



SOFTWARE REQUIREMENT SPECIFICATIONS

Project Name : Hotel Reservation/Management System

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Project Type : Client Server TCP

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1. Introduction

The project, Hotel Management System is client server based application that allows the hotel manager to handle all hotel activities. Ability to manage various bookings and rooms make this system very flexible and convenient. Server provides room booking, statistics of room availability, hotel services management and other necessary hotel management features. The system allows the server to post available rooms in the system. Customers can view and book rooms. Customers have the right to cancel reservations too. This system handles efficient booking of rooms.

1.1 Overview:

The system works as a client - server based application. Users/Clients are required to authorize themselves with username and password to access hotel data from the server. Client requests booking of a certain room type such as single, double, deluxe or suite room along with the check in and check out date. Server checks for the availability of the same and initiates the booking once confirmed by the client. Server also maintains booking history up to a month and displays statistics related to room availability.

1.2 Project Scope:

- Hotel management system facilitates multiple clients to view and book hotel facilities.
- Ensures the efficient allotment of rooms.
- Minimize errors in the making of bills.
- Maintains booking history up to a month.
- The Hotel Management System automates major hotel processes like billing and booking.

2. Overall Description

2.1 Project Features

- The user interface is attractive and user-friendly. The entire process is menu driven.
- The client will have to log in to the system and provide their username and password.
- The server will authorize the user and once the client logs in , the menu will be displayed of different rooms present along with their price and services.
- The client can reserve the room and can also add on the services provided by the hotel.
- The client will also have an option to cancel the booked room.
- After the booking the server will also display the receipt.

2.2 User Needs

1. User Characteristics: The user should be familiar with menu-driven Applications.
2. General Constraints: A full internet connection is required for Linux (Operating System).
3. Intended audience:
 - a. Developers
 - b. Project Manager

2.3 Operating Environment

The operating environment for the application is listed below

- Operating system: Any Linux-based OS

3. System Features

3.1 Functional Requirements

3.1.1 G5_FR01: The system provides an efficient way of booking a hotel room along with services.

3.1.2 G5_FR02: The server maintains all the data related to a hotel booking system i.e. types of rooms such as single, double, duplex and suite rooms available ,price of the room for 24 hours and the services that can be added on while booking the room.

3.1.3 G5_FR03: The server will provide details of the rooms and services as requested by the client and proceed with booking if confirmed . The server should cancel the booking if the client wishes to cancel.

3.1.4 G5_FR04: Multiple clients can connect to the server and try to reserve same/different category of rooms or services.When multiple clients try to book the same room, server uses mutex for locking and unlocking the shared room .so that only one client can access or book the room at a time efficiently.

3.1.5 G5_FR05:Users can check the room availability before they book rooms as the server provides statistics related to availability of rooms.

3.1.6 G5_FR06: The server maintains the history of previous rooms/services booked upto 1 month.This shows the customer information related to who booked the rooms along with the age ,phone number, email address.

3.1.7 G5_FR07: The clients needs to be authorized by the server before accessing the hotel database.If the client/user is logging in first time ,then the user can register at hotel management system using email id and password.

3.1.8 G5_FR08: The reservation system will have 24 hr check-in/check-out for rooms and efficient algorithm for using facilities in the hotel.

3.1.9 G5_FR09: The server will provide the details of all occupied rooms/available rooms, and reserved rooms etc..

3.1.10 G5_FR10: The server provides the client with an option to confirm or cancel the booking, if the client chooses to cancel then the room which is going to be reserved to the client should be accessible to reserve by other clients and client details are also removed from the database.

3.2 Technical Requirements

3.2.1 G5_TR01 - Process Synchronization: It is the way by which processes that share the same memory space are managed in an operating system. Here, it ensures that multiple clients accessing the common data i.e., hotel data is synchronized, thereby avoiding conflicts.

3.2.2 G5_TR02 - Shared Memory in Linux: All data related to the hotel such as room types, price, etc. are shared by multiple clients. Mutex can be used for locking and unlocking the shared resources to avoid data corruptions and booking errors.

3.2.3 G5_TR03 - Socket Programming in C - TCP: Socket programming is a way of connecting two nodes, here the client and server, on a network to communicate with each other and coordinate the hotel booking activities.

3.2.4 G5_TR04 - Support for statistics: Server is responsible for the display of statistics related to availability of rooms such as number of rooms booked and vacant.

3.2.5 G5_TR05 - I/O Multiplexing: I/O multiplexing is the ability to perform I/O operations on multiple file descriptors.

3.2.6 G5_TR06 - Logging and Debugging Framework: Linux logs provide a timeline of events for a valuable troubleshooting tool when encountering issues. When issues arise, analyzing log files facilitates debugging.

3.3 System Requirements

System Requirements are types of functional requirements. These are features that are required in order for a system to function.

Software Interface:

Operating System: Linux OS which supports networking.

Connect protocol: TCP protocol

Hardware Interface:

Hardware requirements are:

1. Processor: i3 or above
2. ROM: 1TB (SSD/HDD)
3. RAM: 8 GB or above

4. Non-Functional Requirements

1. Maintainability: Software must be capable of being maintained cost-effectively throughout its lifetime and can be modified with additional requirements.

2. Performance: Software must be quick to respond to users' actions. Commands must not take much time to run.

3. Compatibility: Software must be compatible with all Linux environments.

4. Scalability: Performance must be as expected even if the workload is high.

5. Availability: Users must access the system whenever they want.

5. External Interface Requirements

I. User Interface:

- a) GUI: There is no GUI involved or created for the project/application
- b) CLI: The application is based on CLI, and the commands are given through it.

II. Hardware Interface:

The Application uses/accesses the hard disk for storing the data and to access the files. Access to the hardware requirements is managed by the operating system and the application.

- a) LINUX-based operating system.
- b) Terminal to run.

6. Future Enhancements

NA

APPENDIX

- <https://www.geeksforgeeks.org/socket-programming-cc/>
- https://www.tutorialspoint.com/inter_process_communication/inter_process_communication_shared_memory.htm
- <https://linuxhint.com/posix-mutex-with-c-programming/>