Software Requirements Specification for PG-Life

Introduction

1.1 Purpose

The purpose of this PG-Life Software Requirement Specification (SRS)document is to provide a detailed overview of a base for the foundation of the project requirements for the PG-Life website, a platform designed to help users find rooms in various cities. This Software Requirement Specification document will provide a clear understanding of what is expected by the client. Client's expectation and requirements are analyzed to produce specific unambiguous functional and non-functional requirements, so they can be used by development team with clear understanding to build a system as per end user needs.

1.2 Product Scope

The primary objective of implementing this PG-Life is to streamline the hotel's day-to-day operations. The PG-Life project aims to facilitate online room reservations and automate diverse hotel operations. PG-Life will have three end users: Customer, Receptionist, and Hotel Manager. PG-Life will comprise a Booking Management System, DBMS Server, and Report Generator. Customers can check room availability, choose rooms, and make payments online. Receptionists can update booking details, while managers can access financial reports and update room information, including cost and category.

Hotel automation addresses increasing demand by providing quick, secure services. It replaces cumbersome physical files, ensuring rapid, error-free transactions and easy information retrieval. The development team aims for ultimate user satisfaction.

1.3 Definitions, Acronyms, and Abbreviations

SRS	Software Requirement Specifications
PG-Life	Paying Guest-Life
DBMS	Database Management System
FR	Functional Requirement
NFR	Non- Functional Requirement
API	Application Programming Interface
UI	User Interface

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JS	JavaScript
HTML	Hyper Text Markup Language
CSS	Cascading Style Sheets

1.4 Technologies to be used

1. Frontend Development:

React:

- Use React for building dynamic and interactive user interfaces.
- Create components for the homepage, city selection pages, room listings, and individual room pages.
- Utilize React Router for navigation between different pages of your website.
- Fetch and display data dynamically using React state and props.

HTML and CSS:

- Structure the content of your web pages using HTML.
- Style your website and components using CSS for a visually appealing design.

Bootstrap:

- Bootstrap can be used to enhance the design and responsiveness of your website.
- Utilize Bootstrap classes for layout, forms, buttons, modals, and other UI elements to maintain a consistent and modern look across your web pages.

2. Backend Development:

PHP:

- Use PHP for server-side scripting.
- Implement server-side logic for user authentication, form handling, and database interactions.
- Create PHP scripts to interact with the database and retrieve data based on user requests.
- Implement CRUD operations (Create, Read, Update, Delete) for managing rooms, cities, and user accounts.

XAMPP:

- Set up a local development environment using XAMPP, which includes Apache (for server hosting), MySQL (for the database), PHP, and phpMyAdmin (for managing the database).
- Create a MySQL database to store information about cities, rooms, and user accounts.

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2. Overall Description

2.1 Product Perspective

>User-Friendly Interface:

*Design an intuitive and user-friendly interface that allows users to easily navigate through the application.

*Implement a search bar on the homepage, enabling users to quickly find PG accommodations in specific cities.

>Comprehensive PG Listings:

*Provide detailed information about each PG accommodation, including facilities, amenities, pricing, and contact details.

*Allow users to filter results based on preferences such as budget, gender, location, etc.

>User Profiles and Reviews:

*Implement user to leave reviews and ratings for PG accommodations, fostering transparency and trust.

*Implement a secure payment gateway for online transactions, ensuring the safety of financial information.

>Mobile Responsiveness:

*Ensure that the web application is mobile-friendly, allowing users to access the platform seamlessly from smart-phones and tablets.

>Notifications and Alerts:

*Implement push notifications to keep users informed about new PG listings, price changes, and other relevant updates.

*Provide alerts for upcoming rent payments, lease renewals, or any other important events.

>Customer Support:

*Offer a responsive customer support system to address user queries, concerns, and feedback.

*Implement a live chat feature or a dedicated support email to assist users in real-time.

>Legal and Safety Information:

*Include information about legalities and safety standards for PG accommodations to ensure users are well-informed.

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*Provide tips and guidelines for a smooth living experience in PG accommodations.

>Marketing and Partnerships:

*Develop a marketing strategy to promote the platform and attract both PG owners and tenants.

*Explore partnerships with educational institutions, companies, or relocation services to expand your user base.

>Analytics and Insights:

*Implements analytics tools to gather insights into user behaviour, popular search trends, and other relevant data.

*Use this data to continually improve the platform, enhance user experience, and make informed business decisions

2.2 The possible user classes are:

>Tenant Users:

*Characteristics:

*Individuals seeking paying guest accommodations.

*Varied budgets and preferences.

*Students, working professionals, or migrants.

* Specific requirements, such as gender-specific accommodations, dietary preferences etc.

*Needs:

*Easy search and filter options.

*Detailed information about PG accommodations.

*Secure and user-friendly booking process.

*reviews and ratings from previous tenants.

*Notifications for new listings or price changes.

>Administrators/Moderators:

* Characteristics:

*Platform administration overseeing the entire system.

*Moderators managing content and user interactions.

* Responsible for ensuring the platform's integrity and security.

*Needs:

*Powerful admin dashboard for monitoring and managing the platform.

*Tools for content moderation and user management.

* Analytics to understand platform usage and performance.

>PG Owner Users:

*Characteristics:

*Individuals or business offering paying guest accommodations.

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*Property managers or landlords.
*Varied property types (apartments, houses, etc.).
*Specific rules and regulations for tenants.
*Needs:
*User-friendly listing management tools.
*Messaging system for communication with potential tenants.
* Transparent review and rating system.
* Notifications for booking requests and updates.

>Support Staff:

*Characteristics:
*Customers support representatives.
*Responsible for addressing user queries and concerns.
*Knowledgeable about the platform's features and policies.
*Needs:
*Access to a robust customer support system.
*Informational resources to assist users.
*Tools for resolving issues and escalating concerns if necessary.

>Partner Institutions or Businesses:

* Characteristics:
*Educational institutions or companies partnering with "PG-Life."
*Involved in helping students or employees find suitable accommodations.
*Needs:
*Collaborative tools for managing partnerships.
*Access to data insights for better accommodations recommendations.
*Coordinated communication channels with platform administrators.

>Local Service Providers:

*Characteristics:
*Local business providing services related to accommodations (cleaning , maintenance, etc.).
*May partner with "PG-Life" to offer their services to PG owners.
*Needs:
*Access to a platform for advertising services.
*Communication channels with PG owners for service arrangements.
*Transparent transaction systems if payments are involved.

2.3 Operating Environment

- Operating System supports all known operating systems, such as Windows, Linux.
- Computer 512MB + RAM, monitor with minimum resolution of 1024 * 768, keyboard and mouse.

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- ◆ Hard Drive should be NTFS file system formatted with minimum 10GB of free space.
- ◆ A Laser Printer will need to be used to print these reports and notes.
- ◆ Software is designed to run on any platform above Microsoft Windows 7 (32 bit).
- ◆ Microsoft NET Frameworks 4.0 or above.

2.4 User Documentation

Online help:

- ◆ Step by step instructions on setting up accounts
- ◆ Viewing will be intuitive and self-explanatory
- ◆ Common FAQs page will be available to the user Everything will be as simple as possible.

Ideally, It provides detailed instructions on account registration, room search, contacting landlords, and managing user profiles. It will require no extra explanation. Every step for account setup and viewing options will be clearly labeled and described as the client progresses through the web page. A page containing frequently asked questions and their answers will be available.

2.5 Software Interfaces:

>User Interface (UI):

>The user interface is the front-end of the website that users interact with.
>It includes web pages, forms, and graphical elements that allow users to search for hotels, view details, and make reservations.

>Application Programming Interface (API):

>APIs allow the website to connect with external systems and services.
Commonly used APIs in a hotel booking website include:

>Payment Gateway APIs: To process payments securely.
>Mapping APIs: To display maps and locations.
> Social Media APIs : For sharing and authentication.
>Geolocation APIs: To determine the user's location.
>Hotel Booking APIs: To access hotel databases and inventory.

>Database Interface:

>The website interacts with a database to store and retrieve data, such as hotel listings, user profiles, reservations, and reviews.
>This interface typically includes SQL or No SQL database management systems.

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>Search and Recommendation Engine:

>Interfaces for search and recommendation algorithms to suggest hotels based on user preferences and behavior.

>Authentication and Authorization:

>Interfaces for user login, registration, and role-based access control to protect sensitive data.

>Messaging and Notifications:

>Interfaces for sending email and push notifications to users, such as booking confirmations, reminders, and updates.

2.6-Hardware Interfaces:

>Server Interface:

>The server hosting the website and its applications communicates with the underlying hardware components, including the CPU, RAM, storage, and network interfaces.

>Payment Processing Hardware:

>Interfaces with hardware components like card readers and secure payment processing devices for handling financial transactions.

>Location Services:

>Interfaces with hardware components, such as GPS modules, to determine the user's location for location-based services.

Network Interface:

>Connects the website to the internet and enables data transmission to and from users' devices.

>Cloud Services:

>Many hotel booking websites use cloud infrastructure, which relies on APIs to interface with cloud servers, storage, and databases.

>Security Hardware:

Interfaces with hardware-based security systems, such as firewalls, intrusion detection systems, and SSL/TLS certificates for data encryption.

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>User Devices:

Interfaces with various user devices, including smartphones, tablets, and desktop computers, which access the website through web browsers or mobile apps.

2.7-External Forces:

2.7.1-Dependencies:

>Payment Gateways:

>Payment processing is a critical component of a hotel booking website.
>You may be dependent on third-party payment gateway services like PayPal, Stripe, or other financial institutions for securely processing payments.

>External APIs:

>Hotel booking websites often rely on external APIs to access and display hotel inventory, location data, and other information.
>These APIs might include hotel booking APIs, mapping APIs (e.g., Google Maps), and geolocation services.

>Internet Connectivity:

>A hotel booking website is highly dependent on a reliable internet connection.
>Users must be able to access the website and make reservations online.

>Database Systems:

>The website depends on the proper functioning of database systems to store and retrieve user data, hotel information, reservations, and reviews.

>Server Infrastructure:

>our website needs a reliable server infrastructure, which may be on-site or hosted in the cloud.
>Dependence on cloud service providers, like Amazon Web Services (AWS) or Microsoft Azure, for server hosting and scaling is common.

>SSL Certificates:

>To secure user data and transactions, the website depends on SSL/TLS certificates for encryption.
>These certificates are often obtained from certificate authorities.

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>Operating Systems and Software:

>The underlying operating systems, web servers (e.g., Apache or Nginx), and other software components must be properly configured and maintained for the website to run smoothly.

>Mobile Platforms:

>If you offer a mobile app for your hotel booking service, you depend on mobile platforms like Android and iOS for app distribution and updates.

>Legal and Regulatory Compliance:

>The website must adhere to legal and regulatory requirements related to data protection, consumer rights, and online commerce.

> Compliance with data protection laws like GDPR or HIPAA may be necessary.

>Third-Party Services:

>Integration with third-party services such as email providers (e.g., SendGrid or Mailgun) for email notifications, SMS gateways for text messaging, and social media platforms for sharing and authentication.

>Location Services:

>If your website provides location-based services, it depends on the user's device having location services enabled and functional, as well as access to accurate geolocation data.

>Payment Hardware:

>If your website uses physical payment hardware (e.g., card readers), you depend on the proper functioning of these devices for in-person payments.

>External Reviews and Ratings Services:

If you display external reviews and ratings (e.g., from TripAdvisor), you depend on the availability and accuracy of these services.

2.7.2-Constraints:

>Regulatory and Legal Constraints:

>Data Protection Regulations:

Compliance with data protection laws such as GDPR (General Data Protection Regulation) may impose constraints on how user data is collected, stored, and processed.

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>Payment Regulations:
Compliance with financial and payment regulations, including PCI DSS (Payment Card Industry Data Security Standard) for handling credit card data.

Security Constraints:

>Secure Transactions:
Ensuring secure transactions and protecting user data may impose constraints related to encryption, data storage, and access control.

>Authentication and Authorization:
Implementing strong user authentication and authorization mechanisms to protect user accounts and data.

>Scalability Constraints.

>Traffic Peaks:
The website must be able to handle surges in traffic during peak booking seasons, which may require scalable server infrastructure and load balancing.

>Performance Constraints:

>Response Time:
Users expect fast response times when searching for hotels, viewing listings, and making reservations.

Image and Media Optimization:
Handling and optimizing high-quality images and multimedia content to ensure fast loading times.

>*Usability Constraints:*

>User Interface: The website should provide an intuitive and user-friendly interface for users of all technical backgrounds.

>Accessibility: Ensuring the website is accessible to users with disabilities may impose constraints on design and development.

>*Technical Constraints:*

>Browser Compatibility: Ensuring the website functions correctly on various web browsers (e.g., Chrome, Firefox, Safari, Internet Explorer).

>Mobile Compatibility: Ensuring the website is responsive and functional on mobile devices, including smartphones and tablets.

>Device Compatibility: Ensuring compatibility with different devices and screen resolutions.

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>*Infrastructure Constraints:*

>Server Availability: Ensuring server infrastructure is available and reliable to prevent downtime.
>Network Speed and Reliability: Dependence on network speed and reliability for data transfer.

>*API and Integration Constraints:*

>Third-Party Services: Dependency on the availability and reliability of third- party APIs for functions such as payment processing and mapping services.

>*Content Constraints:*

>Hotel Listings: Constraints may include the availability and accuracy of hotel data and images, as well as the update frequency.

>*Geographic Constraints:*

>Geographic Coverage: The website's availability and coverage in different regions may be limited, affecting the ability to book hotels in specific areas. Resource Constraints:

>Human Resources: Availability of skilled development and support staff can be a constraint in terms of website development and maintenance.

>*Cultural and Language Constraints:*

>Multilingual Support: Constraints related to providing content and services in multiple languages and accommodating different cultural preferences.

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3 System Features

3.1 Functional features:

>Registration
>Login
>Reservation
>Payment
>My account

Registration:

>The Customer should be able to register with their details.
>The system should record following customer details into member database.

>Name
>Email
>Password
>Address
>DOB
>College

>The system shall send verification message to email.

Login:

>The system should verify the customer email & password against his or her database when logging in.
>After login, member should be directed to Home screen.

Reservation:

>The system should enable customer to check for availability of rooms.
>The system should enable customer to filter the rooms using the following options:

>Gender
>Location
>Price
>User rating

>The system should display rate for all rooms.
>The system should allow customer to confirm or cancel the booking.
>The system should record booking details into database.
>The system enable customer to add preferred rooms in interested properties.

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Payment:

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The system should allow customer to pay bill via online using the following options:

UPI
Credit/Debit cards
Net Banking
Paypal
Mobile Wallets
Gift Cards

My Account:

- The system displays the following user account details:
- My details.
- My Interested Properties.
- The system allows the user to edit or update the user account details.
- The system allows the user to logout.

3.2 Non-Functional Requirements:

- Performance Requirements
- Safety Requirements
- Security Requirements
- Capacity Requirements
- Software System Attributes

Performance Requirements:

- The website would be functional for 24 hours a day to enable user interaction at any point of time.
- Data in database should be updated within 2 seconds.
- Query results must return results within 5 seconds.
- Load time of UI Should not take more than 2 seconds.
- Login Validation should be done within 3 seconds.
- Response to customer inquiry must be done within 5 minutes.

Security Requirements:

- All external communications between the data's server and client must be encrypted.
- All data must be stored, protected or protectively marked.
- Payment Process should use HTTP over Secure protocol to secure the payment transactions.

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➡ *Safety Requirements:*

➡ Database should be backed up every hour.

➡ The database should be carefully maintained by the administrator.

➡ Under failure, system should be able to come back at normal operation under an hour.

➡ *Capacity Requirements:*

➡ System need to handle at least 20 transactions during peak hours.

➡ Each city should display at least 20 rooms.

Software System Attributes:

➡ **Correctness:**

This system should satisfy the normal regular Hotel Management operations precisely to fulfill the end user objectives.

➡ **Efficiency:**

Enough resources to be implemented to achieve the particular task efficiently without any hassle. □

➡ **Flexibility:**

System should be flexible enough to provide space to add new features and to handle them conveniently.

□

➡ **Integrity:**

System should focus on securing the customer information and avoid data losses as much as possible .

➡ **Portability:**

The system should run in any operating environment.

➡ **Usability:**

The system should provide user manual to every level of users.

➡ **Testability:**

The system shall be periodically tested to confirm the performance and clients specifications.

➡ **Maintainability:**

The system should be maintainable.

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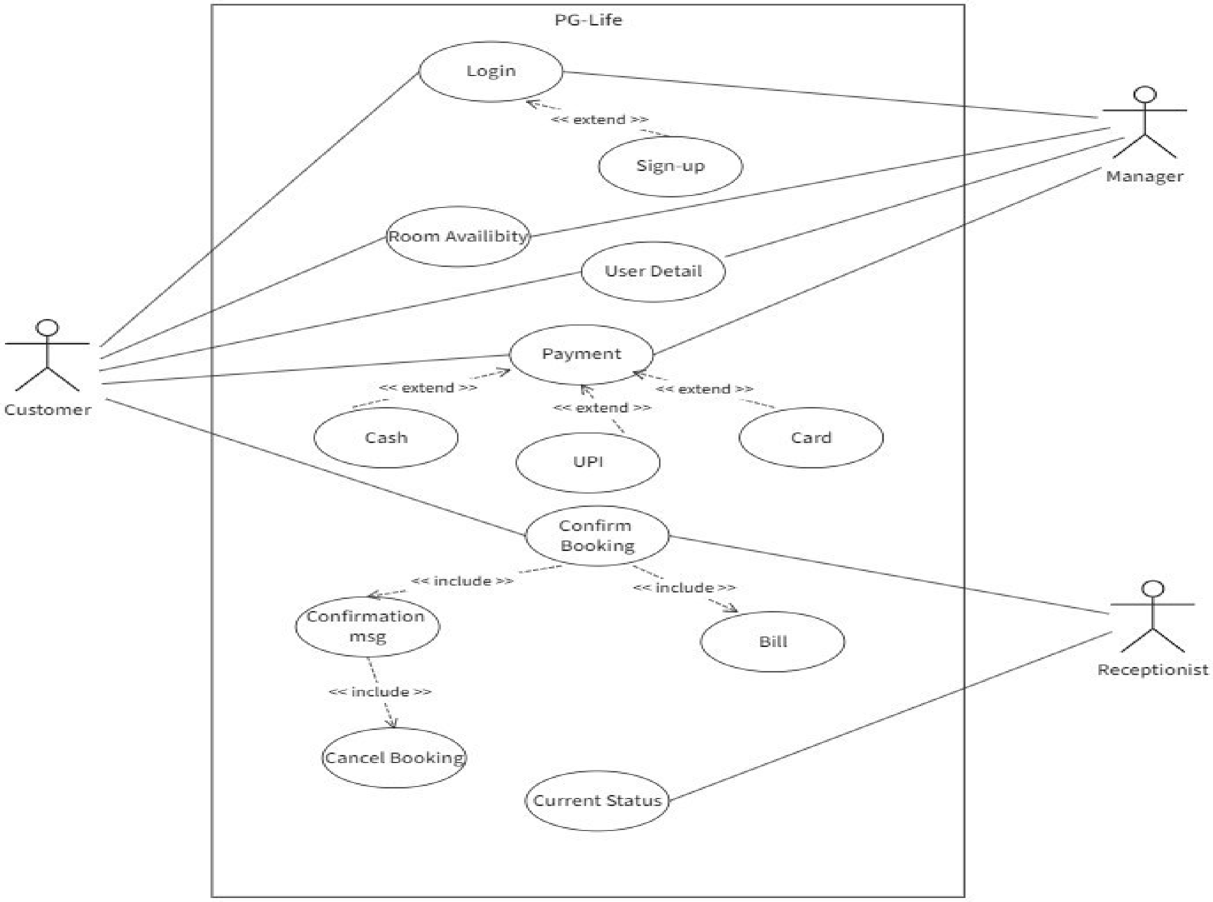
4 Design:

4.1 Front-End Design:

4.1.1- Use Case Diagrams



4.1.2 Use Case Scenarios Description

Customer:

At PG-Life, customers have the option to seamlessly log into our platform. For those without an existing account, a convenient sign-up process is available, accessible independently or following an attempted login. Users can then explore the available rooms and their specifics. Once a choice is made, customers can proceed to payment, selecting from various methods including cash, UPI, and card transactions. Following successful payment, the booking is confirmed, and customers receive both a confirmation message and a detailed bill for their records. This streamlined process ensures a smooth and efficient experience for our valued customers.

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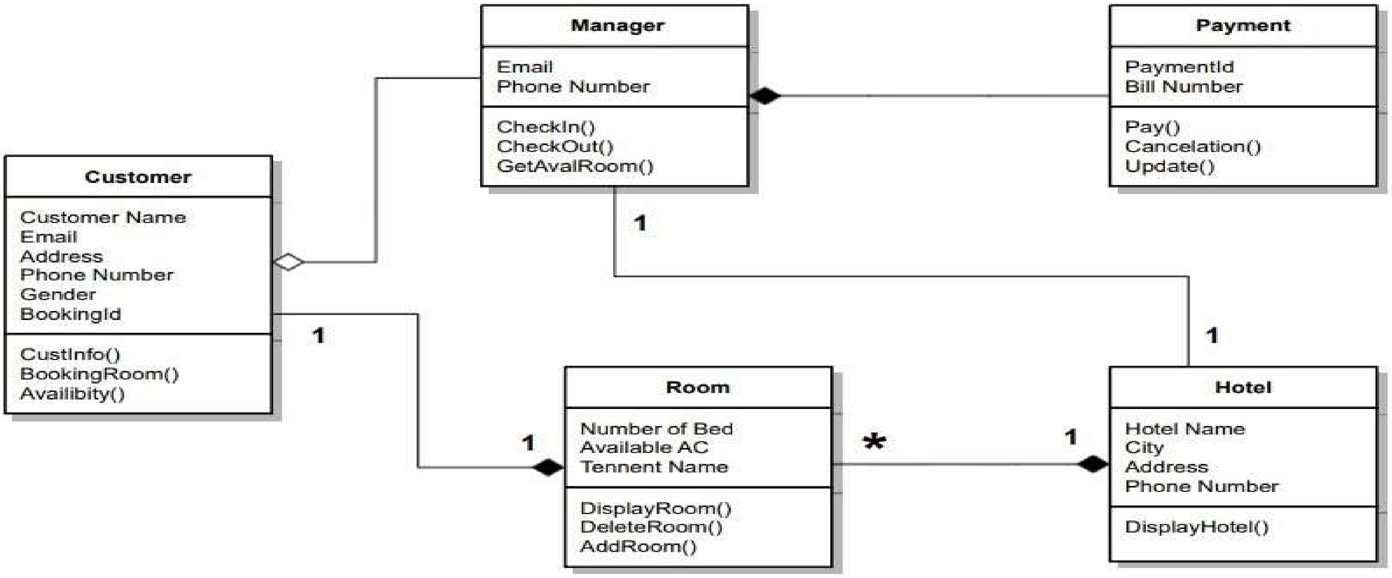
Manager:

Similar to the customer experience, managers, upon accessing the system, possess the authority to oversee available rooms and customer details. Furthermore, they can monitor payment records, ensuring comprehensive management capabilities within the PG-Life interface. This streamlined system empowers managers to efficiently handle room availability, customer information, and payment records, facilitating seamless management processes.

Receptionist:

The receptionist is responsible for confirming bookings, sending confirmation messages along with bills, and managing cancellations. Additionally, they have the authority to access the booking status, ensuring efficient coordination and communication with customers. Their role is pivotal in ensuring smooth transactions, accurate information dissemination, and handling booking-related inquiries effectively.

4.1.3 Class Diagram



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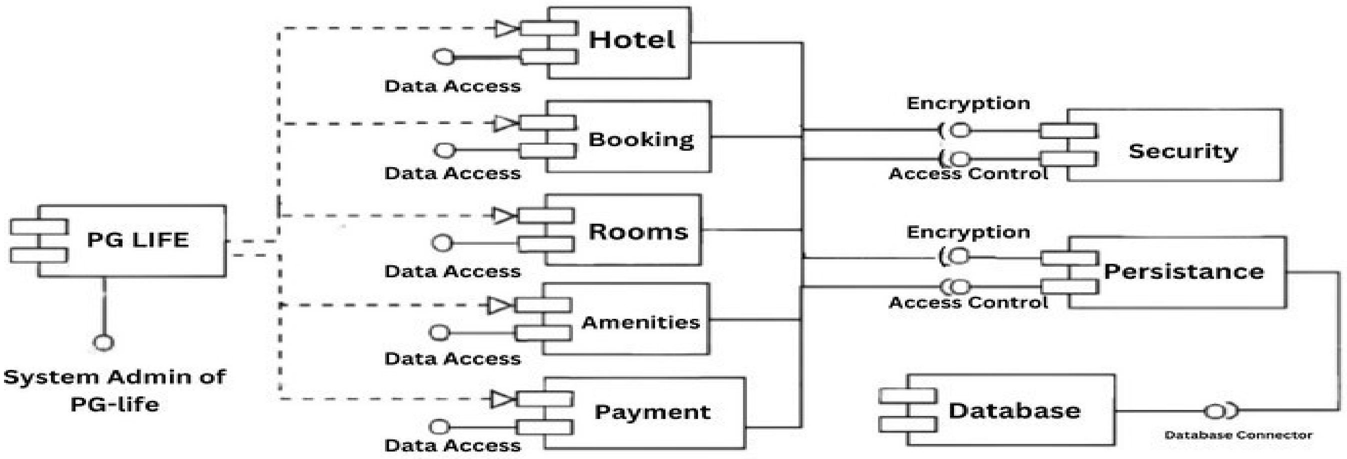
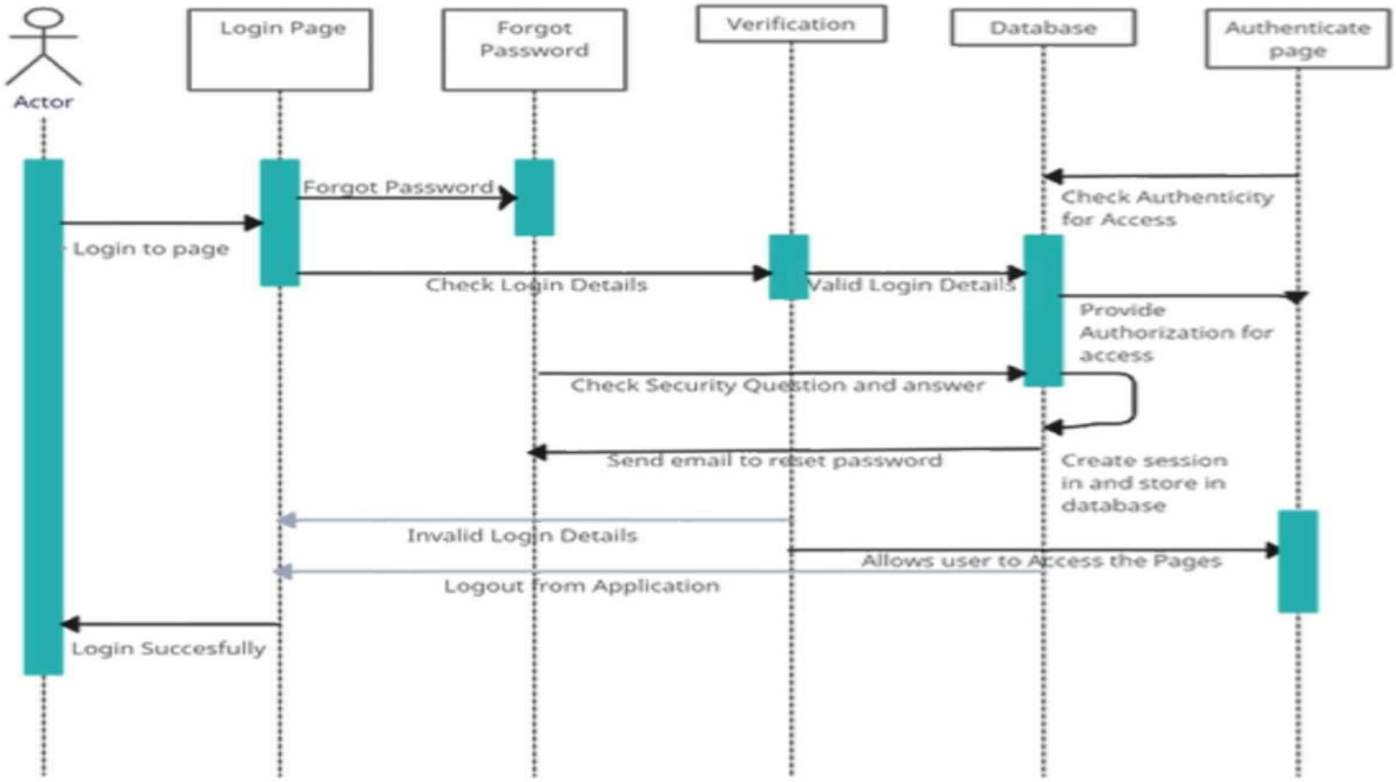
4.1.4-Component Diagram:



4.1.5.2-Sequence Diagram of PG-Life login:



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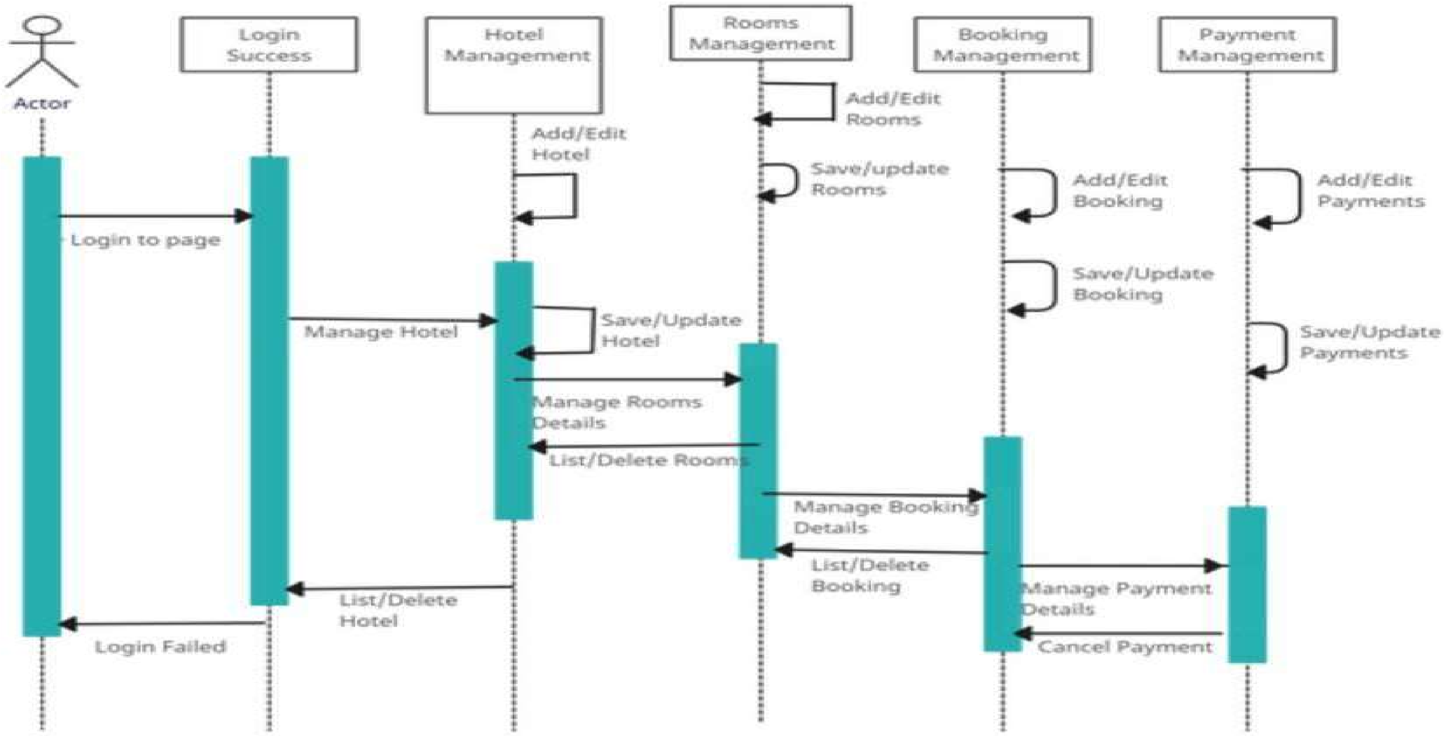
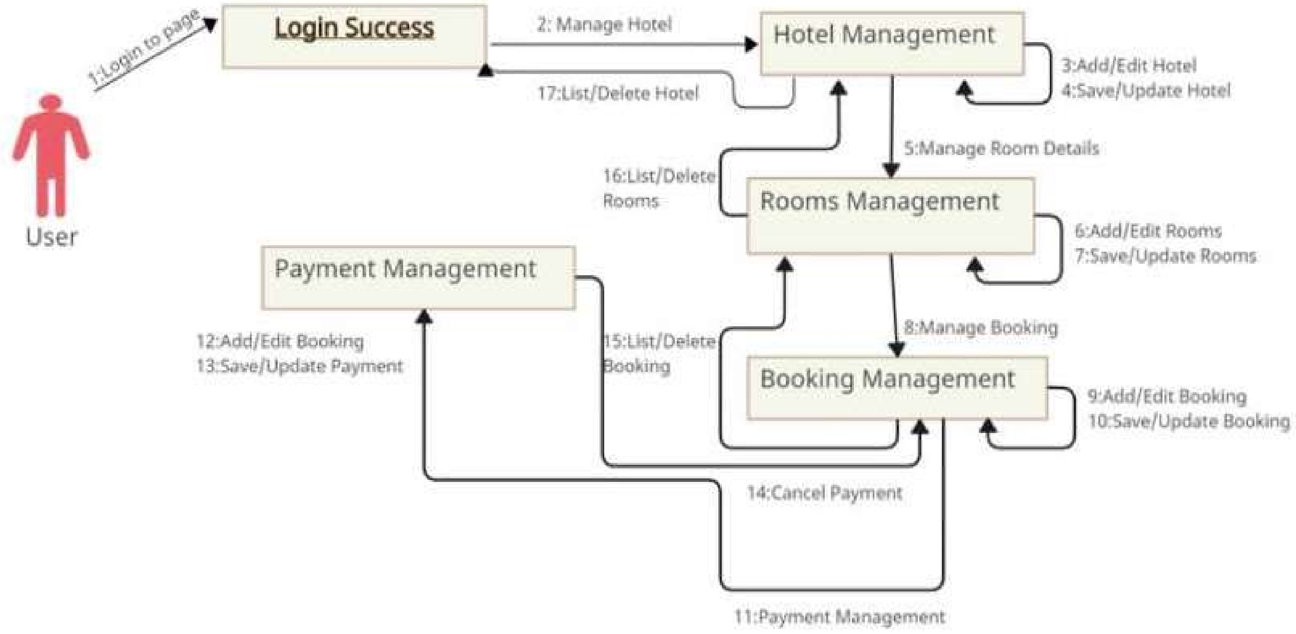
4.1.5.1-Sequence diagram of PG life:



4.1.6-Collaboration Diagram:



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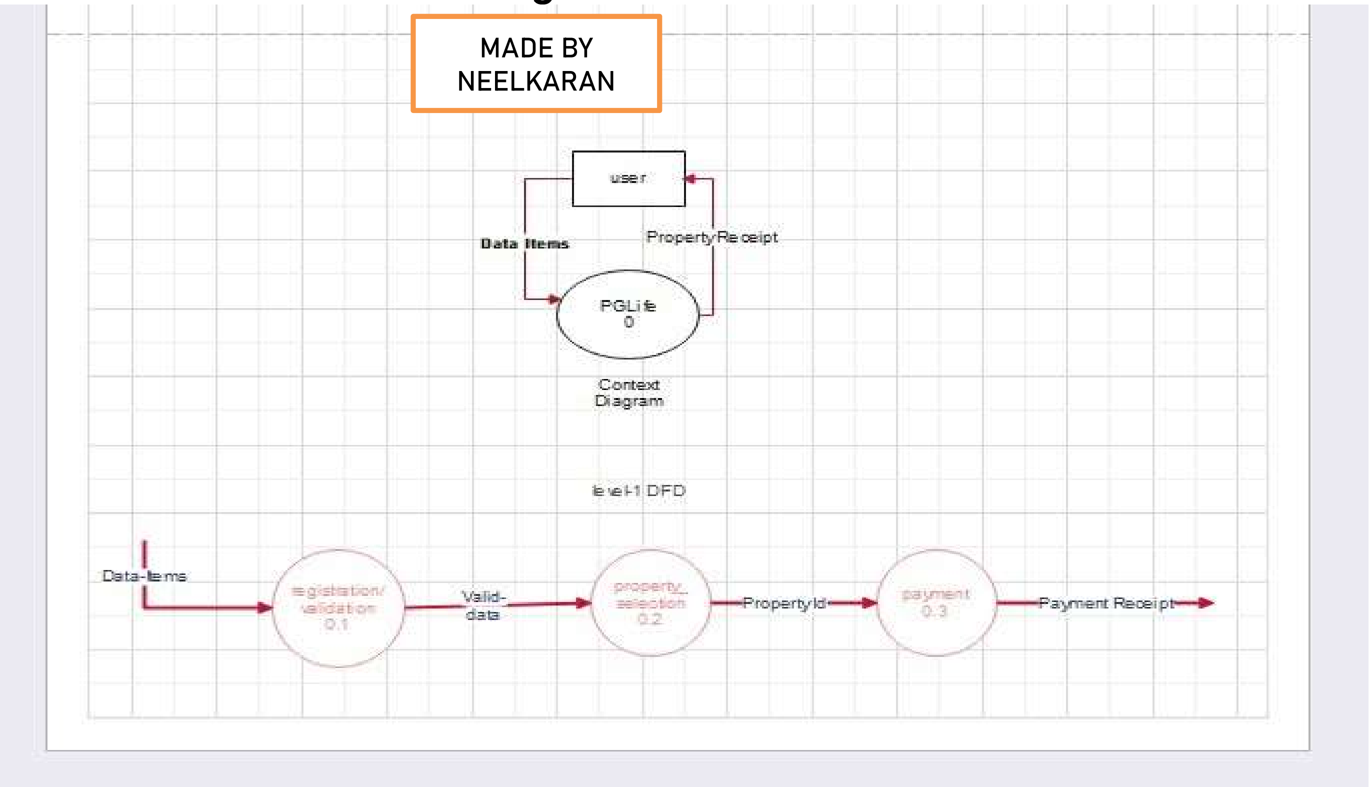
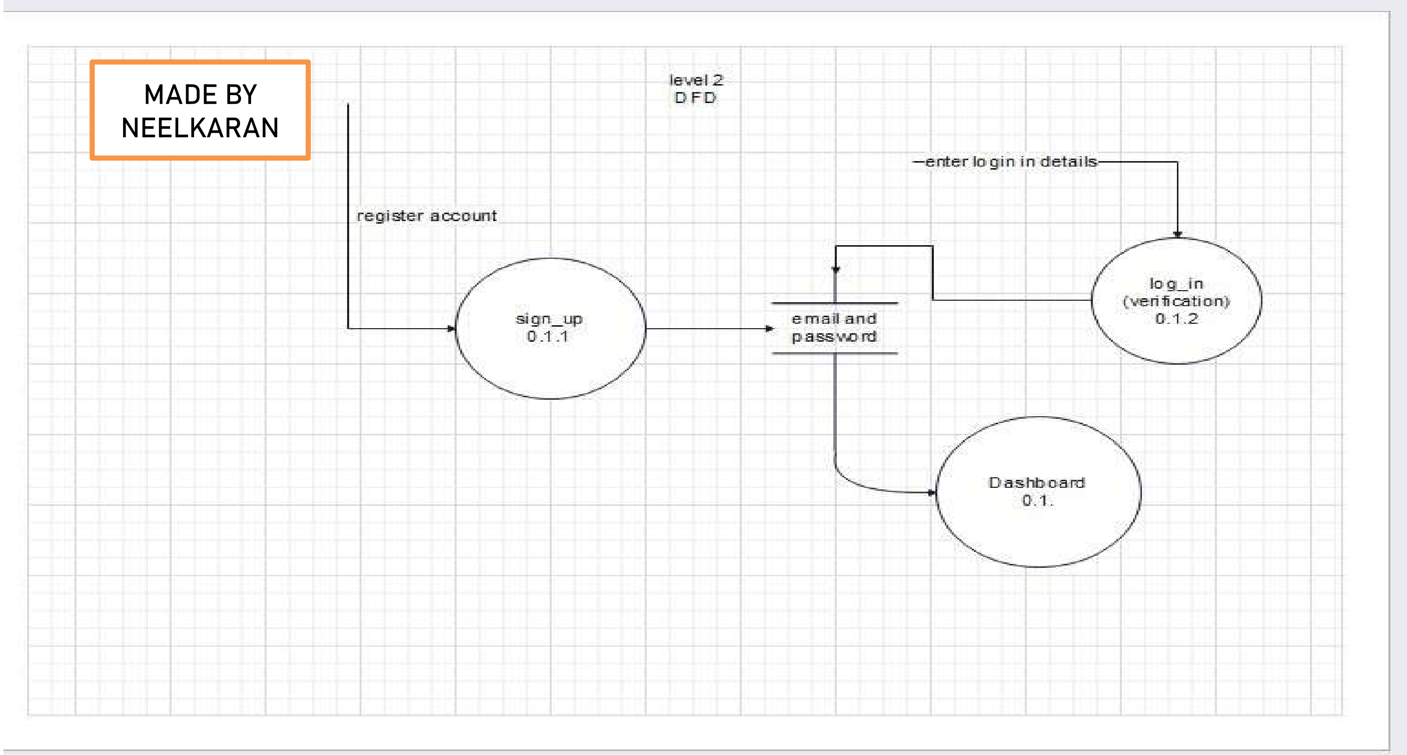
4.1.7 Data Flow Diagram





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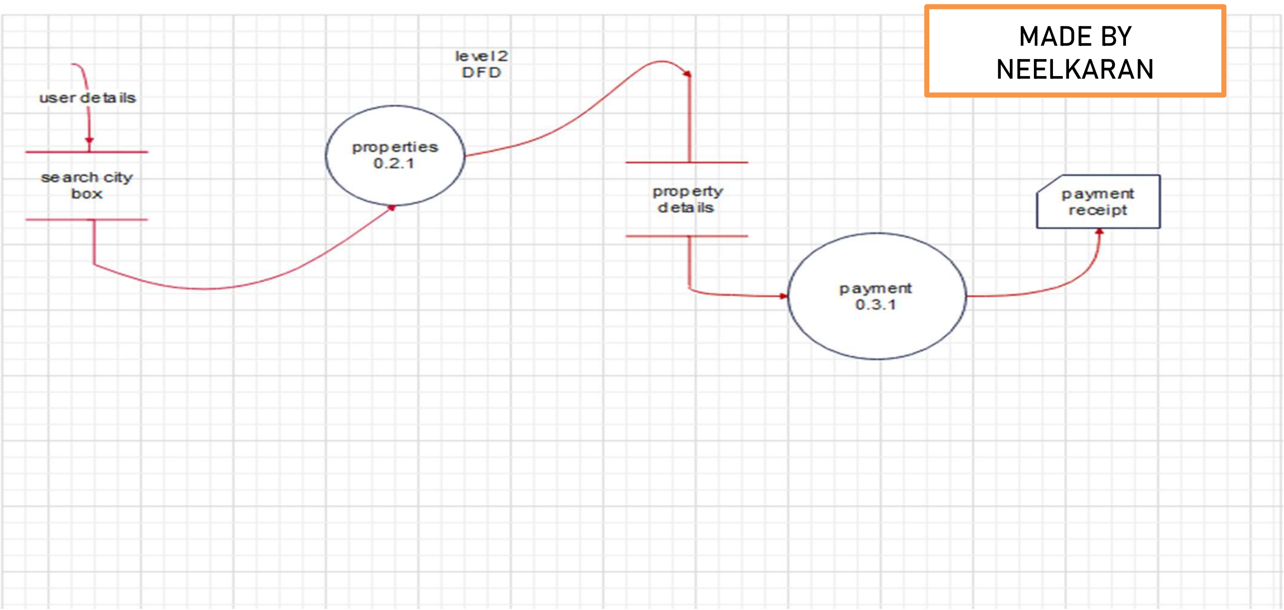
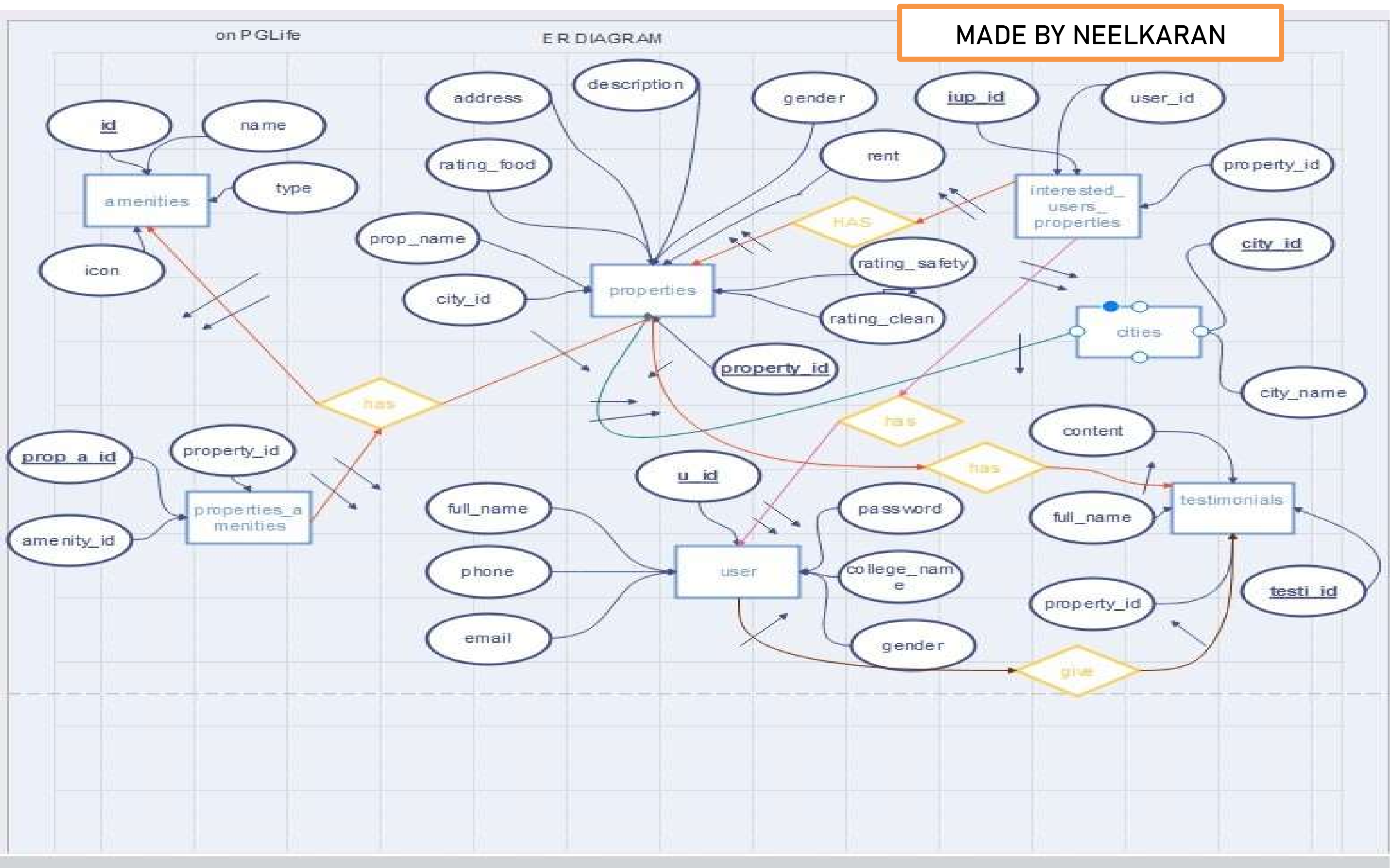


4.2 Database Design

4.2.1 ER-DIAGRAM



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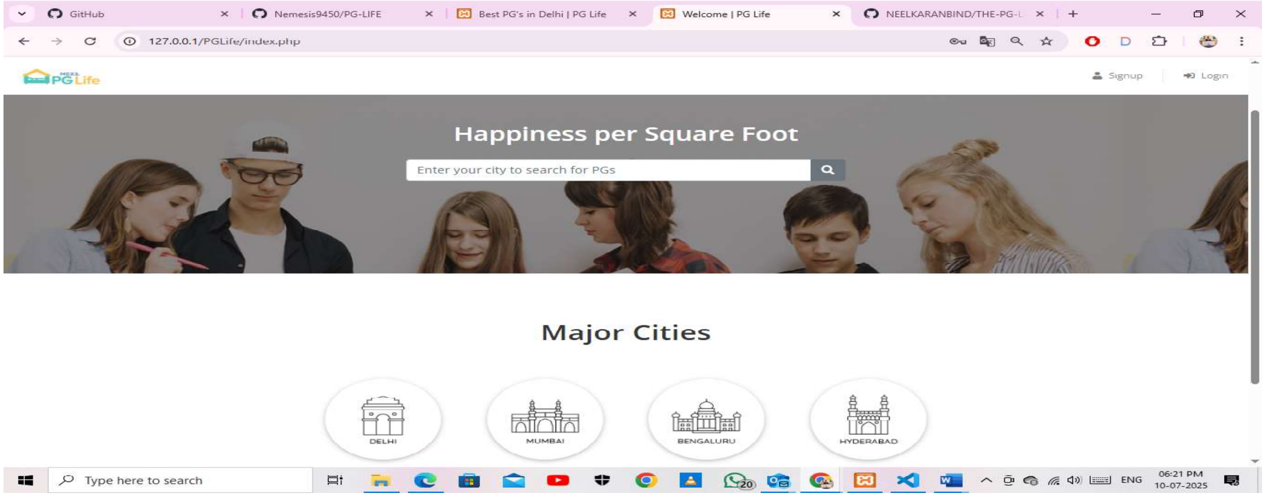
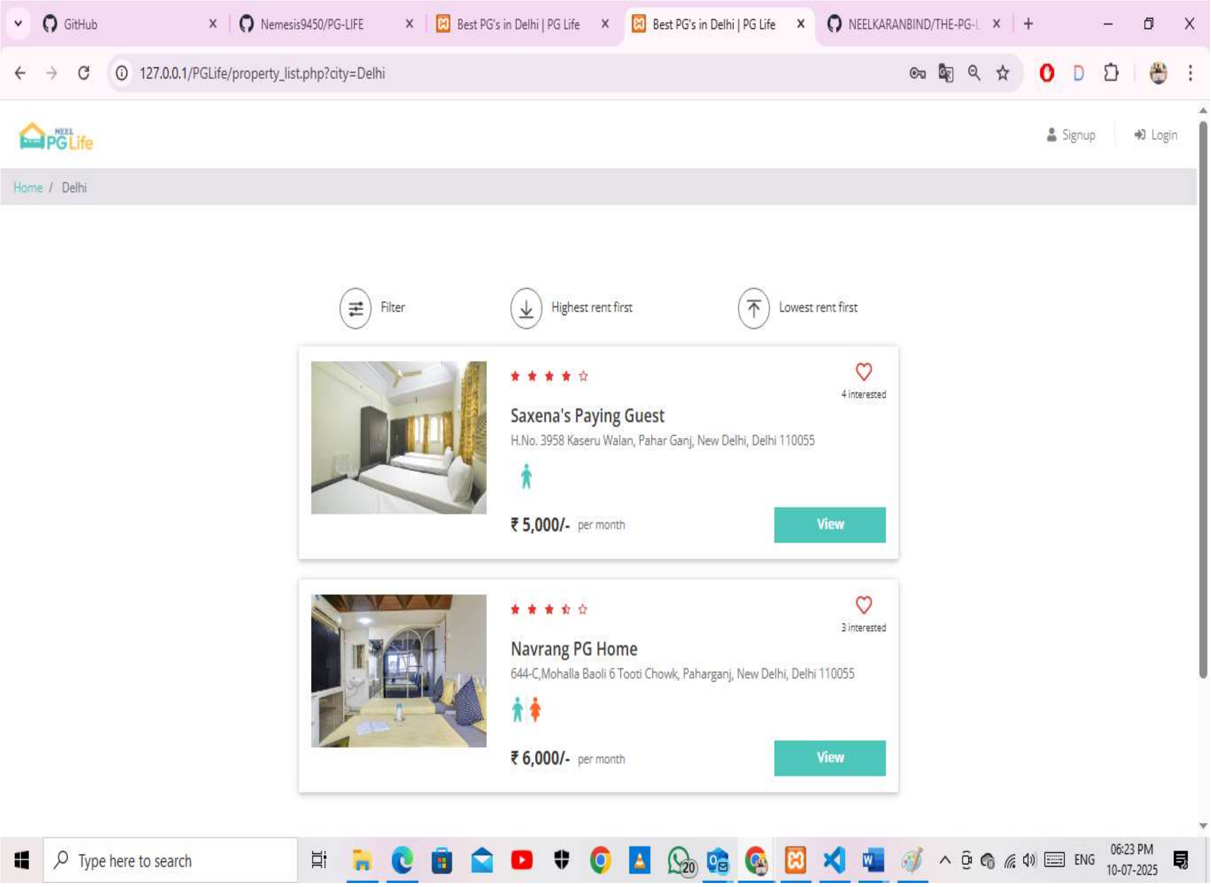
5. GUI



>Home Page



4 interested

Saxena's Paying Guest

H.No. 3958 Kaseru Walan, Pahar Ganj, New Delhi, Delhi 110055

₹ 5,000/- per month

3 interested

Navrang PG Home

644-C,Mohalla Baoli 6 Tooti Chowk, Paharganj, New Delhi, Delhi 110055

₹ 6,000/- per month

>PGs listed

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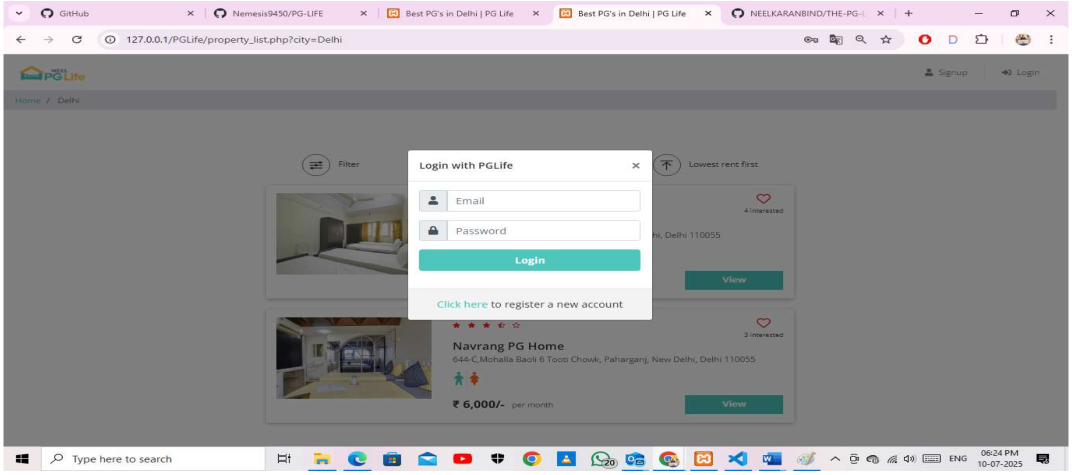
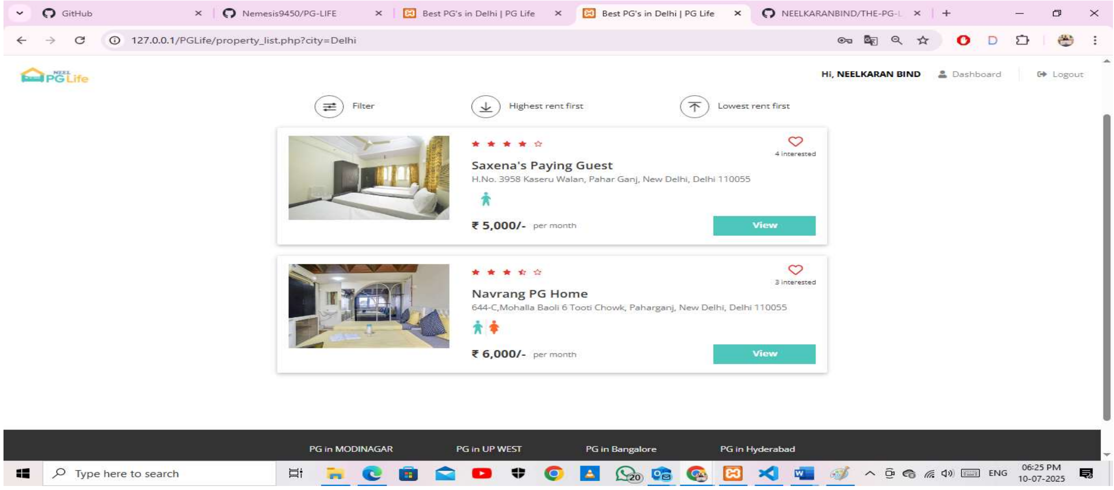


Navrang PG Home
644-C,Mohalla Baoli 6 Tooti Chowk, Paharganj, New Delhi, Delhi 110055
₹ 6,000/- per month

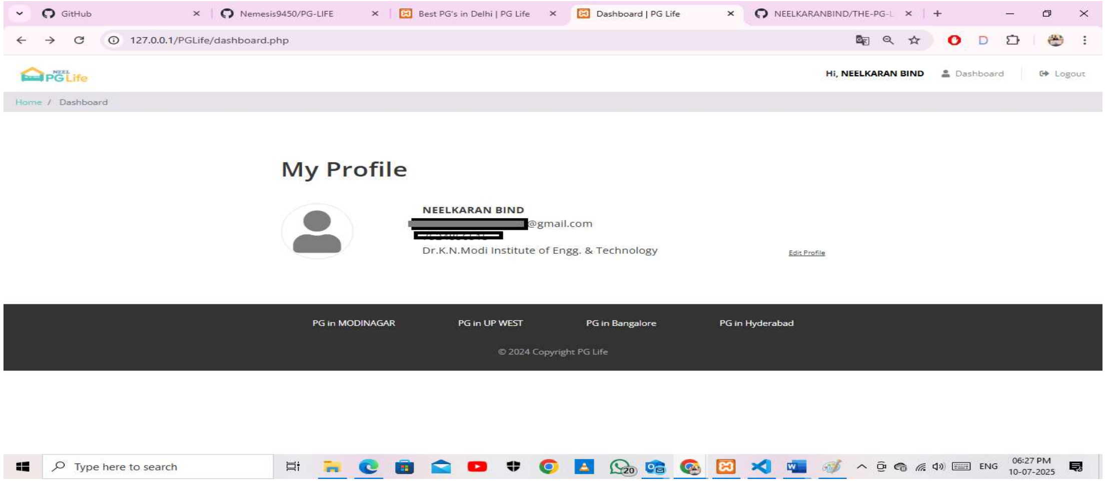
>Login Modal



Saxena's Paying Guest
H.No. 3958 Kaseru Walan, Pahar Ganj, New Delhi, Delhi 110055
₹ 5,000/- per month

Navrang PG Home
644-C,Mohalla Baoli 6 Tooti Chowk, Paharganj, New Delhi, Delhi 110055
₹ 6,000/- per month

>Registered User's Home page



My Profile

NEELKARAN BIND
[redacted]@gmail.com
[redacted]
Dr.K.N.Modi Institute of Engg. & Technology

>Registered User's Dashboard Page

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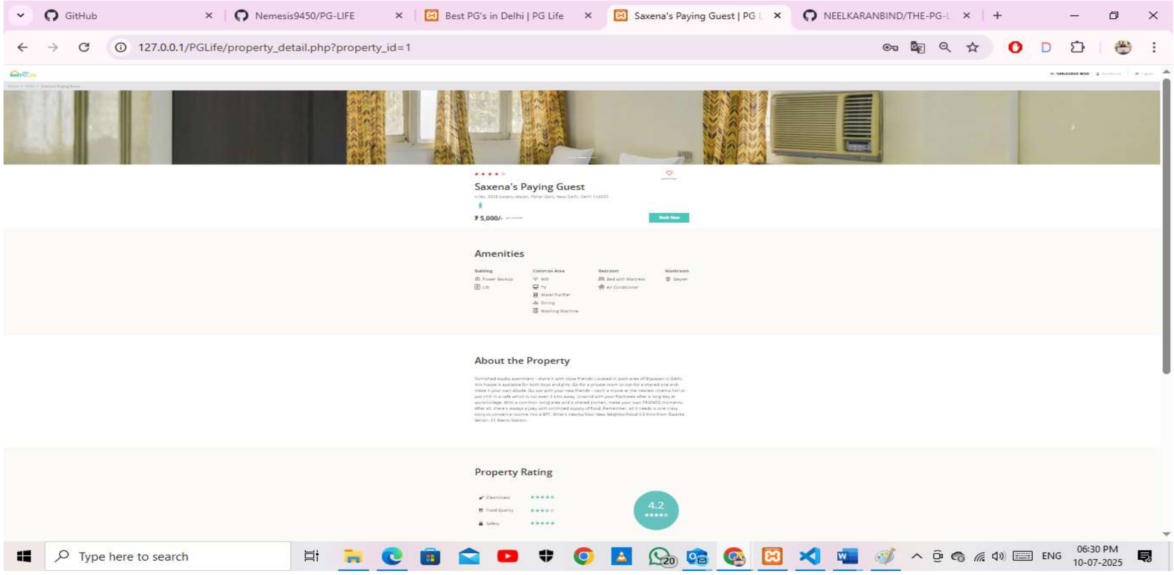

GitHub
Nemesis9450/PG-LIFE
Best PG's in Delhi | PG Life
Saxena's Paying Guest | PG L
NEELKARANBIND/THE-PG-L
127.0.0.1/PGLife/property_detail.php?property_id=1
Type here to search
ENG
06:30 PM
10-07-2025

Saxena's Paying Guest

H.No. 3358 Kasera Wadan, Pahar Ganj, New Delhi, Delhi 110055

₹ 5,000/- per month

Book Now

Amenities

Building	Common Area	Bedroom	Washroom
Power Backup	Wifi	Bed with Matress	Geyser
Lift	TV	Air Conditioner	
	Water Purifier		
	Dining		
	Washing Machine		

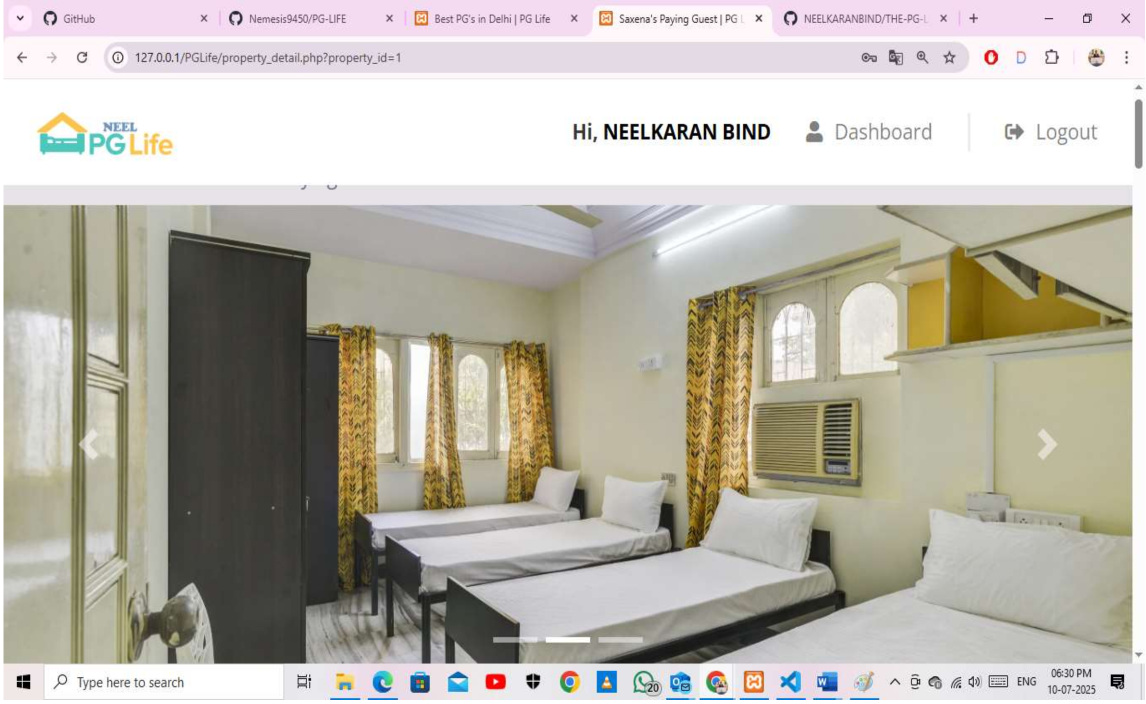
About the Property

Furnished studio apartment - share it with close friends! Located in posh area of Bijwasan in Delhi, this house is available for both boys and girls. Go for a private room or opt for a shared one and make it your own abode. Go out with your new friends - catch a movie at the nearest cinema hall or just chill in a cafe which is not even 2 kms away. Unwind with your flatmates after a long day at work/college. With a common living area and a shared kitchen, make your own FRIENDS moments. After all, there's always a joey with unlimited supply of food. Remember, all it needs is one crazy story to convert a roomie into a BFF. What's nearby/Your New Neighborhood 0.3 kms from Dwarka Sector- 21 Metro Station.

Property Rating

Cleanliness	★★★★★
Food Quality	★★★★☆
Safety	★★★★★

4.2



> Hotel Details

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6-Future Scope:

>Messaging and Notifications:

>Interfaces for sending email and push notifications to users, such as booking confirmations, reminders, and updates.

>Payment Processing Hardware:

>Interfaces with hardware components like card readers and secure payment processing devices for handling financial transactions.

>Location Services:

>Interfaces with hardware components, such as GPS modules, to determine the user's location for location-based services.

>Security Hardware:

Interfaces with hardware-based security systems, such as firewalls, intrusion detection systems, and SSL/TLS certificates for data encryption.

7-Conclusion:

Enhanced User Experience:
>Hotel booking systems provide users with a convenient and intuitive platform for searching, comparing, and booking hotel rooms, making the process smooth and enjoyable.

Efficient Reservation Management:
>These systems offer hotel management tools for overseeing reservations, managing room inventory, and optimizing occupancy rates.

Streamlined Payment Processing:
> Integration with secure payment gateways ensures safe and efficient financial transactions during the booking process.

User Profiles:
>Users can create and manage profiles.

Review and Rating Systems:
>Guest feedback and ratings contribute to the quality assurance and reputation management of hotels.

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Security and Compliance:
> Adherence to data protection and payment regulations is critical for safeguarding user data and financial information.

Scalability and Performance:
> The system should be designed to handle fluctuations in traffic during peak seasons while maintaining high performance.

Maintenance and Support:
> Ongoing maintenance and customer support are crucial for keeping the system up to date and addressing user issues.

8. References

FUNDAMENTALS OF SOFTWARE ENGINEERING, Fifth Edition Rajib Mall

Fundamentals of Database System, 6th Edition, Ramez Elmasri, Shamkant B. Navathe

Use Case Diagram https://www.javatpoint.com/uml-use-case-diagram

Class Diagram https://www.tutorialspoint.com/uml/uml_class_diagram.htm

E-R Diagram https://www.geeksforgeeks.org/introduction-of-er-model/

Data Flow Diagram https://www.geeksforgeeks.org/what-is-dfddata-flow-diagram/

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