NSYSU CSE

Virtual Room Reservation

Software Design Document

Name (s):

Lab Section:

Workstation:

Date: 12/29/2023

Table of Contents

Introduction

1.1. Purpose

1.2. Scope

1.3. Overview

1.4. Reference Material

1.5. Definitions and Acronyms

System Overview

System Architecture

3.1. Architectural Design

3.2. Decomposition Description

3.3. Design Rationale

Data Design

4.1. Data Description

4.2. Data Dictionary

Component Design

Human Interface Design

6.1. Overview of User Interface

6.2. Screen Images

6.3. Screen Objects and Actions

Requirements Matrix

Appendices

1. Introduction

1.1 Purpose

This Software Design Document (SDD) provides a detailed architecture and system design for the Virtual Room Reservation project. It is intended for use by the development team, project stakeholders, and system maintainers.

1.2 Scope

The scope of this document encompasses the comprehensive design of the Virtual Room Reservation software, including the architecture, data structures, user interface, and component functionalities. It defines the structure and relationship of software elements for the effective implementation of the system.

1.3 Overview

This document is organized to provide a thorough understanding of the software’s architecture, data design, component construction, and user interface. It includes diagrams, definitions, and detailed descriptions for clarity.

1.4 Reference Material

Virtual Room Reservation Requirements Specification

UML Documentation, Version 2.5

1.5 Definitions and Acronyms

VRR: Virtual Room Reservation

SDD: Software Design Document

UML: Unified Modeling Language

2. System Overview

The Virtual Room Reservation system is a web-based application designed to facilitate the online reservation of classrooms. It integrates with existing educational infrastructure to allow students and staff to book rooms based on availability and requirements.

3. System Architecture

3.1 Architectural Design

The system architecture is modular, consisting of a front-end for user interaction, a back-end for processing, and a database for data storage. Major subsystems include User Authentication, Room Management, Reservation Processing, and Notification Systems.

3.2 Decomposition Description

User Authentication Subsystem: Manages user login and registration.

Room Management Subsystem: Handles room details and availability.

Reservation Processing Subsystem: Processes reservations and checks for conflicts.

Notification System: Sends alerts and confirmations to users.

3.3 Design Rationale

The modular design allows for scalability and maintainability. A web-based approach was chosen for accessibility. Trade-offs included balancing system complexity with user-friendliness.

4. Data Design

4.1 Data Description

Data is structured into entities such as Users, Rooms, Reservations, and Notifications. Each entity has attributes and relationships that are mapped in the system’s database.

4.2 Data Dictionary

User: {UserID, Name, Email, Password}

Room: {RoomID, Location, Capacity, Features}

Reservation: {ReservationID, UserID, RoomID, StartTime, EndTime}

5. Component Design

Each component of the system, corresponding to subsystems in the architecture, is described with its functionalities and interactions. Algorithms and processes are presented in pseudocode.

6. Human Interface Design

6.1 Overview of User Interface

The user interface is designed for ease of use with intuitive navigation. Users can search for rooms, make reservations, and view their booking history.

6.2 Screen Images

(Screenshots of the user interface are included here.)

6.3 Screen Objects and Actions

Discussion on UI elements such as search fields, reservation forms, and interactive calendars, along with their associated actions.

7. Requirements Matrix

A table mapping each system component and data structure to the functional requirements specified in the SRS, using the reference numbers from the SRS.

8. Appendices