Software Requirements Specification

for

Conference Room Booking System

Version 1.0

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

- *Product: Conference Room Booking System*
- *Revision/Release Number: 1.0*
- *Scope: This SRS covers the entire Conference Room Booking System*

1.2 Document Conventions

1. Document Formatting Standards:

- *Font: The document uses Arial text with an 11-point text size.*

- *Headings and Subheadings: Section headings shall be in bold and use title case (e.g., **"1. Introduction"**). Subsection headings shall be in italics (e.g., "1.1 Purpose").*

- *Numbering and Labeling: All sections and subsections shall be numbered or bulleted, and requirements shall be labeled using a unique identifier (e.g., "REQ-001").*

2. Text Formatting:

- *Bulleted and Numbered Lists: Bulleted lists shall be used for presenting items without a specific order. Numbered lists shall be used for items that require sequential identification.*

- *Quotation Marks: Quotation marks shall be used for enclosing literal text or phrases. For example, "ISO 9001:2015 - Quality Management Systems - Requirements."*

1.3 Intended Audience and Reading Suggestions

1. Intended Audience

Developers and Designers

- ***Description:** Developers will find detailed technical information in this document that is essential for implementing the Conference Room Booking System. They should begin with the "Overview" section to get a high-level understanding of the project, then proceed to the "Functional Requirements" and "Nonfunctional Requirements" sections for detailed technical specifications.*

- ***Reading Focus:*** *Developers and designers should focus on the technical details, functional requirements, and system architecture described in the document. They should ensure that the system is implemented according to these specifications.*

Project Managers

- ***Description:*** *Project managers play a critical role in overseeing the project's progress and ensuring it aligns with business goals. They should start with the "Overview" section to understand the project's scope and objectives. Additionally, they may be interested in the "Project Timeline" and "Resource Requirements" sections to manage project resources effectively.*
- ***Reading Focus:*** *Project managers should review the document to gain an understanding of the project's scope, objectives, and high-level functional requirements. This will help them plan the project and allocate resources effectively*

Quality Assurance and Testers

- ***Description:*** *QA teams and testers responsible for verifying that the system meets the specified requirements.*
- ***Reading Focus:*** *Testers should pay close attention to the functional requirements, test cases, and performance requirements outlined in the document. This will guide their testing efforts and ensure comprehensive test coverage.*

System Administrators

- ***Description:*** *System administrators are responsible for deploying and maintaining the Conference Room Booking System.*
- ***Reading Focus:*** *System administrators should look for information regarding the system's hardware and software requirements, installation procedures, and system configuration. This will assist them in setting up and managing the system.*

Business Stakeholders

- ***Description:*** *Business stakeholders, including executives and decision-makers, interested in the system's alignment with business goals.*
- ***Reading Focus:*** *Business stakeholders should focus on the product scope, business objectives, and any financial or strategic implications mentioned in the document. This will help them assess how the system supports corporate objectives.*

<u>*End Users (Employees, Project Managers)*</u>

- **Description:** End users, including employees and project managers who will interact with the system.
- **Reading Focus:** End users should primarily review sections related to the user interface, features, and functionalities that pertain to their roles. They should understand how the system will meet their specific needs.

2. Reading Suggestions

<u>*Overview Sections*</u>

Description: Begin by reading the introductory sections (1. Introduction) to get an overview of the document's purpose, scope, and intended audience. This provides context for the rest of the document.

<u>*User Classes and Characteristics*</u>

- **Reading Focus:** Users (employees, project managers) should review this section to understand how the system caters to their specific roles and needs.

<u>*System Features*</u>

- **Reading Focus:** Developers, project managers, and testers should delve into this section to understand the detailed functionality and requirements of the system. Each feature should be studied in detail.

<u>*External Interface Requirements*</u>

- **Reading Focus:** System administrators should pay attention to hardware and software interface requirements. End users should review user interface descriptions.

<u>*Other Nonfunctional Requirements*</u>

- **Reading Focus:** Quality assurance teams should focus on performance, safety, and security requirements. Business stakeholders should review how nonfunctional aspects align with business objectives.

<u>Assumptions and Dependencies</u>

- ***Reading Focus:*** *Everyone involved should be aware of any assumptions and dependencies that could impact the project.*

<u> Appendices</u>

- ***Reading Focus****: Developers may refer to Appendix B for analysis models. Appendix A contains the glossary, which can be useful for understanding key terms.*

By following these reading suggestions, each stakeholder group can navigate the SRS document effectively, extract the relevant information, and contribute to the successful development and deployment of the Conference Room Booking System.

1.4 Product Scope

Description

The Conference Room Booking System is a software solution designed to streamline and enhance the management of conference room reservations within an organization. Its primary purpose is to facilitate the efficient booking of conference rooms, catering to the needs of employees, project managers, and administrators. The system ensures that meetings and events can be scheduled seamlessly, reducing administrative overhead and improving resource allocation.

Objectives and Goals

- *Efficient Room Booking: The system aims to provide employees with a user-friendly platform to reserve conference rooms of various sizes and facilities quickly.*
- *Managerial Oversight: Project managers play a crucial role in approving room bookings within their teams, ensuring that resources are allocated appropriately.*
- *Administrative Control: Administrators have the tools to manage conference room assets, process payments, and oversee booking requests effectively.*
- *Minimize Conflicts: By maintaining a centralized booking system, the software minimizes conflicts and double bookings, enhancing overall operational efficiency.*
- *Financial Accountability: The system enables tracking and billing of room usage, promoting financial accountability within the organization.*

Benefits

- *Improved Efficiency: The Conference Room Booking System streamlines the booking process, reducing the time and effort required to secure meeting spaces.*

- *Enhanced Resource Utilization: Through manager approvals and real-time availability tracking, the system optimizes the utilization of conference rooms.*
- *Financial Transparency: By tracking room usage and processing payments, the software provides financial transparency, aiding budget management.*
- *User Satisfaction: Employees benefit from a user-friendly interface that simplifies the booking process, contributing to higher user satisfaction.*
- *Administrative Control: Administrators gain better control over room assets, bookings, and payment processing.*

Alignment with Corporate Goals

- *The Conference Room Booking System aligns with the corporate goals and strategies of the organization by*
- *Improving Efficiency: The system supports efficient resource allocation, reducing wastage of valuable meeting spaces and time.*
- *Cost Control: By billing for room usage and automating payment processing, the system contributes to financial control and accountability.*
- *Enhancing Collaboration: Streamlined room booking facilitates effective collaboration among teams and departments, supporting the organization's goal of fostering innovation and teamwork.*
- *Data-Driven Decision-Making: The system generates reports and data analytics that can inform strategic decisions regarding office space utilization.*
- *User-Centric Approach: The user-centric design of the system enhances the overall workplace experience, aligning with the organization's commitment to employee satisfaction.*

1.5 References

No specific references have been mentioned in this document.

2. Overall Description

2.1 Product Perspective

- *Description: The Conference Room Booking System is a self-contained software product designed to streamline the booking and management of conference rooms within an organization.*
- *Context: It operates as a standalone system but may integrate with other corporate systems, such as user directories for authentication.*

2.2 Product Functions

Description: *The system offers the following major functions:*

- *Room Booking: Allows employees to book conference rooms based on size, facilities, and availability.*
- *Manager Approval: Requires project managers to approve room bookings made by their team members.*
- *Admin Controls: Provides administrative tools for managing rooms, processing payments, and controlling bookings.*

2.3 User Classes and Characteristics

1. User Classes:

- *Admin: Responsible for system administration and configuration.*
- *Employee: Regular users who need to book conference rooms.*
- *Project Manager: Supervisors who approve or deny room bookings made by their team members.*

2. Characteristics:

- *Admins have full system access and control.*
- *Employees need to book rooms based on their department's needs.*
- *Project managers oversee their team's room bookings and approvals.*

2.4 Operating Environment

- *Hardware Platform: The system will run on standard office computer hardware, including servers and workstations.*
- *Operating System: Compatible with common operating systems like Windows, Linux, and macOS.*
- *Software Dependencies: Relies on a web server, a database management system, and a programming language (e.g., PHP, Python).*
- *External Interfaces: Integrates with user directories for authentication and may connect to payment gateways for processing.*

2.5 Design and Implementation Constraints

- *Corporate Policies: Must comply with corporate policies related to data security, privacy, and user access control.*
- *Hardware Limitations: System performance may be constrained by the hardware available.*
- *Interfaces: Compatibility with external systems and libraries.*
- *Security: Implement security measures to protect user data and sensitive information.*

2.6 User Documentation

- *User Manuals: Comprehensive user manuals will be provided to guide employees, project managers, and admins on using the system effectively.*
- *Online Help: Contextual online help and tooltips within the application for real-time assistance.*
- *Tutorials: Video tutorials and walkthroughs for users to quickly get started.*

2.7 Assumptions and Dependencies

1. Assumptions:

- *The availability of standard office hardware and software.*
- *Corporate policies regarding data security will be followed.*
- *Users have basic computer literacy.*

2. Dependencies:

- *Integration with user directories for authentication.*
- *Dependency on third-party payment gateways for processing payments.*

3. External Interface Requirements

3.1 User Interfaces

3.1.1 Employee User Interface

1. Logical Characteristics:

- *The employee user interface provides a web-based front-end accessible via standard web browsers.*
- *It offers a user-friendly dashboard displaying available conference rooms based on size and facilities.*
- *Users interact with the system using a computer mouse and keyboard.*
- *The interface follows corporate branding guidelines for a cohesive look and feel.*

2. Standard Buttons and Functions:

- *The interface includes standard buttons such as "Book Room," "View Availability," and "Cancel Booking."*

- *Keyboard shortcuts for common actions are available.*
- *Error messages are displayed in a consistent format following user interface standards.*

3. *Screen Layout:*

- *The screen layout adheres to a responsive design, ensuring usability on various screen sizes and devices.*
- *It provides clear navigation menus and tooltips for guidance.*

3.1.2 Admin User Interface

1. *Logical Characteristics:*

- *The admin interface is web-based and secured with additional authentication layers.*
- *It offers tools for adding/removing conference rooms, processing payments, approving/denying bookings, and managing user accounts.*
- *Administrators use standard web browsers to access the interface.*

2. *Standard Buttons and Functions:*

- *The admin interface includes buttons for "Add Room," "Remove Room," "Process Payment," "Approve Booking," and "Deny Booking."*
- *Error messages and confirmation dialogs follow standard conventions.*

3.1.3 Manager User Interface

1. *Logical Characteristics:*

- *The manager interface is web-based and allows project managers to approve or deny room bookings made by their team members.*
- *It is accessed via standard web browsers, with additional authentication for managers.*

2. *Standard Buttons and Functions:*

- *The manager interface includes buttons for "Approve Booking" and "Deny Booking."*
- *It provides clear notifications when booking requests are pending manager approval.*

3.2 Hardware Interfaces

1. Logical and Physical Characteristics:

- *The Conference Room Booking System interacts with standard office hardware components, including servers and workstations.*
- *It communicates with hardware through standard communication protocols (e.g., TCP/IP) for data transfer.*

3.3 Software Interfaces

3.3.1 User Authentication (External System)

1. Description:

- *The system integrates with an external user authentication system (e.g., LDAP, Active Directory) to verify user credentials.*
- *This external system is responsible for authenticating users during login.*

2. Data Items or Messages:

- *User credentials (username and password) are passed from the Conference Room Booking System to the external authentication system.*
- *The external system responds with authentication success or failure.*

3.3.2 Payment Gateway (Third-party)

1. Description:

- *The system interfaces with a third-party payment gateway for processing payments related to room bookings and cancellations.*
- *This gateway handles payment transactions securely.*

2. Data Items or Messages:

- *The system sends payment details (e.g., credit card information) to the payment gateway when processing payments.*
- *The payment gateway responds with payment confirmation or failure.*

3.4 Communications Interfaces

3.4.1 Email Notifications

1. Description:

- *The system sends email notifications to users for booking confirmations, approvals, and other relevant updates.*
- *Email communication ensures users are informed about their booking status.*

2. Communication Protocols:

- *The system uses SMTP (Simple Mail Transfer Protocol) for sending email notifications.*

3. Message Formatting:

- *Email notifications follow a predefined template and include essential information, such as booking details and confirmation links.*
- *This detailed elaboration of the "External Interface Requirements" section provides a clear understanding of how the Conference Room Booking System interacts with external systems, hardware, software interfaces, and communication channels. These interfaces are crucial for the system to function seamlessly and provide users with the expected functionality and services.*

4. System Features

4.1 Employee Booking:

4.1.1 Description and Priority

- *Allows employees to view, book, and waitlist conference rooms.*
- *Priority: High*

4.1.2 Stimulus/Response Sequences

Stimulus 1: An employee logs in to the system.

Response 1: The system authenticates the employee's credentials and displays the dashboard.

Stimulus 2: The employee selects the "View Available Conference Rooms" option.

Response 2: The system presents a list of available conference rooms based on size and facilities.

Stimulus 3: The employee selects a specific conference room and booking details.

Response 3: The system prompts the employee to enter their name, ID, department, project manager's details, date, and time for booking.

Stimulus 4: The employee submits the booking request.

Response 4: The system processes the request and updates the booking status. If the room is available, it confirms the booking; otherwise, it places the employee on a waitlist.

Stimulus 5: If the booking is confirmed, the employee receives a confirmation notification.

Response 5: The system displays the booking confirmation with relevant details.

Stimulus 6: If the booking is waitlisted, the employee receives a notification.

Response 6: The system notifies the employee of their position on the waitlist and provides information about potential cancellations and associated fees.

Stimulus 7: If the employee cancels a booking.

Response 7: The system updates the booking status and, if applicable, charges a cancellation fee. It also notifies the employee of the fee.

4.1.3   Functional Requirements

- **REQ-1:** *Employees can view available conference rooms based on size and facilities.*
- **REQ-2:** *Employee can book a room, providing the necessary information.*
- **REQ-3:** *Waitlist functionality for unavailable rooms.*
- **REQ-4:** *Cancellation incurs a fee.*

4.2 Manager Approval and Billing:

4.2.1   Description and Priority

- *Allows managers to approve bookings and access billing information.*
- *Priority: High*

4.2.2   Stimulus/Response Sequences

Stimulus 1: A manager logs in to the system.
Response 1: The system authenticates the manager's credentials and displays the manager's dashboard.

Stimulus 2: The manager selects the "Pending Bookings" option.
Response 2: The system presents a list of pending booking requests from their team members.

Stimulus 3: The manager reviews a booking request and decides to approve or deny it.
Response 3: The system processes the manager's decision and updates the booking status accordingly.

Stimulus 4: If the manager approves a booking.
Response 4: The system confirms the booking and notifies the employee. It also updates the billing information for the manager's team.

Stimulus 5: If the manager denies a booking.
Response 5: The system informs the employee of the denial and the reason for it.

Stimulus 6: At the end of the month, the manager selects the "Billing Information" option.
Response 6: The system generates a billing summary for the manager, displaying the total charges incurred by their team for conference room bookings during the month.

4.2.3   Functional Requirements

- ***REQ-5:*** *The manager approves or denies employee bookings.*
- ***REQ-6:*** *Billing information available to managers.*

5. Other Nonfunctional Requirements

5.1 Performance Requirements

- *Response Time: The system should respond to user interactions within 2 seconds or less, ensuring a seamless booking experience.*
- *Scalability: The system must be able to handle a growing number of users and conference rooms. It should scale horizontally to accommodate increased traffic and data.*
- *Concurrent Users: The system should support at least 100 concurrent users without a significant degradation in performance.*
- *Database Query Speed: Database queries for room availability should be completed within 1 second even during peak usage.*

5.2 Safety Requirements

- *Data Privacy: The system should comply with relevant data protection regulations (e.g., GDPR) to ensure the privacy of user and booking data.*
- *Data Backup: Regular automated backups of booking and user data should be maintained to prevent data loss in case of system failures.*

5.3 Security Requirements

- *User Authentication: User authentication should be implemented securely, requiring usernames and strong passwords. Two-factor authentication should be available for added security.*
- *Access Control: Only authorized personnel (Admins, Managers) should have access to sensitive functions like adding/removing conference rooms, processing payments, and approving room bookings.*
- *Data Encryption: User data, including personal and payment information, should be encrypted during transmission and storage.*
- *Audit Trails: The system should maintain audit logs of all user actions, including room bookings, cancellations, and changes made by Admins.*

5.4 Software Quality Attributes

- *Reliability: The system should have an uptime of at least 99.9% to ensure it's available when needed.*
- *Usability: The system should have an intuitive user interface and provide clear error messages to enhance user experience.*
- *Maintainability: Code should be well-documented and modular, allowing for easy maintenance and updates.*
- *Portability: The system should be accessible from popular web browsers and mobile devices for user convenience.*

5.5 Business Rules

- *Booking Approval: Only bookings approved by the respective Project Manager should be confirmed. Unapproved bookings should remain tentative until approval is obtained.*
- *Cancellation Policy: Cancellation requests should be subject to a fee, and the cancellation policy should be clearly communicated to users during the booking process.*
- *Payment Processing: Payments should be processed securely, and users should receive electronic receipts upon successful payment.*
- *Room Access: Access to specific rooms may be restricted based on the user's department or role. Business rules should enforce these restrictions.*

6. Other Requirements

Database Requirements: The system shall use a relational database management system (RDBMS) to store user data, booking records, and other relevant information. The database schema shall be designed to efficiently manage and retrieve data related to conference room bookings, user accounts, and payment transactions.

Internationalization Requirements: The system shall support multiple languages to accommodate users from different regions. Language preferences shall be configurable by individual users. Translations for system messages, labels, and notifications shall be provided for at least English and Spanish languages.

Legal Requirements: The system shall comply with all relevant legal and regulatory requirements, including data protection laws (e.g., GDPR), accessibility standards (e.g., WCAG), and any local or industry-specific regulations related to payment processing and financial transactions.

Reuse Objectives for the Project: The project shall follow established software development best practices to maximize code reusability. Common functions and modules shall be designed to be reusable in future projects or system enhancements. Reusable components may include user authentication modules, payment processing integrations, and booking management functions.

Appendix A: Glossary

Admin: A user class in the Conference Room Booking System with full system access and control, responsible for system administration and configuration.

Employee: A user class in the Conference Room Booking System responsible for booking conference rooms based on their department's needs.

Project Manager: A user class in the Conference Room Booking System responsible for supervising room bookings made by their team members and approving or denying them.

<u>*RDBMS:*</u> *Relational Database Management System, a type of database system used to store and manage structured data in a tabular format.*

<u>*GDPR:*</u> *General Data Protection Regulation, a European Union regulation that governs data protection and privacy for individuals within the EU.*

<u>*WCAG*</u>*: Web Content Accessibility Guidelines, a set of guidelines for making web content more accessible to people with disabilities.*

Appendix B: Analysis Models

<u>*Use Case Diagram*</u>

Description: *The use case diagram provides a visual representation of the system's functional requirements by illustrating the interactions between various actors and the system itself. It identifies the primary use cases that describe the system's essential functionalities and the actors (user classes) that interact with these use cases.*

Diagram:
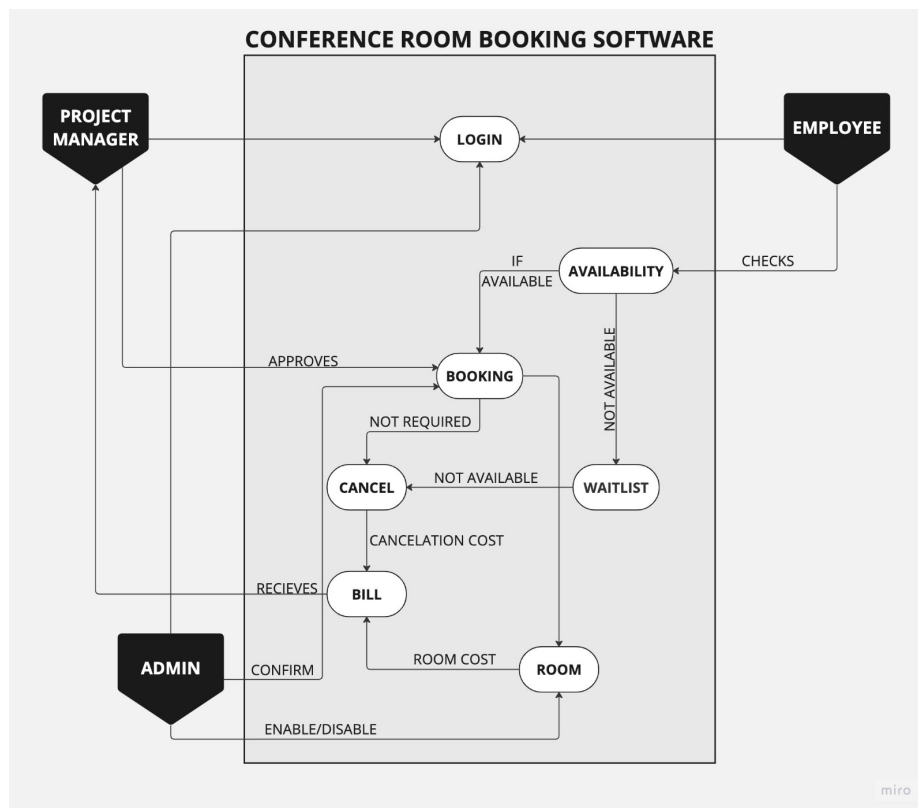
Key Elements:

> <u>*Actors*</u>*:*

> - *Admin: Represents the system administrator responsible for system configuration and administration.*

> - *Employee: Represents regular users who need to book conference rooms.*

> - *Project Manager: Represents supervisors who approve or deny room bookings made by their team members.*

> <u>*Use Cases:*</u>

> - *Employee Booking: This use case allows employees to view, book, and waitlist conference rooms.*

> - *Manager Approval and Billing: This use case enables managers to approve bookings and access billing information.*

> <u>*Interactions:*</u>

> - *Employees interact with the "Employee Booking" use case to book conference rooms.*

> - *Project managers interact with the "Manager Approval and Billing" use case to approve or deny room bookings made by their team members and access billing information.*

The use case diagram serves as a high-level overview of the system's functionalities and the roles of various actors within the Conference Room Booking System. It helps stakeholders visualize the system's interactions and functionality at a glance.

Appendix C: To Be Determined List

1. <u>Pricing Structure</u>

   *- **Description:** The specific pricing structure for conference room bookings, including any discounts, penalties, or special rates.*

    - Reason for TBD: Pricing decisions require further analysis and agreement among stakeholders.

2. Cancellation Policies

    - Description: Detailed policies regarding room booking cancellations, including the cancellation fee structure and time frame for cancellations.

    - Reason for TBD: Cancellation policies need to be defined based on business requirements.

3. Authentication and Security Mechanisms

    - Description: Detailed specifications for user authentication methods and security protocols.

    - Reason for TBD: Security measures need to be discussed and finalized to protect user data and system integrity.

4. Payment Gateway Selection

    - Description: The choice of a payment gateway or processing service for financial transactions and payment security.

    - Reason for TBD: The selection of a payment gateway requires further evaluation.

5. Data Retention Period

    - Description: The duration for which booking records and user data will be retained before deletion or archiving.

- ***Reason for TBD:*** *Data retention policy needs to align with legal requirements and business needs.*

6. *Integration with Access Control Systems*

   - ***Description:*** *How the system will integrate with building access control systems to grant room access based on bookings.*

   - ***Reason for TBD****: Integration details require discussion with access control system providers.*

7. *Usability Testing Plan*

   - ***Description:*** *The plan for conducting usability testing, including test scenarios, user profiles, and testing schedule.*

   - ***Reason for TBD:*** *A usability testing plan needs to be developed as part of the project plan.*