ABSTRACT

This project aims at creating on Hotel Management System which can be used by Admin and Customers. The admin to advise/publish the availability of rooms in different hotels and customers are checking the availability of room in required hotel. Customers should be able to know the availability of the rooms on a particular date to reserve in hotel. They should be able to reserve the available rooms according to their need in advance to make their stay comfortable. The admin hands the booking information of customers. The users can register and log into the system. The administrator will know the details of reservation and daily income. The hotel department maintain the seat availability and booking details in certain database. This project provides high security to Admin and user information.

The main objective of this project is to design a hotel management system for running a hotel business. The system should be as flexible as possible so that it can be used for different hotels. You have to find out which procedures hotels have used for different hotels. You have to find out which procedures hotels have and based on that information; you should create a system which makes it efficient. You need to find out how a hotel system works on the internet, use your own experience or directly talk to people in the hotel business. The more diverse the sources of your information are, the better will be the resulting system and, possibly, your grade.

INTRODUCTION

Project Statement: The project, Hotel Management System is a web-based application that allows the hotel manager to handle all hotel activities online. Interactive GUI and the ability to manage various hotel bookings and rooms make this system very flexible and convenient. The hotel manager is a very busy person and does not have the time to sit and manage the entire activities manually on paper. This application gives him the power and flexibility to manage the entire system from a single online system. Hotel management project provides room booking, staff management and other necessary hotel management features. The system allows the manager to post available rooms in the system. Customers can view and book room online. Admin has the power of either approving or disapproving the customer's booking request. Other hotel services can also be viewed by the customers and can book them too. The system is hence useful for both customers and managers to portable manage the hotel activities.

I can list out some feature through the following points:

a. It saves user time that is wasted in search of required vehicles.

b. User can find the various hotel information along with images at a single place

c. This system is effective and saves time, efforts and cost of users.

d. Users can easily book their hotel online without visiting the site.

e. Easy registration.

OBJECTIVE OF PROPOSED PROJECT

The objectives of the project are listed down below:

a. The application can be used by any of the entities be it **Customer manager admin.**

b. Customer have to spend least time on the platform as all the formalities will be done by the respective hotel. The customer has to only book with the hotel, this will lead to a minimum time-consuming activity.

c. This project can be used in real-life also. It is having ample number of functionalities to resurrect the hotel management system.

Proposed Project Architecture

As my project is all related to the web, so I will be discussing about the **Web Application Architecture.**

Generally, a user gets to see a specific page on his/her system through a series of interactions between various components of applications, user interfaces, database, server and the browser. The framework which ties up this relation and interaction is **Web Application Architecture.**

In simple words, I can say that, the flow of processes typically includes the user browsing for an URL, following which the browser triggers a search. Consequently, to the search, the network sends data to the browser from the server and the browser displays the page that has been requested.

Working of web application architecture: Web applications include two sets of programs that run separately yet simultaneously with the shared goal of working together for delivering solutions. The two set of programs include **the code in the browser** which works as per the inputs of the user and **the code in the server** which works as per the requests of protocol, HTTPS. So, I have to decide on the functions of the code on the server and the functions of the code on the browser and how the two will communicate with each other.

Components of Web Application Architecture: Basically, the web application architecture comprises various components that are segregated into two categories of components – User Interface App Component and structural Components.

USER INTERFACE APP COMPONENTS: Its role is related to the display, settings and configurations. It is related to the interface/experience, rather than the development, and consequently it deals with the display dashboards, configuration settings, notifications, and logos etc.

STRUCTURAL COMPONENTS: They refer to the functionality on the web application with which a user interacts, the control and database storage. It has to do more with the structural aspects of the architecture. This basically comprises:

1. The web browser or client: It permits the users to interact with the functions of the web apps and is generally developed using **JavaScript(React Js)**.
2. The web application server: It handles the central hub that supports business logic and the multi-layer applications, and is generally developed using **Spring boot(Rest Api)**
3. The database server: It offers the business logic and relevant information/data that is stored and managed by the web application server. It stores, retrieves and provides the information **Xampp(MySQL)**

As for the web application server, I have used the **Java** language. So, one can say that the project uses the **Java** web application architecture. Let's have a look at the **Java** web application architecture.

JAVA Web Application Server: By virtue of being the least complex and highly functional development languages, JAVA is one of the most popular among the community. The architecture permits robust security, a dedicated framework, simple maintenance, and extended support from a community of developers.

Choosing a suitable architecture for the project is a huge task as some of the very important parameters hinge on the choice of architecture – **the speed of the web app, the robust and secure nature, and the manner in which it is responsive.**

That is why I have gone with the Java(Spring Boot).

Scope of Proposed Project

In order to specify the scope of the project, I will be creating a **Scope of Work (SOW) document**, which is a sort of agreement on the work I have performed on the project. For this project, the SOW document will contain the following aspects:

- **Deliverables:** This is what the project delivers. The deliverables involved in this project are listed down:
  - Hotels information
  - Sort & search facilities while booking hotel
  - Ease of access to all customers & managers

- **Timeline:** It is a roadmap leading from the start of the project to its end. Timeline for the project Hotel management system islisted down:
  - 6 Feb 2023 – 12 Feb 2023: Made the website which consists of webpages (React Js).
  - 13 Feb 2023 – 15 Feb 2023: Formed the SQL database for the project. There are around 9 tables catering the data storage needs.
  - 16 Feb 2023 – 2 April 2023: In order to turn the static website into a dynamic one, I did the integration part i.e., make the website communicate with the database server and vice versa. This was achieved by adding the Spring Boot code to the java script files.

- **Milestones:** Larger phase of the project are marked by what is called a **milestone.** It's a way to monitor the progress of the project to make sure it's adhering to the planned schedule. For this project, following were the milestones:

- Once done with the UI part, next task was to prepare a Database structure which will serve for the back-end purpose. So, the next milestone was **successfully finding out the database structure** (tables and their fields)**.**
- The biggest task was the data communication part, which was supposed to be done between various webpages. So, the next milestone was **making the webpages successfully communicating between themselves.**

➢ **Reports:** They are a formal record of the progress of the project. As I was working solely on this project and keeping an eye on the progress of the report, so I didn't make a good number of reports. But still, I made the following reports:

- On a weekly basis, checking the status of the project's development.
- Staying in touch of my mentor so that the bugs can be detected at the earliest.

A feasibility analysis is used to determine the viability of an idea, such as ensuring a project is legally and technically feasible as well as economically justifiable. It tells us whether a project is worth the investment—in some cases, a project may not be doable.

The different sets of feasibility study carried out for this project are as follows:

- **Technical Feasibility:** The project being a web application, doesn't require to store anything locally on any particular local machine, anything to everything is being stored at the server side (or you can say on the world wide web). So, it automatically reduces the hardware required to successfully run the project.

  As far as the software requirements are considered, there are different requirements for the administrator and a user. An end user will be needing simply the latest version of the web browser and an internet connection to use the web app. But the administrator will need to have MySQL (to do data manipulations on the database side), any of the code editor (to customize the Spring boot and java script files according to his/her need) and local server to do the trial and testing for the application.

  At the end I can easily summarize that, be it the user or the administrator, anyone can use the application as per their needs without having any of the complex h/w or s/w.

- **Operational Feasibility:** I think that there is an urgent need of using this application because it can not only make the **hotel booking** system easier but can also make sure that everyone in the Hospitality sector will be benefitted after using this.

PROJECT ANALYSIS

USER INTERFACE

There are a number of pages in this project, so I will be explaining the User Interface for each of these pages.

A. Landing Page:

Majority of the use of bootstrap is done in this page. Landing page of the application will be presented to every user. There we have many sections:

a. **All Locations**:- User can select at which location he is searching the hotel.

b. **All Facilities**:- User can select the hotel according to their need of the facilities.

c. **Register:** - Customer need to register them self before booking the hotel.

d. **Login:**- Only register users can login and book the hotels.

A. User Register

This section has form(First name, last name , email id..etc) which user need to fill for registration.

B. Login Page:

This page offers the user to put in the credentials and also choose the correct role so that it can proceed further. Especially for the **Admin** there is a functionality for *Adding managers and new hotels*.

C. Admin Interface:

By using this admin interface admin can add location, add facilities, register hotel user(Manager) , add hotel , view all bookings

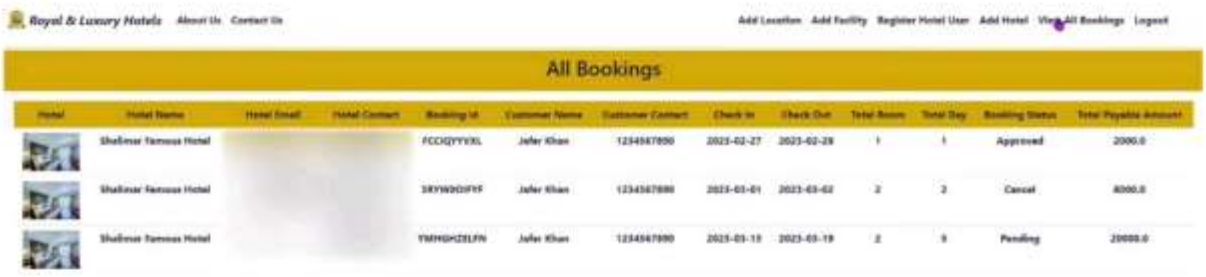
D. Hotel booking interface:

By using this interface registered users can book hotel rooms by choosing the check in date and checkout date. User also need to specify how many rooms he need.

E. Add Facility:

By using this add facility feature admins or managers can add the facility to the hotels individually, so the user get to know the features of the hotels properly.

F. All bookings:



Admins and managers check the booking status of the user or user's details like booking id customer name check in and checkout date total rooms total payable amount.

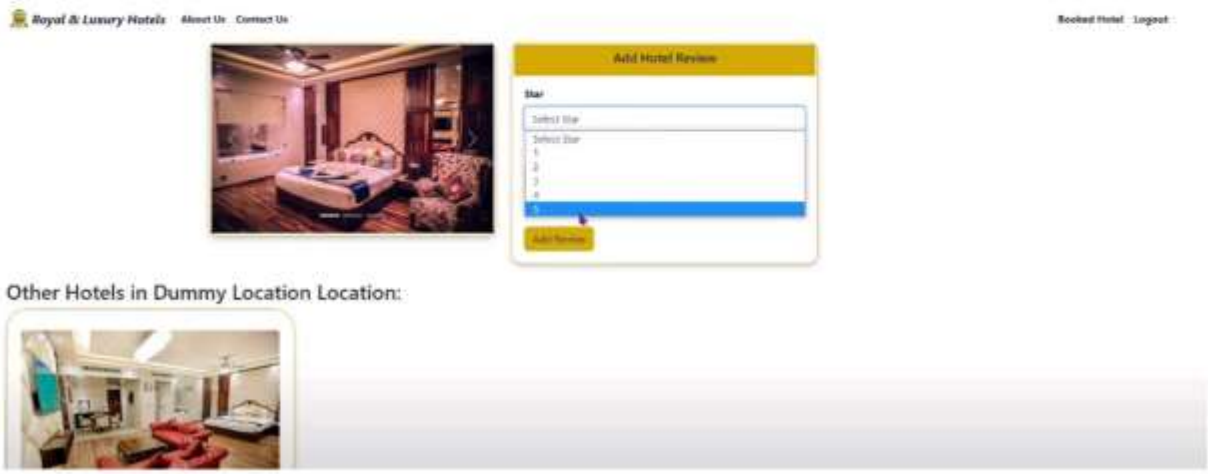
G. Managers interface:

Manager can check all the bookings of the hotel and details of the user like customer name , customer number, customers email id etc.

H. Booking interface:

Manager can change the booking status of the hotel like approve, pending cancel.

I. User review Interface:-



User can give their review on the site which is also seen my other users so that other user can choose hotels accordingly.

HARDWARE REQUIREMENTS

Hardware Requirements:

- **Processor:** Minimum & Recommended 1 GHz or more
- **Hard Drive:** Minimum & Recommended 32 GB
- **Memory (RAM):** Minimum 1 GB; Recommended 2 GB or more
- Ethernet connection (LAN) or Wireless adapter (Wi-Fi)

SOFTWARE REQUIREMENTS

Recommended Operating Systems:

- **Windows:** 7 or newer
- **MAC:** OS X v10.7 or higher
- **Linux:** Ubuntu

Software Requirements:

- Java Spring Boot (back-end)
- React Js (front-end)
- VS Code Editor
- JavaScript (front-end)
- MySQL Server (back-end)
- Web Browser: Microsoft Edge, Google Chrome, Safari

PROJECT UTILITIES / TOOLS

The project belongs to the category of **full stack web development**, so I have integrated extra utilities and tools to make the project functionable. The utilities which have been used in the project are listed down:

- **Google Fonts:** Google fonts is a library of more than a thousand free and open-source font families. I have used the **Pacifico** font in some sections.
- **Font Awesome Icons:** It is a toolkit and an icon library through which one can explore some really cool looking icons.
- **XAMPP Server:** XAMPP stands for Windows, Apache, MySQL. Basically, XAMPP server is a sort of local server through which you can do the trail and testing of theproject.

I can do the trial and testing of the project on my local machine, only by the help of XAMPP server as it stimulates a server like environment on the machine. But for production purpose, I have deployed it.

PROJECT DESIGN

Project Functionality

In order to describe the functionality of the project, I will explain the 3 entities that are Admin, user(Customer), manager.

A. Admin: -

Admin can do any changes in the whole data that is admin can add hotel and its facilities and all , so first we have to register the admin then admin will choose or appoint the manager so that manager can also handle the works.

Admin have some special powers like

a. Admin can appoint and remove the manager.
b. Admin can add or remove the hotel.

Etc.

B. User (Customer)

Customer can book the hotel rooms and give their feedback (Review)

Customer have very less powers or features to access in this web application but customer is the main member out of all the 3 entities.

Applications will not get effected if manager is not their but if customer is not their then there is no use of this web application.

Customers hove some features like

a. Hotel booking ability.
b. Review system: - Customer can give their review about the facilities and hospitality according to their real life site visit. Which may help the other users to book the hotel accordingly

C. Manager

Every hotel will have their own manager which will observe all the booking and hotel related work manager can manipulate the booking status of the hotel and can add the facilites of the hotel

DATABASE DESIGN

In order to make the database which will store all the information from the website, I made 08 tables in the database and named the database as **hotel management system.** In the **hotel management system** database, there are the following tables:

```
+-----------------------------------+
| Tables_in_hotel_management_system |
+-----------------------------------+
| booking                           |
| facility                          |
| hotel                             |
| hotel_facility                    |
| hotel_review                      |
| location                          |
| location_hotels                   |
| user                              |
+-----------------------------------+
```

1. User

```
mysql> select * from user;
+----+-----+-----------+-----------+-----------------+------------+----------+-----------+--------------------------------------------------------------
--------------------------+---------+-------+--------+---------+
| id | age | city      | contact   | email_id        | first_name | hotel_id | last_name | password
                          | pincode | role  | sex    | street  |
+----+-----+-----------+-----------+-----------------+------------+----------+-----------+--------------------------------------------------------------
--------------------------+---------+-------+--------+---------+
|  1 |  23 | Faridabad | 123456789 | Adminl@gmail.com | Admin      |        0 | 1         | $2a$10$o1kBONcLPNLkr4Oa3HM/
OAlPRRcl.3hlOm/EEgiWOvEmFOy07saS | 121003  | Admin | Male | haryana |
|  2 |  23 | Delhi     | 123456789 | m1@gmail.com     | manager1   |        0 | m1        | $2a$10$Wk6LPMEo.6pOaPqrQHpw
O5PqiWMuyC9CTJJD0zhWWqFyrvlthLpW | 12345   | Hotel | Male | delhi   |
|  3 |  23 | Delhi     | 123456789 | m2@gmail.com     | manager2   |        0 | m2        | $2a$10$vC3ZdlapwiPOubTGYzmX
OpBLJsmgcUmTpuEoRSD0x1FmVHYAy8HO | 12345   | Hotel | Male | delhi   |
|  4 |  23 | Delhi     | 123456789 | m3@gmail.com     | manager3   |        0 | m3        | $2a$10$rlVkE1hPmZ8bPoUp4KmD
.Y27RluH8Iv61gPa8MY6UIyoHSmeu7V. | 12345   | Hotel | Male | delhi   |
+----+-----+-----------+-----------+-----------------+------------+----------+-----------+--------------------------------------------------------------
--------------------------+---------+-------+--------+---------+
```

2. Location:

```
mysql> select * from location;
+-----+-----------+-------------+
| id  | city      | description |
+-----+-----------+-------------+
|   1 | Delhi     | Delhi       |
|   2 | Mumbai    | Mumbai      |
|   3 | Haryana   | Haryana     |
|   4 | Pune      | Pune        |
|   5 | Hydrabad  | Hydrabad    |
|   6 | Bengaluru | Bengaluru   |
|   7 | Chennai   | Chennai     |
+-----+-----------+-------------+
```

3. hotel:

```
mysql> select * from hotel;
+----+-------------+----------------+--------+--------+--------+-------------------+---------+----------------+--------+------------+---------+
| id | description | email_id       | image1 | image2 | image3 | name              | pincode | price_per_day | street | total_room | user_id | locatio
n_id |
+----+-------------+----------------+--------+--------+--------+-------------------+---------+----------------+--------+------------+---------+
---+
|  1 | dummy1      | dummy1@gmail.com | NULL   | NULL   | NULL   | Hotel Signature Grand | 121003  |           2000 | avs    |         20 |       2 |
  1 |
+----+-------------+----------------+--------+--------+--------+-------------------+---------+----------------+--------+------------+---------+
---+
```

4. Facility

```
mysql> select * from facility;
+----+-----------------------------+-----------------------------+
| id | description                 | name                        |
+----+-----------------------------+-----------------------------+
|  1 | Canteen                     | Canteen                     |
|  2 | Free Parking                | Free Parking                |
|  3 | Free Gym                    | Free Gym                    |
|  4 | Free Wifi                   | Free Wifi                   |
|  5 | AC rooms                    | AC rooms                    |
|  6 | Dining Option               | Dining Option               |
|  7 | Laundry and valet service   | Laundry and valet service   |
+----+-----------------------------+-----------------------------+
```

TESTING & TEST RESULTS

OBJECTIVE OF TESTING

Testing is a method to check whether the actual software product matches expected requirements and to ensure that software product is defect free. It involves execution of software/system components using manual or automated tools to evaluate one or more properties of interest. The purpose of software testing is to identify errors, gaps or missing requirements in contrast to actual requirements. Its objectives are as follows:

- **Cost-Effective:** It is one of the important advantages of software testing. Testing any IT project on time helps you to save your money for the long term. In case if the bugs caught in the earlier stage of software testing, it costs less to fix.
- **Security:** It is the most vulnerable and sensitive benefit of software testing. People are looking for trusted products. It helps in removing risks and problems earlier.
- **Product Quality:** It is an essential requirement of any software product. Testing ensures a quality product is delivered to customers.
- **Customer Satisfaction:** The main aim of any product is to give satisfaction to their customers. UI/UX Testing ensures the best user experience.

STEPS IN TESTING

Step 1: Review & analyse the requirements

The test team has to identify and hence determine what items have to be tested. These items are heavily based on how the end user will consume the system and hence has to be measurable, detailed and meaningful. The items or features that are identified generally describe what the particular software or product intends to do; characterized as functional requirements. There can also be some non-functional requirements identified such as performance or end to end software components' interaction.

Step 2: Scope of Testing

The scope of testing is generally an extension of the requirement analysis phase and mostly considered as a single activity, since they go hand in hand. Once the requirements are out, the test team determines what items are to be tested and what not. This activity should also target to determine what areas of testing are covered by what teams.

Step 3: Design the test strategy according to the scope

The test team after gathering the requirements and identifying the scope of testing will then put out a high-level document called the test strategy document, defining the testing approach to achieve the test objectives. A test strategy document is not meant to be updated too often.

Step 4: Identify the required tools needed for testing and management

Based on whether automation is possible and whether CLI (Command Line Interface) or GUI automation is targeted, the corresponding tools need to be identified. There also have to be tools identified for test management which will help in creating and assigning tasks, tracking the test progress, identifying roadblocks and generating reports indicating progress.

Step 5: Estimate the test effort and team

Correct effort estimation can prevent any time delays and dynamically enable the re-balancing of resources as required. The primary factors that would influence this activity are the size of the team, the skills within the team, the attitude of the team and the schedule.

Step 6: Define the schedule

Once you have the testable items that have been broken down into logical line items, the sizing estimate complete for the specified piece of work, a measurable test schedule has to be defined based on all these and the assigned testers.

Step 7: Determine and procure the test environment

Identify the needed infrastructure required for testing the system and initiate all the requests to acquire the needed hardware, software and networking pieces to support the testing. This is a crucial element in the planning phase as this will govern the stability of the test environment, which will have a direct impact on the defects produced.

Step 8: Identify the test metrics

Test metrics are generally the quantified method to derive the quality of the product or system. Generally, for quality audit purposes, the metrics are direct indicators of the product and process quality.

TESTING STRATEGY FOR PROPOSED PROJECT

At the end, this project is a web application. So other than the different levels of software testing, I have used the following testing strategy for the project:

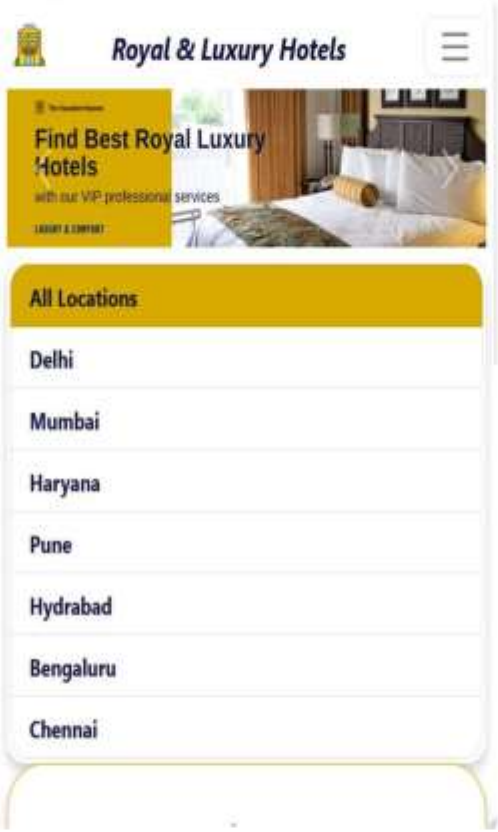
Cross-Browser Compatibility Testing: With more and more users accessing websites on their mobile phones and tablets, everyone is exploring more ways to make their websites mobile-friendly. Responsive web design makes the web applications deliver a rich user experience on every device. To ensure that the web application is able to work well on all browsers and devices, I have used the concept of **mobile first approach** by using open web technologie like JavaScript. Hence, it becomes important to perform cross- browser compatibility testing to ensure that the website is accessible onevery available version of individual web browser and screen sizes.

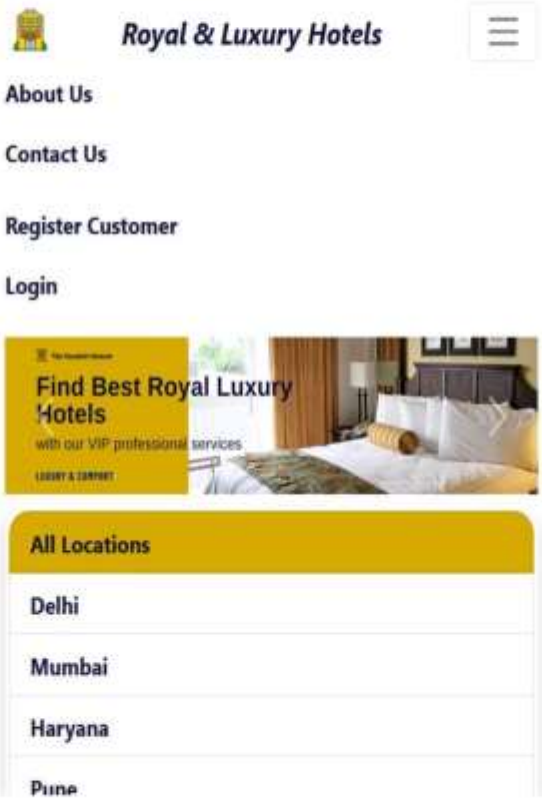
Mobile First Approach: As the applications' front-end is made by the help of Java script, so I have adopted the **Mobile First Approach** for the making of User Interface. In this approach two concepts are of utmost importance:

A. **Responsive Web Design (RWD):** It enables websites to fit the screens of different devices automatically. This greatly reduces the users' operations like panning, zooming and scrolling while navigating through the website.
B. **Progressive Advancement:** It means one must first build a version for relatively lower browser (for a phone) and should contain the most basic functions & features. After that, we hop onto the advanced version for a tablet or PC.

Below are the images which will tell you that this project is completely responsive and will adapt according to the screen sizes.

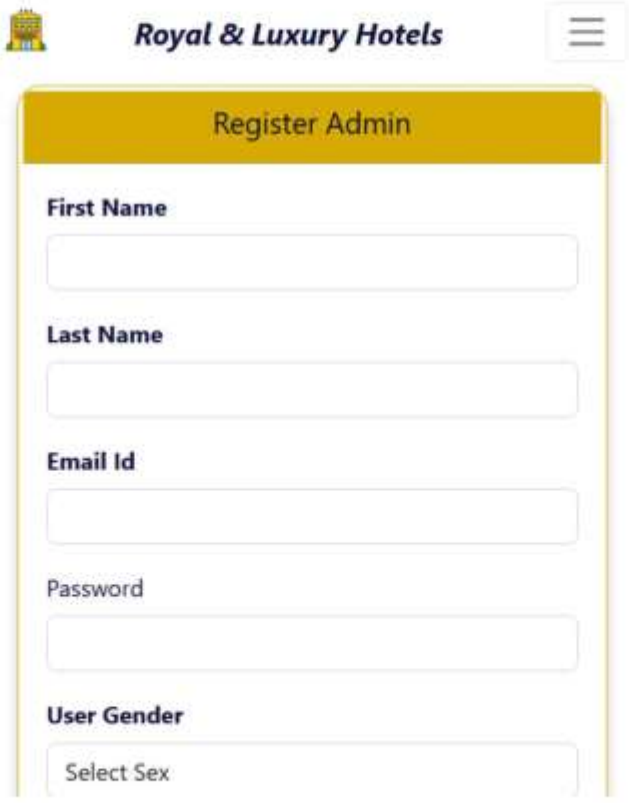
A. First user interface



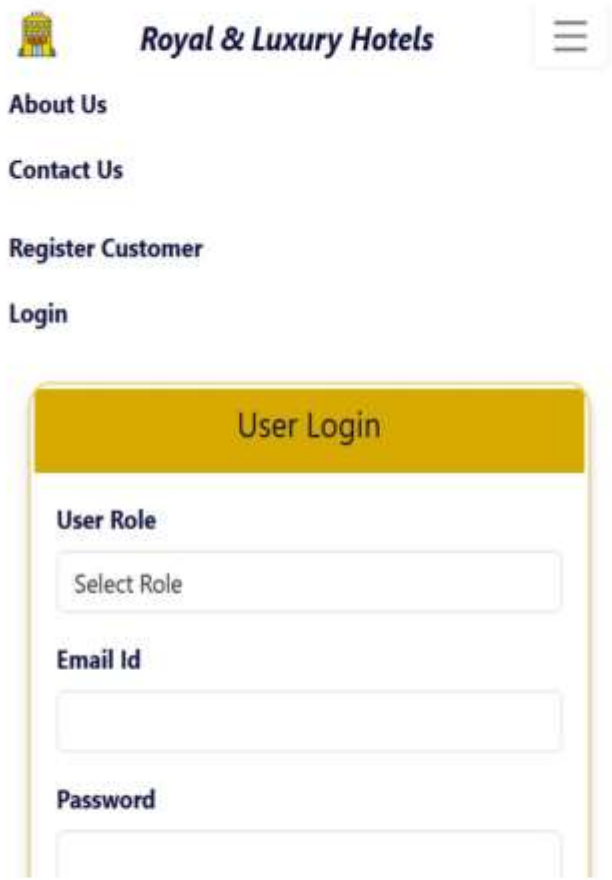


B. Location

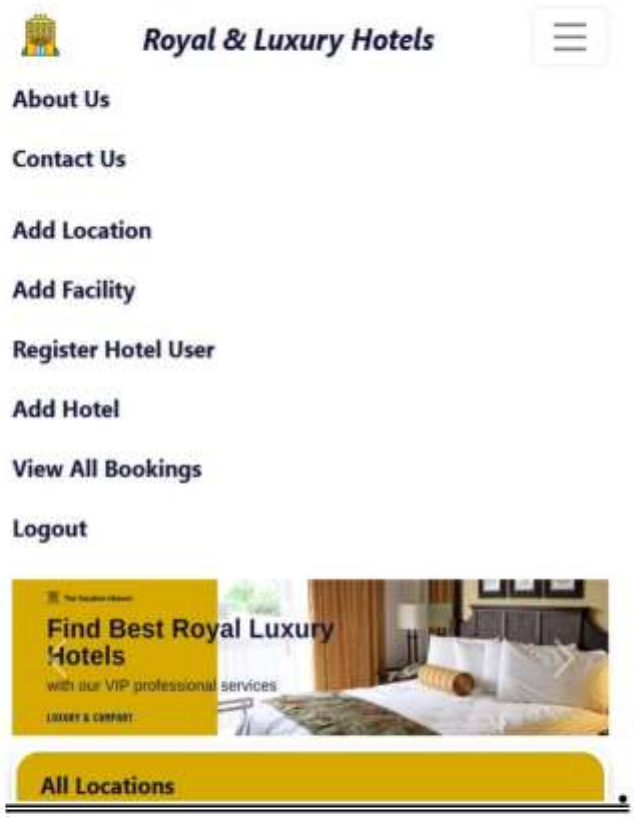
C. User register interface



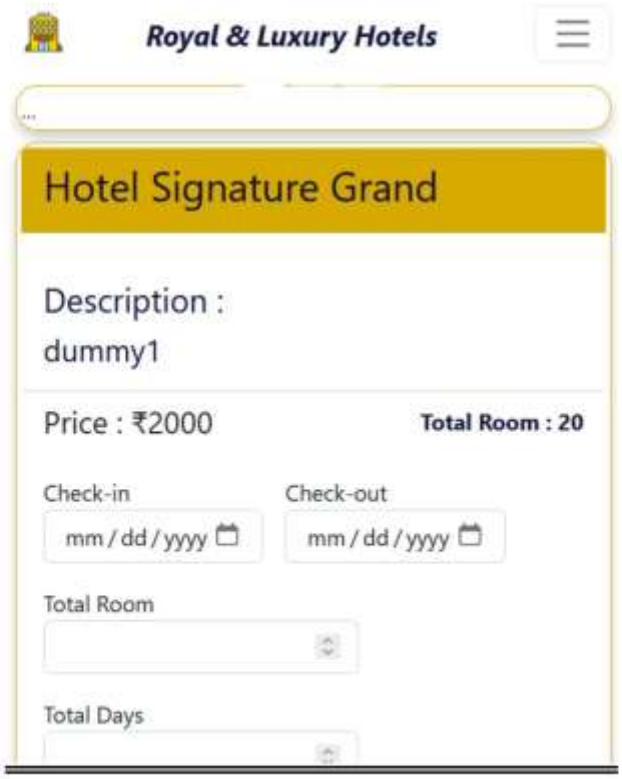
D. Login interface



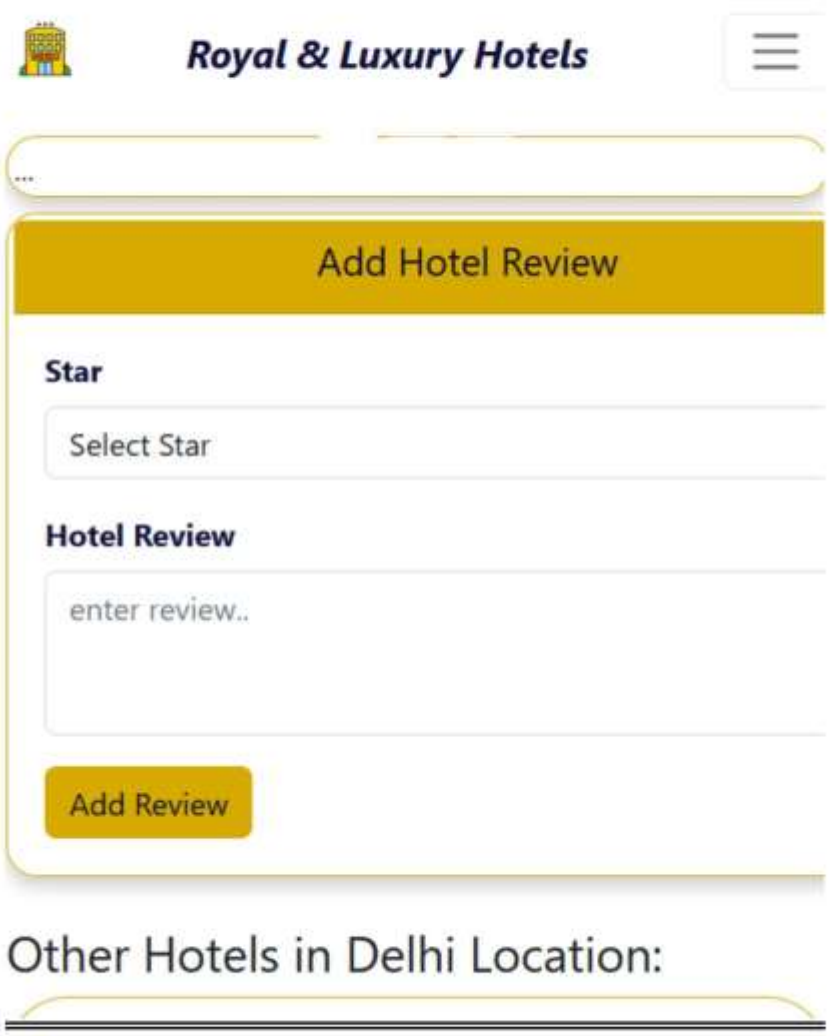
D.Admin interface



E.Hotel booking interface



F. Customer Review



TESTING ANALYSIS

I have done majority of the testing in the User Acceptance Phase as in that phase I can run the maximum number of test cases and thus can formulate the testing analysis accordingly. **Note:** For every function of the project

Functions	Description	Test Cases Passed	Test Cases Failed	Remarks
New User's Account	Check if new account is successfully createdfor a user	05	0	Good to go
Login of users	Check if user can successfully log in ornot	05	0	Good to go
Add a new rooms	Check if hotel can add a new rooms by filling the form orusing AI assistant	05	0	Good to go
Add facilities	Check if the hotel can add facilities for a room	05	0	Good to go
Change the password (if user is logged in)	Check if a not-logged in user can change the password or not?	05	0	Good to go
Every entity can work smoothly	Check if referral system, find out section & everything	05	0	Good to go

	is working or not?			

So, on the basis of the above test analysis I can prepare a test summary for the project. The test summary for the above is as follows:

Test Summary	
Project Name	Hotel Management System
Test Type	Performance Test
Pass	30
Fail	0
Not Executed	0
Total	30

CONCLUSION

CONCLUSION

The conclusion of this project is A Hotel management system is a computerized management system. This system keeps the records of hardware assets besides software of this organization. The proposed system will keep a track of Workers, Residents, Accounts and generation of report regarding the present status. This project has GUI based software that will help in storing, updating and retrieving the information through various user-friendly menu-driven modules. The project "Hotel Management System" is aimed to develop to maintain the day-to-day state of admission/Vacation of Residents, List of Workers, payment details etc. Main objective of this project is to provide solution for hotel to manage most their work using computerized process. This software application will help admin to handle customers information, room allocation details, payment details, billing information. Detailed explanation about modules and design are provided in project documentation. The existing system is a manually maintained system. All the Hotel records are to be maintained for the details of each customer, Fee details, Room Allocation, Attendance etc. All these details are entered and retrieved manually, because of this there are many disadvantages like Time Consuming, updating process, inaccuracy of data. For avoiding this we introduced or proposed a new system in proposed system the computerized version of the existing system. provides easy and quick access over the data.