Abstract

Online Hotel Reservation System (OHRS) is a web-based room reservation system through which hotel's rooms are booked by using internet or intranet and computer. The OHRS aims at providing the user to reserve rooms at hotel in efficient manner and no time wasting for paper work and room availability. The system shall take the start and end dates from the user and check for availability of rooms. This is a simple user interface which displays the information about the rooms, price and available accommodations of rooms. The system will calculate the rate of the rooms according to the number of days they want to reserve the room. The project will notify the user whether the requested room is booked or rejected through email. The project is based on both user and administrative end where in user end the user can see the availability of the rooms by providing the start and end data, and in administrative end the administrative user can accept or reject the booking request, add or remove room's category as well as add or remove rooms.

Acknowledgements

I sincerely acknowledge and thank to those who have contributed their valuable time in helping me to achieve the success in my project work. I would like to express my gratitude to all those who gave me the possibility to complete this project. I want to thank **Aadim National College** for giving me the opportunity for doing this project. I am indebted and thankful to my Project Guide. **Mr. Yuba Raj Kalathoki** to whom I owe his piece of knowledge for his valuable and timely guidance, co-operation, encouragement & time spent for doing this project work. I would also like to thank my principal **Mr. Shankar Prasad Sharma** and project supervisor **Mr. Yuba Raj Kalathoki** for their assistance and insightful comments, and who willingly shared their expertise with me.

I am immensely obliged to my friends for their elevating inspiration, encouraging guidance and kind supervision in the completion of my project. I sincere thanks to the IT staff for providing us sufficient information which helped me to complete my project successfully.

Last, but not the least, my parents are also an important inspiration for me. So, with due regards, I express my gratitude to them.

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Abbreviations and Acronyms

BCA	Bachelor of Computer Application
CSS	Cascading Style Sheet
DFD	Data Flow Diagram
ES	ECMAScript
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
IDE	Integrated Development Environment
RDBMS	Relational Database Management System
SQL	Structured Query Language
UI	User Interface
JSP	Java Servlet Page

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Chapter 1: Introduction

1.1. Introduction

Online Hotel Reservation is a website which helps people to choose various hotel's rooms and book them online. This website will serve as an effective booking hotel's room online. Users can login to the website, register a new account, view various kinds of with different category and accommodation. Thus, "Online Hotel Reservation System" is a website which helps people to book as many rooms of their own choice by just visiting the website.

This project is a Web-based application that provides a user-friendly and simple interface to let users easily book hotel rooms and perform booking activities via Internet. The records are shared with not only Web users but also with administrators to the site. The Project uses a regular Web browser with JSP as the basic interface language. Users can perform booking activities via the Internet browser. The administrations also can view all users, rooms and the category. The Web pages are written in Java Servlet and stored in Apache Tomcat Server. All the data is store in a MySQL database and accessed by Java.

The Online Hotel Reservation System is a very easy-to-user Web-based application. Everyone who knows how to use a Web browser can book rooms on specific date. User will receive a confirmed email after finishing all steps in reservation.

1.2. Problem Statement

In most hotel, the room's reservations are taken manually. It is not only time consuming, but it is also unsecure and unreliable and it can be lost. Some hotels use manual paper attendance sheets for reserving rooms while this will be difficult for hotel managers to keep track of the large number of customers trying to book rooms and those room already booked by using paper.

1.3. Objectives

The main purpose of this system is to develop a web application program that would circumvent all those problems encountered in the manual hotel booking system. The main objectives of the proposed system are:

- To convert the manual hotel reservation procedure into digital method.
- To provide features that will familiarize customers with the hotel reservation system.
- To eliminate duplicate data entry and errors in time and hotel customer entries.

1.4. Scope and Limitation

These extend to be covered in these project is the designing and implementation of computerized hotel reservation and booking system. This study is aimed at finding out how effective the online room reservation or booking system will improve the operations of room reservations in hotels. However, out of the several departments that makes up the hotel, this research project is restricted to only room reservation.

1.4.1. Scope

- Can be used anywhere any time as it is web-based application,
- General customers will be able to use the system and reserve the room.

1.4.2. Limitation

- General customer cannot book a room without logging in to the system,
- This system is working for single server,
- The project does not store transactions so the customer will not be able to make any references to past transactions.

1.5. Development Methodology

The waterfall model was selected as the SDLC model due to the following reasons:

- The project is short.
- Easy to arrange tasks.
- Cleary defined stages.
- Simple and easy to understand and use.
- There were no ambiguous requirements.
- Technology is understood and is not dynamic.
- Easy to manage due to the rigidity of the model. Each phase has specific deliverables and a review process.

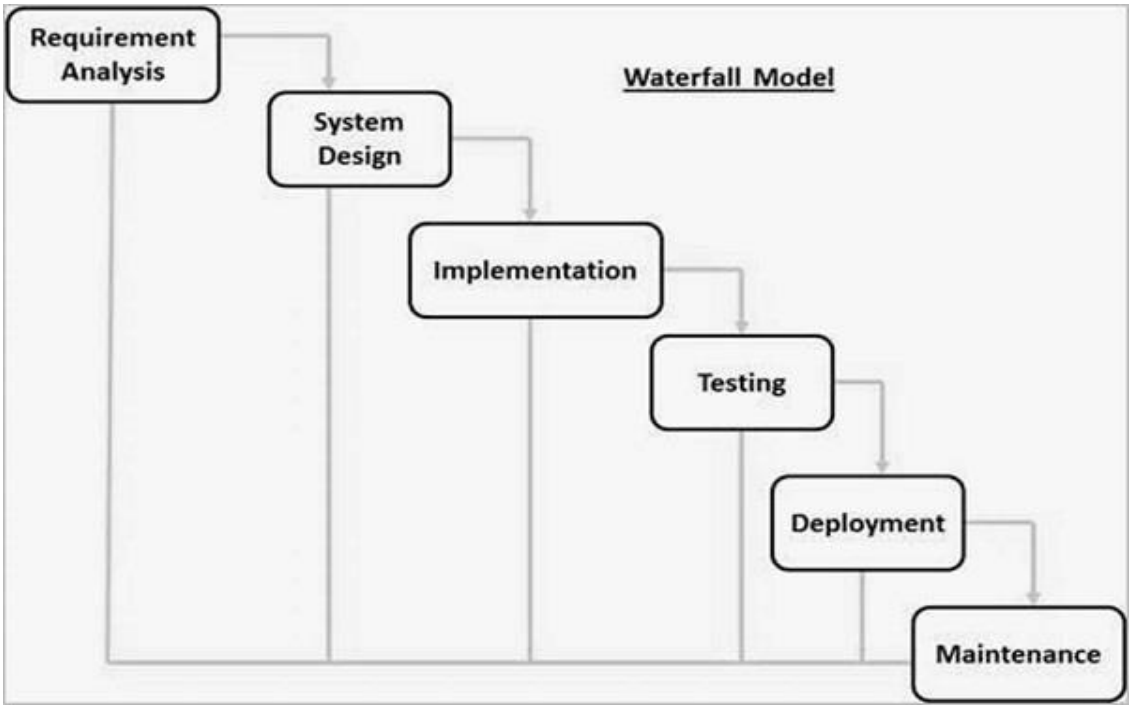

Figure 1: Waterfall Model [1]

1.6. Report Organization

This report document contains five chapters including this chapter. Chapter two defines and describes Background Study and Overview of related existing systems and their pros and cons. Chapter three presents the System Analysis and Design including Requirement Analysis and Feasibility Analysis. Chapter four presents the Implementation, Testing and debugging are explained. In chapter five, Conclusion, Limitations and Future Enhancement are briefly explained.

Chapter 2: Background Study and Literature Review

2.1. Background Study

A hotel can simple define as a building or a place for the great to receive room and stay for short period of time, also a place of refreshment, entertainment and protection of the visitor. There is a great need for an easy quick, reliable and information system to aid the traveler in planning their vacation. Shelter is one of their basic necessity of life individuals need a place to stay. The individuals who want to reserve a hotel's room must first contact the Hotels. This can be done online. At this point, the person has to supply some information such as dates of reservation and room number. After this details are worked out, the individual reserving the rooms must present a valid identification card to the hotels.

Most Hotels Companies throughout the industry make a profit based on the types of rooms that are booked. The rooms are categorized into deluxe, king's size, double bed etc. And customers are free to book any rooms of their choice based on their purse and availability of such rooms at the time of reservation.

2.2. Literature Review

Current Websites providing services on Hotel's Room Reservation

To get more ideas on how to implement the system in our business, we reviewed some available websites that have the same type of service and their description can be seen below.

Hotel Yambu

Hotel Yambu is a Nepal based hotel booking system. It provides various kind of room and room booking services fully dynamically. "Yambu" name given by Tibetans and other ethnic people living in the Himalayan region to Kathmandu means "The Northern Land". The Hotel located in one of the major tourist destination in Kathmandu. Hotel Yambu provide spacious room and homely environment to feel guests like their own home. It have wooden floors, and a separate drawers to keep your belongings, and a TV for entertainment. [2]

Kathmandu Eco Hotel

Kathmandu Eco Hotel offers a distinctive setting for the travelers and leisure guest alike. Offering an unparalleled location situated in the heart of Thamel's most coveted attraction. Kathmandu Eco hotel provides guest with the unmatched access to the kings palace, midtowns most sought Thamel's life and endless shopping and recreational activities. [3]

Chapter 3: System Analysis and Design

3.1. System Analysis

Since this project involves design and implementation of a software system regardless that it is web-based, it will be important to mention and consider some models used in software development and deployment. Some general models of software development are namely.

- **The Waterfall approach:**

  It represents activities in requirements, specifications, design, implementation, and testing. All these as separate processes.

- **Evolutionary / Incremental Development:**

  It involves a rapid development of the specifications and then refined later for the customer.

- **Agile model:**

  It refers to a software development approach based on iterative development. Agile methods break tasks into smaller iterations, or parts do not directly involve long term planning. The project scope and requirements are laid down at the beginning of the development process.

After reading though all these models. The Waterfall model fits the development of this website. It had very clear iterations and considering the fact that we are just two developers for a project. So, I can focus on each part of the model during development and come back if needed to be. The project can easily be broken down into different parts based on this model.

3.1.1. Requirement Analysis

Requirement analysis is done while developing a system and before implementing it, it is necessary to analyze the whole system requirement. It is categories into mainly two parts:

1. Functional Requirements 2. Non-functional Requirements

For any system, there are functional and nonfunctional requirements to be considered while determining the requirements of the system. The functional requirements are user “visible” features that are typically initiated by stakeholders of the system, such as generating reports, login, and sign up. On the other hand, nonfunctional requirements are requirements that describe how the system will do what it is supposed to do, for example,

Usability, Reliability & Availability, Performance, Security and maintainability.

1. **Functional Requirements**

- **Admin**

1. Can login
2. Can delete users
3. Can add room category
4. Can delete room category
5. Can add rooms
6. Can delete rooms

- **User**

1. Can Signup
2. Can Login
3. Can view all rooms
4. Can book a room

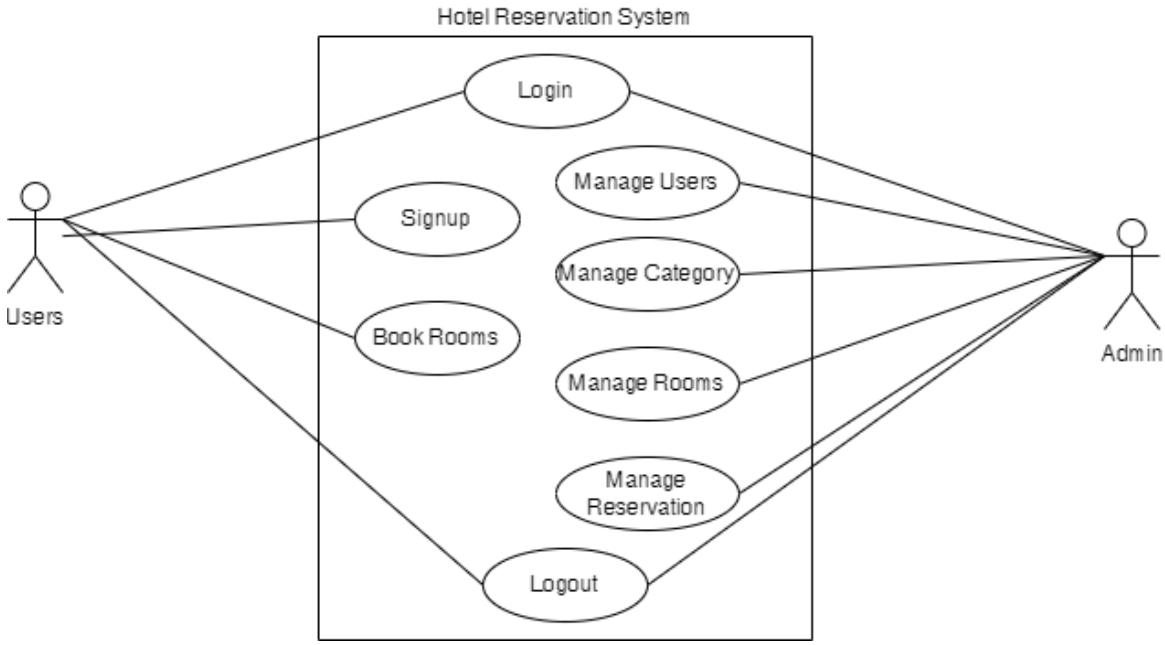

Figure 2: Use-Case Diagram

2. **Non-Functional Requirements**

- Security: This system has accounts for its users and only authorized users can access the system with username and password. The passwords are encrypted using secret key.

- Availability: This system is available to users anytime, anywhere, just need a PC or Mobile and Internet Connection. Also, the system works in multiple web browsers like (Chrome, Mozilla and Opera).
- Reliability: The system has to be 100% reliable due to the importance of data and the damages that can be caused by incorrect or incomplete data. The system will run 7 days a week, 24 hours a day. This system provides a quick and efficient information of the vehicle.
- Maintainability: The system will be easily maintained by the developer or other authorized trained person.

3.1.2. Feasibility Analysis

Feasibility study assesses the operational, technical and economic merits of the proposed project. The feasibility study is intended to be a preliminary review of the facts to see if it is worthy of proceeding to the analysis phase. From the systems analyst perspective, the feasibility analysis is the primary tool for recommending whether to proceed to the next phase or to discontinue the project.

Feasibility studies undergo four major analyses to predict the system to be success and they are as follows

- Operational Feasibility
- Technical Feasibility
- Schedule Feasibility
- Economic Feasibility

Economic Feasibility

This study is carried out to check the economic impact will have on the system and on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus, this project is economically feasible as the only cost involved is having a computer with the minimum requirements. For the users to access the application, the only cost involved will be in getting access to the Internet.

Technical Feasibility

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes

for the implementing this system. In order to design this system, it uses off-shelf and existing technologies, software and hardware so there is no technological hurdle to build this system.

Online Hotel Reservation System deals with the modern technology system that needs the well efficient technical system to run this project. All the resource constrains must be in the favors of the better influence of the system. Keeping all these facts in mind we had selected the favorable hardware and software utilities to make it more feasible.

Operational Feasibility

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. This system uses simple technologies to design. So, it is user friendly.

Schedule Feasibility

This assessment is the most important for project success; after all, a project will fail if not completed on time. In scheduling feasibility, an organization estimates how much time the project will take to complete. To calculate and reexamine whether it is possible to complete all amount and scope of work lying ahead, utilizing the given number of resources, within required period of time. In our project we used Gantt Chart for Schedule feasibility study.

Gantt Chart

Gantt chart is a bar chart that provides a visual view of tasks scheduled over time. A Gantt chart is used for planning projects of all sizes, and it is a useful way of showing what work is scheduled to be done on a specific day. It can also help you view the start and end dates of a project in one simple chart. In our project, we used Online Gantt Chart Maker for developing the Gantt chart which is shown below in the figure.

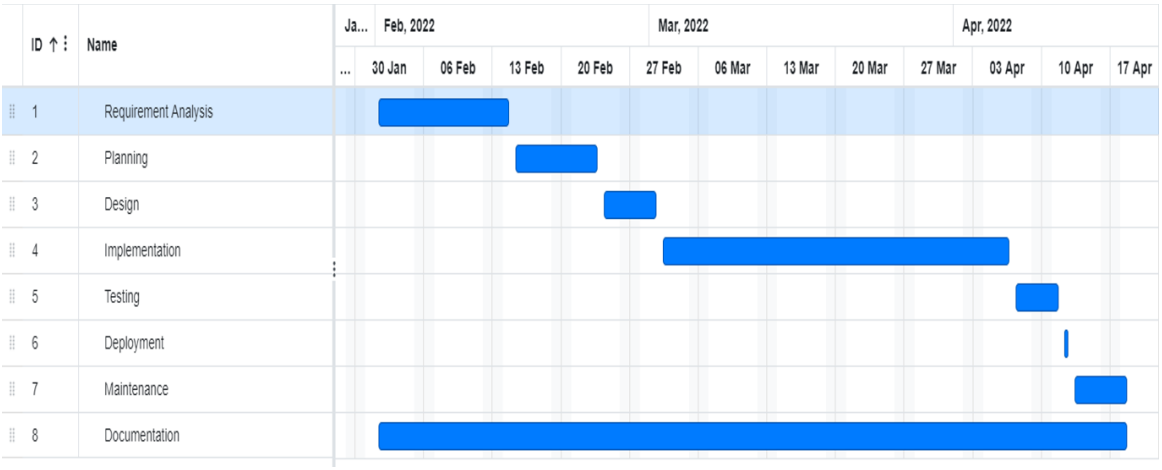

Figure 3: Gantt Chart

In the above Gantt chart showing the start and finish date of a project's elements such as requirements analysis, planning, design, development and testing, and maintenance. It clearly shows that our project started at February-1, and took 10 days for requirement analysis and son on Till April-17 we had finished design, development and testing. As we all know maintenance is ongoing process, so it has no limit. Gantt chart helps in scheduling, managing, and monitoring specific tasks and resources in a project.

3.1.3. Data Modeling (ER-Diagram)

This ER (Entity Relationship) Diagram represents the model of this project (Hotel Reservation System). The entity-relationship diagram of the project shows all the visual instruments of the database table and the relations between admin, rooms, categories and admin etc. This E-R consists many entity, primary keys and attributes. There are various kind of relation or cardinality in this E-R diagram. This E-R describes the major relation between entities and their various attributes. A whole system of Hotel Reservation System is shown in the figure below.

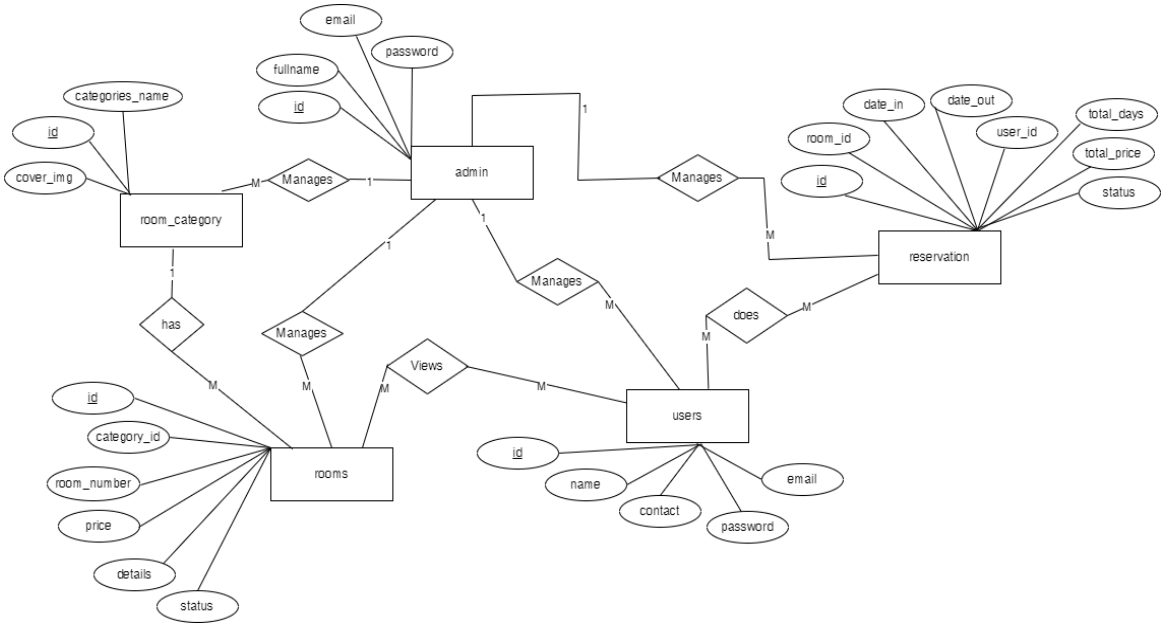

Figure 4: ER-diagram of Online Hotel Reservation System

In the above ER Diagram, we can clearly see all the relation between the entities. There are a total five entities in this project and they have their respective attributes too. Here we can see that only admin who can manage all the users, rooms and the rooms categories. The rooms have their own attributes and also has room_category. Users can book or view the rooms but cannot manage the rooms, but the admin can manage all the rooms and the room_category. The room_category also have categories_name and id as their attributes and the id is the primary key for the room_category table. So, we can clearly observe the Entity Relation between all of the above entities.

3.1.4. Process Modeling (DFD)

Data Flow Diagrams show the flow of data from external entities into the system, and from one process to another within the system. Following are the Data Flow Diagrams for the current system. Each process within the system is first shown as a Context Level DFD and later as a Detailed DFD. The Context Level DFD provides a conceptual view of the process and its surrounding input, output and data stores. The Detailed DFD provides a more detailed and comprehensive view of the interaction among the sub processes within the system. Which is explained below in figure.

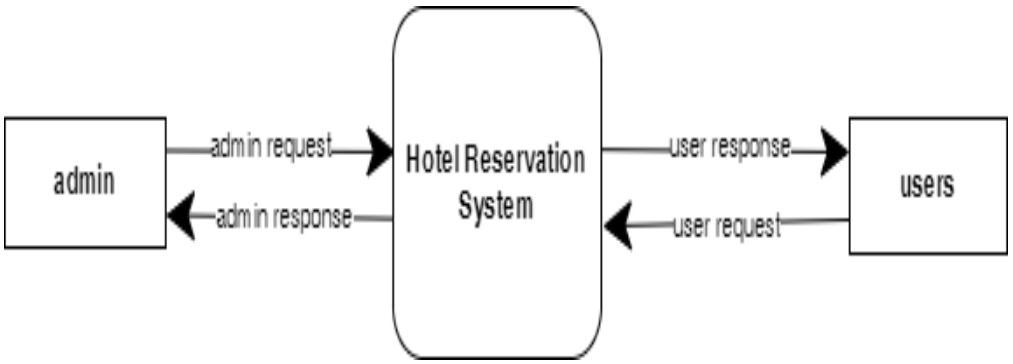

Figure 5: Context Diagram of Online Hotel Reservation System

The above figure represent the context diagram of Online Hotel Reservation System. The above figure shows that the admin requests to the Hotel Reservation System and get response back from it. Like admin user also request and get response from the Hotel Reservation System. Hotel Reservation System fetch the data from the Hotel Reservation System Database to provide response to admin and users.

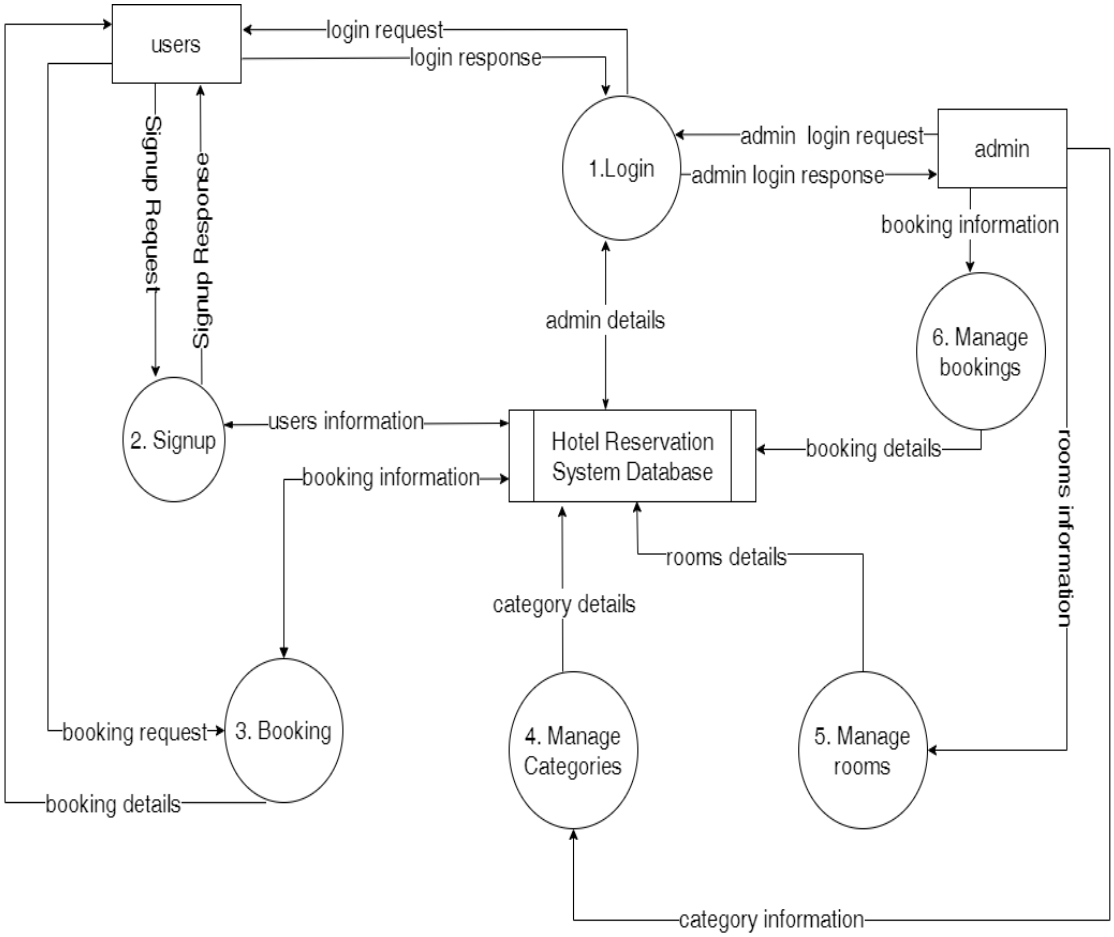

Figure 6: Level 1 DFD of Online Hotel Reservation System

The above picture represents DFD Level 1 of this application. The functionalities that can be done by the user is roughly shown in the figure as well as the link of our application with the database is also shown in the figure. The main functionalities of our system are login, signup, booking, manage categories, manage rooms, manage bookings etc.

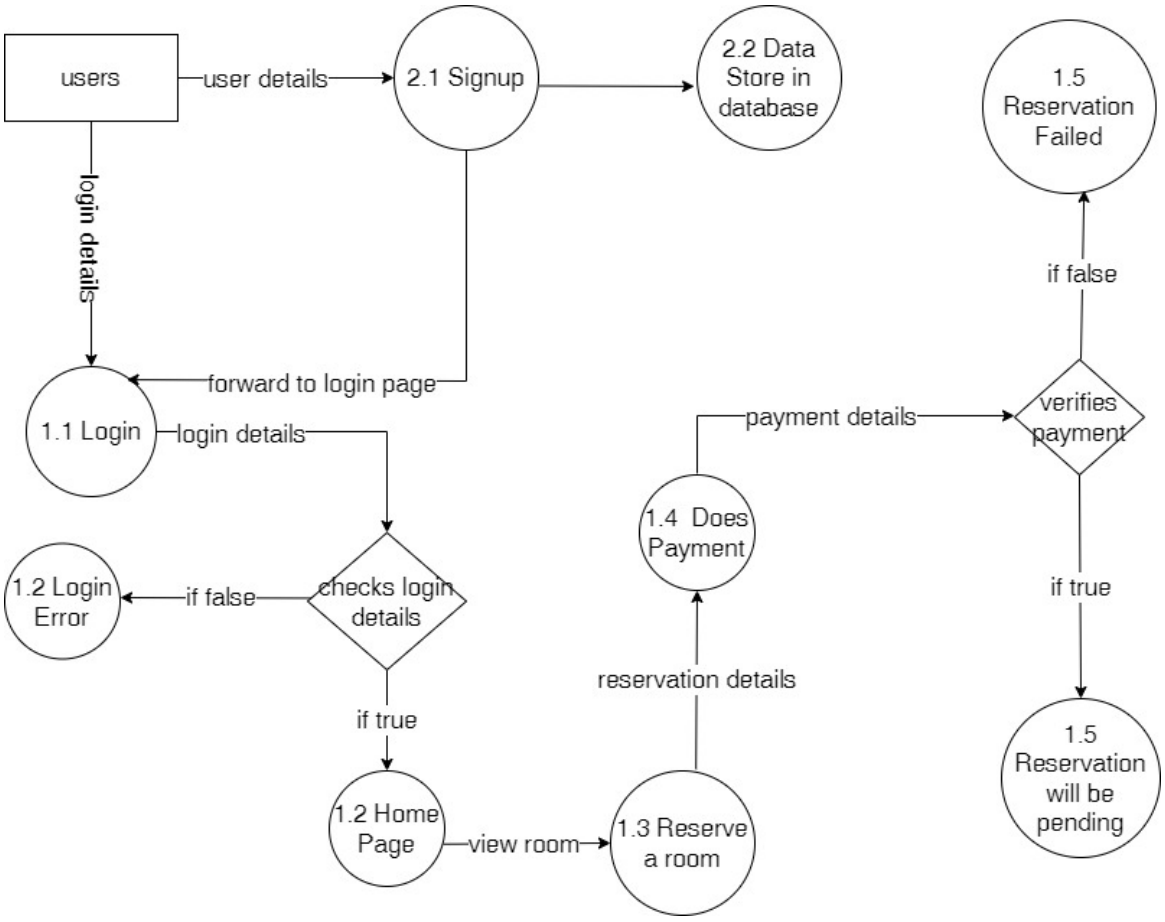

Figure 7: Level 2 DFD of Online Hotel Reservation System

In the above DFD Level-2 we can see all the operations that can be done by the admin and users. Here the admin can manage users, room_category and rooms, whereas the user should log into the system by using the verified email and password to book a room.

3.2. System Design

This document contains the overall design of the system. The system has been designed to enhance effectiveness, incorporate free and open source, platform independent and local language support as well as user friendly solution to the terms related with jobs.

The design process includes modular decomposition of the whole system, functional partitioning of the system, ER diagram, DFDs, user interfaces, information flow diagrams etc. The design document acts as a guideline for the system implementation.

3.2.1. Architectural Design

The next phase of design will be planning the architecture of the application. There will be in some cases a separation of the user interface and data. The business layer will be totally independent and not embedded in the views of the website. Data will be stored in an SQL database. To query the database and code behind for server-side-scripting will be in JSP Servlet. The other business objects will have their own layer. The architecture of the application is shown below in figure.

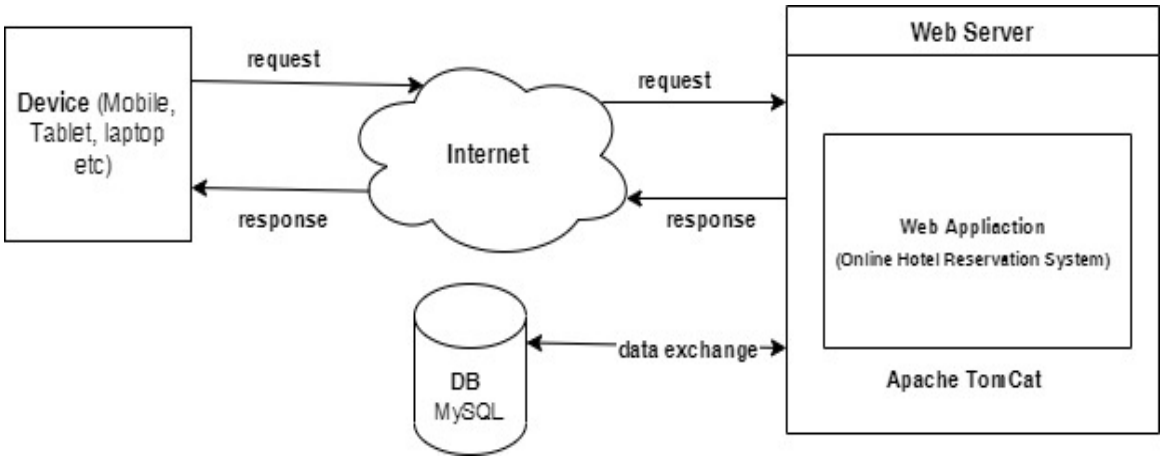

Figure 8: Architecture Diagram of Online Hotel Reservation System

3.2.2. Database Schema Design

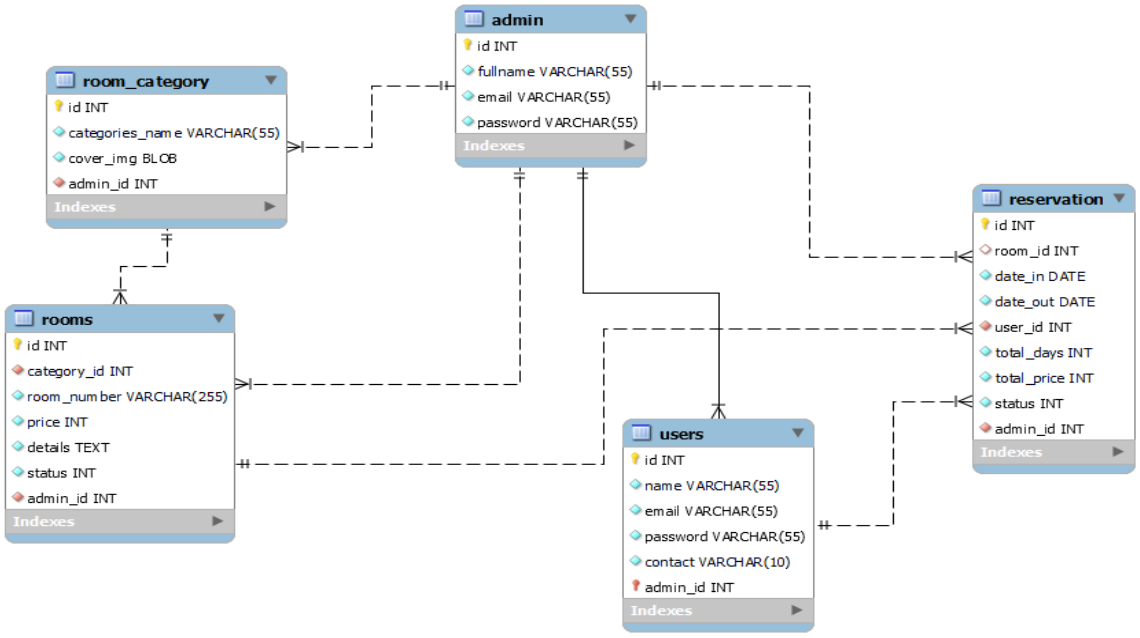

Figure 9: Database Schema Design of Online Hotel Reservation System

The design of the database is called a schema. This tells us about the structural view of the database. It gives us an overall description of the database. A database schema defines how the data is organized using the schema diagram.

In the above database schema diagram, we have five tables' reservation, rooms, room_category, users and admin. So, we can represent the schema of these five tables using the schema diagram as above. In this schema diagram admin table doesn't connect with any table. user_id connect the two tables' users and reservation where foreign key user_id of reservation table is references to users table. The category_id connect the two tables' rooms and room_category where foreign key category_id of rooms table is references to room_category. Similarly, room_id connect the two tables' rooms and reservation where foreign key room_id of reservation table is references to rooms.

3.2.3. Interface Design

Before implementing the actual design of the project, a few user interface designs were constructed to visualize the user interaction with the system as they see the availability of the rooms and book the rooms. The user interface design will closely follow our Functional Decomposition Diagram show the initial designs of the web pages.

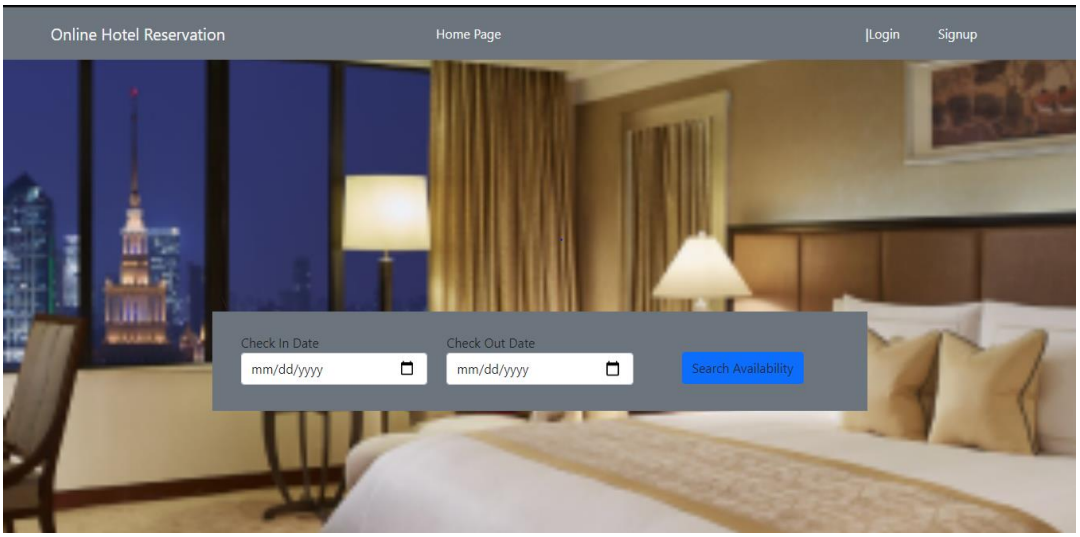

Figure 10: Home Page of Online Hotel Reservation System

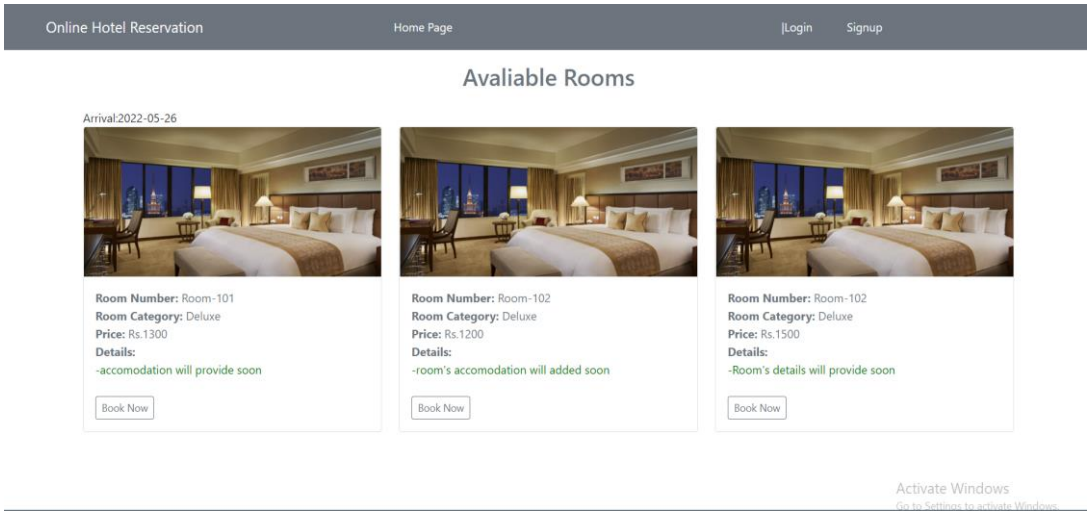

Figure 11: Available Rooms Page of Online Hotel Reservation System

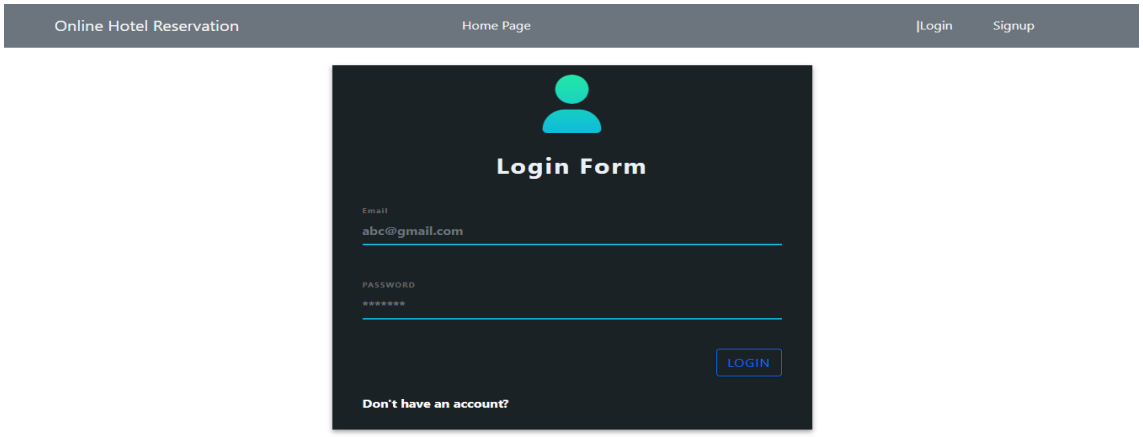

Figure 12: Login Page of Online Hotel Reservation System

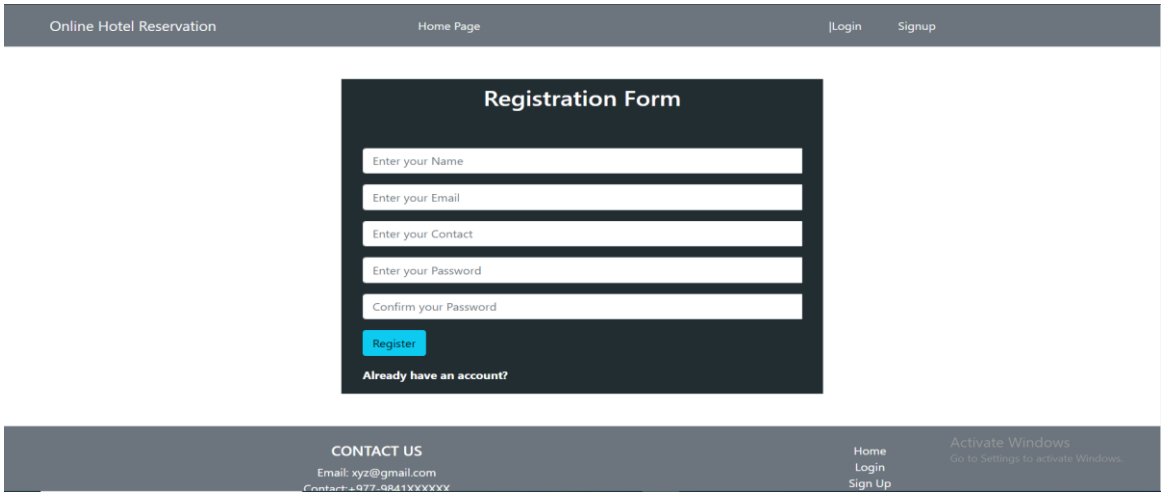

Figure 13: Signup Page of Online Hotel Reservation System

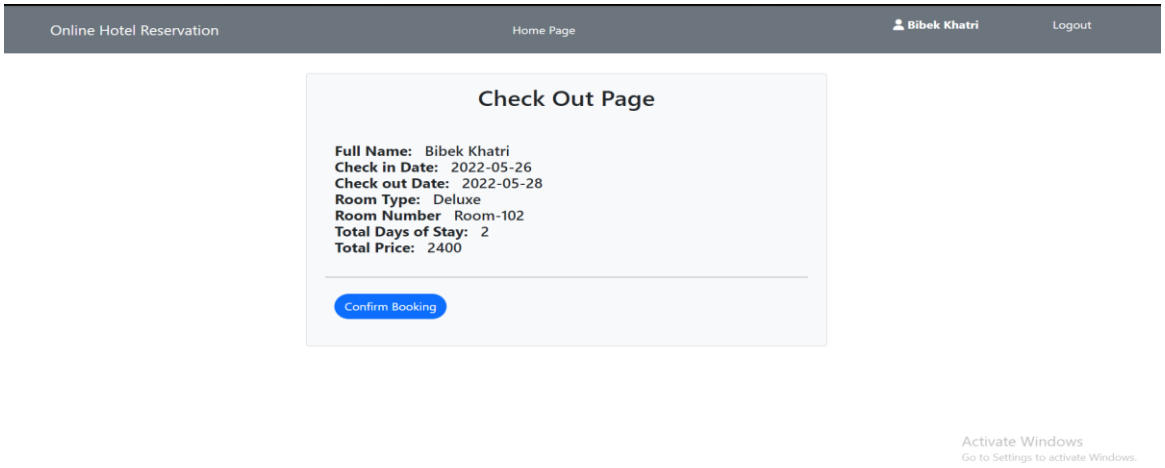

Figure 14: Booking Cart Page of Online Hotel Reservation System

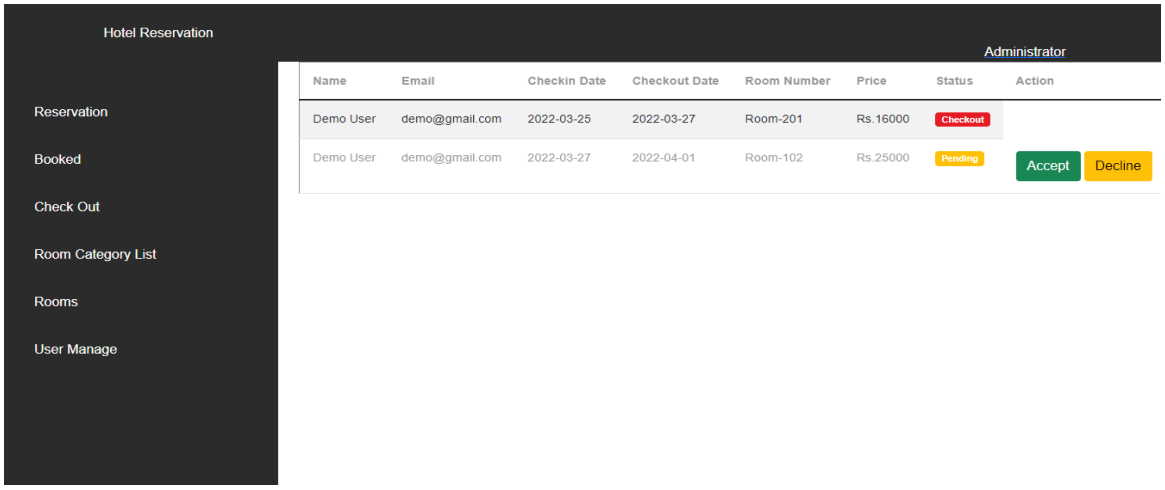

Figure 15: Admin Page of Online Hotel Reservation System

3.2.4. Physical DFD

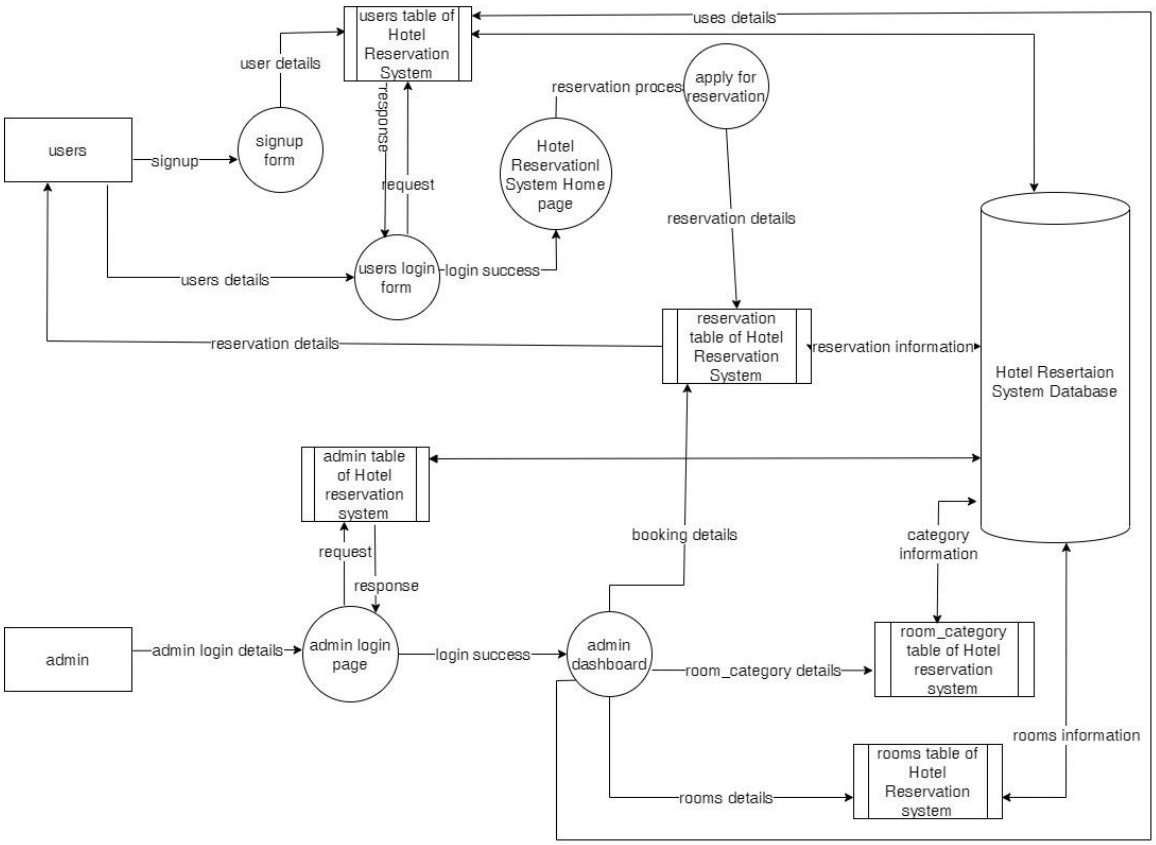

Figure 16: Physical DFD of Online Hotel Reservation System

Physical data flow diagram shows how the data flow is implemented in the system. Physical DFD is more specific and closer to implementation. Figure illustrated above shows a physical DFD of Online Hotel Reservation System. In the figure above users signup the form and login to the Hotel Reservation System Home page using users' table. The login users can view and reserve the rooms which is stored in reservation table of Hotel Reservation System. Admin also login using the admin table details of Hotel Reservation System and login to the dashboard of admin where he can manage users, rooms and room_category.

Chapter 4: Implementation and Testing

4.1. Implementation

Implementation basically means the phase where the system is actually being built. Firstly, all the information that we gathered is studied and analyzed and implemented a system in operation for users. It is one of the most important phases of any project. Implementation usually consists of coding, testing, installation, documentation, training and support. Different tools and technologies that have been used to develop the system which are already discuss in the previous chapter. It is basically converting system design specification into working software.

4.1.1. Tools Used

The various system tools that have been used in developing both the front-end and back- end of the project are being discussed in this chapter.

- **Front-end**

  Figma, HTML5, CSS3, and JavaScript are used for developing the front-end.

- **HTML5 (Hyper Text Markup Language)**

  HTML is a syntax used to format a text document on the web.

- **CSS3 (Cascading Style Sheets)**

  CSS is a style sheet language used for describing the look and formatting of a document written in a markup language.

- **Java Script V8 8.9.255.25**

  Java Script is a dynamic computer programming language. It is most commonly used as part of web browsers, whose implementations allow client-side scripts to interact with the user, control the browser, communicate asynchronously, and alter the document content that is displayed. Java Script is used to create popup windows displaying different alerts in the system.

- **Back-end**

  The back-end is implemented using JSP, Servlet and MySQL. MySQL is used to design the database.

- **JSP and Servlet**

  Java Servlet and Java Server Pages (JSP pages) are server-side technologies that have dominated the server-side Java technology market; they've become the standard way to develop commercial web applications. Java developers love these technologies for

myriad reasons, including: the technologies are fairly easy to learn, and they bring the Write Once, Run Anywhere paradigm to web applications. More importantly, if used effectively by following best practices, servlets and JSP pages help separate presentation from content. Best practices are proven approaches for developing quality, reusable, and easily maintainable servlet- and JSP-based web applications. For instance, embedded Java code (scriptlets) in sections of HTML documents can result in complex applications that are not efficient, and difficult to reuse, enhance, and maintain. Best practices can change all that.

- **MySQL 8.0.22**

MySQL is the world's second most widely used open-source relational database management system (RDBMS). The SQL phrase stands for Structured Query Language. MySQL is also used in many high-profile, large-scale websites, including Google (though not for searches), Facebook, Twitter, Flickr and YouTube.

4.1.2. Implementation Details of Modules

After the design was made and the problems arising from the design process were clarified and dealt with, it was time to start implementing the application. Implementing application of this scale requires lots of resources and explaining the whole implantation process will not be clarified in this paper. However major important aspects in the implementation will be described.

- **The website designs**

Figma is used to design over all layout of the project and every other implementation like HTML and CSS tagging was done using Net Beans. There are many style sheets and JavaScript for the website. The CSS style sheets are kept inside the css folder and js folder. The actual implementation has been done using JSP and Servlet. Servlet has been used to interact with the backend database. In this implementation, My SQL Server has been used. JSP processes the inputs or commands given by the user and translates them in the commands understandable to the backend database. The output produced by the backend database is also handled by JSP Servlet which then displayed on the browser screen.

- **Home page**

The Home page is made up of navbar at the top which includes options like home button, User Login button and User Signup button. It’s the main template of the website. There is a logo on top left corner. If a user is not register in system, there is a button Login in navbar which helps the user to login and register in system. All the information of the

rooms is fetched from the database. If the user clicks on the show availability button after entering the check in date and check out date, then the result is shown in another page. The list view gets all its information from the database.

- **Available Rooms**

To book rooms on the website you do not have to be a registered member. If you are a registered user, you can view and book available rooms and if you are not a registered member then you can only view the rooms.

4.2. Testing

For the application or website to be deployed it has to be tested. Hence test cases will be written to test the application. There are many types of tests to be carried out on a web application from performance, functionality, database loading time, response time, server time handling, user's actions, and many others. We will not carry out all types of tests for the application considering the time scale to present this project. Hence the performance check related to upload time, memory usage will be part of a future test. We will focus the test cases on functionality, security and performance.

The later test on the website will make sure that the website provides the right results and outcome. The test will help reduce unpredictability on the website. We will run test on various browsers making sure that the application produces the same result and is stable on the major popular browsers.

Finally, the last test will be the checking of all input source such as query strings, web services and textboxes. This will help prevent cross-side scripting attacks and SQL injection.

4.2.1. Test Cases for Unit Testing

In unit testing, we designed the entire system in modularized pattern and each module is tested. Until getting the accurate output from the individual module, I work on the same module. The input forms is tested so that they do not accept invalid input.

Table 1: User Registration

ID	Test Case Description	Test Data	Expected Result	Actual Result	Pass/ Fail
U_REG_1	User forgets to enter a particular	Name: Bibek Khatri email: contact: 9849805425	Display message that "Please fill	As Expected	Pass

	required field.	password:bibek@123 confirm_pass:bibek@123	out this field.”		
U_REG_2	User enters The Invalid Email Formats	Name: Bibek Khatri email: khatribk10 contact: 9849805425 password:bibek@123 confirm_pass:bibek@123	Display message that “Invalid email”	As Expected	Pass
U_REG_3	User enters email which is already in the system	Name: Bibek Khatri email: khatribk10@gmail.com contact: 9849805425 password: bibek@123 confirm_pass:bibek@123	Display message that “Email Already Exists”	As Expected	Pass
U_REG_4	User enters all the details successfully	Name: Bibek Khatri email: khatribk10@gmail.com contact: 9849805425 password:bibek@123 confirm_pass:bibek@123	Display message with swap pop up “Success”	As Expected	Pass

Table 2: Admin Login

ID	Test Case Description	Test Data	Expected Result	Actual Result	Pass/ Fail
A_LOG_1	Admin enters a wrong email and	email: administrator@gmail.com password:password@12	Display message that “Invalid email or password”	As Expected	Pass

	password	3			
A_LOG_2	Admin enters a correct email and password.	email: admin@gmail.com password:admin@123	Admin login successfully	As Expected	Pass

Table 3: User Login

ID	Test Case Description	Test Data	Expected Result	Actual Result	Pass/ Fail
U_LOG_1	User enters a wrong email and password	email: khatribibek@gmail.com password:khatri@123	Display message that "Invalid email or password"	As Expected	Pass
U_LOG_2	User enters a correct email and password.	email: khatribk10@gmail.com password:bibek@123	User login successfully	As Expected	Pass

4.2.2. Test Cases for System Testing

In system testing, whole system is tested as below:

Table 4: Test Case for Add and Delete Category

ID	Test Case Description	Test Data	Expected Result	Actual Result	Pass/ Fail
ADD_CAT_01	Admin forgets to enter the particular fields	Category : Image: 14.jpg	Display message that "Please fill out this field"	As Expected	Pass
ADD_CAT_02	Admin enter incorrect	Category : 41884451 Image: 14.jpg	Display "Numeric values not	As Expected	Pass

	data		accepted ”		
ADD_CAT_03	Admin enter data correctly	Category : twin rooms Image: 14.jpg	Category added successfully	As Expected	Pass
ADD_CAT_04	Admin delete the category from category list	delete	Category deleted successfully	As Expected	Pass

Table 5: Test Case for Add and Delete Room

ID	Test Case Description	Test Data	Expected Result	Actual Result	Pass/ Fail
ADD_RM_01	Admin forgets to enter the particular fields	Room Number: Price: 1800 Details: rooms details will added soon Category: Deluxe Availability: Available	Display message that “Please fill out this field”	As Expected	Pass
ADD_RM_02	Admin enter incorrect data	Room Number: Room101 Price: 1800 Details: rooms details will added soon Category: Deluxe Availability: Available	Display “Doesnot match the format ”	As Expected	Pass

ADD_RM_03	Admin enter data correctly	Room Number: Room-201 Price: 1800 Details: rooms details will added soon Category: Deluxe Availability: Available	Room added successfully	As Expected	Pass
ADD_RM_04	Admin delete the room from rooms list	delete	Room deleted successfully	As Expected	Pass

Table 6: Admin Accept or Reject the booking

ID	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
AC_BK_01	Admin press the accept button.	Accept	Accept the customer booking and sent mail to customer email	As Expected	Pass
AC_BK-02	Admin press the reject button.	Reject	Reject the customer booking and sent mail to customer email	As Expected	Pass

Chapter 5: Conclusion and Future Recommendation

5.1. Conclusion

My goal was to create an application where people can book hotel's room online. The current application has fulfilled these goals. I followed the specifications strictly but enhanced some of the features when there was need for it to be done. With the goals achieved the basis of the application and this project has been achieved. Building this web application has been challenging and enriching because throughout the project I learnt a lot about JSP and Servlet, JavaScript and understand what it takes to build a fully functional website. There have been challenges especially when it came to backend and making sure that the application responses in a predictable. Careful planning made our job easier because I had to carefully think about the type of architecture, the design, the database types to use and what type of business objects to create. When this was done, we proceeded with implementation.

Choosing the JSP and Servlet for this project is because it is very simple and easy to use, compared to another language, this is widely used all over the world. It is Open source; we can freely download and use. And it is platform independent as well.

As I came to the end of the project, we realized that there are many enhancements that can be made on the application. Some of these ideas came from those who tested the application and some of them from both of us. I decided to follow the specification because there were realistic to achieve in this given amount of time. Any other enhancements to the application can be done in future development of the application.

5.2. Lesson Learnt / Outcome

When this project is completed, the users will be able to book the hotel's room online. After sign up to the system, user can view and book rooms online through web browser. Users are notified whether their booking is confirm or reject through their email. Users can see their booking history and status in the system. In this way user can save time and make money from this website.

5.3. Future Recommendation

Here is what can be added in the future on this website to increase its usability, user experience and portability of the website. There is a lot to be done hence this application can be considered as a starting point for something big to come. It will need more time and

resources for all these to be done but it is still very realistic and possible to achieve.

- Add payment gateways,
- Addition of themes,
- Cancelation of booking,
- Possibility of users for discount and provide special packages,
- Provide review and rate rooms according to review,
- Access the application on a small device (mobile app),
- Fully automation of booking.

Appendices

1.1. Screenshots

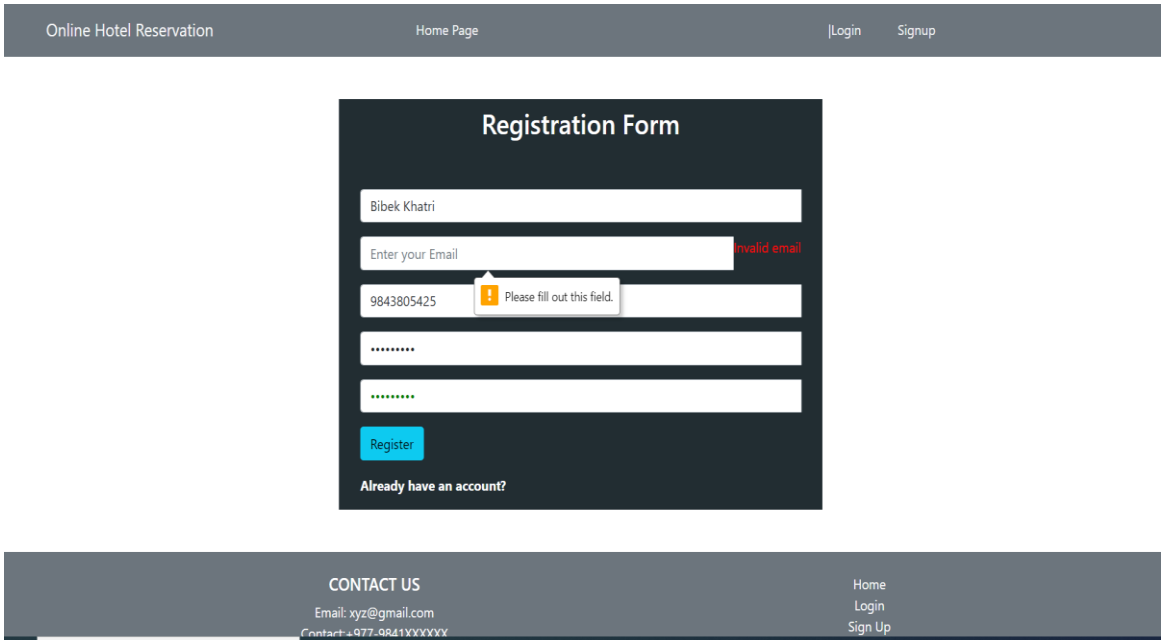

Figure 1: Registration Page Empty Field

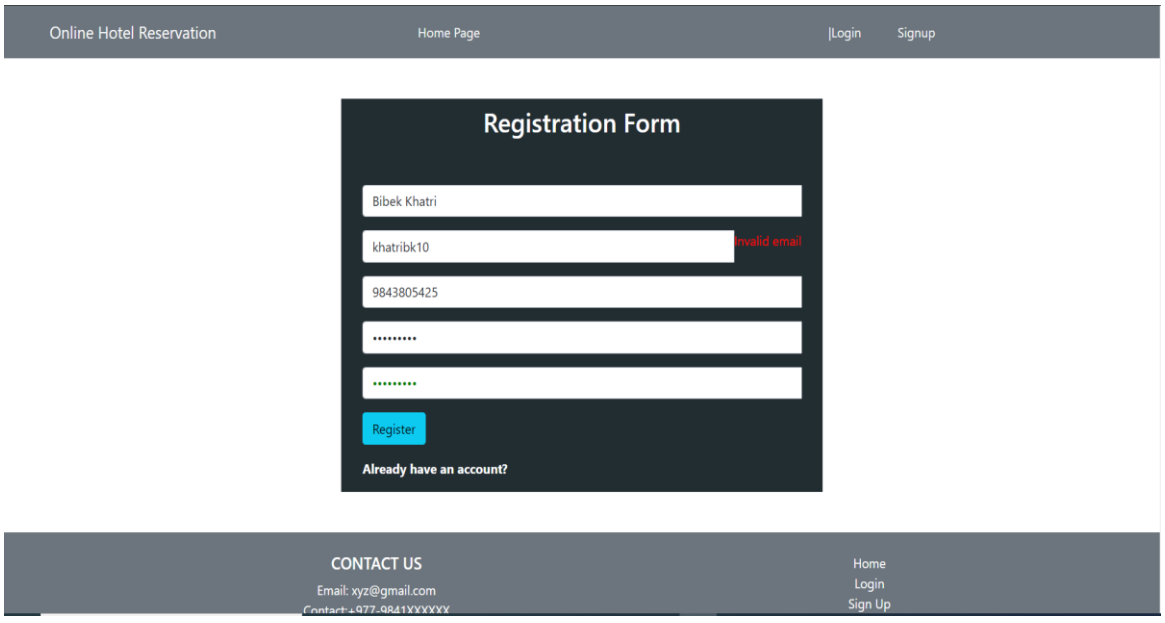

Figure 2: Registration Page Invalid Email

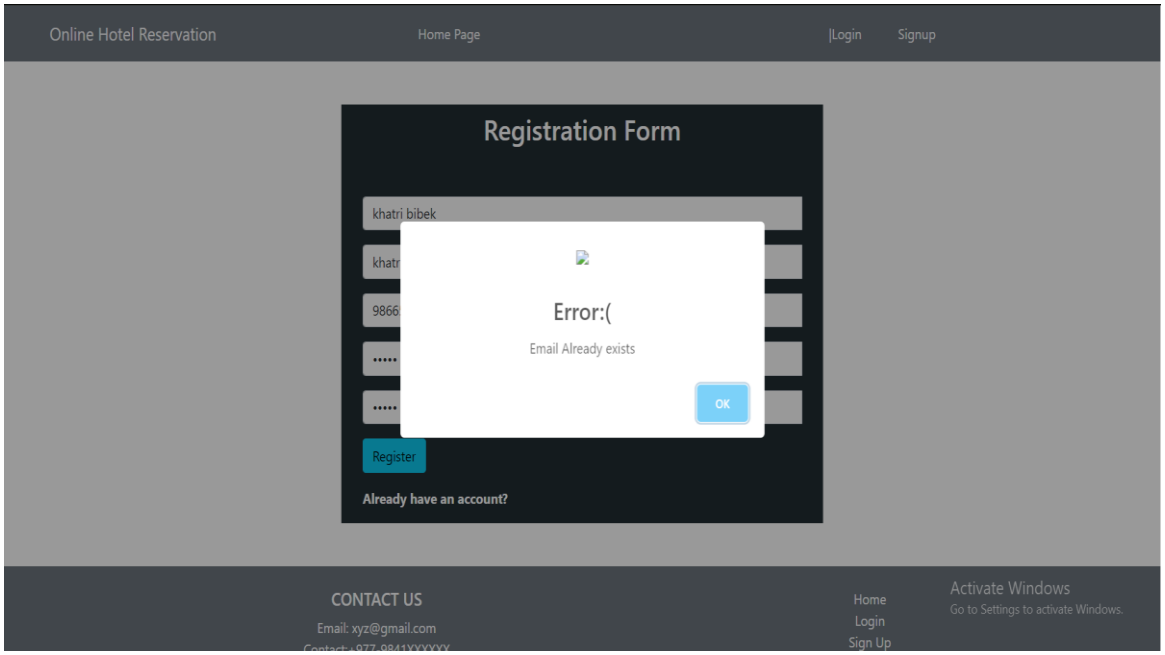

Figure 3: Email already exists on the system

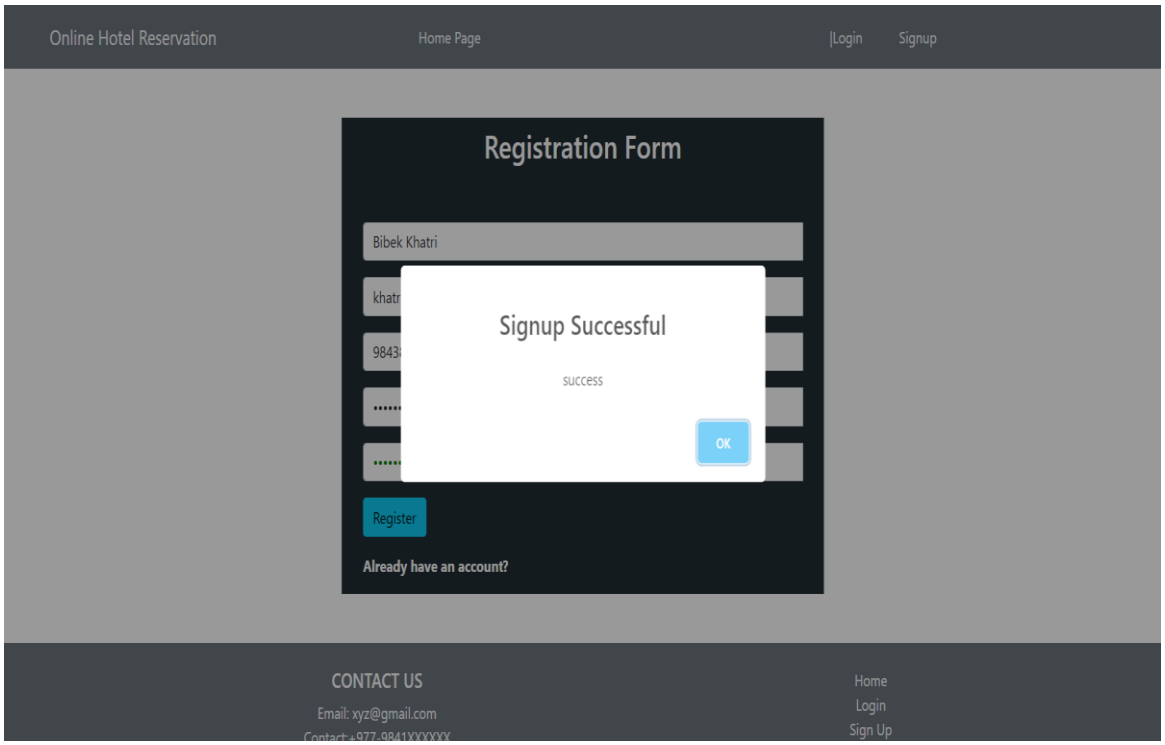

Figure 4: Signup Successful

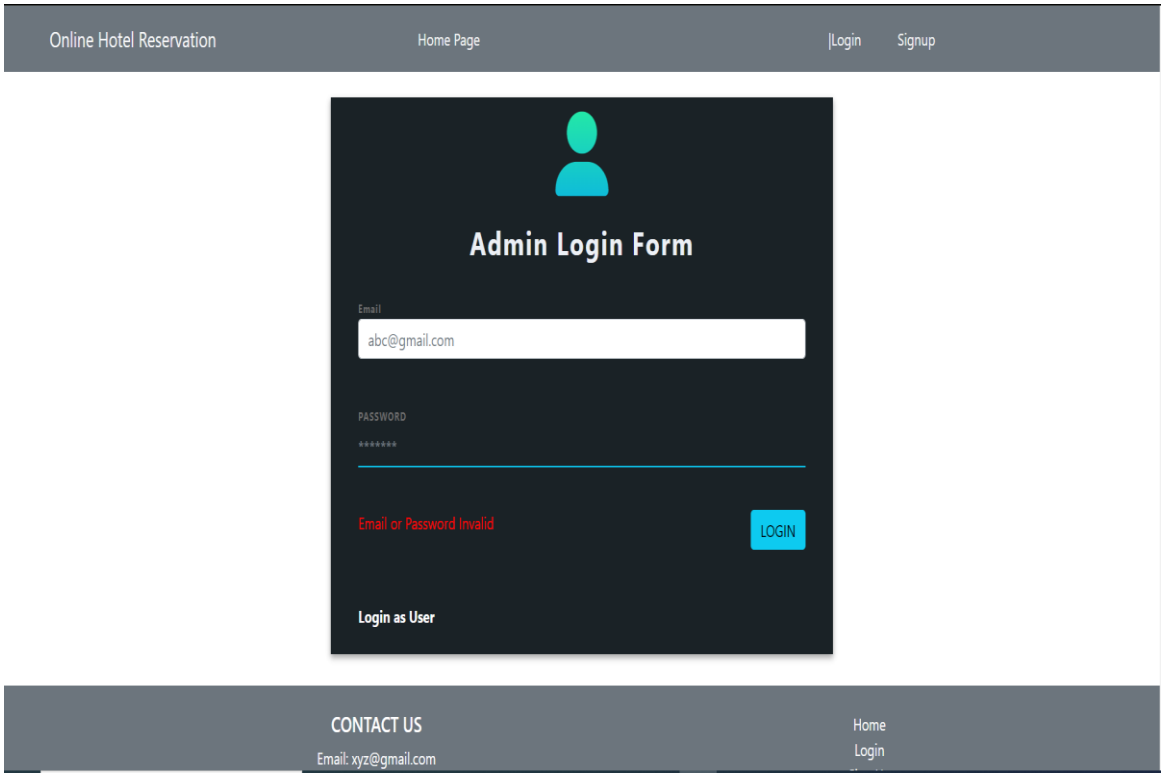

Figure 5: Admin Login Invalid

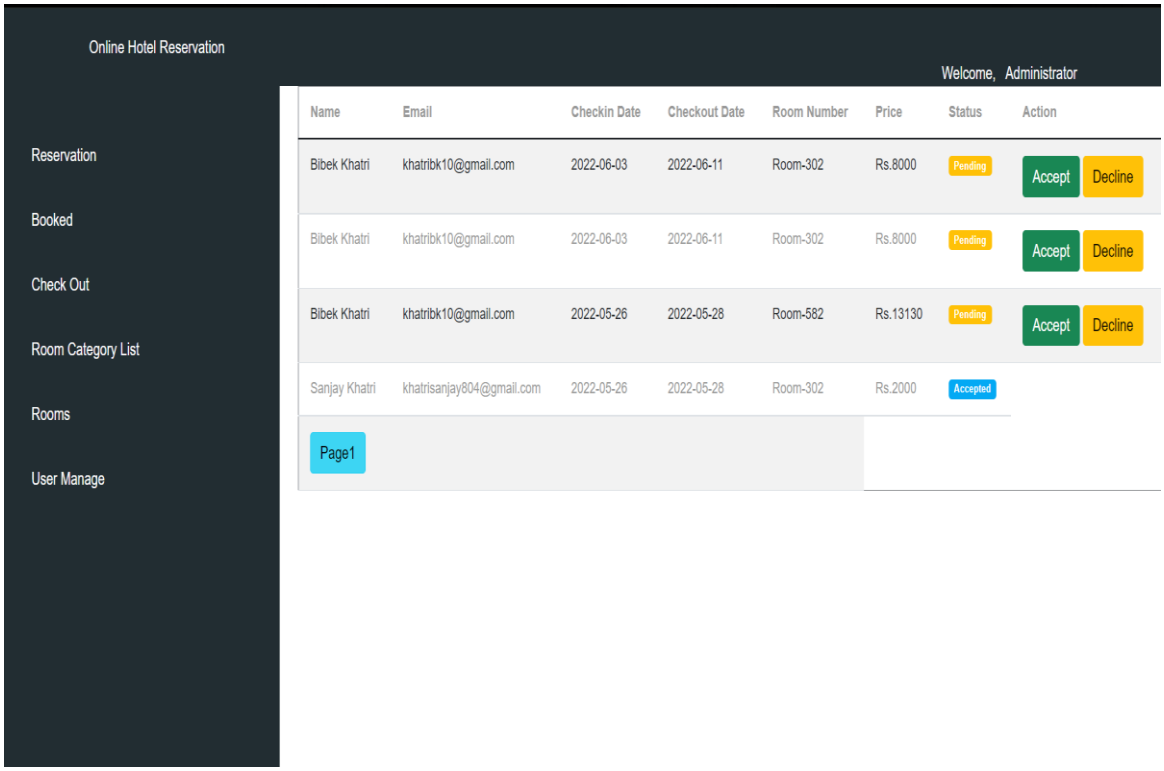

Figure 6: Admin Login Successful

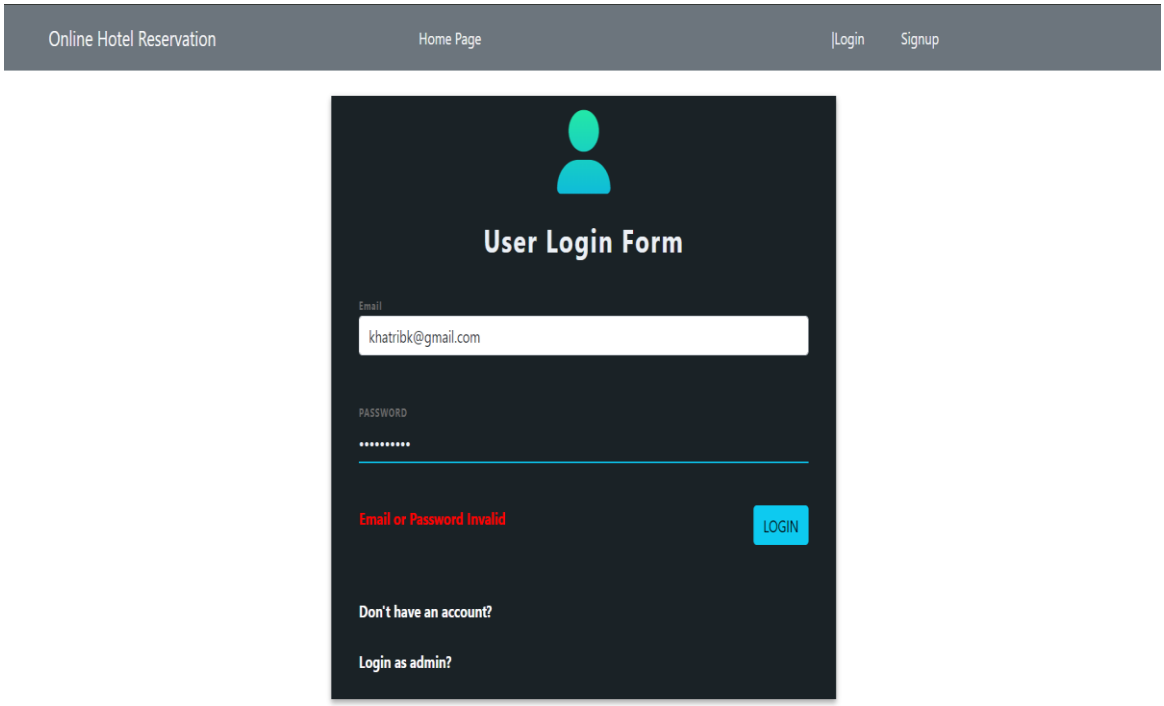

Figure 7: User Login Invalid

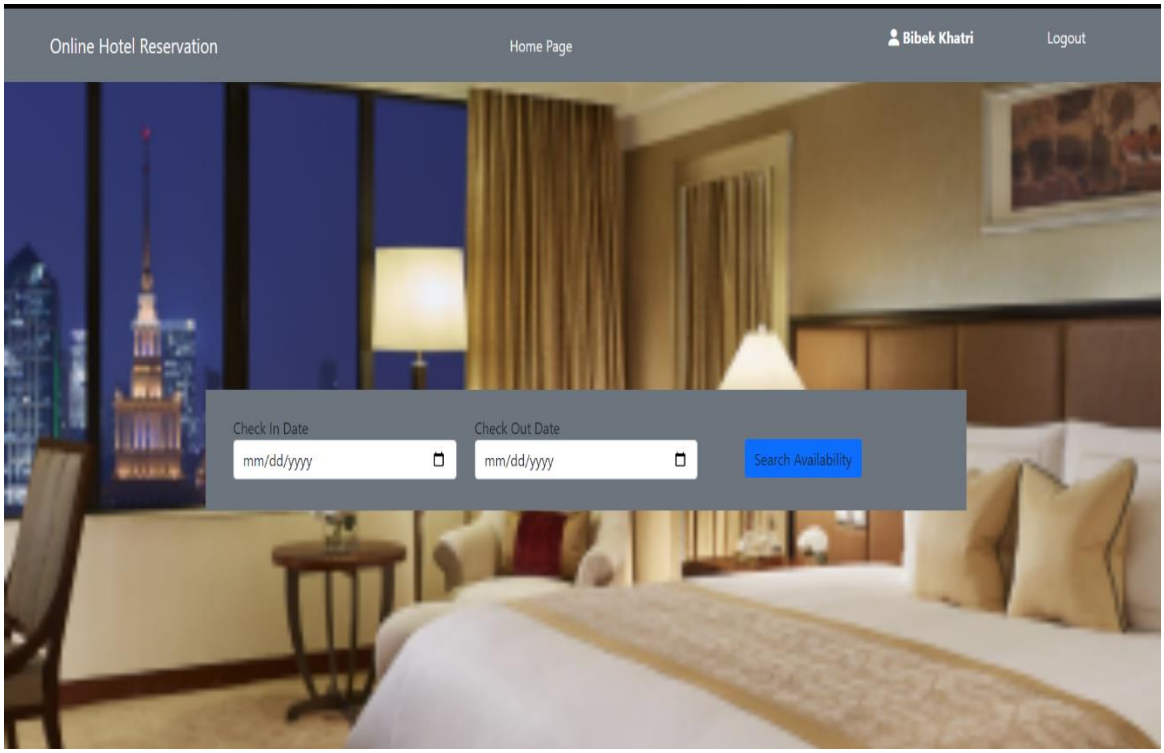

Figure 8: User Login Successful

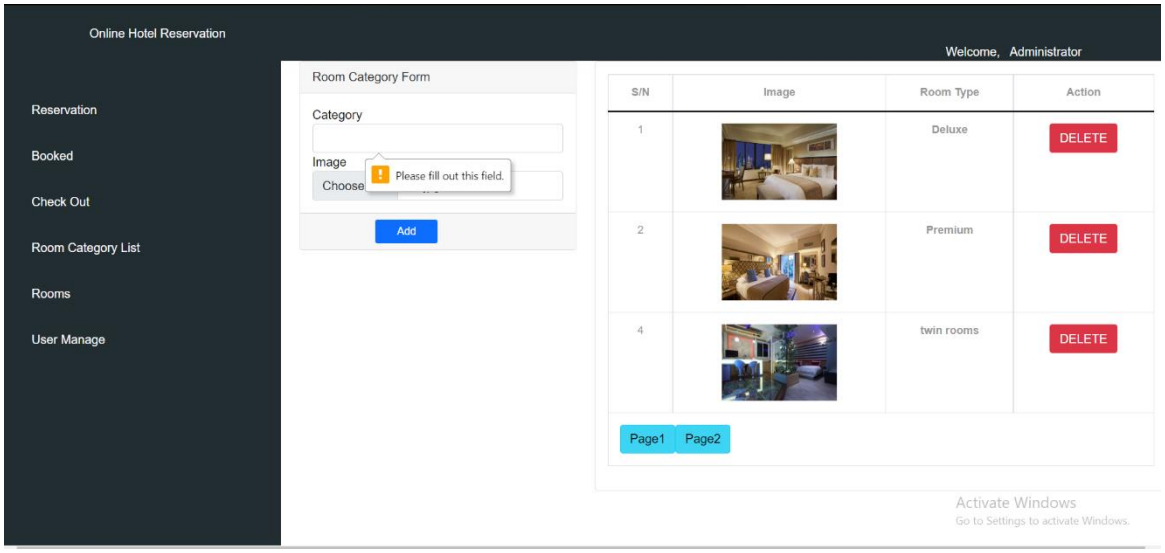

Figure 9: Category Added Failed due to empty Field

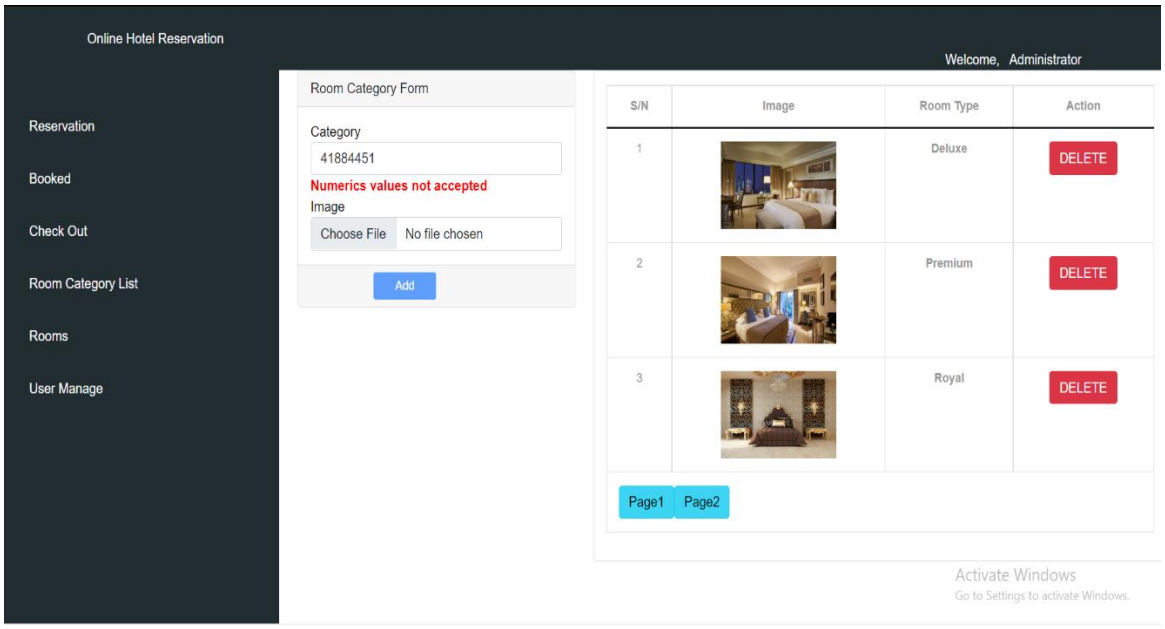

Figure 10: Category Added Failed Due to Numeric Character

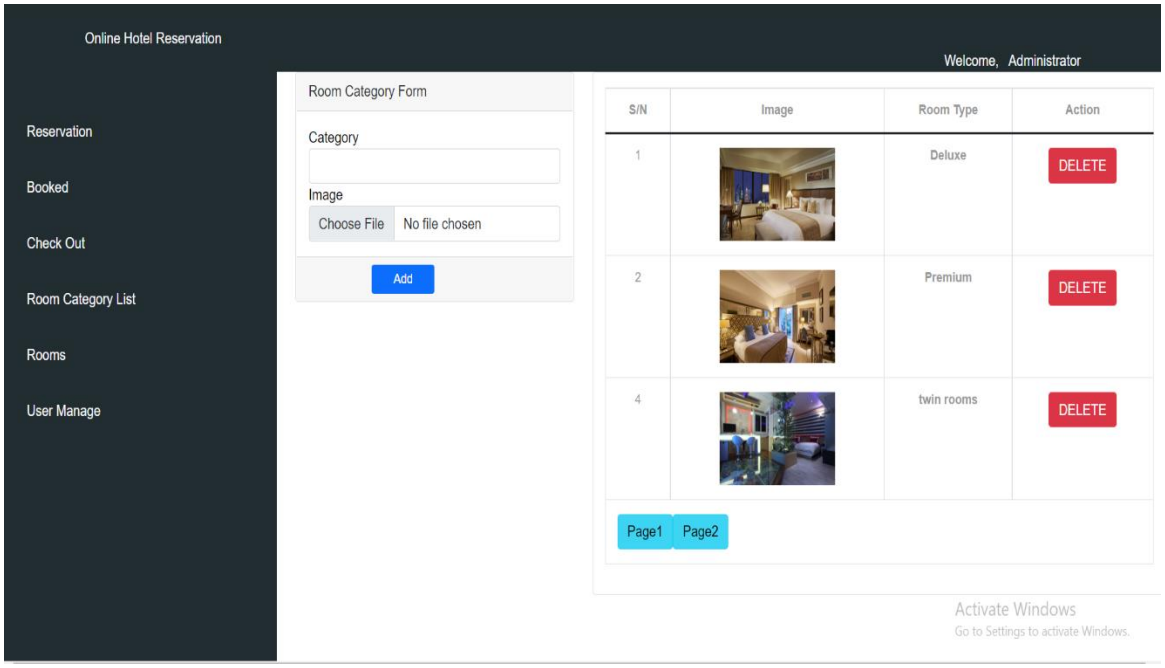

Figure 11: Category Added Successfully

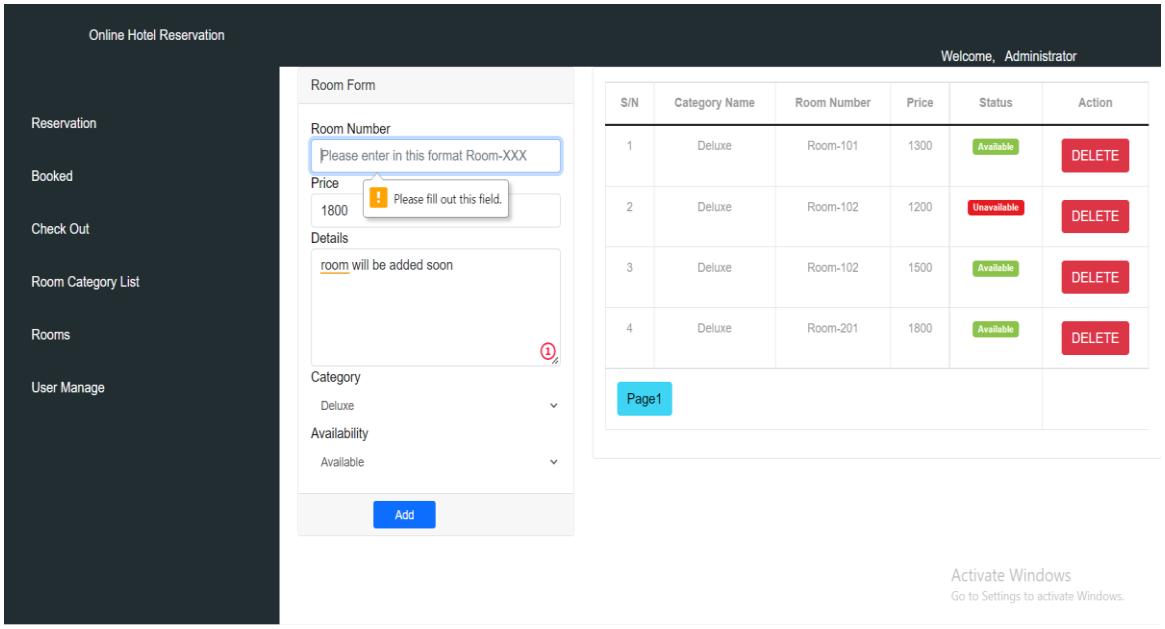

Figure 12: Room Added Failed Due to Empty Field

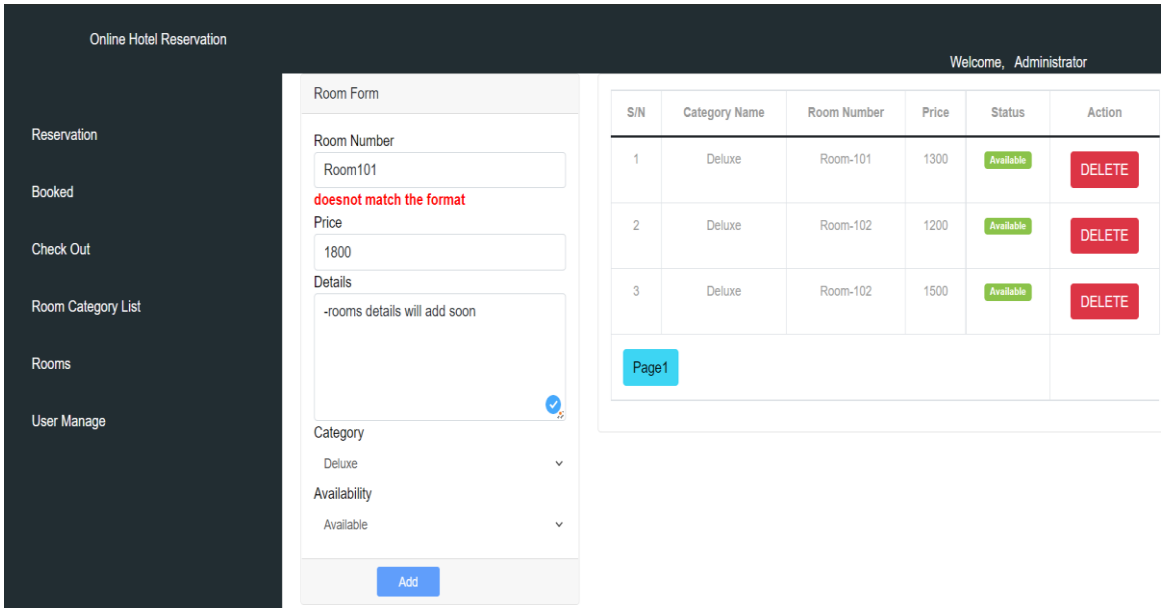

Figure 13: Room Added Failed

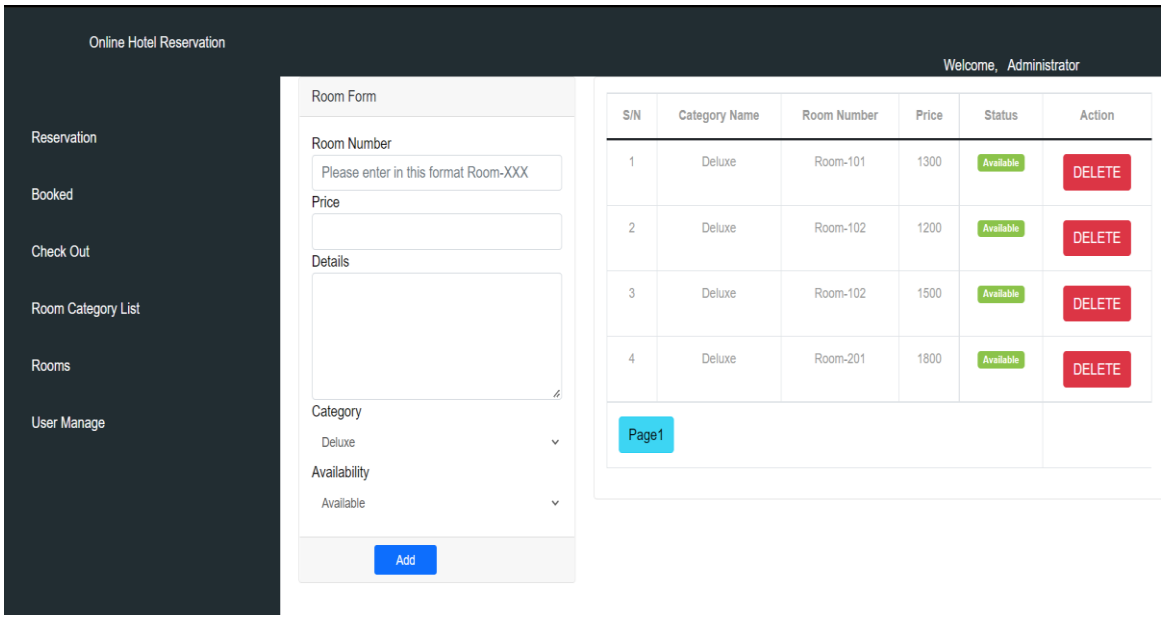

Figure 14: Room Added Successfully

1.2. Source Code

DatabaseConnection.java

```
package com.HotelReservation.database;
import java.sql.Connection;
import java.sql.DriverManager;
public class DatabaseConnection {
public static Connection getConnection() {
        Connection cn = null;
        String url;
        String con;
        try {
            if (cn == null) {
                url = "jdbc:mysql://localhost:3306/project_sixth_semester";
                con = "com.mysql.jdbc.Driver";
                Class.forName(con);
                cn = DriverManager.getConnection(url, "root", "");
            }
        } catch (Exception ex) {
            ex.printStackTrace();
        }        return cn;
    }
}
```

index.jsp (Home Page)

```
<!doctype html>
<html lang="en">
    <head>
        <%@include file="head.jsp" %>
        <title>banner</title>\
        <style>
            .maindiv{
                /*background-color: red;*/
```

```
            margin: 250px;
            padding: 25px;

        }
        body{
            width: 100%;
            height: 100%;
            background-position: center;
            background-image: url("images/Deluxe King 1.png");
            background-repeat: no-repeat;
            background-size: cover;
        }
    </style>
</head>
<body class="">
    <form action="availableRooms.jsp" method="post" onsubmit="return validateForm()" name="myForm">
        <div class=" row maindiv bg-secondary px-4">
            <div class="col-4  ">
                <div>
                    <label><b class="text-white">Check In Date</b></label>
                </div>
                <input type="date" class="form-control" name="check_in" id="check_in" required/>
                <span id="checkin"></span>
            </div>
            <div class="col-4">
                <div>
                    <label><b class="text-white">Check Out Date</b></label>
                </div>
                <input type="date" class="form-control " name="check_out" id="check_out" required />
                <span id="checkout"></span>
            </div>
```

```
            <div class="col-2 mt-3 px-5 btn">
                <input type="submit" class="btn bg-primary text-white" value="Search Availability" />
            </div>
        </div>
    </form>

    <script type="text/javascript">
        function validateForm() {
            const currentDate = new Date();
            var checkDate = currentDate.setDate(currentDate.getDate()  - 1 );
            var arrivalDate = new Date(document.getElementById('check_in').value);
            var depatureDate = new Date(document.getElementById('check_out').value);
            if (depatureDate <= arrivalDate) {
                displayMsg("Your checkin and check out date is invalid", "checkout", "red");
                return false;
            }
            else if (arrivalDate < checkDate) {
                displayMsg("Your checkin date is less than current date", "checkin", "red");
                return false;
            }
        }

        $(function () {
            var dtToday = new Date();
            var month = dtToday.getMonth() + 1;
            var day = dtToday.getDate();
            var year = dtToday.getFullYear();
            if (month < 10)
                month = '0' + month.toString();
            if (day < 10)
                day = '0' + day.toString();
            var maxDate = year + '-' + month + '-' + day;
```

```
            $('#check_in').attr('min', maxDate);
            $('#check_out').attr('min', maxDate);
        });
    </script>
    <script src="js/formValidation.js" type="text/javascript"></script>
  </body>
</html>
```

(Other Codes of Online Hotel Reservation can be found in GitHub Link below)

https://github.com/Khatribibek10/HotelReservation

References

[1] "Tutorial Point," [Online]. Available: https://www.google.com/search?q=waterfall+model&sxsrf=APq-WBswcUCem6nh6AGfifw3PnyoUcm3Tg:.

[2] "Hotel Yambu," Hotel Yambu, [Online]. Available: https://www.hotelyambu.com/.

[3] "Best price Hotels Online Booking," KathmanduEcoHotel, [Online]. Available: https://www.kathmanduecohotel.com/.