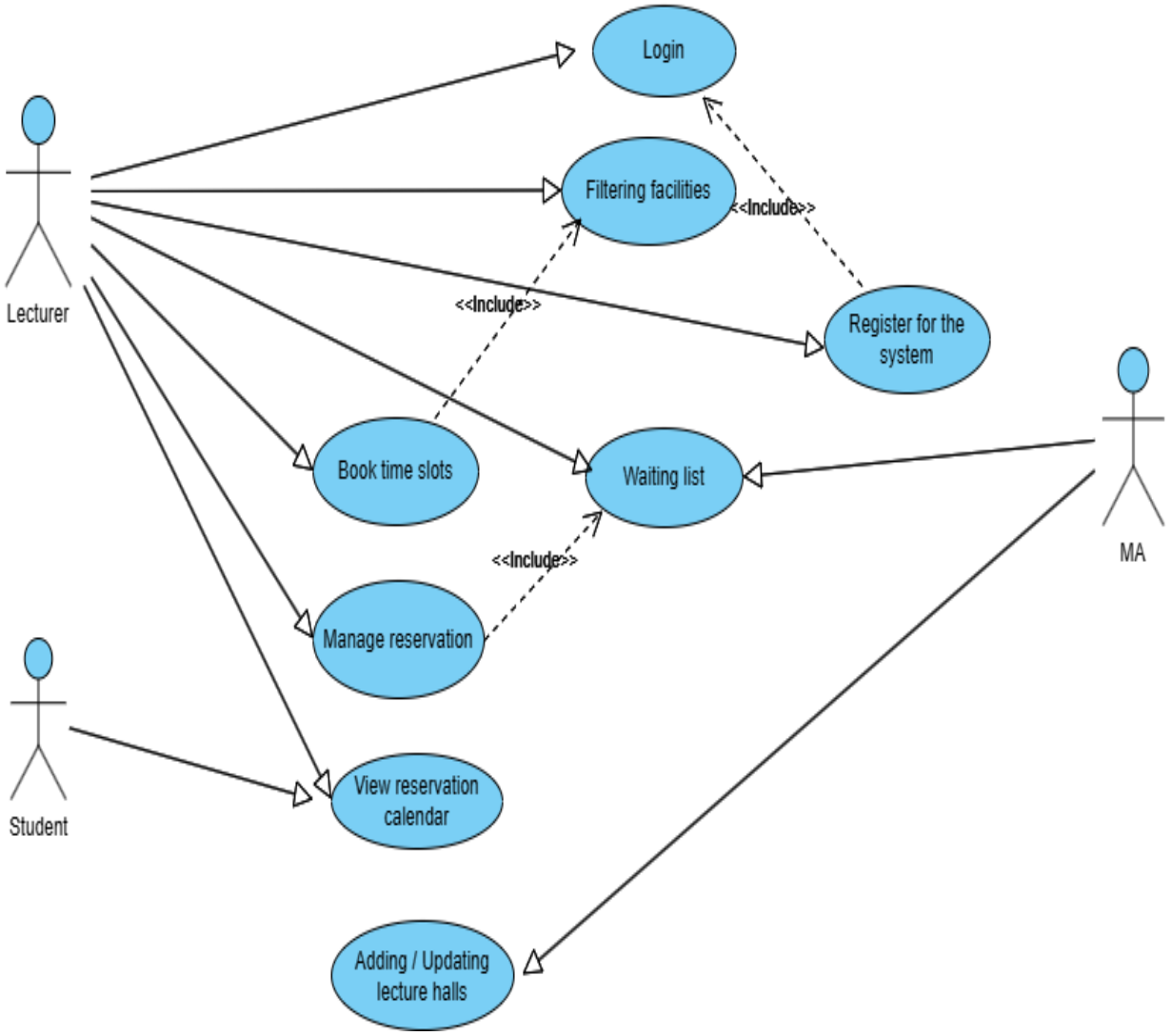
USE CASES WITH DESCRIPTION

Use case name	Register For the system
Description	Register for the System as a responsible person (Students are not allowed to register)
Actors	Lectures
Pre-condition	The system connects to the network
Post-condition	Access to the login functionality
	Login
Description	User login to access the functions in the system.
Actors	Lectures
Pre-condition	User should register for the system
Post-condition	Log in to the system and access the all functionalities
	View Reservation calendar
Description	View Booked and available slots as a Schedule calendar
Actors	Students, Lectures
Pre-condition	-
Post-condition	-
	Book Time slots
Description	Book available Time slots (available and reserved Time slots are displayed in Schedule calendar)
Actors	Lecturers

Pre-condition	Registered and logged in as a lecturer, Select the date, Select the time slot, Filter the infrastructures need such as projectors, whiteboard etc.
Post-condition	Lock The Reserved Time slot on the calendar
	Manage Reservation
Description	Cancel reservations
Actors	The person who booked the relevant time slot
Pre-condition	Book a time slot
Post-condition	Sending an email who are in the waiting list to reserve the same time slot
	Waiting List
Description	See what are the reservations are in the waiting list
Actors	Lecturers and MA
Pre-condition	Logged in as a lecturer, admin
Post-condition	If the booked reservation is canceled sending emails the responsible persons who are in waiting list
	Filtering facilities
Description	Filtering Facilities and infrastructures before booking the hall
Actors	Lecturers
Pre-condition	Registered and logged in as a lecturer
Post-condition	Filtering time slots according to the filter details
	Adding Updating Lecture Halls
Description	Adding Lecture halls to the system

Actors	Only MA
Pre-condition	Registered and logged in as a MA
Post-condition	The added Halls are available to Reserve for time slots

USE CASE DIAGRAM



FUNCTIONAL SYSTEM REQUIREMENT

1. User Registration:
   - The system shall allow Lecturers to register for access.
   - Only Lecturers are permitted to register; students are not allowed.
   - Upon registration, Lecturers must provide necessary information such as name, email, and possibly affiliation.

2. User Login:
   - Lecturers must be able to log in to access system functionalities.
   - Access to functionalities is granted only after successful login.
   - Authentication mechanisms such as username/password or two-factor authentication may be employed.

3. View Reservation Calendar:
   - Lecturers and possibly Students shall be able to view a calendar displaying booked and available time slots for lecture halls.
   - The calendar should provide an overview of reservations for efficient scheduling.

4. Book Time Slots:
   - Lecturers should be able to book available time slots for lecture halls.
   - The booking process should allow selection of date, time slot, and any necessary infrastructure requirements (e.g., projectors, whiteboards).

5. Manage Reservation:
   - Users who booked a time slot should be able to cancel reservations.
   - Upon cancellation, the system should notify users on the waiting list, if any, about the newly available time slot.

6. Waiting List:
   - Lecturers and possibly administrative staff should be able to view reservations on the waiting list.
   - The system should automatically notify users on the waiting list when a previously booked time slot becomes available.

7. Filtering Facilities:
   - Lecturers should be able to filter available time slots based on specific facilities and infrastructures required for their lecture (e.g., projector availability, seating capacity).

8. Adding/Updating Lecture Halls:
    - Only authorized administrative staff (e.g., MA) should be able to add or update lecture halls within the system.
    - This functionality includes adding new lecture halls, updating existing ones, and ensuring their availability for reservation.

NON-FUNCTIONAL SYSTEM REQUIREMENT

1. Performance
    - The system should respond to user actions (e.g., booking, canceling reservations) within a reasonable timeframe, typically within a few seconds.
    - The system should be able to handle concurrent user interactions without significant performance degradation.
    - The calendar view should load efficiently, even with a large number of reservations.

2. Security
    - User authentication and authorization mechanisms should be robust to prevent unauthorized access to sensitive functionalities.
    - User passwords should be securely stored using industry-standard encryption techniques.
    - Access controls should be implemented to ensure that only authorized users can perform specific actions (e.g., booking, canceling reservations).

3. Usability
    - The user interface should be intuitive and easy to navigate, even for users with minimal technical expertise.
    - Error messages should be informative and guide users toward resolving issues effectively.
    - The system should provide clear feedback to users upon successful completion of actions (e.g., reservation confirmation).

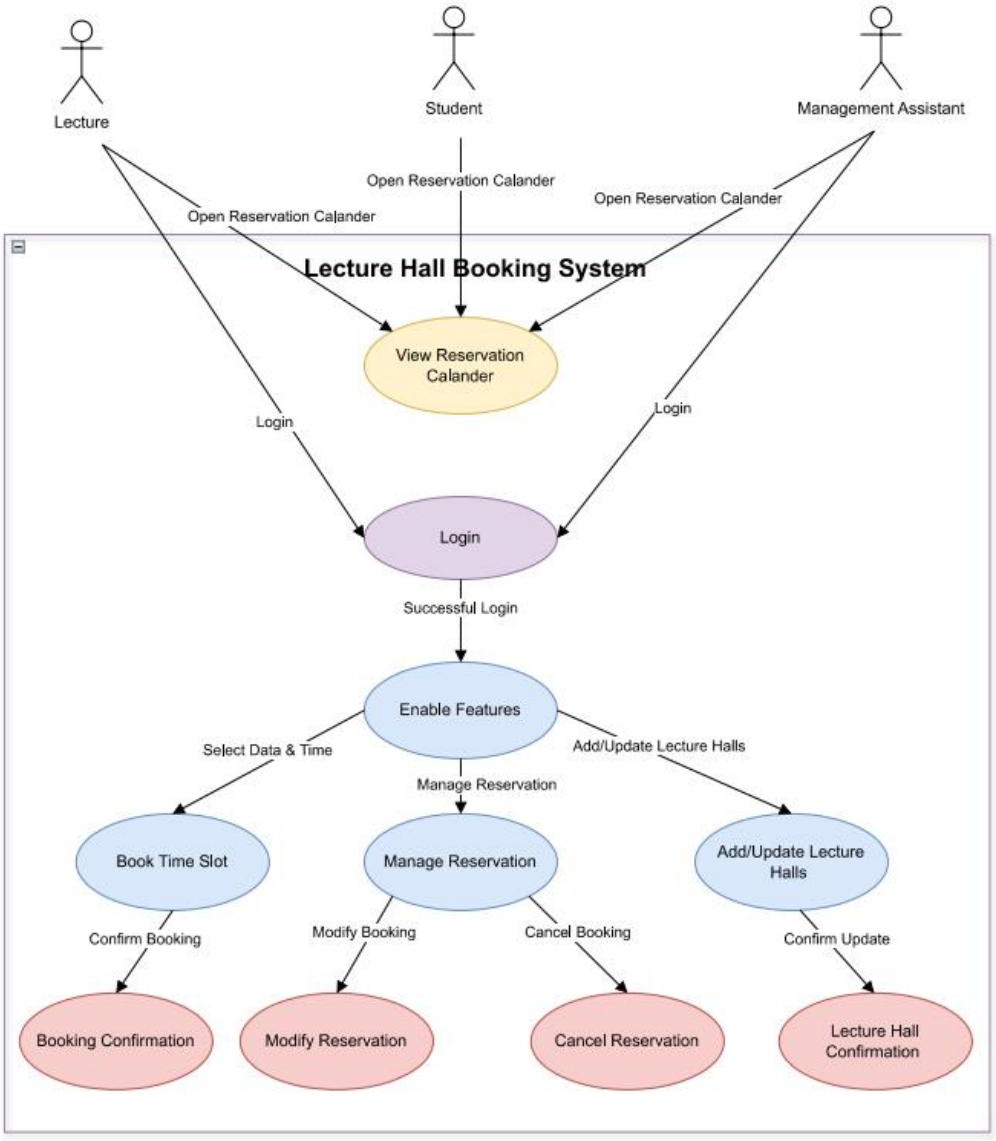
4. Reliability
    - The system should be highly available, with minimal downtime for maintenance or upgrades.
    - Data integrity should be maintained at all times, ensuring that reservations and user information are accurate and consistent.
    - The system should have backup and recovery mechanisms in place to prevent data loss in case of system failures or disasters.

5. Scalability
    - The system should be able to accommodate an increasing number of users and reservations over time without significant performance degradation.
    - Scalability measures such as load balancing and horizontal scaling should be implemented to handle spikes in user activity effectively.

6. Compatibility
    - The system should be compatible with commonly used web browsers and devices to ensure accessibility for all users.
    - Compatibility with various operating systems and platforms should be ensured to reach a broad user base.

7. Auditability
    - The system should maintain logs of user activities, including login attempts, reservation bookings, and cancellations, for auditing purposes.
    - Logs should be securely stored and accessible only to authorized personnel for monitoring and analysis.

USER FLOW CHART



RISK MANAGEMENT PLAN

RISK IDENTIFICATION

There is a risk of network instability affecting the system's availability and performance, leading to potential downtime during peak usage periods.

The system may encounter compatibility issues with certain web browsers or devices, impacting user experience and accessibility.

Delays in the user registration process may hinder user adoption and delay system utilization.

RISK MITIGATION STRATEGIES

Implement redundant network connections and Regular monitoring and maintenance will be conducted to ensure network reliability.

Perform extensive testing across various web browsers.

Optimize the user registration process to minimize delays and friction.

TIMELINE

1-2 week	• Discuss the project title
3-4 week	• Create GitHub, Jira and Figma accounts for our team and study how work with them
4-6 week	• Finalize functinoal and non functional requirement
5 week	• Draw ER diagram and Usecase diagram
6-8 week	• Design the frontend and Backend paralally
9-11 week	• Design the frontend and Backend paralally
11-12 week	• Testing the develoment process
13 week	• Modify the developing procedure for user testing suggestion
14-15 week	• Do the documentation