

**BỘ GIÁO DỤC VÀ ĐÀO TẠO
TRƯỜNG ĐẠI HỌC CẦN THƠ
TRƯỜNG CÔNG NGHỆ THÔNG TIN & TRUYỀN THÔNG**



PROJECT IN INFORMATION TECHNOLOGY

**TOPIC:
HOTEL BOOKING SYSTEM FOR WEBSITE
AND MOBILE DEVICES**

**INSTRUCTOR:
TS. THÁI MINH TUẤN**

**STUDENT:
TRẦN TRUNG NGUYỄN
B2111995
DI21V7F1**

Cần Thơ, 10/2024

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This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the entire width of the page, providing a guide for handwriting or typing. There are no margins, text, or other markings on the page.

Instructor

TRAN TRUNG NGUYEN B2111995

THANK YOU

Firstly, I would like to sincerely thank the Board of Directors and teachers of the School of Information and Communications Technology for imparting valuable experiences and knowledge throughout the period of study and research, as a foundation. foundation for me to complete this topic.

Besides, I would like to send my most sincere thanks to Mr. Thai Minh Tuan, who wholeheartedly guided, supported, and offered many solutions so that I could successfully complete this report.

Finally, I would like to send special thanks to my family, friends, and loved ones who have always encouraged and supported me throughout the time of writing this report.

Your help and support have helped me complete this annual report successfully. I am very grateful and proud of the results we have achieved together.

Thank you sincerely!

Cần Thơ, ngày... tháng... năm 2024

Writer

Trần Trung Nguyễn

TABLE OF CONTENT

INSTRUCTOR'S COMMENTS	1
THANK YOU.....	2
TABLE OF CONTENT	3
LIST OF PICTURE	6
LIST OF TABLE.....	8
LIST OF ABBREVIATIONS.....	9
ABSTRACT	10
PART 1. INTRODUCTION	11
I. INTRODUCTION	11
II. HISTORY OF PROBLEM-SOLVING.....	11
III. TOPIC OBJECTIVE.....	12
IV. OBJECT AND SCOPE OF THE STUDY	12
1. Object.....	12
2. Scope of study	12
V. CONTENTS OF THE REPORT	12
1. Methods of implementation:.....	12
2. Solution.....	13
VI. REPORT LAYOUT.....	13
PART 2. CONTENTS	14
I. TOPIC OVERVIEW	14
1. Overview	14
II. SOLUTION DESIGN AND INSTALLATION.....	14
1. Theoretical basis.....	14
1.1. HTML (Hypertext Markup Language).....	14
1.2. CSS (Cascading Style Sheets)	14
1.3. Bootstrap.....	15
1.4. Javascript	15
1.5. Kotlin	15

1.6.	Spring Boot	16
1.7.	phpMyAdmin	16
1.8.	RESTful API	16
2.	Usecase Diagram	16
2.1.	Usecase diagram for the hotel management side	17
2.2.	Usecase diagram for the customer side	17
3.	Design database	19
3.1.	CDM diagram – Concept Data Model	19
3.2.	Data description	19
PART 3. RESULT		22
I.	Client-side functionality	22
1.	Sign up & Login	22
1.1.	Sign up	22
1.2.	Log in	24
2.	Update customer information:	25
3.	Wishlist	26
4.	Booked page	27
5.	Post review	29
6.	Search for hotel	29
7.	Booking	31
8.	Log out	33
II.	Admin functionality	33
1.	List of customer account	33
2.	List of reviews	34
3.	Hotels management	35
3.1.	Update hotel	36
3.2.	Delete hotel	37
4.	Rooms management	37
4.1.	Update Room	38

4.2. Delete Room	39
5. Bookings management	40
6. Log out.....	40
PART 4. TESTING	42
I. Testing goal	42
1. Test script	42
1.1. Sign up	43
1.2. Login.....	43
1.3. Add to wishlist	43
1.4. Create new hotel	44
1.5. Update hotel.....	44
1.6. Create new room.....	44
1.7. Update room	44
1.8. Booking room	44
PART 5. CONCLUSION AND DEVELOPMENT ORIENTATION	46
I. ACHIEVED RESULTS	46
II. RESTRICTIONS	46
III. ORIENTED DEVELOPMENT	46
REFERENCE SOURCE.....	47

LIST OF PICTURE

Picture 1. Usecase diagram for hotel manager	17
Picture 2. Usecase diagram for user with website.....	18
Picture 3. Usecase diagram for user with mobile app	18
Picture 4. Database	19
Picture 5. Flow-chart for sign up and log in.....	22
Picture 6. Sign up interface for website.....	23
Picture 6. Sign up interface for mobile.....	24
Picture 8. Log in interface for website	24
Picture 9. Log in interface for website	25
Picture 10. Update customer informatio interface.....	26
Picture 11. Wishlist interface for website.....	26
Picture 12. Wishlist interface for mobile.....	27
Picture 13. Booked rooms interface for website	28
Picture 14. Booked rooms interface for website	28
Picture 15. Post a review on website	29
Picture 16. Flow-char for search function	30
Picture 17 + 18. Result for search hotel	31
Picture 19. Flow-chart for booking room.....	31
Picture 20. Booking form interface on website	32
Picture 21. Booking form interface on mobile	32
Picture 22. Log out on website	33
Picture 23. Log out on mobile	33
Picture 24. Flow-chart for hotel manager.....	33
Picture 25. Flow-chart of manage customer account	34
Picture 26. Manage accounts page	34
Picture 27. Flow-chart of manage reviews	35
Picture 28. Manage reviews page	35
Picture 29. Flow-chart of manage hotels	36

Picture 30. Manage hotels page.....	36
Picture 31. Edit form for updating hotel.....	37
Picture 32. Delete hotel	37
Picture 33. Flow-chart of manage rooms	38
Picture 34. Manage rooms page	38
Picture 35. Edit form for updating room	39
Picture 36. Delete room.....	39
Picture 37. Flow-chart of manage bookings.....	40
Picture 38. Manage bookings page.....	40
Picture 39. Log out in administrator.....	41

LIST OF TABLE

Table 1: Users	19
Table 2: Person	20
Table 3: Hotel	20
Table 4: Category	20
Table 5: Reviews	20
Table 6: Wishlist.....	21
Table 7: bookings	21
Table 8: Booking_detail	21
Table 9. Functional test script	43
Table 10. Test sign up function	43
Table 11. Test log in function.....	43
Table 12. Test add to wishlist function	44
Table 13. Test create a new hotel function.....	44
Table 14. Test update hotel function	44
Table 15. Test create a new room function	44
Table 16. Test update room function.....	44
Table 17. Test booking room function	45

LIST OF ABBREVIATIONS

UI	User interface design
API	Application program interface
DFD	Data Flow Diagram
CDM	Concept Data Model
LDM	Logical Data Model

ABSTRACT

This paper introduces a comprehensive Hotel Booking System developed to provide seamless functionality across both websites and mobile devices, catering to the evolving needs of modern travelers. The system is designed to deliver an intuitive and user-friendly experience, allowing users to effortlessly search, compare, and reserve hotel accommodations. Key features include real-time room availability, dynamic pricing, secure payment gateways, and personalized user accounts for a tailored experience. The system employs a responsive web design to ensure compatibility across various screen sizes and a dedicated mobile application optimized for Android and iOS devices, enhancing accessibility and convenience.

From a technical perspective, the back-end infrastructure utilizes modern frameworks to ensure efficient data processing, robust security, and scalability to handle high-user traffic. Hotel managers are also equipped with an admin panel for efficient inventory management, booking tracking, and reporting. This system bridges the gap between travelers and service providers, aiming to streamline the booking process, reduce operational overheads, and improve customer satisfaction within the hospitality industry.

PART 1. INTRODUCTION

I. INTRODUCTION

In today's fast-paced and interconnected world, the demand for convenient and efficient hotel booking solutions has grown significantly. Travelers increasingly rely on digital platforms to plan and manage their trips, seeking systems that provide a seamless and hassle-free experience. The rise of smartphones and widespread internet accessibility has further driven the shift towards online and mobile booking systems, transforming how accommodations are searched, reserved, and managed.

This project focuses on the development of a Hotel Booking System designed for dual functionality across websites and mobile devices. By offering a responsive web interface alongside a dedicated mobile application, the system caters to diverse user preferences and ensures accessibility across various platforms. The platform enables users to search for hotels, view real-time room availability, compare prices, and make secure reservations with just a few clicks.

In addition to user-centric features, the system provides tools for hotel administrators to efficiently manage room inventory, monitor bookings, and generate reports, all within a centralized back-end framework. With real-time updates and integration of secure payment gateways, the system enhances trust and usability for both customers and service providers.

By leveraging modern technologies and a user-friendly design, this Hotel Booking System aims to bridge the gap between travelers and hoteliers. It not only simplifies the booking process but also addresses operational challenges in the hospitality industry, making it a valuable tool for improving overall customer satisfaction and business efficiency.

II. HISTORY OF PROBLEM-SOLVING

In the past, hotel bookings were managed manually, often leading to inefficiencies like overbooking and delays in confirmations. With the rise of the internet, basic online booking systems emerged, automating some processes but lacking advanced features and user-friendliness. As mobile devices became ubiquitous, the need for integrated web and mobile platforms grew to meet the demands of modern travelers. However, many existing systems still face challenges like outdated interfaces, poor real-time updates, and security concerns. This project addresses these gaps by providing a comprehensive, user-centric, and secure Hotel Booking System for both websites and mobile devices.

III. TOPIC OBJECTIVE

The primary objective of the Hotel Booking System is to provide a seamless, efficient, and user-friendly platform for both travelers and hotel administrators. This system aims to simplify the process of hotel reservations by integrating a responsive web platform and a mobile application, ensuring accessibility and convenience across various devices.

The key objectives of this project are:

- **User Experience Enhancement:** To develop an intuitive and easy-to-use interface for travelers, enabling them to effortlessly search, compare, and book hotel rooms based on real-time availability, price, and location.
- **Mobile and Web Integration:** To create a unified platform that supports both a responsive website and a dedicated mobile application, offering flexibility and accessibility to users regardless of the device they are using.

IV. OBJECT AND SCOPE OF THE STUDY

1. Object

The research subjects of the project are hotel owners, hotel managers, receptionists, and hotel staff. The service implementation process of some online hotel booking systems on managing room information and customer reservation information. System users are hotel managers, hotel owners, and receptionists

2. Scope of study

The scope of the research focuses on the operating process of a hotel reservation system: from the process of searching for a hotel, choosing a suitable room, making a reservation, and finally making payment. From there, creating a hotel booking system for users as well as system managers can manage this booking system.

The system is developed on both mobile and website platforms, convenient for users to access anytime, anywhere, and compatible with all devices.

V. CONTENTS OF THE REPORT

1. Methods of implementation:

Requirements analysis: Explore the preferences and trends in modern tourism to conduct a necessary survey for customers and hotel managers. Based on the findings, develop a suitable website and mobile application.

Design: General description of the website and mobile app, functional requirements, databases, and UI for the website and app.

Settings:

- **Font-end:** Design website using HTML [1], CSS [2], Bootstrap [3], and Javascript [4]. The mobile app uses the Kotlin [5] for the UI.
- **Back-end:** Spring Boot [6].

- **Database:** phpMyAdmin [7].
- **API:** RESTful API [8].

2. Solution

- **Theoretical basis:** Analyze and design the phpMyAdmin database management system. Build Use Case Diagram, DFD functional decomposition diagram, CDM and LDM databases.
- **Software and tools:** IntelliJ IDEA, Visual Studio Code, Android Studio, StarUML, Flowchart Maker & Online Diagram Software, Xampp, Postman.

VI. REPORT LAYOUT

The layout of the entire report includes:

Part 1 – Introduction: Presents the most general overview of the topic to help readers understand as comprehensively as possible through the sections: Setting the problem, Objectives of the topic, History of problem-solving, Research content, Object and scope of research.

Part 2 – Contents:

Chapter 1 – Overview of the topic: Introduction and general description of the system.

Chapter 2 – Solution design and installation: Presenting solution design and installation, theoretical basis and used technologies, use-case diagrams, flow-chart diagrams, and databases as well as describing the main functions of the system.

Part 3 – Implementation results: Presents the interface of the main functions of the System.

Part 4 – Testing: Present testing objectives, test scenarios, and test results.

Part 5 – Conclusion: Achieved results and proposed future development directions.

PART 2. CONTENTS

I. TOPIC OVERVIEW

1. Overview

The **Hotel Booking System** is a modern solution designed to meet the growing demand for convenient and efficient booking platforms in the hospitality industry. This system integrates both a responsive website and a dedicated mobile application, enabling users to access the platform from various devices seamlessly. The primary goal is to provide a comprehensive, user-friendly interface for travelers to search, compare, and reserve hotel accommodations while also offering advanced management tools for hotel administrators.

The system includes key features such as searching for hotels by location, tracking room availability, and user personalization. For hotel administrators, the platform provides powerful backend functions, including room inventory management, reservation tracking, and data analytics to make informed decisions. By ensuring that bookings are processed in real-time and transactions are processed securely, the system solves common challenges faced by both customers and service providers.

Overall, this project aims to revolutionize the traditional hotel booking process by leveraging advanced technologies and a user-centric approach, creating a seamless connection between travelers and hoteliers while optimizing operations in the hospitality sector.

II. SOLUTION DESIGN AND INSTALLATION

1. Theoretical basis

1.1. HTML (Hypertext Markup Language)

HTML, or Hypertext Markup Language, serves as the foundation of web development. It's a markup language used for creating and structuring web pages. In essence, HTML provides the structure and content of a webpage, defining the elements that make up the page, such as headings, paragraphs, links, images, and more. HTML serves as the backbone of web development, providing the structural framework for creating and organizing content on the internet. Its importance lies in its ability to define the elements of a webpage and facilitate accessibility and search engine optimization, ultimately contributing to a seamless and effective web browsing experience.

1.2. CSS (Cascading Style Sheets)

CSS is to separate the content of a webpage from its presentation, allowing developers to control the layout, colors, fonts, spacing, and other visual aspects of the page without altering its underlying structure. This separation of concerns enhances the maintainability and flexibility of web development projects, as

changes to the styling can be implemented independently of the content. CSS plays a critical role in web development by allowing developers to control the presentation and styling of web pages, separate from their content. It enhances the visual appeal, accessibility, and user experience of websites, while also facilitating maintainability and flexibility in the development process.

1.3. Bootstrap

Bootstrap is a popular open-source front-end framework used for developing responsive and mobile-first websites. Created by Twitter, it provides developers with a collection of pre-designed HTML, CSS, and JavaScript components, such as navigation bars, buttons, forms, modals, and more. Bootstrap simplifies the process of creating consistent and visually appealing web designs, ensuring compatibility across different screen sizes and devices. Its grid system and extensive library of utilities make it a powerful tool for building modern, flexible, and user-friendly web applications efficiently.

1.4. Javascript

JavaScript is a versatile and powerful programming language primarily used for adding interactivity and dynamic functionality to web pages. One of the key roles of JavaScript is to enhance user experience by providing features such as form validation, interactive maps, sliders, animations, and much more. It allows developers to create responsive and engaging web applications that can respond to user actions in real time, without requiring page reloads. JavaScript is also commonly used for client-side scripting, meaning it runs directly within the user's web browser. This enables dynamic updates and interactions without needing to communicate with the server, resulting in faster and more responsive user experiences.

1.5. Kotlin

Kotlin is a modern, open-source programming language developed by JetBrains, designed to interoperate seamlessly with Java while offering additional features to enhance productivity and code safety. Officially supported by Google for Android development, Kotlin has become a popular choice for building mobile applications.

Kotlin combines object-oriented and functional programming paradigms, enabling developers to write concise, expressive, and reliable code. Key features include null safety to prevent runtime errors, extension functions for cleaner code, and coroutines for simplifying asynchronous programming.

With its growing ecosystem and versatility, Kotlin is not limited to Android development but is also used for back-end, web, and multiplatform projects, making it a powerful tool in modern software development.

1.6. Spring Boot

Spring Boot is a Java framework designed to simplify the development of web and enterprise applications. It offers features like auto-configuration, embedded servers, and a streamlined project setup, allowing developers to quickly create and deploy applications. Ideal for building REST APIs and microservices, Spring Boot reduces boilerplate code and enhances productivity.

1.7. phpMyAdmin

phpMyAdmin is a free, open-source tool designed for managing MySQL and MariaDB databases through a web interface. It allows users to perform various tasks such as creating databases, running queries, managing tables, and importing/exporting data without needing extensive command-line knowledge. With its user-friendly interface and robust features, phpMyAdmin is widely used by developers and administrators for efficient database management.

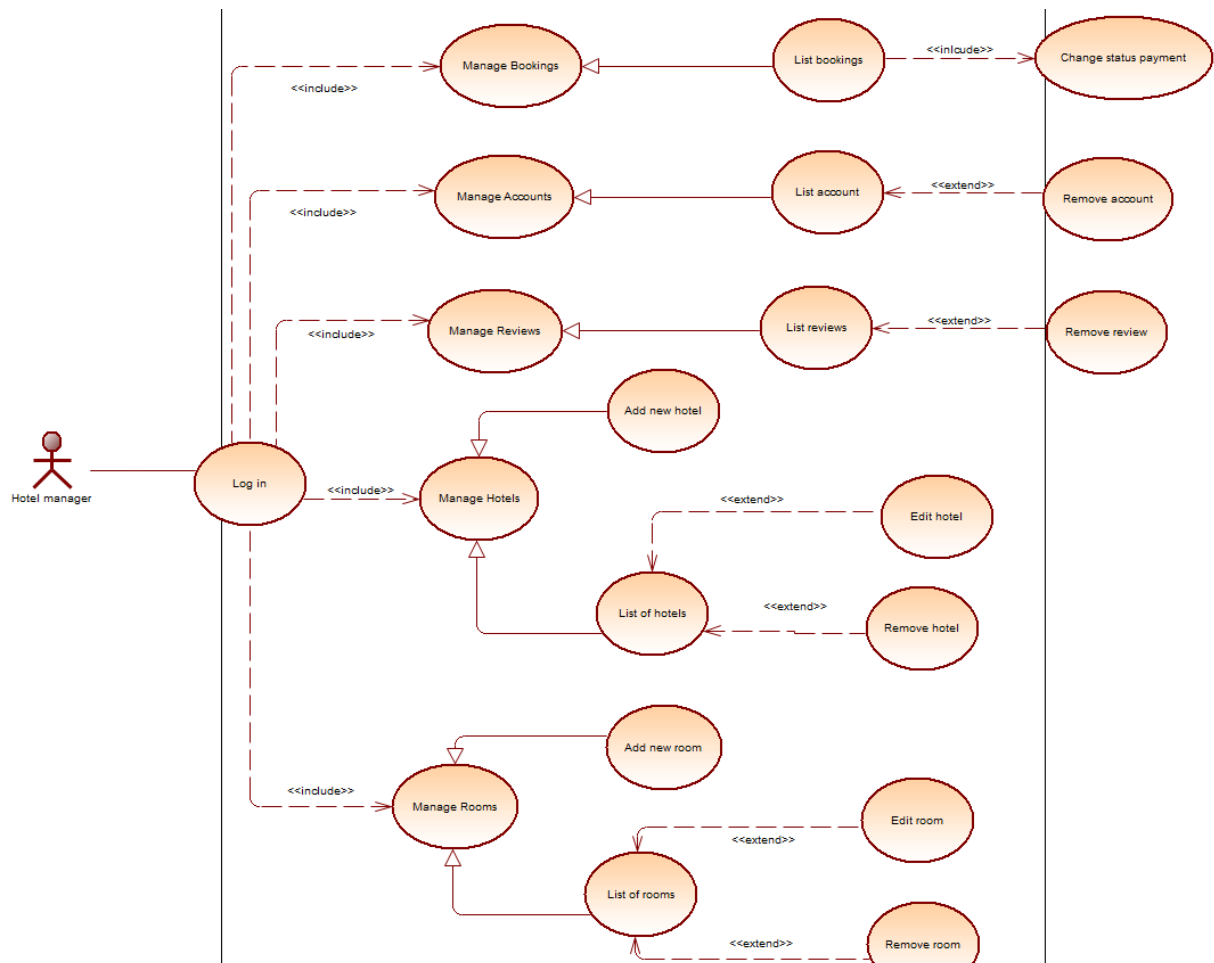
1.8. RESTful API

A RESTful API (Representational State Transfer API) is a web service that follows REST principles to enable communication between systems. It uses HTTP methods like GET, POST, PUT, and DELETE to perform operations on resources, which are identified by unique URLs. RESTful APIs are stateless, scalable, and widely used for building web applications and services due to their simplicity, flexibility, and ease of integration.

2. Usecase Diagram

The system includes 2 main user group including: Hotel management, and customer. Each group will have the right to use different functions depending on the nature of their work.

2.1. Usecase diagram for the hotel management side

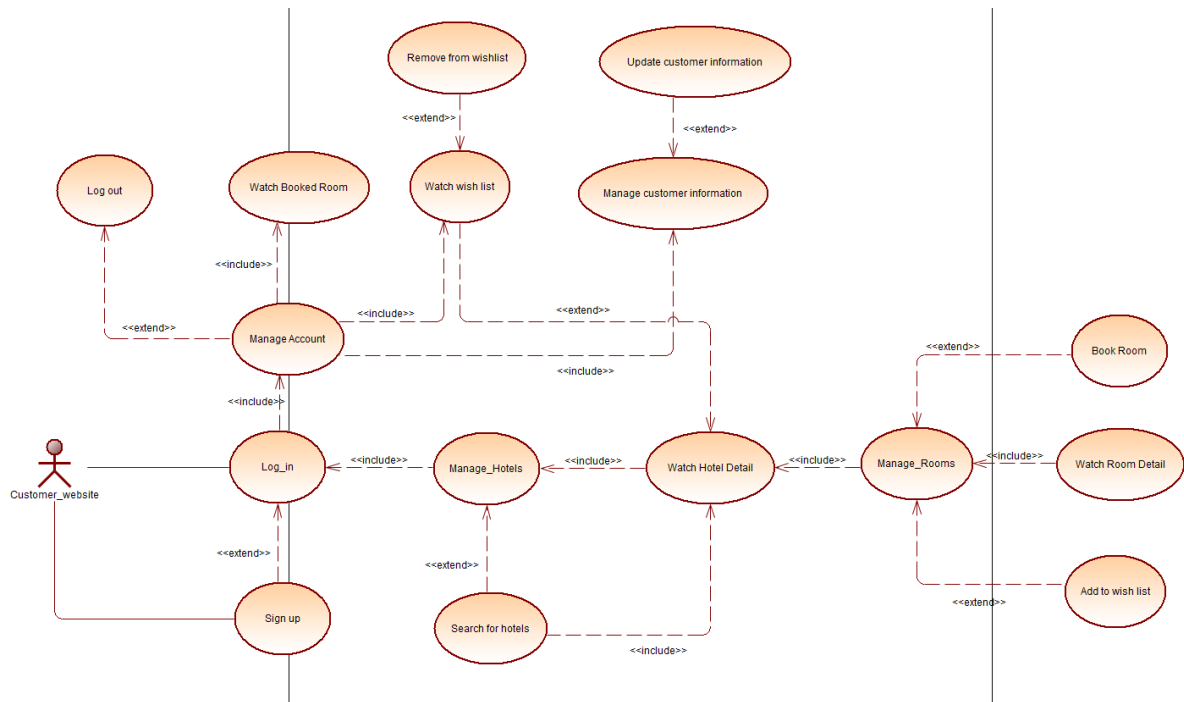


Picture 1. Usecase diagram for hotel manager

Hotel manager is the person with the highest authority on the system with many important functions to control the amount of information in the most comprehensive way and maintain the system to operate stably and transparently. With Picture 1, we can see the general functions of hotel management such as: Hotels & Rooms, Account management,...

2.2. Usecase diagram for the customer side

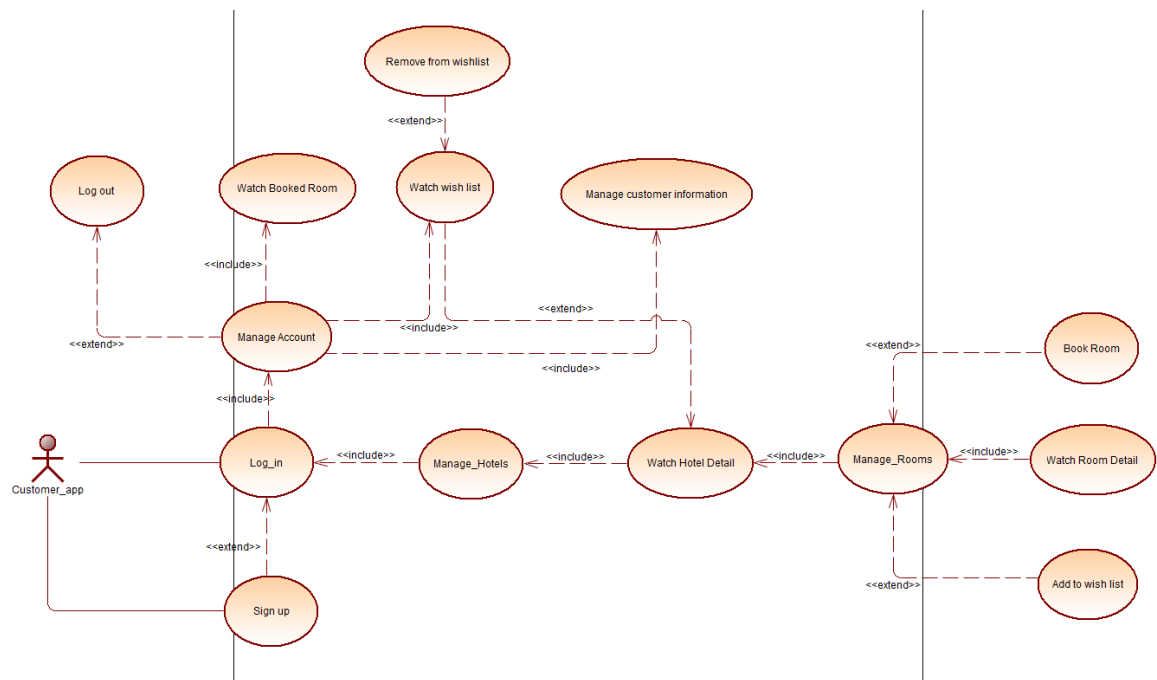
Website:



Picture 2. Usecase diagram for user with website

Customers are the primary users of the **Hotel Booking System Website**, serving as the main agents for reserving accommodations. According to the system design, customers who wish to book a hotel must first log in to access booking-related functionalities. After logging in, features such as making reservations, updating personal information, and managing bookings become available.

Mobile App:



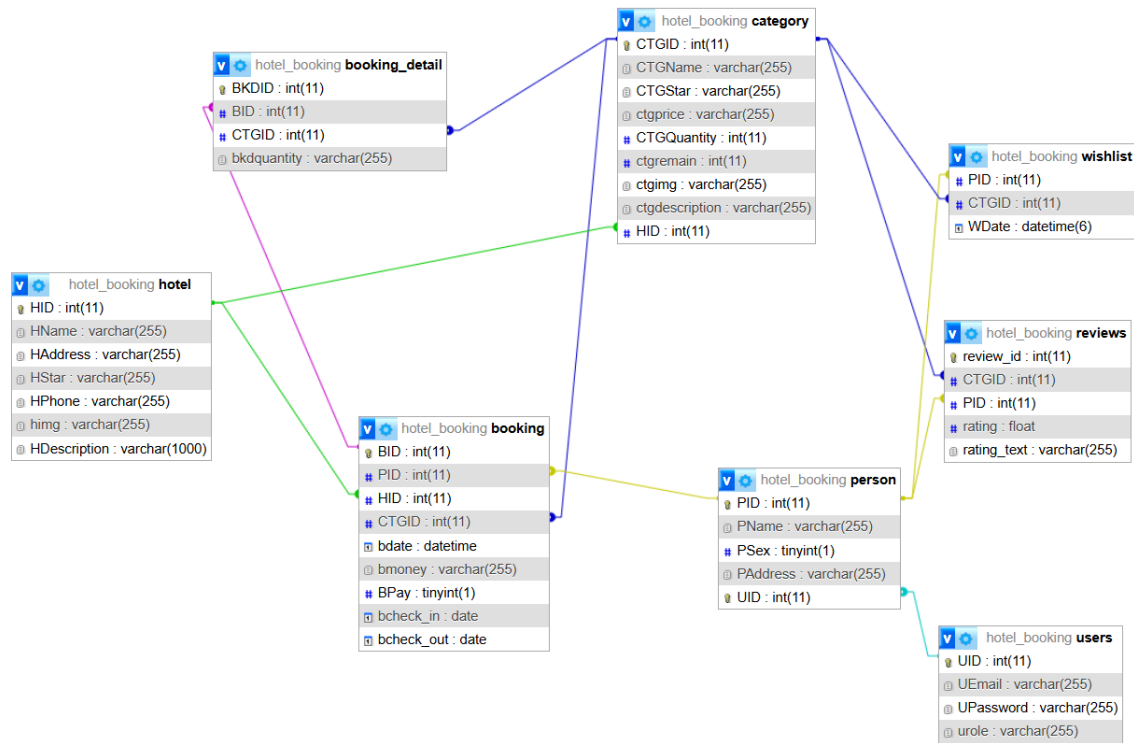
Picture 3. Usecase diagram for user with mobile app

Users are the primary operators of the **Hotel Booking Mobile App**, acting as the main agents for reserving accommodations. In the app's design, users who wish to book a

hotel must first log in to unlock booking-related features. Once logged in, they can access functionalities such as making reservations, and managing their bookings seamlessly through the mobile interface.

3. Design database

3.1. CDM diagram – Concept Data Model



Picture 4. Database

3.2. Data description

Table users:

Num.	Field name	Datatypes	Describe
1	UID	Integer	User id
2	UEmail	Varchar	User email
3	UPassword	Varchar	User password
4	Urole	Varchar	User Role

Table 1: Users

Table person

Num.	Field name	Datatypes	Describe
1	PID	Integer	Person id
2	PName	Varchar	Person name
3	PSex	Boolean	Person gender
4	PAddress	Varchar	Person address
5	UID	Integer	Foreign key to user table

Table 2: Person

Table hotel

Num.	Field name	Datatypes	Describe
1	HID	Integer	Hotel id
2	HName	Varchar	Hotel name
3	HAddress	Varchar	Hotel address
4	HStar	Varchar	Hotel rating star
5	HPhone	Varchar	Hotel phone
6	himg	Varchar	Hotel image
7	HDescription	Varchar	Hotel description

Table 3: Hotel

Table category (room)

Num.	Field name	Datatypes	Describe
1	CTGID	Integer	Room id
2	CTGName	Varchar	Room name
3	CTGStar	Varchar	Room rating star
4	ctgprice	Varchar	Room price
5	CTGQuantity	Varchar	Numbers of rooms
6	ctgremain	Varchar	Remaining rooms
7	ctgimg	Varchar	Room image
8	ctgdescription	Varchar	Room description
9	HID	Integer	Foreign's key to hotel table

Table 4: Category

Table reviews

Num.	Field name	Datatypes	Describe
1	reviews_id	Integer	Review id
2	CTGID	Integer	Foreign's key to category table
3	PID	Integer	Foreign's key to person table
4	rating	Float	Rating star
5	rating_text	Varchar	Contents of review

Table 5: Reviews

Table wishlist

Num.	Field name	Datatypes	Describe
------	------------	-----------	----------

1	PID	Integer	Foreign's key to person table
2	CTGID	Integer	Foreign's key to category table
3	WDate	Datetime	Time when add to wish list

Table 6: Wishlist

Table bookings

Num.	Field name	Datatypes	Describe
1	BID	Integer	Booking id
2	PID	Integer	Foreign's key to person table
3	HID	Integer	Foreign's key to hotel table
4	CTGID	Integer	Foreign's key to category table
5	bdate	Datetime	Day and time when booking
6	bmoney	Varchar	Total booking money
7	Bpay	Boolean	Payment status
8	bcheck_in	Date	Check-in day
9	bcheck_out	Date	Check-out day

Table 7: bookings

Table booking_detail

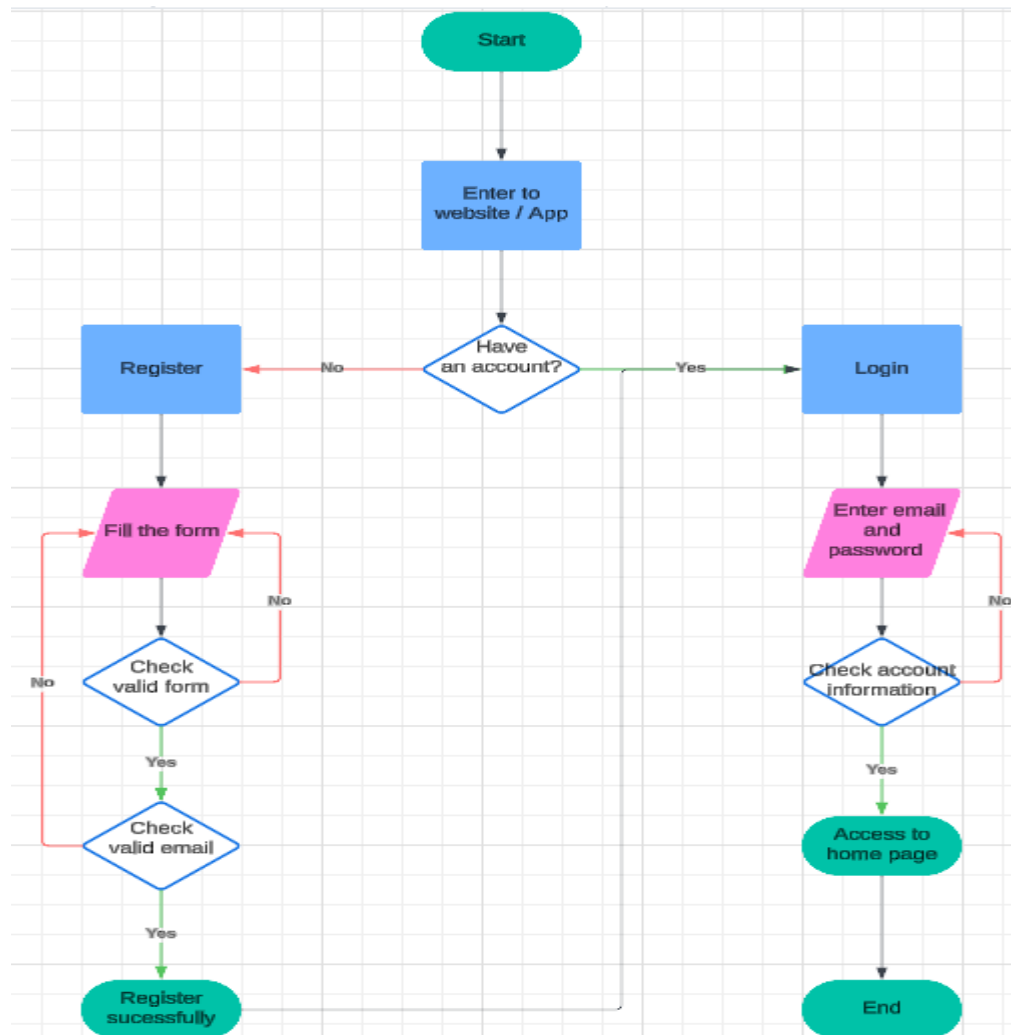
Num.	Field name	Datatypes	Describe
1	BKDID	Integer	Booking detail id
2	BID	Integer	Foreign's key to bookings table
3	CTGID	Integer	Foreign's key to category table
4	bkdquantity	Varchar	The number room per each booking

Table 8: Booking_detail

PART 3. RESULT

I. Client-side functionality

1. Sign up & Login

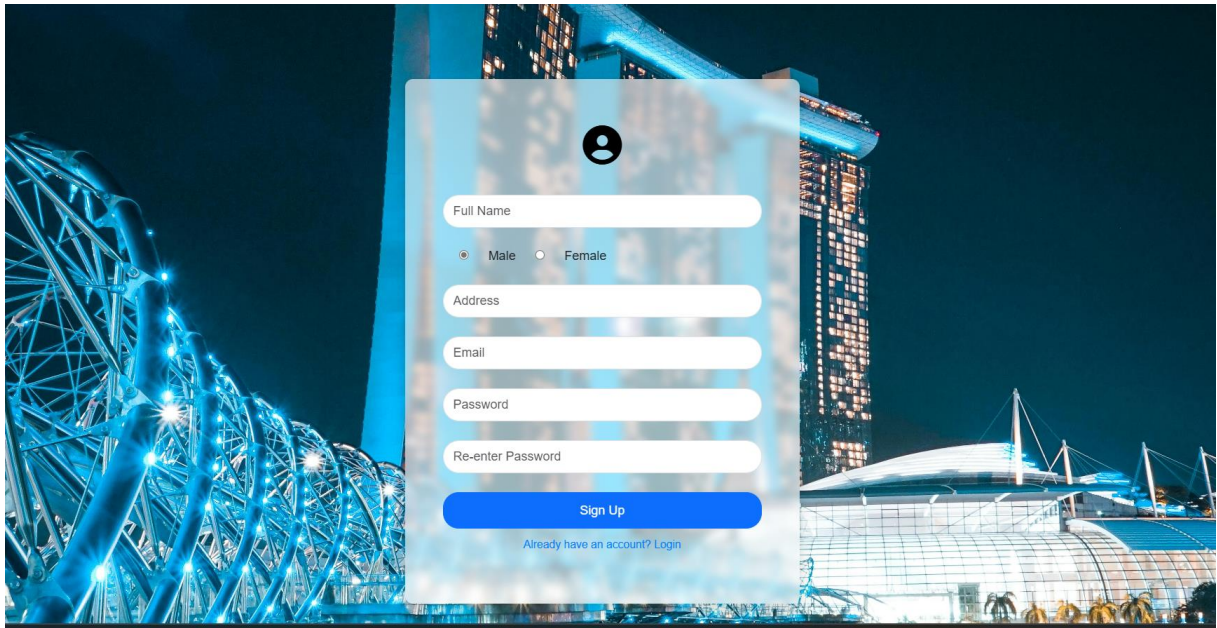


Picture 5. Flow-chart for sign up and log in

1.1. Sign up

Customers who want to booking at the system are required to have an account. If they do not have an account, they can register at the account registration page. The registration page includes the following information:

***Website:**



The image shows a website sign-up form overlaid on a background of a city skyline at night, featuring a Ferris wheel and a modern building. The form is a light blue rectangle with rounded corners. At the top is a black circle icon representing a user profile. Below it are input fields for 'Full Name', 'Address', 'Email', 'Password', and 'Re-enter Password'. There are radio buttons for 'Male' and 'Female'. A blue 'Sign Up' button is at the bottom, with a link 'Already have an account? Login' below it.

Full Name

☒ Male ☐ Female

Address

Email

Password

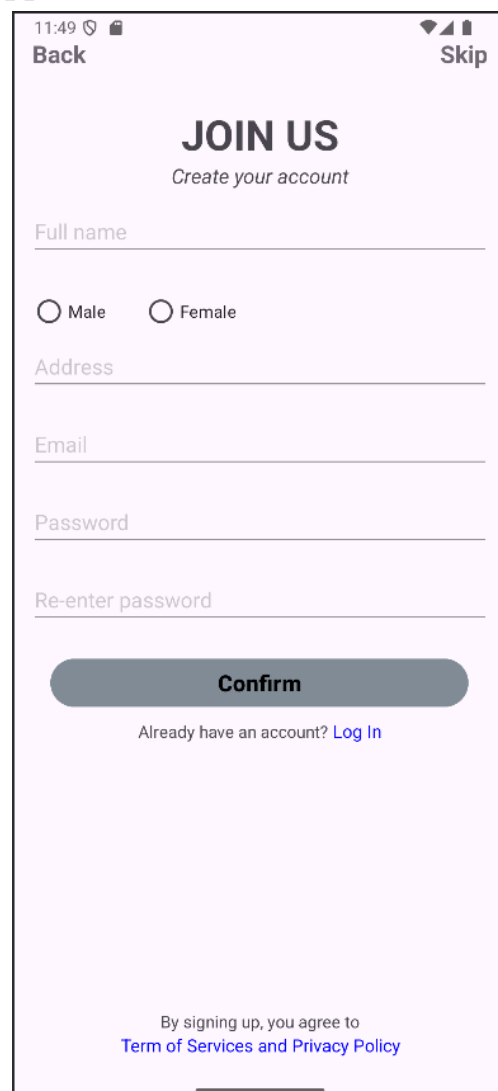
Re-enter Password

Sign Up

[Already have an account? Login](#)

Picture 6. Sign up interface for website

***Mobile App:**



The image shows a mobile app sign-up screen. At the top, there's a status bar with the time 11:49 and battery level. Below it, a 'Back' button on the left and a 'Skip' button on the right. The main heading is 'JOIN US' in bold, followed by the subtitle 'Create your account'. The form fields are 'Full name', 'Address', 'Email', 'Password', and 'Re-enter password'. There are radio buttons for 'Male' and 'Female'. A grey 'Confirm' button is at the bottom, with a link 'Already have an account? Log In' below it. At the very bottom, there's a line of text: 'By signing up, you agree to' followed by a link 'Term of Services and Privacy Policy'.

11:49

Back Skip

JOIN US
Create your account

Full name

☐ Male ☐ Female

Address

Email

Password

Re-enter password

Confirm

Already have an account? [Log In](#)

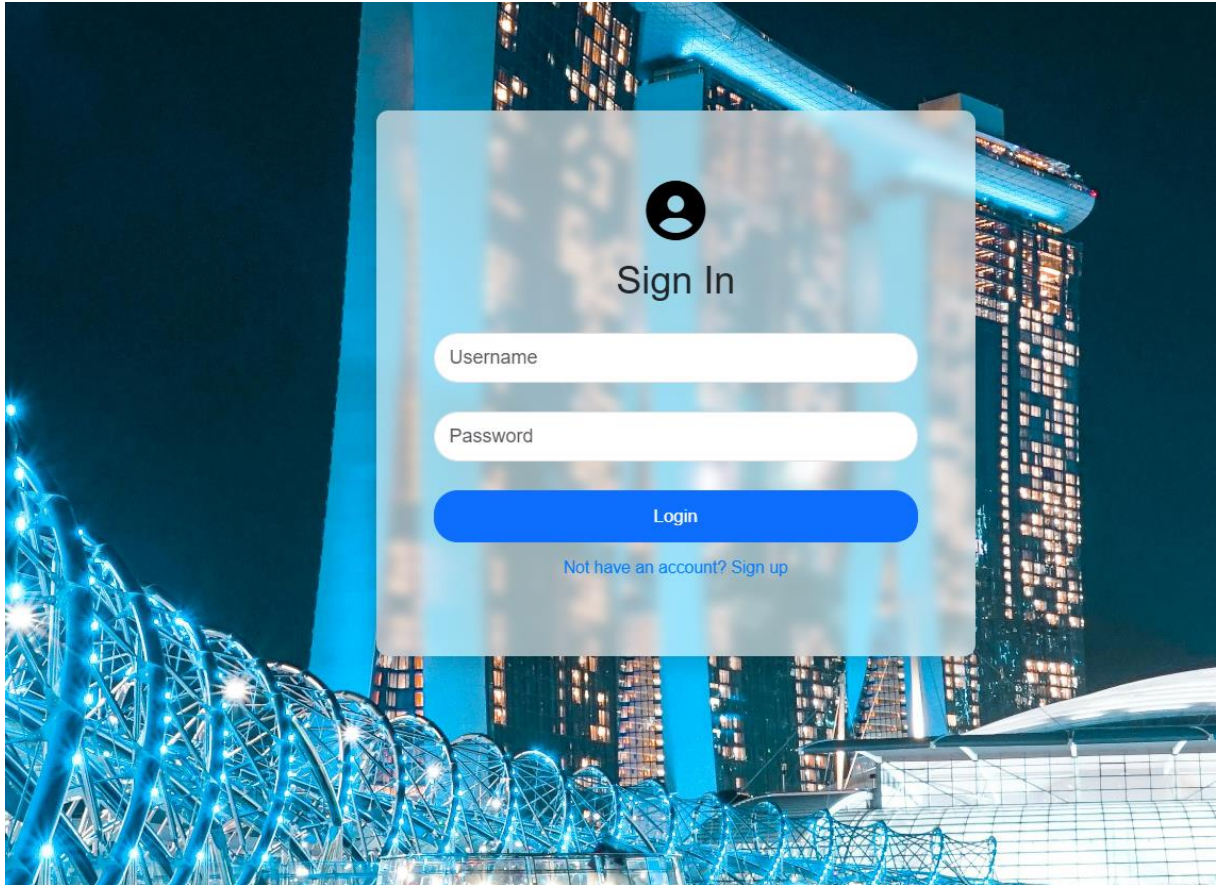
By signing up, you agree to
[Term of Services and Privacy Policy](#)

Picture 6. Sign up interface for mobile

1.2. Log in

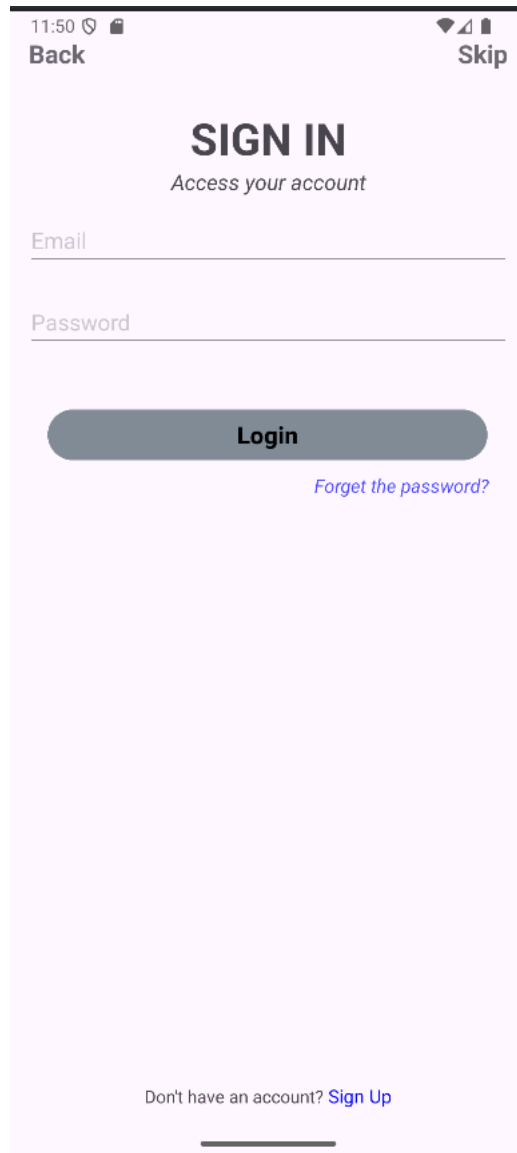
Users use accounts to log into the system. If the correct information is entered, the system will, based on the account's permissions, switch to the management page for that individual. Otherwise, the system will report an error and ask to re-enter.

***Website:**



Picture 8. Log in interface for website

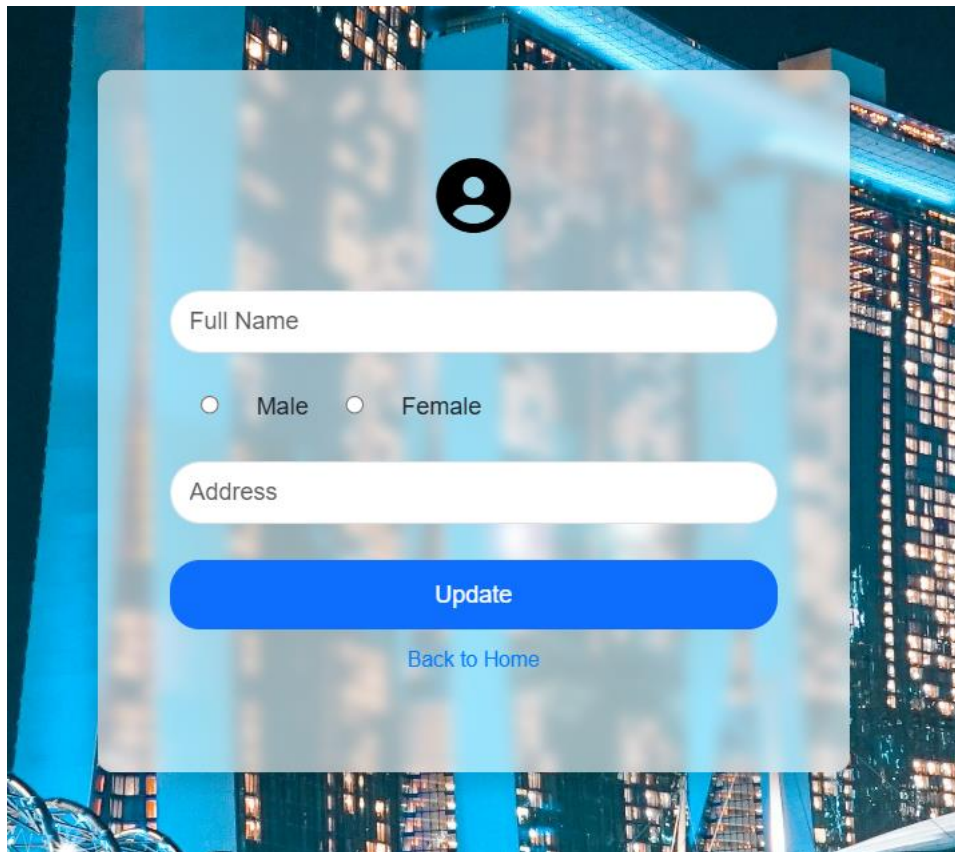
***Mobile:**

A mobile app login screen with a light pink background. At the top, there's a status bar showing the time 11:50 and battery level. Below the status bar, there are two links: "Back" on the left and "Skip" on the right. The main heading is "SIGN IN" in bold, followed by the subtitle "Access your account". There are two input fields: "Email" and "Password", each with a horizontal line below it. Below the input fields is a dark grey rounded button labeled "Login". To the right of the "Login" button is a link "Forget the password?". At the bottom of the screen, there is a link "Don't have an account? Sign Up".

Picture 9. Log in interface for website

2. Update customer information:

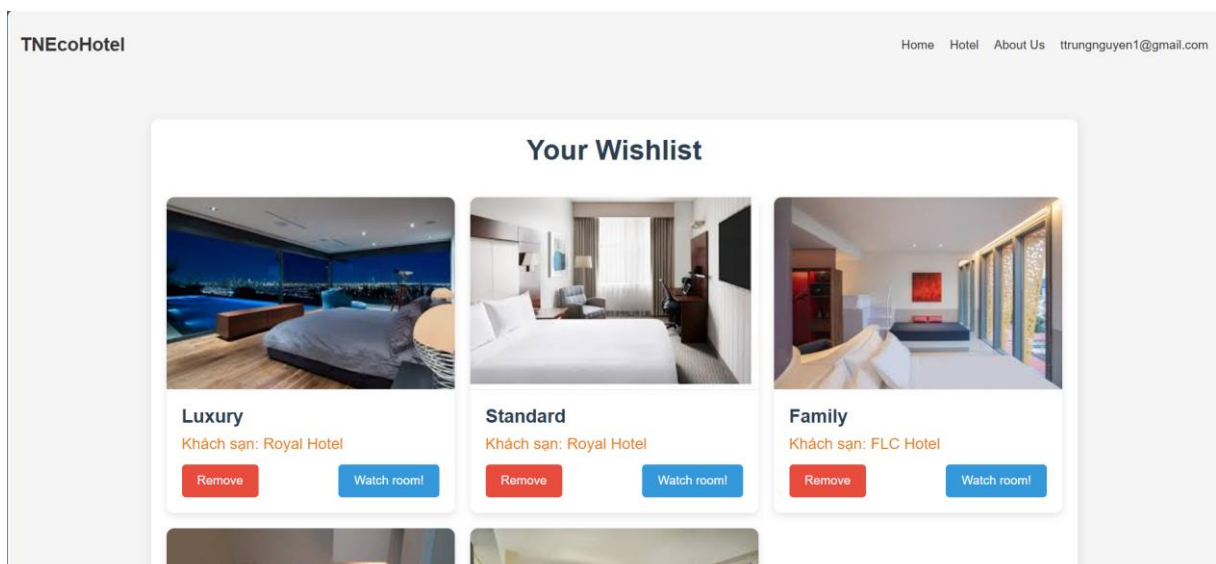
Customers can update customer information by filling in the blank fields to update customer details.



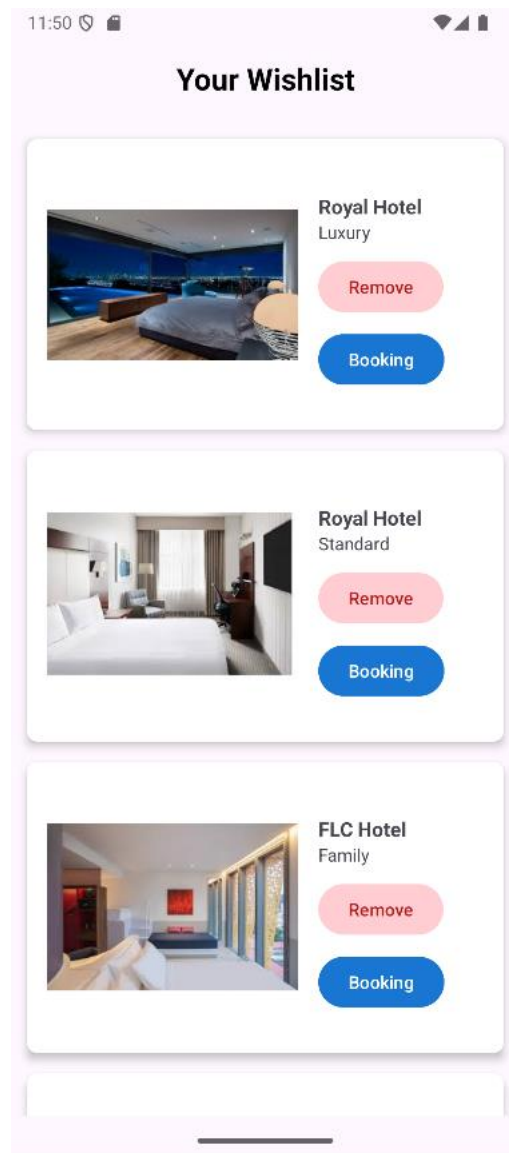
Picture 10. Update customer information interface

3. Wishlist

This page allows users to save a list of favorite rooms for convenient recording and quick access to their favorite rooms. In this page, you can access directly into room by click button “Watch room!” in website and click on image on mobile app.



Picture 11. Wishlist interface for website



Picture 12. Wishlist interface for mobile

4. Booked page

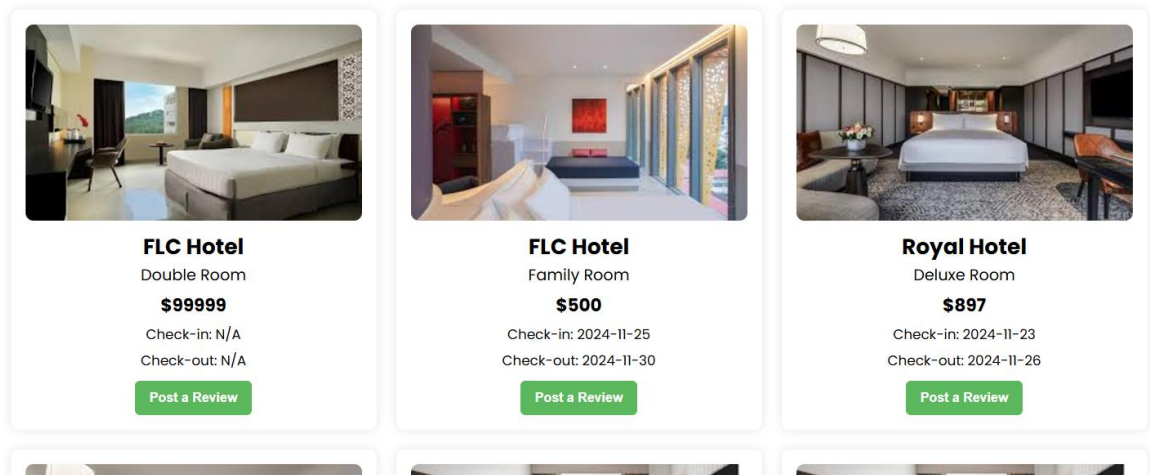
This page lists booked rooms, including basic information about the room, hotel, total cost, check-in date, and check-out date. Especially, on website you can post a new review about this room to rate satisfaction for this booking.

*Website

TNEcoHotel

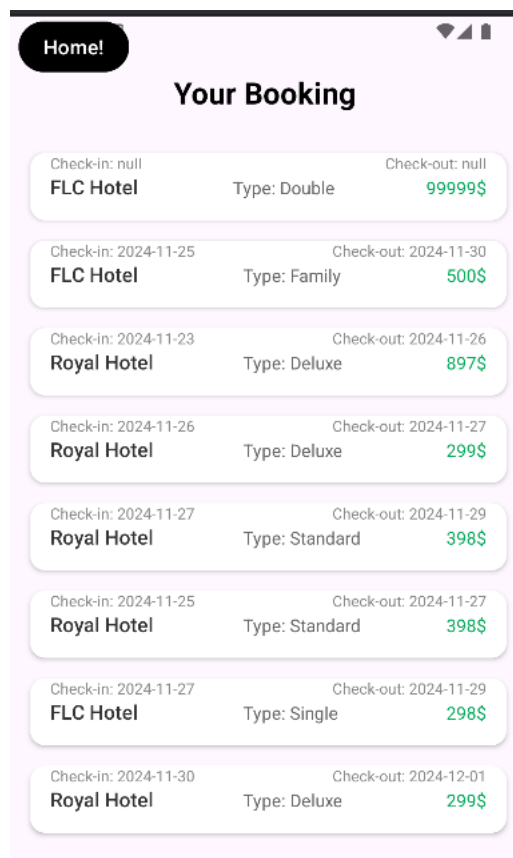
Home Hotel About Us ttrungnguyen1@gmail.com

Your Booked Rooms



Picture 13. Booked rooms interface for website

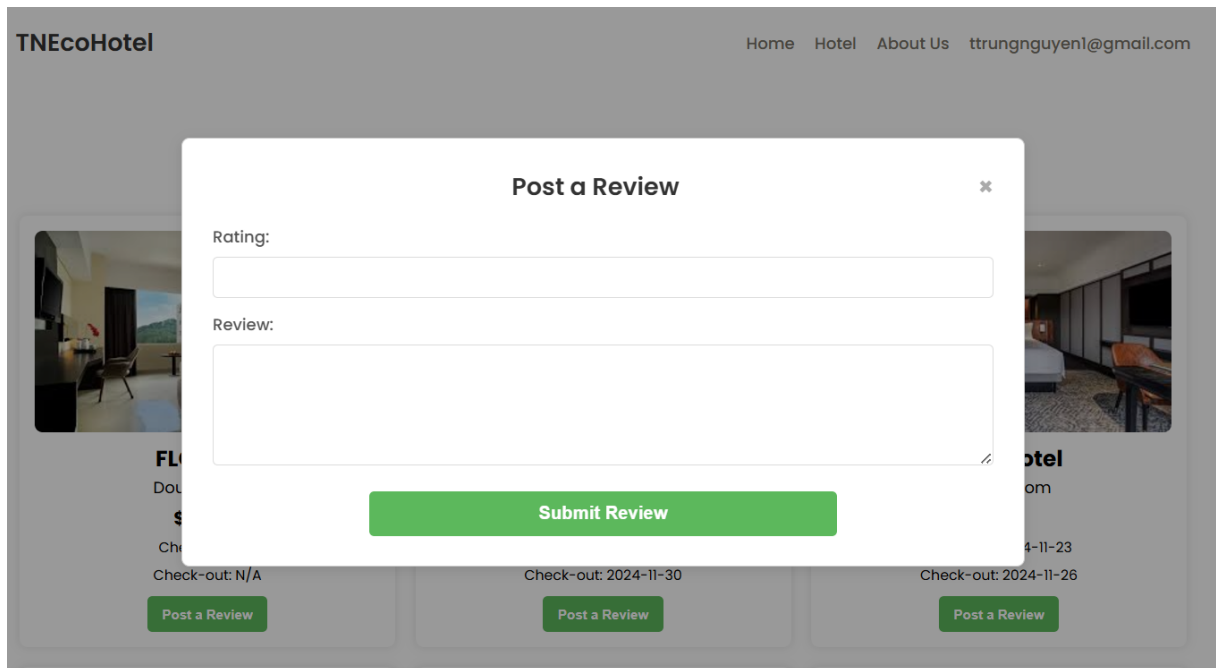
*Mobile



Picture 14. Booked rooms interface for website

5. Post review

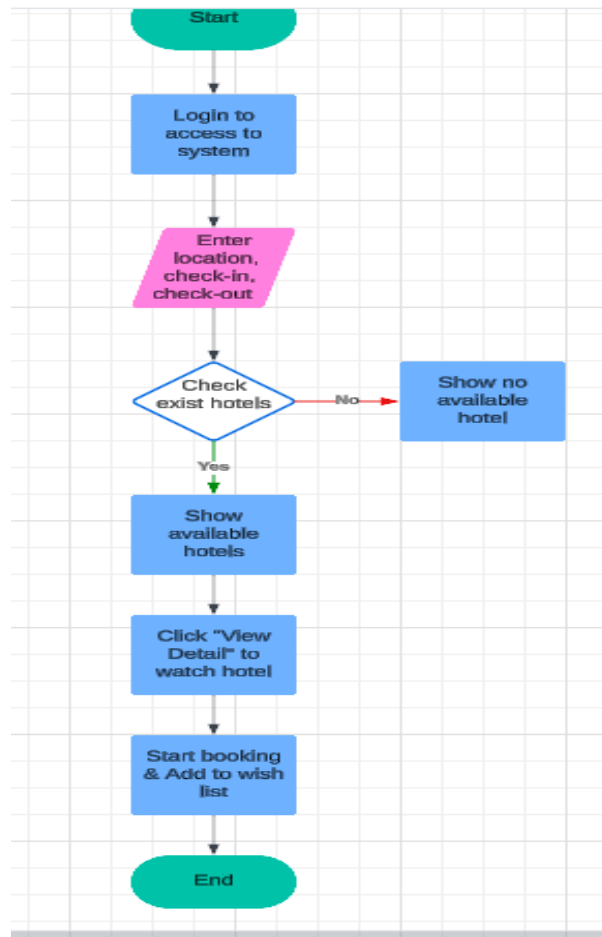
In this page, after you finish your booking. A button “Post a Review” will showed and you can post a rating, you feeling with this room by fill the form such as: rating score from 1 to 5 star, and the content of review.

The image shows a web browser window with the TNEcoHotel website. A modal form titled "Post a Review" is centered on the screen. The form has a close button (X) in the top right corner. It contains two input fields: "Rating:" with a numeric input box, and "Review:" with a larger text area. Below these fields is a green button labeled "Submit Review". The background of the website is dimmed, showing hotel listings with images, names, and "Post a Review" buttons.

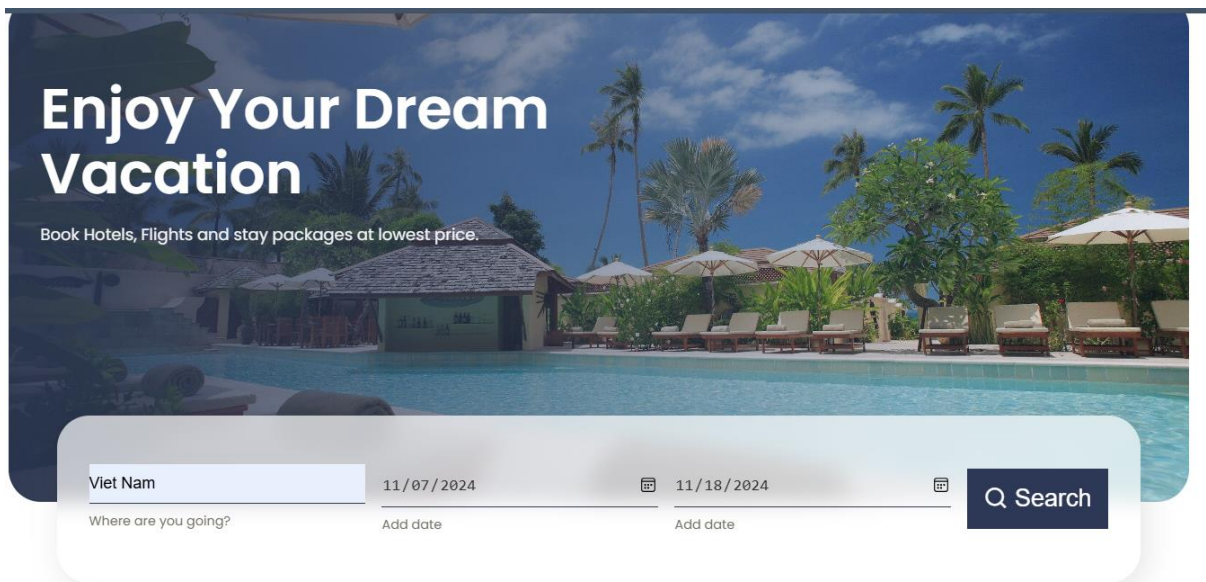
Picture 15. Post a review on website

6. Search for hotel

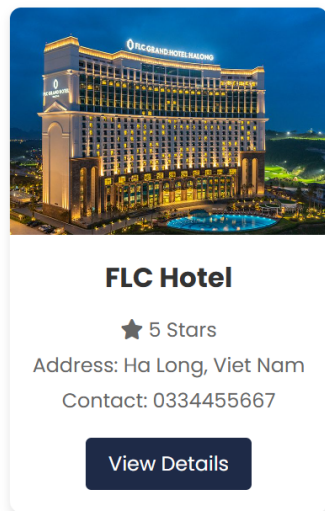
In Picture 16, the search functionality is demonstrated effectively. When customers search for hotels, the system displays all available options, allowing them to explore further by clicking "View Details" for each hotel. On the other hand, if no hotels are available in the selected location, the screen still transitions to the results page, notifying customers with the message, "No availability in this location."



Picture 16. Flow-char for search function



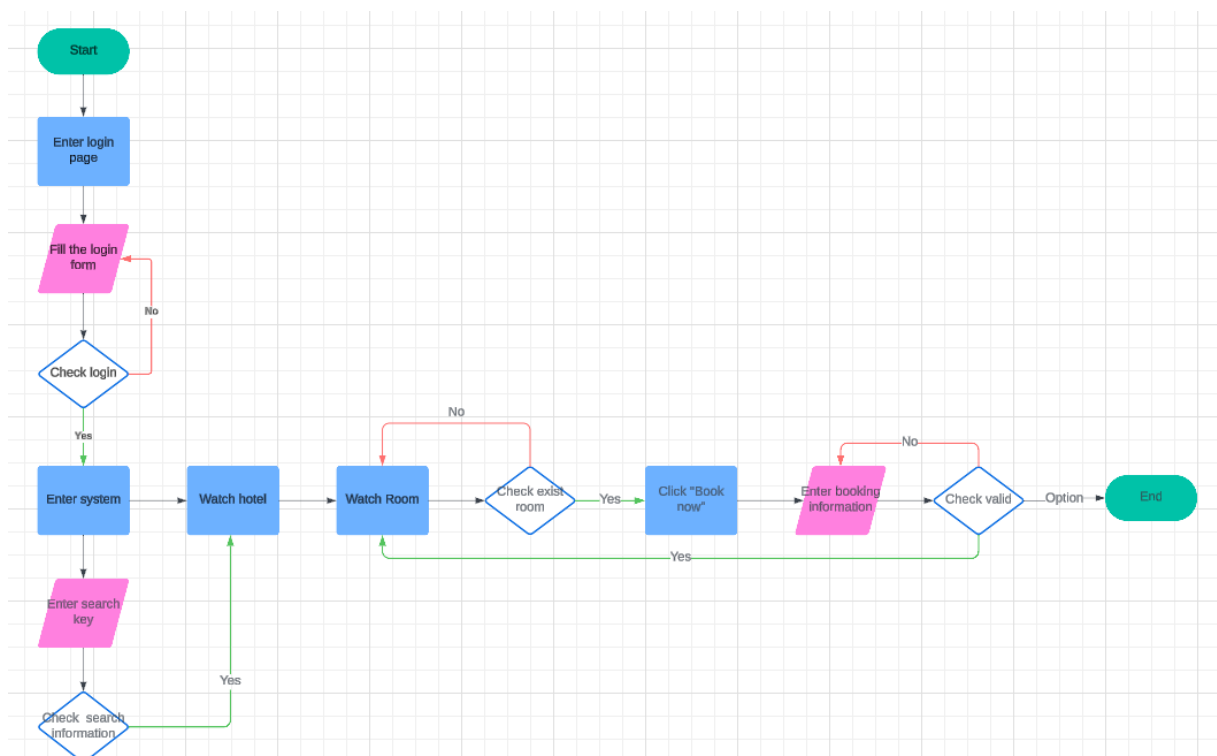
Hotels in Viet Nam



Picture 17 + 18. Result for search hotel

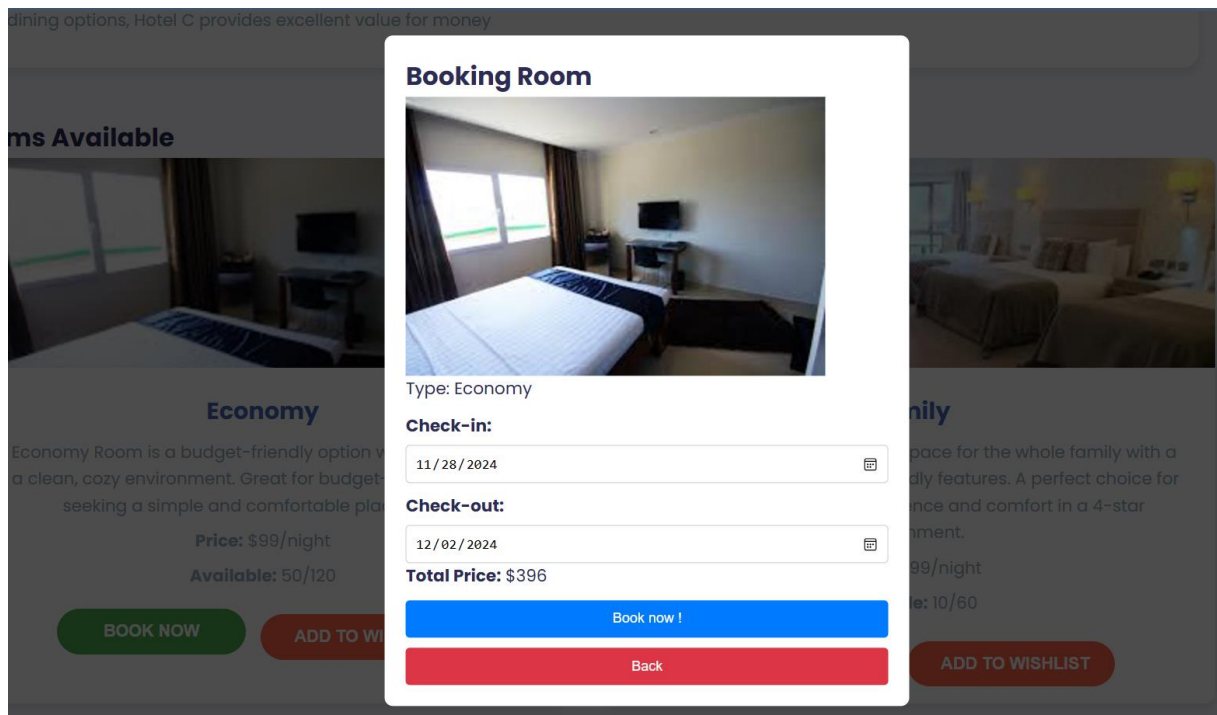
7. Booking

Picture 19, 20, and 21 clearly illustrate the booking process within the system, seamlessly integrated across both the website and mobile platforms. Each step, from searching and selecting a room to confirming the booking, is presented in detail, showcasing how the system operates smoothly and consistently across all devices.



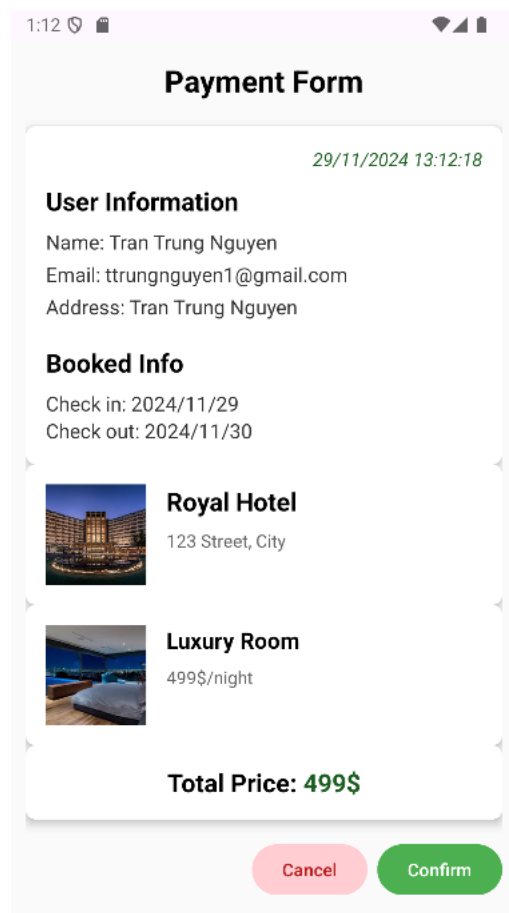
Picture 19. Flow-chart for booking room

***Website:**



Picture 20. Booking form interface on website

***Mobile:**



Picture 21. Booking form interface on mobile

8. Log out

When the customer want to log out the account, customer can log out at the account bar in each page of website and bottom of each page on mobile. Press the log out button, customer can log out immediately and back again login screen.

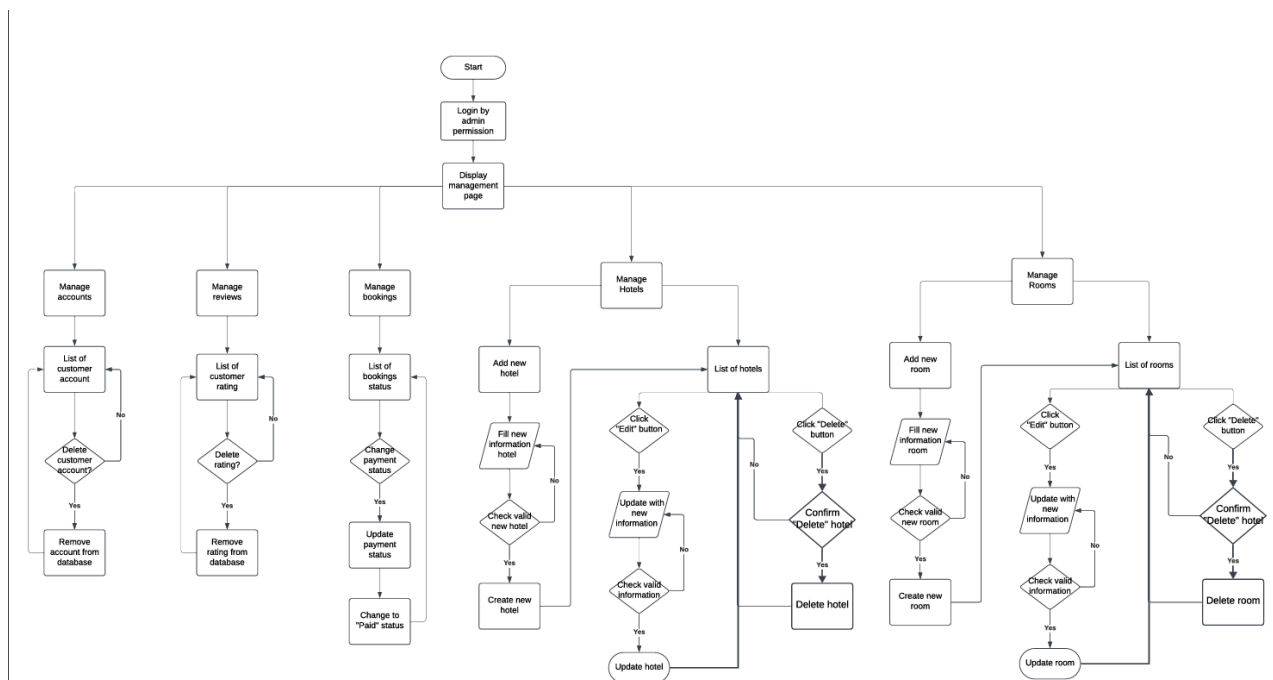


Picture 22. Log out on website



Picture 23. Log out on mobile

II. Admin functionality



Picture 24. Flow-chart for hotel manager

1. List of customer account

On this page, managers can view all customer account information registered on the system. Furthermore, if customers behave inconsistently with the hotel's regulations, the manager can delete the user account on the system by press into the “Delete” button.



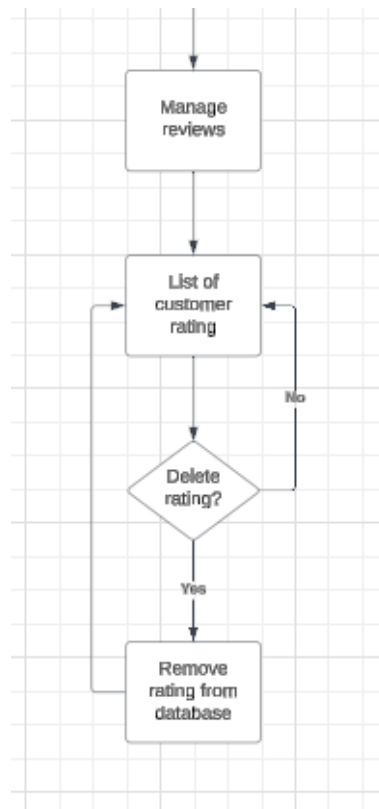
Picture 25. Flow-chart of manage customer account

<div>TNEcoHotel</div> <div> <div>Hotels</div> <div>Persons</div> <div>Rooms</div> <div>Booking</div> <div>Reviews</div> </div> <div>Logout</div>					
Manage person					
ID	Name	Sex	Address	User's ID	Actions
1	Tran Trung Nguyen	Female	Can Tho	1	Delete
2	test01	Male	Ho Chi Minh	2	Delete
3	John William	Female	England	13	Delete
4	Trung Nguyen 1	Female	Ho Chi Minh	14	Delete
5	Trung Nguyen test	Male	Can Tho - android	15	Delete
6	Daniel	Female	USA	16	Delete
8	Email check	Female	Ho Chi Minh	18	Delete
9	Trung Nguyen	Male	Bac Lieu	19	Delete
14	Tran Trung Nguyen	Female	357 Ấp Cái Tràm A1	23	Delete
15	Tran Trung Nguyen	Male	Can Tho	24	Delete
16	Tran Trung Nguyen	Female	357 Ấp Cái Tràm A1	25	Delete

Picture 26. Manage accounts page


2. List of reviews


This page manages customer reviews, allowing managers to remove comments that violate the hotel's policies or contain misleading content using the "Delete" button.





Picture 27. Flow-chart of manage reviews


TNEcoHotel


Hotels

Persons

Rooms

Booking

Reviews

Logout

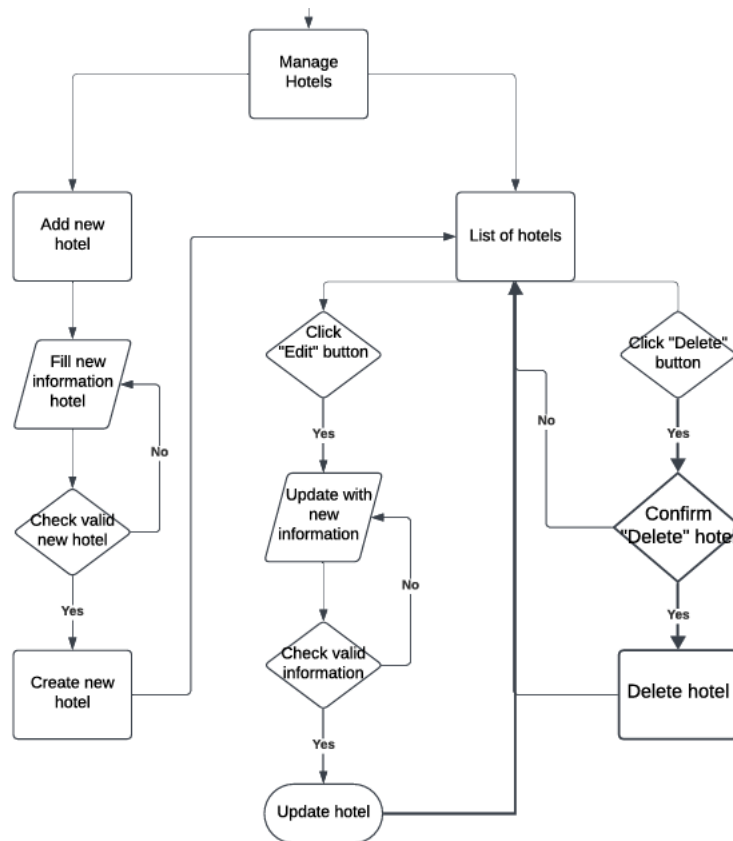
Manage reviews

ID	Customer	Hotel Name	Room Name	Score	Contents	Action
1	Tran Trung Nguyen	Royal Hotel	Luxury	4.5	Great product, highly recommended!	Delete
3	John William	Royal Hotel	Deluxe	5.0	Excellent service and quality!	Delete
4	Trung Nguyen 1	Royal Hotel	Luxury	2.5	Not worth the price.	Delete
5	Trung Nguyen test	Royal Hotel	Standard	4.0	Good value for money, but needs improvement in features.	Delete
6	Nha Man	Royal Hotel	Deluxe	5.0	Fantastic! Will definitely buy again.	Delete
7	Email check	Royal Hotel	Standard	4.2	Very nice, comfortable to use, but delivery was late.	Delete
8	Trung Nguyen	Royal Hotel	Luxury	5.0	Perfect! Exceeded my expectations.	Delete
9	Daniel	Royal Hotel	Luxury	4.9	Dịch vụ tuyệt vời!!!	Delete
10	Daniel	FLC Hotel	Double	4.9	The place so peaceful for me with a healing week!	Delete
12	Tran Trung Nguyen	Royal Hotel	Luxury	4.9	The place so nice!!!!	Delete

Picture 28. Manage reviews page

3. Hotels management

This page provides all the necessary information for managing a hotel. Users can view the status of hotels, as well as add new ones, update existing details, or remove unsuitable hotels from the list to maintain accurate and up-to-date records.



Picture 29. Flow-chart of manage hotels

Hotels																																																
<div>TNEcoHotel</div> <div> Hotels Persons Rooms Booking Reviews </div> <div>Logout</div>																																																
<div>Create hotel</div> <table> <tr> <th>ID</th><th>Name</th><th>Address</th><th>Star</th><th>Phone</th><th>Image</th><th>Actions</th></tr> <tr> <td>1</td><td>Royal Hotel</td><td>123 Street, City</td><td>5</td><td>0123456789</td><td></td><td>Edit Delete</td></tr> <tr> <td>2</td><td>Hotel B</td><td>456 Avenue, City</td><td>4</td><td>0987654321</td><td></td><td>Edit Delete</td></tr> <tr> <td>3</td><td>Hotel C</td><td>789 Boulevard, City</td><td>3</td><td>0112233445</td><td></td><td>Edit Delete</td></tr> <tr> <td>4</td><td>Hotel D</td><td>101112 Lane, City</td><td>4</td><td>0556677889</td><td></td><td>Edit Delete</td></tr> <tr> <td>5</td><td>FLC Hotel</td><td>Ha Long, Viet Nam</td><td>5</td><td>0334455667</td><td></td><td>Edit Delete</td></tr> </table>							ID	Name	Address	Star	Phone	Image	Actions	1	Royal Hotel	123 Street, City	5	0123456789		Edit Delete	2	Hotel B	456 Avenue, City	4	0987654321		Edit Delete	3	Hotel C	789 Boulevard, City	3	0112233445		Edit Delete	4	Hotel D	101112 Lane, City	4	0556677889		Edit Delete	5	FLC Hotel	Ha Long, Viet Nam	5	0334455667		Edit Delete
ID	Name	Address	Star	Phone	Image	Actions																																										
1	Royal Hotel	123 Street, City	5	0123456789		Edit Delete																																										
2	Hotel B	456 Avenue, City	4	0987654321		Edit Delete																																										
3	Hotel C	789 Boulevard, City	3	0112233445		Edit Delete																																										
4	Hotel D	101112 Lane, City	4	0556677889		Edit Delete																																										
5	FLC Hotel	Ha Long, Viet Nam	5	0334455667		Edit Delete																																										

Picture 30. Manage hotels page

3.1. Update hotel

On this page, clicking the "Edit" button opens a form for updating hotel information. Once the "Confirm" button is pressed, the updates are saved and completed. Alternatively, clicking "Cancel" will return the user to the previous hotel list page.

Edit Hotel

Hotel Name:

Hotel Address:

Hotel Star:

Hotel Phone:

Hotel Description:

Upload new image:

No file chosen

Picture 31. Edit form for updating hotel

3.2. Delete hotel

A hotel manager who wants to delete a hotel can click the "Delete" button. After clicking "OK" to confirm, the hotel will be removed from the database.

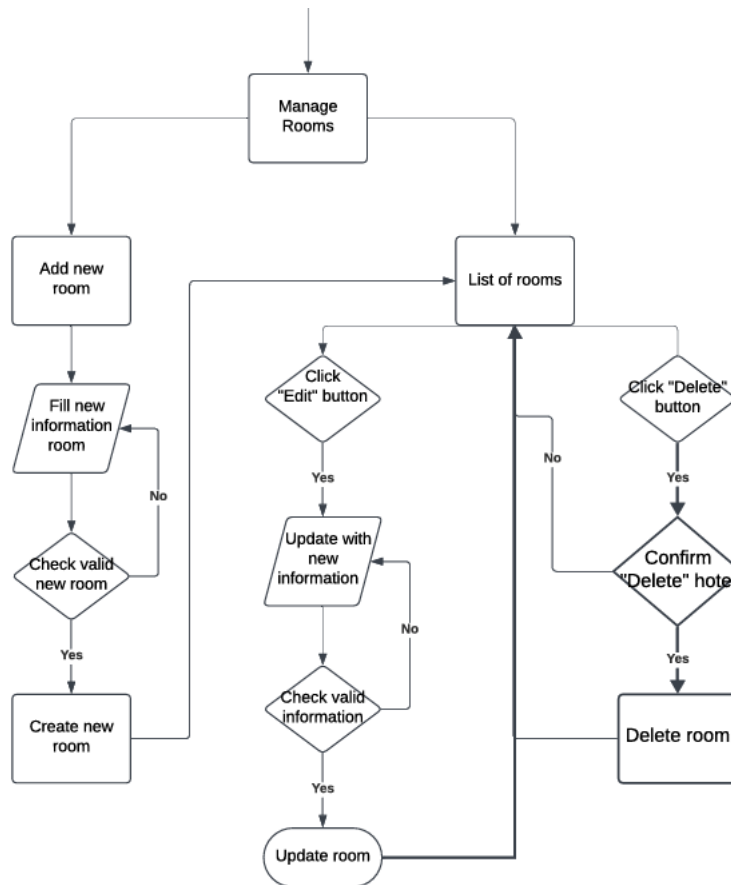
The screenshot shows the TNEcoHotel application interface. On the left is a sidebar with navigation links: Hotels, Persons, Rooms, Booking, Reviews, and Logout. The main area displays a table of hotels. A modal dialog box is open in the center, asking 'Delete hotel?' with 'OK' and 'Cancel' buttons. The table contains the following data:

ID	Hotel Name	Address	Star	Phone	Image	Actions
4	Hotel D			0556677889		Edit Delete
5	FLC Hotel	Ha Long, Viet Nam	5	0334455667		Edit Delete
8	Novotel Hotel	167 Hai Bà Trưng, Phường 6, Quận 3, Hồ Chí Minh	5	0946755961		Edit Delete
14	JW Hotel	Bethesda, Maryland, U. S.	5	12313131		Edit Delete
15	Naz City Hotel	Kocatepe, Irmak Cd. 44-46, 34437 Beyoğlu/İstanbul, Türkiye	5	01230193		Edit Delete
19	Canopy Hotel	New York, USA	5	09274902759		Edit Delete

Picture 32. Delete hotel

4. Rooms management

This page provides detailed information about the room types available at each hotel. It enables managers to gain insights into the details and current status of each room type, allowing them to develop tailored strategies to optimize the hotel's sales performance.



Picture 33. Flow-chart of manage rooms

TNEcoHotel

- Hotels
- Persons
- Rooms
- Booking
- Reviews
- Logout

Manage rooms

[Create new room](#)

ID	Name	Star	Price	Quantity	Remain	Image	HID	Action
1	Luxury	5	499\$	50	20		1	Edit Delete
2	Standard	3	199\$	100	30		1	Edit Delete
3	Deluxe	4	299\$	75	10		1	Edit Delete
4	Suite	5	149\$	30	15		2	Edit Delete
5	Economy	2	99\$	120	50		3	Edit Delete
6	Family	4	399\$	60	10		3	Edit Delete

Picture 34. Manage rooms page

4.1. Update Room

On this page, clicking the "Edit" button opens a form for updating room information. Once the "Confirm" button is pressed, the updates are saved and completed. Alternatively, clicking "Cancel" will return the user to the previous room list page.

Edit Room

Room Name:

Room Star:

Room Price:

Number of room:

Remain room:



Upload image

No file chosen

Hotel:

Room Description:

The Suite Room is the epitome of luxury, with a separate living area, exquisite decor, and personalized services. Ideal for those desiring a

Picture 35. Edit form for updating room

4.2. Delete Room

A hotel manager who wants to delete a room can click the "Delete" button. After clicking "OK" to confirm, the room will be removed from the database.

TNEcoHotel

- Hotels
- Persons
- Rooms
- Booking
- Reviews

Logout

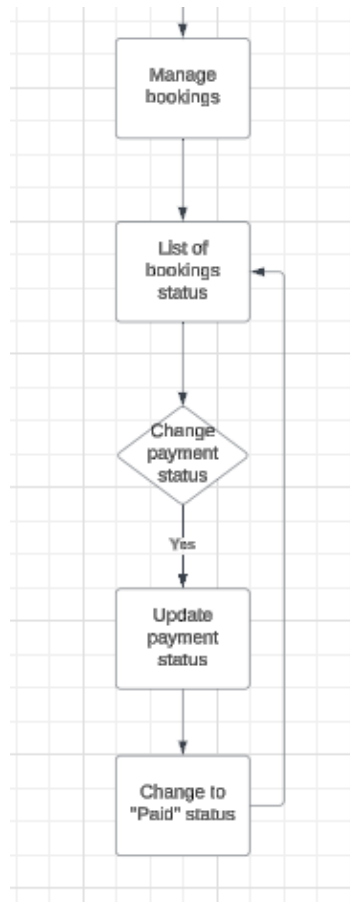
Delete room?

ID	Name	Star	Price	Quantity	Remain	Image	HID	Action
1	Luxury	5	499\$	50	20		1	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
2	Standard	3	199\$	100	30		1	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
3	Deluxe	4	299\$	75	10		1	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
4	Suite	5	149\$	30	15		2	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
5	Economy	2	99\$	120	50		3	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
6	Family	4	399\$	60	10		3	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
7	Single	3	99\$	80	30		4	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Picture 36. Delete room

5. Bookings management

On this page, managers can view all user booking details along with their payment status. For bookings that have been paid, managers can confirm the payment by clicking the "Paid" button.



Picture 37. Flow-chart of manage bookings


Manage bookings						
ID	Customer	Hotel	Room	Total Money	Status	Action
1	Tran Trung Nguyen	Royal Hotel	Standard	900	Paid	
2	test01	Hotel B	Deluxe	299	Paid	
3	Trung Nguyen test	FLC Hotel	Economy	500	Paid	
4	Tran Trung Nguyen	FLC Hotel	Family	599	Not Paid	<button>Paid</button>
5	Tran Trung Nguyen	Royal Hotel	Family	999	Not Paid	<button>Paid</button>
6	Trung Nguyen test	Hotel B	Single	99	Not Paid	<button>Paid</button>
8	Tran Trung Nguyen	FLC Hotel	Double	99999	Not Paid	<button>Paid</button>
9	Tran Trung Nguyen	Hotel C	Standard	1000.0	Not Paid	<button>Paid</button>
15	Tran Trung Nguyen	FLC Hotel	Family	500	Not Paid	<button>Paid</button>
16	Tran Trung Nguyen	Royal Hotel	Deluxe	897	Not Paid	<button>Paid</button>
17	Nha Man	Royal Hotel	Luxury	1497	Paid	


Picture 38. Manage bookings page


6. Log out


By click into “Log out” button at the bottom of navigation bar, manager can log out immediately


TNEcoHotel


 Hotels

 Persons

 Rooms

 Booking

 Reviews

 Logout

Picture 39. Log out in administrator

PART 4. TESTING

I. Testing goal

The main goal of testing is to detect errors and check whether the program meets the requirements or not.

Objectives to be achieved:

Usability testing is checking whether the website and application are user-friendly or not? Users can understand whether the system works easily or not.

- All error messages are accurate, without any spelling or grammar errors, and the error message must match the field label.
- Link to the home page on each page

Functional testing is to verify whether the functional and business characteristics mentioned in the specification document are met.

- Check if the account and password match
- Check email function (if registered with the same email)
- Check all links to see if they work and if they go to the expected screen.
- Check the ability to force data entry, empty data, bind data, display a message when entering incorrect data.

Database testing is checking whether the data displayed in the web application matches the data stored in the database or not? Whether the application operation data is added to the database correctly.

- The data displayed to the user is the same as the data in the database.

1. Test script

Function test script:

Num.	Description	Testing date
1	Sign up	29-11-2024
2	Log in	29-11-2024
3	Add to wishlist	29-11-2024
4	Create new hotel	29-11-2024
5	Update hotel	29-11-2024
6	Create new room	29-11-2024
7	Update room	29-11-2024

8	Booking room	29-11-2024
----------	--------------	------------

Table 9. Functional test script

1.1. Sign up

Num.	Describe test case	Testing script	Expected results	Current result	Test date
1	Leave the fields blank	Leave the fields blank	Report an error, request input	Successfully	29-11-2024
2	Enter an existing email	Enter an existing email	Report an error, request re-entry	Successfully	29-11-2024

Table 10. Test sign up function

1.2. Login

Num.	Describe test case	Testing script	Expected results	Current result	Test date
1	Leave the fields blank	Leave the fields blank	Report an error, request input	Successfully	29-11-2024
2	Incorrect login fields entered	Enter wrong email/password	Report an error, request re-entry	Successfully	29-11-2024
Login by admin					
3	Log in (Admin)	- Step 1: Open website - Step 2: Login with email/password	Go to the admin's management page	Successfully	29-11-2024
Login by customer					
4	Log in (User)	- Step 1: Open Website/app - Step 2: Login with email/password	Go to home page	Successfully	29-11-2024

Table 11. Test log in function

1.3. Add to wishlist

Num.	Describe test case	Testing script	Expected results	Current result	Test date
-------------	---------------------------	-----------------------	-------------------------	-----------------------	------------------

1	Add to wish list with existed room	Add to wish list with existed room	Report an error	Successfully	29-11-2024
----------	------------------------------------	------------------------------------	-----------------	--------------	------------

Table 12. Test add to wishlist function

1.4. Create new hotel

Num.	Describe test case	Testing script	Expected results	Current result	Test date
1	Leave the fields blank	Leave the fields blank	Report an error, request input	Successfully	29-11-2024

Table 13. Test create a new hotel function

1.5. Update hotel

Num.	Describe test case	Testing script	Expected results	Current result	Test date
1	Leave the fields blank	Leave the fields blank	Report an error, request input	Successfully	29-11-2024

Table 14. Test update hotel function

1.6. Create new room

Num.	Describe test case	Testing script	Expected results	Current result	Test date
1	Leave the fields blank	Leave the fields blank	Report an error, request input	Successfully	29-11-2024

Table 15. Test create a new room function

1.7. Update room

Num.	Describe test case	Testing script	Expected results	Current result	Test date
1	Leave the fields blank	Leave the fields blank	Report an error, request input	Successfully	29-11-2024

Table 16. Test update room function

1.8. Booking room

Num.	Describe test case	Testing script	Expected results	Current result	Test date
1	Leave the fields blank	Leave the fields blank	Report an error, request input	Successfully	29-11-2024

2	Booking with out of stock room	Booking with out of stock room	No button “Book now” show	Successfully	29-11-2024
3	Booking with unavailable date	Booking with check-in date smaller than check-out date	Total money is 0	Successfully	29-11-2024

Table 17. Test booking room function

PART 5. CONCLUSION AND DEVELOPMENT ORIENTATION

I. ACHIEVED RESULTS

The Hotel Booking System for Mobile Devices successfully achieves its primary goals by providing a user-friendly platform for customers to search for accommodations, make reservations, and manage their bookings directly through the mobile app. The app ensures secure access via a login system, real-time updates for room availability, and seamless payment integration for a complete booking experience. Moreover, it offers hotel administrators efficient tools to manage room inventory and monitor reservations, improving operational efficiency. The mobile app's intuitive interface and responsiveness cater to the growing demand for convenient, on-the-go booking solutions.

II. RESTRICTIONS

Despite its achievements, the system has certain limitations:

- The app requires consistent internet access, making it less effective in areas with poor connectivity.
- Handling a large volume of concurrent users during peak periods may result in performance bottlenecks.
- The system offers limited insights for advanced analytics and customer behavior tracking, which are crucial for enhancing user engagement.

III. ORIENTED DEVELOPMENT

To address these limitations and further enhance the system, the following development directions are proposed:

- Implement an offline mode allowing users to browse hotels and plan reservations without an active internet connection.
- Optimize the app's infrastructure to handle increased traffic efficiently, ensuring smooth performance during high-demand periods.
- Integrate advanced analytics tools for better tracking of user preferences, providing personalized recommendations and marketing insights.
- Expand functionality by integrating the app with travel-related services such as flight bookings, car rentals, and local attractions for a comprehensive travel planning experience.
- Introduce AI-powered chatbots for customer support and machine learning algorithms to enhance personalization in recommendations.

REFERENCE SOURCE

1. [Spring Boot :: Spring Boot](#)
2. [Introduction · Bootstrap](#)
3. [What is REST?: REST API Tutorial](#)
4. [Kotlin Docs | Kotlin Documentation](#)