IIT Hyderabad

Software Engineering

CS4443

HOTEL BOOKING SYSTEM

Software Requirement Specification

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1 Introduction

1.1 Purpose

This platform aims to act as a seamless intermediary booking system connecting customers with hotels. With a user-friendly interface, the platform seeks to improve the overall experience for both guests and hotels compared to traditional booking systems. This document serves as a software specification guide for users and as a means of validating the software for prospective clients.

1.2 Scope

1.2.1 In Scope

1. Search Service based on features like pricing , duration of stay , no rooms
2. Rating and Reviews of hotel rooms
3. Generate bill for the hotel reservation
4. Price changing and Room blocking options for hotel manager.
5. List of Reservations for the hotel manager.

1.2.2 Out of Scope

1. No online Payment Service
2. No personalized recommendations.

1.3 Overview

The remaining sections of this SRS are structured as follows: In Section 2, there is an overall overview of the software. Section 3 outlines the specific requirements that the software is expected to fulfill, with functional requirements articulated through various use cases. Potential future extensions of the system are presented in Section 4. Lastly, Section 5 contains the appendices, which provide descriptions of the user screens.

1.4 References

1. Appendix A: Formula for rating calculation.
2. Appendix B: The User Screens.

2 Overall Descriptions

2.1 Product Perspective

Our Hotel Booking System (HBS) is envisioned as an autonomous solution catering to dynamic needs of hospitality sector. This software is designed to run seamless platform runs on browser environment.

2.2 Software Functions

Class of Uses Cases	Use Cases	Description
Authentication and Authorization	Signup as guest	Create an account as Guest
	Signup as Hotel Manager	Create an account as Hotel Manager
	Login as guest	Login into HBS as Guest
	Login as Hotel Manager	Login into HBS as Hotel Manager
	Logout	Logout from HBS
Hotel Manager	Add a Hotel	Creates a hotel instance in HBS
	Update room types	Add or remove a room type or update the amenities
	Update Number of rooms	Change rooms of specified room type
	Change price	change price of rooms for a specified duration
	Block rooms	Block specified rooms for a specified duration
	Update FAQs	Edit the FAQs displayed in the hotel page
Search	Search Hotels	Search hotels meeting specified requirements
	Sort Hotels	Sort Hotels by Popularity, Ratings, Price
	Filter	Filter on Price range, amenities
Reservation	Room type selection	Choose different type of room from the selected hotel
	Change duration	Change the duration of visit in the hotel page
	Reserve	Guest reserves the room
	Confirm Reservation	Manager Confirms the reservation
	Reject Reservation	Manager rejects the reservation
	Cancel Reservation	Guest cancels the reservation
Review	Rate the hotel	Guest can rate the hotel on 1 to 5 scale
	Review the hotel	Guest can write a review about the hotel
Display information	Upcoming Reservations	Shows upcoming reservations to the manager
	Completed Reservations	Shows completed reservations to the manager
	Canceled Reservations	Shows canceled reservations to the manager
	Today reservations	Shows today's reservations to the manager
	Vacant rooms	Shows number of vacant rooms in each room type to the manager
	Display Hotel info	Displays all the information related to the Hotel
	Reviews and ratings	Shows reviews and ratings of hotel to the manager
	FAQs	Shows FAQs of hotel to the manager
	analytics	Display number of reservations per each month

The above table classifies all the functionalities into different types of use cases and provides a brief description.

2.3 User Characteristics

"HBS" has two type of users:

1. **Customer/Guests**
   Guests can anyone from general public who wish to stay during their trip or journey . Guests should familiar with e-commence website and their services.

2. **Hotel Manager**
   Any management member of hotel can be treated as the manager, to precise person who is responsible for reservation and management.

2.4 Principal actors

In our Software there are three different principal actors, these are considered to be actors who initiate the actions which are followed by results.

1. Guest
2. Hotel Manager
3. System

2.5 General Constraints

1. Good internet connection for accessing the platform.
2. Latest Browser software
3. Email should be present to login to the platform.

2.6 Assumptions and Dependencies

1. Login system depends on Google profile.
2. Payment is assumed to be processed offline and customer also receives the receipts offline.
3. Hotel verification is assumed to be done offline and is out of scope of the software.

3 Specification Requirements

3.1 Functional Requirements

Use cases capture who (actor) does what (interaction) with the system and for what purpose (goal), without dealing with system internals. A comprehensive collection of use cases delineates every possible configuration for the system, hence defining all necessary behavior and the system's bounds. From Hereafter, we describe the functional requirements by giving various use cases.

3.1.1 Authentication and Authorization

Use case 1: Signup as a guest
Primary actor: guest / customer
Pre-condition: There exists an active google account or an email Id
Main Scenario:

1. Go to the main page of the website. User can sign up under sign up as guest option.User can signup using either google account or through email Id.
2. sign up with google
   (a) User is showed a list of their active google accounts
   (b) User selects any one of them
3. Sign up using email id
   (a) User provides their email Id and sets and confirms a password.
   (b) System verifies whether the email Id is correct and not used before and both password and confirm password match.
4. User info is added to the system
5. User is signed up and Homepage for guests is displayed

Alternate Scenario:

1. Email Id provided is wrong: Same signup page is displayed with an error message.
2. Email Id provided is already in use: Same signup screen is displayed with an error message.
3. Password and confirm password do not match: Prompt user to reenter them.

Use case 2: Signup as a hotel manager
Primary actor: Hotel Manager
Pre-condition: There exists an active google account or an email Id
Main Scenario:

1. Go to the main page of the website.User can sign up under signup as Hotel Manager option.User can sign up using either google account or through email Id.
2. sign up with google
   (a) User is showed a list of their active google accounts
   (b) User selects any one of them
3. Sign up using email id
   (a) User provides their email Id and sets and confirms a password.
   (b) System verifies whether the email Id is correct and not used before and password matches with confirm password .
4. User info is added to the system
5. User is signed up and homepage for hotel manager is displayed

Alternate Scenario:

1. Email Id provided is wrong: Same signup page is displayed with an error message.
2. Email Id provided is already in use: Same signup screen is displayed with an error message.
3. Password and confirm password do not match: Prompt user to reenter them.

Use case 3: login as a guest
Primary actor: customer / guest
Pre-condition: User is signed up
Main Scenario:

1. Go to the main page of the website.User can login under login as guest option.User can login either using google account or through email Id.
2. login with google
   (a) User is showed a list of their active google accounts
   (b) User selects any one of them
3. login using email id
   (a) User provides their email Id and password.

(b) System verifies if email Id and password are correct.

4. User is logged in and Homepage for guests is displayed

Alternate Scenario:

1. email id or password is wrong: Prompt user to reenter them.

Use case 4: login as hotel manager
Primary actor: hotel manager
Pre-condition: User is signed up
Main Scenario:

1. Go to the main page of the website.User can login under login as hotel manager option.User can login either using google account or through email Id.

2. login with google

   (a) User is showed a list of their active google accounts

   (b) User selects any one of them

3. login using email id

   (a) User provides their email Id and password.

   (b) System verifies if email Id and password are correct.

4. User is logged in and Homepage for hotel manager is displayed

Alternate Scenario:

1. email id or password is wrong: Prompt user to reenter them.

Use case 5: forgot password
Primary actor: guests and hotel manager
Pre-condition: User is signed up
Main Scenario:

1. User clicks Forgot Password? option.

2. User is prompted to enter email Id. System verifies if email Id is correct and an OTP is sent to the entered email Id.

3. User enters OTP.System verifies OTP. User sets and confirms a password.

4. System updates password

Alternate Scenario:

1. email id is wrong / unused: Prompt user to reenter.

2. Password and confirm password do not match: Prompt user to reenter them.

Use case 6: Logout
Primary actor: guests and hotel manager
Pre-condition: User is signed in
Main Scenario:

1. User clicks the log out option.
2. User is logged out.
3. Login/Sign up page is displayed.

3.1.2 Hotel Manager

Use case 7: Add a Hotel
Primary actor: hotel manager
Pre-condition: hotel manager is logged in
Main Scenario:

1. Hotel manager opts to add a hotel
2. On clicking add a hotel, hotel manager is prompted to enter hotel info like description, amenities, room types and number of rooms. prices for each type of rooms and corresponding photos.
3. hotel manager enters data, upload photos and confirms.
4. hotel is added to the system

Use case 8: Update room types
Primary actor: hotel manager
Pre-condition: hotel manager is logged in and Hotel is added
Main Scenario:

1. Hotel manager opts to update room types.
2. hotel manager clicks on edit hotel details and update room types.
3. hotel manager confirms after each update.
4. new hotel info is added to the system

Alternate Scenario:

1. If Hotel manager tries to update a room type of already reserved rooms, system prompts an alert of pre-booked reservations.

Use case 9: Update number of rooms
Primary actor: hotel manager
Pre-condition: hotel manager is logged in and Hotel is added
Main Scenario:

1. Hotel manager opts to change number of rooms.
2. hotel manager clicks on edit hotel details and update number of rooms.
3. hotel manager confirms after each update.
4. new hotel info is added to the system

Alternate Scenario:

1. If Hotel manager decreases number of rooms below the number of reserved rooms of specified room type then system prompts an alert of the pre-booked reservations.

Use case 10: Change price
Primary actor: hotel manager
Pre-condition: hotel manager is logged in and Hotel is added
Main Scenario:

1. Hotel manager opts to change price of each type of rooms for a particular day.
2. hotel manager clicks on change price in calendar and update price of each type of rooms for a particular day in a period of a month.
3. hotel manager confirms after each update.
4. new prices is added to the system

Alternate Scenario:

1. If Hotel manager tries to update price of already reserved rooms, system prompts an alert of pre-booked reservations.

Use case 11: Block rooms
Primary actor: hotel manager
Pre-condition: hotel manager is logged in and Hotel is added
Main Scenario:

1. Hotel manager opts to block required rooms for a day.
2. The hotel manager selects the day to block rooms.
3. hotel manager selects the rooms to block and saves/confirms it.
4. calendar is updated to the system

Alternate Scenario:

1. If Hotel manager tries to block already reserved rooms, system prompts an alert of pre-booked reservations.

Use case 12: Update FAQs
Primary actor: hotel manager
Pre-condition: hotel manager is logged in and Hotel is added
Main Scenario:

1. Hotel manager opts to update FAQs.
2. The hotel manager selects edit FAQs .
3. hotel manager adds or update FAQs.
4. new FAQs are added to the system.

3.1.3 Search

Use case 13: Search Hotels
Primary actor: Guest
Pre-condition: Guest logged in
Main Scenario:

1. Guest selects the duration of the journey, city, number of rooms, guests.
2. The system displays all the hotels that meet the requirements, ordered by popularity by default.

Alternate Scenario:

1. If there are no hotels matching the criteria, the screen displays "No hotel found"

Use case 14: Sort Hotels
Primary actor: Guest
Pre-condition: Guest logged in
Main Scenario:

1. Guest selects the option to sort the results by popularity, ratings, or price(low to high and high to low)
2. The system displays all hotels that meet the requirements in the order requested by the Guest.

Use case 15: Filter
Primary actor: Guest
Pre-condition: Guest logged in
Main Scenario:

1. Guest selects the options to filter the Hotel based on price range, amenities, neighbourhood.
2. The system displays all the hotels that meets the requirements.

Alternate Scenario:

1. If there are no hotels matching the criteria, the screen displays "No hotel found"

3.1.4 Reservation

Use Case 16: Room Type Selection.
Primary actor: Guest.
Pre-Condition: Guest logged in and selected a hotel.
Main Scenario:

1. Guest selects a room type from the given list of room types
2. The system Collects the data of selected room type in specified hotel.
3. The system displays room type, amenities, number of rooms available, price, duration of visit(option to change duration is also available), FAQs, reviews and ratings and About information of the hotel.

Use Case 17: Change duration.
Primary actor: Guest.
Pre-Condition: Guest logged in and selected a hotel.
Main Scenario:

1. Guest Chooses a different duration than the one selected for searching the hotels.
2. System Checks the availability of rooms in newly specified duration.
3. System Calculates the new price and displays it.

Alternate Scenario:
2a. If rooms are not available, Sold Out is displayed instead of Reserve button.

Use Case 18: Reserve.
Primary actor: Guest.
Pre-Condition: Guest logged in and selected a hotel.
Main Scenario:

1. Guest clicks on the reserve button.
2. System computes the price and generates a unique bill id.
3. System displays the generated bill along with the contact details of the hotel.
4. System adds this hotel in guests my bookings page, with reservation status as pending(Waiting to be confirmed by manager of that hotel).

Use Case 19: Confirm Reservation.
Primary actor: Hotel Manager.
Pre-Condition: Hotel Manager logged in and selected Upcoming reservations.
Main Scenario:

1. After Conforming with the guest, hotel manager clicks on the confirm registration button.

2. System Changes the reservation from pending to confirmed in guests my bookings page.

Use Case 20: Reject Reservation.
Primary actor: Hotel Manager.
Pre-Condition: Hotel Manager logged in and selected Upcoming reservations.
Main Scenario:

1. After Conforming with the guest, hotel manager clicks on the reject registration button.

2. System Changes the reservation from pending to rejected in guests my bookings page.

3. System removes the reservation from hotel's list of upcoming reservations.

4. System makes the bill null and void.

Use Case 21: Cancel Reservation.
Primary actor: Guest.
Pre-Condition: Guest logged in and selected my bookings.
Main Scenario:

1. Guest clicks on Cancel button at the hotel booking he wants to cancel.

2. System Checks whether reservation is pending or not.

3. System Changes the reservation from pending to cancelled in guests my bookings page.

4. system removes it from the Hotel's list of upcoming reservations.

5. System makes the bill null and void.

Alternate Scenario:
2a. If the reservation is rejected, System displays Booking already cancelled message to the guest.
2b. If the reservation is confirmed then,

- The system Changes the reservation from Confirmed to cancelled in guests my bookings page.

- system removes it from the Hotel's list of upcoming reservations.

- system adds the booking to the hotel's list of cancelled reservations.

- system makes the bill null and void

3.1.5 Review

Use case 22: Rate the hotel
Primary actor: Guest
Pre-condition: Guest logged in and Reservation is confirmed
Main Scenario:

1. Guest can give rating on scale of 1 to 5 .
2. After submitting the rating , the system calculates the overall rating of the hotels and update in the record.
3. the final updates are shown in the hotel pages.

Use case 23: Review the hotel
Primary actor: Guest
Pre-condition: Guest logged in and Reservation is confirmed
Main Scenario:

1. Guest can give Review on the text box provided.
2. After submitting the review , the system add the new review to hotel records.
3. the final updates are shown in the hotel pages.

3.1.6 Display information

Use case 24: Upcoming Reservations
Primary actor: Hotel Manager
Pre-condition: Hotel Manager logged in
Main Scenario:

1. Hotel Manager selects on the option of viewing upcoming reservations.
2. System shows all the upcoming reservations in the Hotel under Upcoming Reservations.

Alternate Scenario:

1. If there are no upcoming reservations, the screen displays "No reservations found"

Use case 25: Completed Reservations
Primary actor: Hotel Manager
Pre-condition: Hotel Manager logged in
Main Scenario:

1. Hotel Manager selects on the option of viewing completed reservations.

2. System shows all the completed reservations in the Hotel under completed Reservations.

Alternate Scenario:

1. If there are no completed reservations, the screen displays "No reservations found"

Use case 26: Canceled Reservation
Primary actor: Hotel Manager
Pre-condition: Hotel Manager logged in
Main Scenario:

1. Hotel Manager selects on the option of viewing canceled reservations.

2. System shows all the canceled reservations in the Hotel under canceled Reservations.

Alternate Scenario:

1. If there are no canceled reservations, the screen displays "No reservations found"

Use case 27: Today Reservation
Primary actor: Hotel Manager
Pre-condition: Hotel Manager logged in
Main Scenario:

1. Hotel Manager goes to the Dashboard page

2. System shows all the reservations for today in the Hotel under Today Reservations.

Alternate Scenario:

1. If there are no reservations today, the screen displays "No reservations found"

Use case 28: Vacant Rooms
Primary actor: Hotel Manager
Pre-condition: Hotel Manager logged in
Main Scenario:

1. Hotel Manager opens the Dashboard page

2. System shows number of vacant rooms in each type of room in the Hotel for each day.

Use case 29: Display Hotel info
Primary actor: Guest
Pre-condition: Guest logged in
Main Scenario:

1. Guest selects a Hotel to view the Hotel page.
2. The system computes the ratings for the Hotel.
3. The system displays Name of the hotel, photos of the hotel, address, different room types, amenities offered for each room type, ratings and reviews, FAQs, a way to generate bill.

Use case 30: Reviews and Ratings
Primary actor: Hotel Manager
Pre-condition: Hotel Manager logged in
Main Scenario:

1. System computes the ratings of the Hotels that belongs to the Hotel Manager and display them along with the reviews.

Alternate Scenario:

1. If there are no prior reviews, the screen displays "No reviews found"

Use case 31: FAQs
Primary actor: Hotel Manager
Pre-condition: Hotel Manager logged in
Main Scenario:

1. Hotel Manager opens the Dashboard page
2. The system displays the FAQs for the hotel.

Alternate Scenario:

1. If there are no FAQs, the screen displays "No frequently asked questions are available for this hotel at the moment."

Use case 32: Analytics
Primary actor: Hotel Manager
Pre-condition: Hotel Manager logged in
Main Scenario:

1. Hotel Manager opens the Dashboard page
2. System computed number of reservations per each month.
3. System displays the number of reservations per each month.

3.2 Performance Requirements

1. Response time should be tolerable for general operations with few exceptions like bill generation.
2. Concurrent reservations should be handled and system should able to handle a good number of users simultaneously accessing and interacting with platform .

3.3 Design Constraints

1. **Security**: Records related to Guests and Hotels must be protected from unauthorized users.
2. **Fault tolerance**: Data should not be corrupted in case of any system crash or failure.
3. **Responsive**: Software should able to run on both mobile and PC browser environments.

3.4 External Interface Requirements

For Login/signup, users can choose Hotel Manager or Guest roles, can continue with email, password or continue with Google.
The Guest page will have Search tab at the top, the past travel history at the bottom. When the Guest searches hotel with requirements, it shows list of hotels. There are filters in the left, sort by option in top. The hotel page is divided into 2 parts. Left part will have details about the hotel and right part will have details about the rooms selected to proceed to reserve.
The Hotel Manager's dashboard has navbar where there are options like Hotel info, Calendar, Reservations. The Manager can edit Hotel info, can see all the reservations from the Reservations tab.

4 Future Extension

1. Integrating a feature for verifying and validating hotel information, enhancing system reliability.
2. Incorporating a secure payment gateway to ensure safe and protected financial transactions within the system.
3. Introducing a feature for personalized recommendations to enhance user experience.

5 Appendix

5.1 Appendix A: Formula for rating calculation

Rating of a hotel is calculated as the average of all the ratings given by users for all the room types available in the hotel. When an user rates a hotel, the new hotel rating is Calculated as

$$CurrentRating = \frac{PreviousRating * n + GivenRating}{n + 1}$$

where n = number of ratings the hotel has previously,
PreviousRating = rating of the hotel,

GivenRating = new rating given by the user.

After that n is incremented by 1 and PreviousRating is updated to CurrentRating

5.2 Appendix B: The User Screens

The first page that is visible for any guest after login where he can search for hotels.

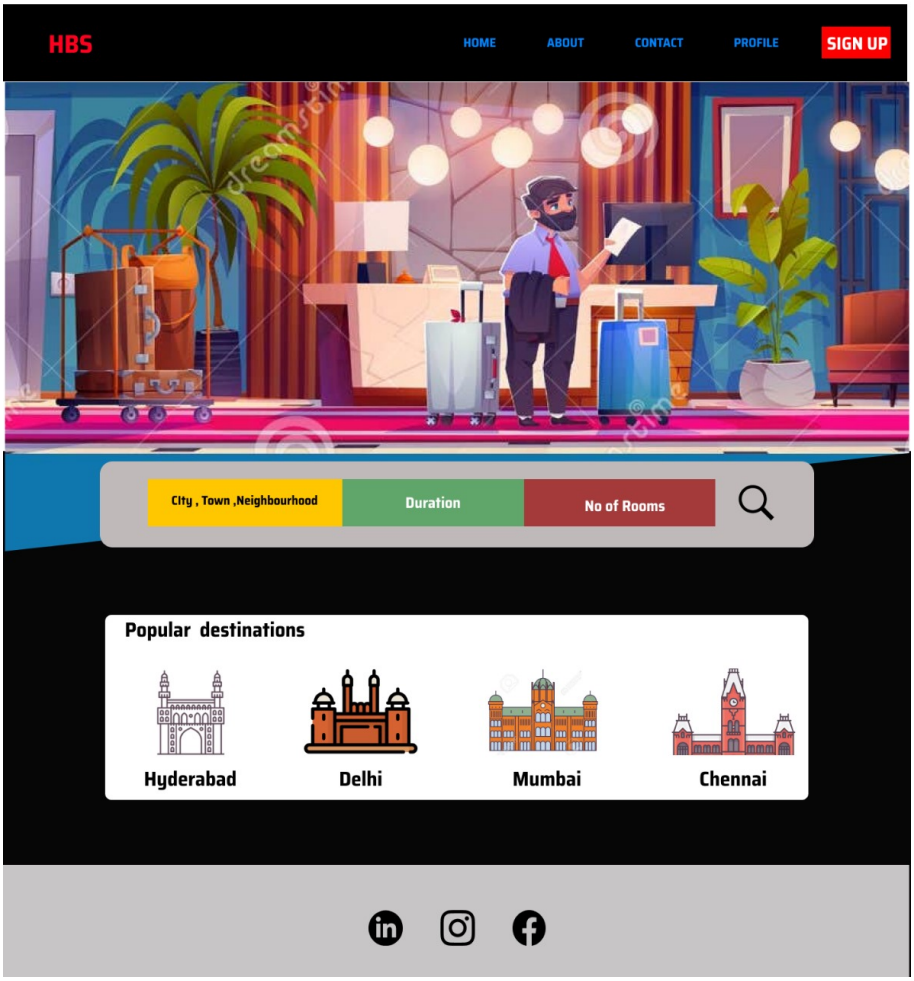

Figure 1: The first screen visible for guest

When guest selects a hotel, He will see the hotel info and can change to another room type in the hotel or change duration or number of rooms, which

is represented in our platform as the below figure. The empty photos are filled with photos of the hotel provided by manager.

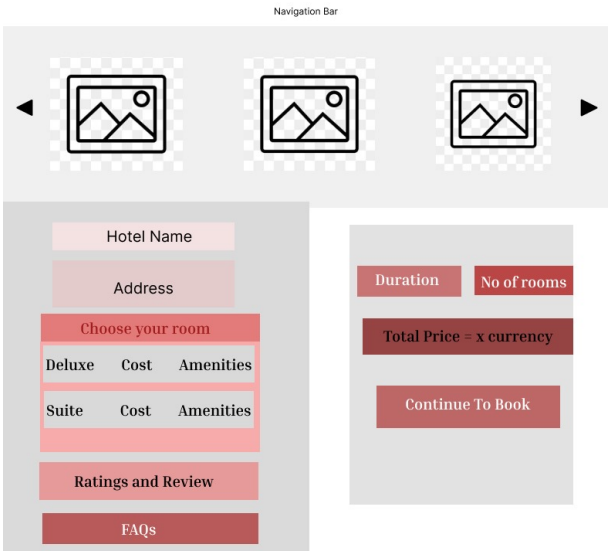

Figure 2: The hotel page

The Guest has an option to see his previous reservations, their status(Pending, Confirmed, Rejected) and to cancel them. The screen for this is provided below.

Past Reservations

S.NO	Hotel Name	Date of booking	duration	Rating	Review	Reservation status	Cancel option
1	Taj Hyd	27 Jan 2024	30 Jan 2024 to 2 Feb 2024	Payment has to be confirmed	Payment has to be confirmed	Pending	
2	Taj Vij	28 Jan 2024	5 Feb to 8 Feb 2024	4/5	Good Sevice	Confirmed	
3	Taj Mum	30 Jan	2 Feb to 3 Feb			Rejected	

Figure 3: Previous reservations of guest

The screen for hotel manager profile is given below.

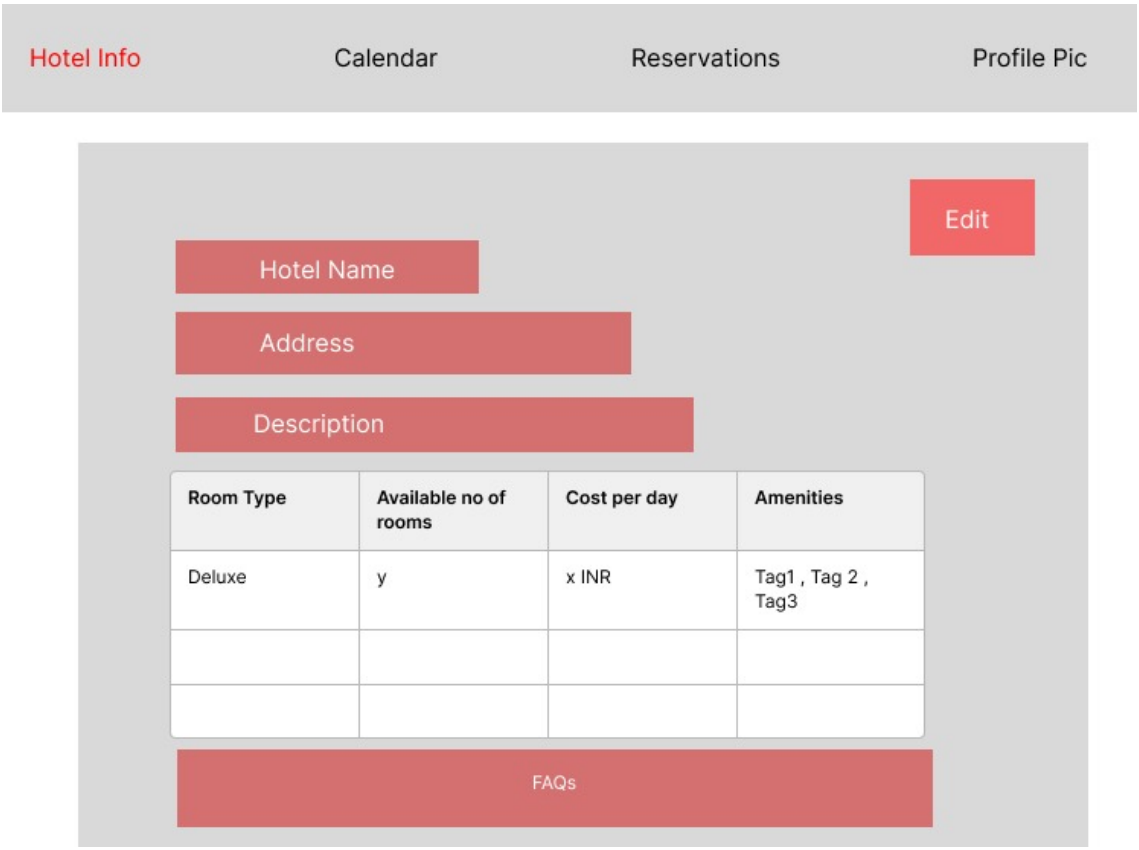

Figure 4: Hotel info page

The Screen to view upcoming reservations by hotel manager is provided below. The Manager Can accept or reject reservations in this screen.

Figure 5: Upcoming Reservations for Hotel Manager