TRIBHUVAN UNIVERSITY

FACULTY OF HUMANITIES AND SOCIAL SCIENCE

A Project Proposal

On

"DreamStay"

Submitted to

Department of Computer Application

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Under the Supervision of

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1 Introduction

DreamStay is a online hotel room/property booking system. your ultimate destination for seamless hotel room bookings and property rentals. Whether you're planning a quick getaway, a business trip, or a long-term stay, DreamStay is here to make your experience effortless and memorable.

For Travelers: Discover a world of options at your fingertips with DreamStay. Our platform features a diverse selection of accommodations ranging from charming bed-and-breakfasts to luxurious hotels and everything in between. Each property is carefully curated to ensure quality, comfort, and a unique experience tailored to your preferences.

Navigate our user-friendly interface to browse through detailed listings, high-resolution photos, and informative descriptions. Easily compare amenities, read reviews from fellow travelers, and make secure bookings with just a few clicks. Whether you're looking for a cozy retreat, a family-friendly apartment, or a stylish urban loft, DreamStay provides the tools to find your perfect stay.

For Property Owners: Are you a property owner looking to maximize your rental income? List your property on DreamStay and reach a global audience of travelers seeking accommodations like yours. Our platform offers robust management tools to streamline the rental process, from listing creation and pricing strategies to calendar management and guest communications.

2 Problem statement

1. **Fragmented Booking Process:** Many travelers encounter difficulty in finding comprehensive information and trustworthy reviews when searching for accommodations across various platforms, leading to uncertainty and potential dissatisfaction.

2. **Lack of Quality Assurance:** There is a lack of standardized quality assurance across rental listings, often resulting in discrepancies between advertised amenities and actual conditions, leading to customer dissatisfaction and trust issues.
3. **Complexity for Property Owners:** Property owners face challenges in effectively managing their rental properties, including pricing strategies, booking management, and maintaining high occupancy rates due to the fragmented nature of current rental management tools.
4. **Customer Support and Transparency:** Existing platforms may lack adequate customer support and transparency in terms of booking procedures, cancellation policies, and dispute resolutions, which can lead to frustration and distrust among users

3 Objectives

The main objective of an DreamStay are:-

1. To provide travelers with a user-friendly and centralized platform that offers comprehensive information, reliable reviews, and seamless booking experiences for a wide range of accommodations.

2. To empower property owners with efficient management tools that optimize occupancy rates, streamline booking processes, and enhance visibility to a global audience of potential guests.

4 Methodology

4.1 Requirement Identification

Conduct interviews, surveys, and workshops with stakeholders to gather detailed requirements. Focus on functionalities needed by travelers (search, booking, account management) and property owners (listing management, booking management, analytics).

4.1.1 Study of existing system

Traditional methods of booking hotel rooms and renting properties often require physical presence at booking offices or property locations. Customers typically need to visit multiple venues to find suitable accommodations, which can be inefficient and time-consuming. Moreover, during the COVID-19 pandemic, physical visits pose health risks due to potential exposure in public spaces.

In contrast, modern digital platforms such as Airbnb, Booking.com, and other online travel agencies (OTAs) have revolutionized this process. They enable customers to browse, select, and book hotel rooms and rental properties remotely from the comfort and safety of their homes. This shift not only enhances convenience but also addresses health concerns during times of global health crises like the COVID-19 pandemic.

4.1.2 Literature Review

In today's digital age, the e-commerce sector plays a crucial role globally, transforming how consumers interact with businesses, particularly in sectors such as hotel bookings and property rentals. The proliferation of the internet has fueled the growth of e-commerce, attracting every generation with its convenience, extensive choices, and streamlined purchasing processes.

Traditionally, booking hotel rooms or renting properties required physical visits to booking offices or rental agencies. This involved travel, interacting with agents, and sometimes negotiating prices in person. However, e-commerce has revolutionized these practices by

enabling users to browse, select, book, and pay for accommodations from anywhere, eliminating the need for physical presence.

Founded in 2008, Airbnb has revolutionized the way people travel by offering unique accommodations and experiences in over 220 countries and regions worldwide. Its platform allows hosts to list their homes, apartments, or unique properties for short-term rentals, catering to a diverse range of travelers seeking authentic and personalized stays. Airbnb emphasizes community and local experiences, enabling travelers to connect with hosts and immerse themselves in different cultures.[2]

Content-based filtering, as explored by Lops, De Gemmis, and Semeraro (2015), is particularly relevant in the realm of hotel room and property booking systems. In these systems, hotel rooms and rental properties are categorized by a range of attributes such as location, price, amenities (like Wi-Fi availability, parking, or pool access), room size, bed types, and customer ratings.The approach involves constructing a user profile based on the attributes of rooms or properties that the user has previously booked or expressed interest in. This profile captures preferred locations, budget preferences, desired amenities, and accommodation types (e.g., hotels, apartments, houses).[3]

Trust and Loyalty: E-commerce platforms prioritize building trust and maintaining loyalty by offering transparent transactions, reliable customer service, and user-friendly interfaces.

- **Security:** Ensuring robust online security measures to protect sensitive user data such as payment information, addresses, and personal details is critical.
- **Customer Guarantees:** Providing assurances like cash-back guarantees and flexible cancellation policies enhances consumer confidence and satisfaction.
- **Promotional Strategies:** Offering discounts, special offers, and loyalty rewards attracts and retains customers, contributing to business growth and customer loyalty.

E-commerce offers several advantages over traditional booking and rental methods:

- **Convenience:** Users can browse and book accommodations conveniently from their homes or any location with internet access.
- **Time Efficiency:** Online booking systems save time by eliminating the need for physical travel and waiting times associated with traditional booking processes.
- **Choice and Comparison:** Consumers can compare different accommodations based on price, location, amenities, and user reviews, enabling informed decision-making.
- **Promotional Offers:** Special promotions, discounts, and exclusive deals incentivize bookings and enhance customer satisfaction.

4.1.3 Requirements Analysis

Requirements for the hotel booking and property rental system will be gathered through various methods such as interviews, online research, website visits, and user feedback.

4.1.3.1 Functional Requirement

- **User Registration and Login:** Users (both travelers and property owners) should be able to create accounts and securely log in to access personalized features.

- **Booking Functionality:** The system should allow travelers to search for accommodations, view property details, check availability, and book rooms or properties online.

- **Payment Integration:** Integration with an online payment gateway to facilitate secure transactions for booking accommodations.

4.1.3.2 Non-functional Requirement

- **Availability:** The system should be accessible to users from any geographical location, ensuring global reach and accessibility.

- **Reliability:** Implement robust encryption and data protection measures to ensure the security and integrity of user information and transactions.

- **User Interface:** Provide an intuitive and visually appealing interface that enhances user experience, making it easy for users to navigate, search, and book accommodations.

4.2 Feasibility Study

A feasibility study evaluates how well the system will perform under various constraints including operational, economic, and technical feasibility.

4.2.1 Technical Feasibility

The system can be built using web development technologies such as HTML, CSS, JAVASCRIPT and MERN stack . Thus, it is technically feasible.

4.2.2 Operational Feasibility

The proposed system will be accessible via standard web browsers on desktop computers and mobile devices, ensuring operational feasibility for a diverse user base.

4.2.3 Economic Feasibility

Development costs will be minimized by utilizing freely available development tools and royalty-free resources such as images, making the project economically feasible.

4.3 High Level Design of System

The high-level design illustrates how the hotel booking and property rental system will function and how users will interact with it.

4.3.1 Methodology of the proposed system

The proposed system will adopt the Agile software development lifecycle model. Agile methodology emphasizes iterative development and collaboration between cross-functional teams, enabling flexibility and responsiveness to changing requirements throughout the project lifecycle.

4.3.1.1 Agile Approach:

1. **Requirements Gathering and Analysis:**
    - Requirements will be collected from stakeholders including travelers, property owners, and administrators through interviews, surveys, and feedback sessions.

Agile's iterative nature allows for continuous refinement of requirements based on ongoing feedback.

2. **Iterative Design and Development:**
    - The design phase will focus on creating user stories and wireframes that outline the functionalities and user interface of the system. Development will proceed in short, time-boxed iterations called sprints, typically lasting 1-2 weeks.
3. **Continuous Integration and Testing:**
    - During each sprint, developers will implement features according to priority and business value. Continuous integration practices ensure that new code integrates smoothly with existing functionality. Automated and manual testing will be conducted within each sprint to identify and fix defects early.
4. **User Feedback and Iteration:**
    - At the end of each sprint, stakeholders, including end-users, will review the implemented features and provide feedback. This feedback loop allows for adjustments and refinements to be made promptly, ensuring alignment with evolving user needs.
5. **Deployment and Monitoring:**
    - Upon successful completion of testing and stakeholder approval, features are deployed to the production environment. Agile promotes frequent deployments of incremental changes, enabling rapid delivery of value to users. Post-deployment monitoring ensures system stability and performance.

4.3.2 System Flowchart

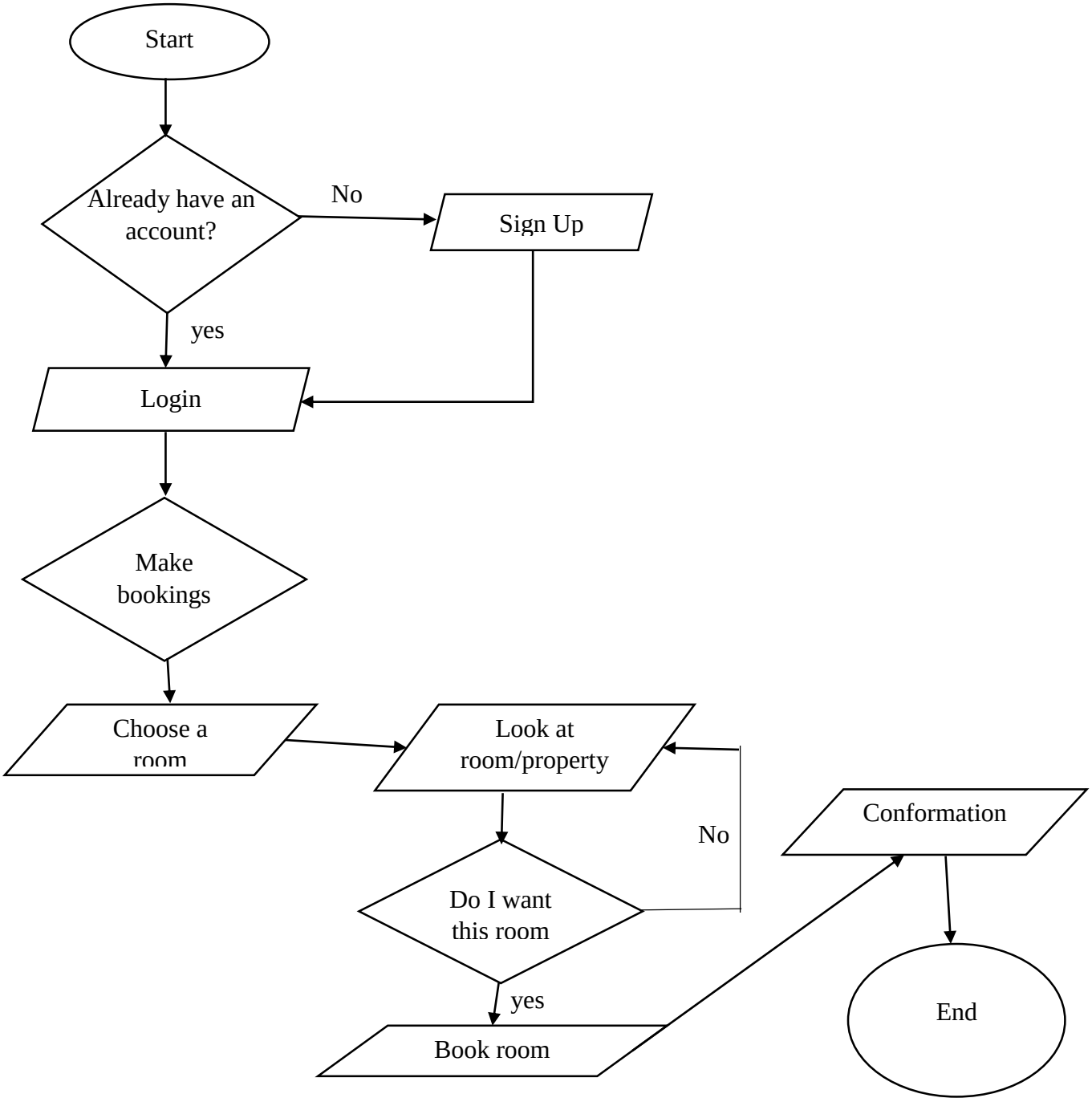

Figure 1: Flowchart for users

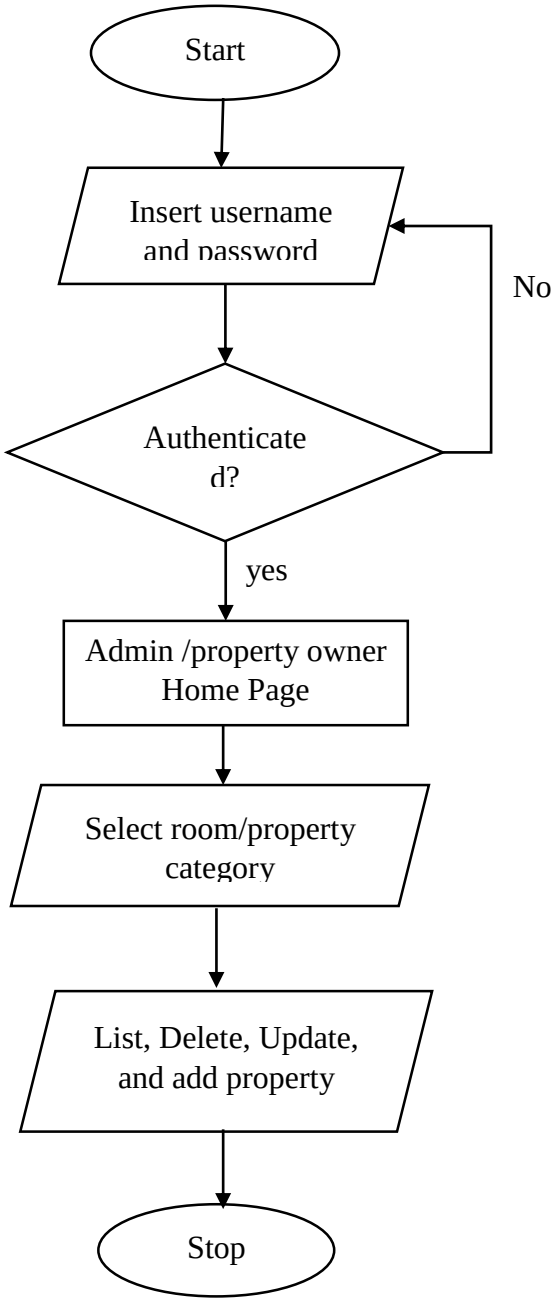

Figure 2: Flowchart for admin

4.3.3 Use Case Diagram

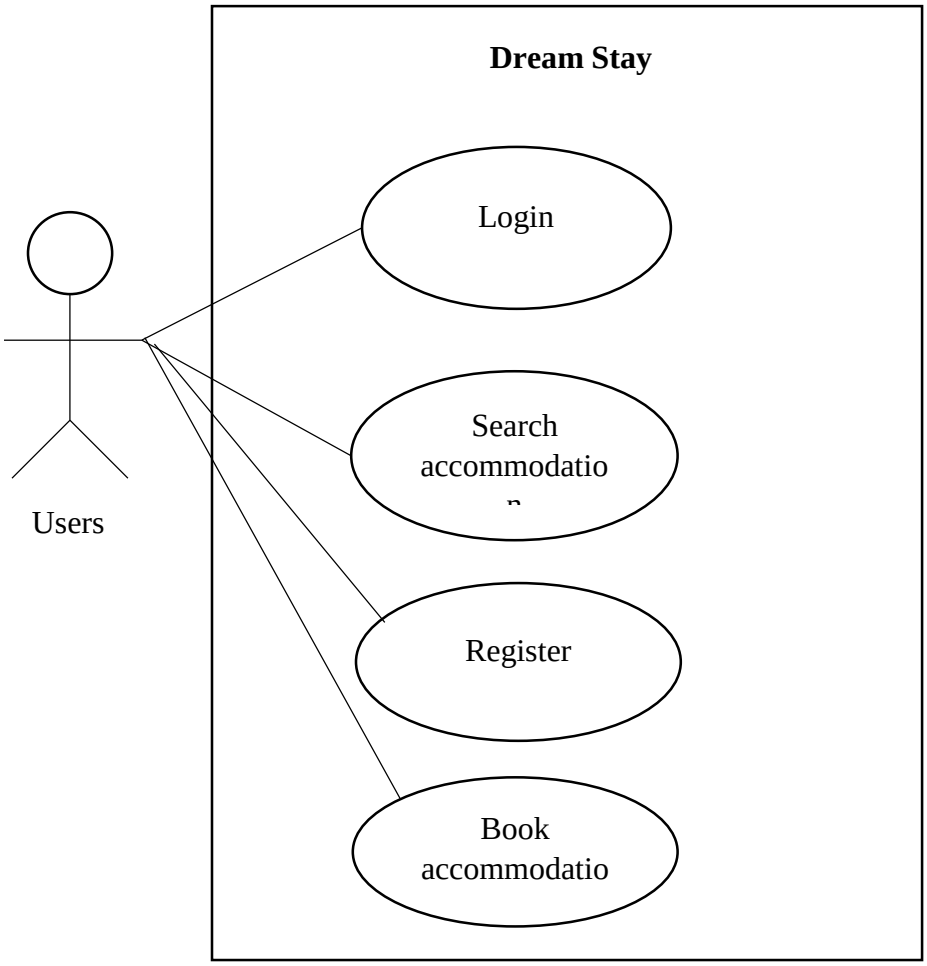

Figure 3: Use case diagram for users

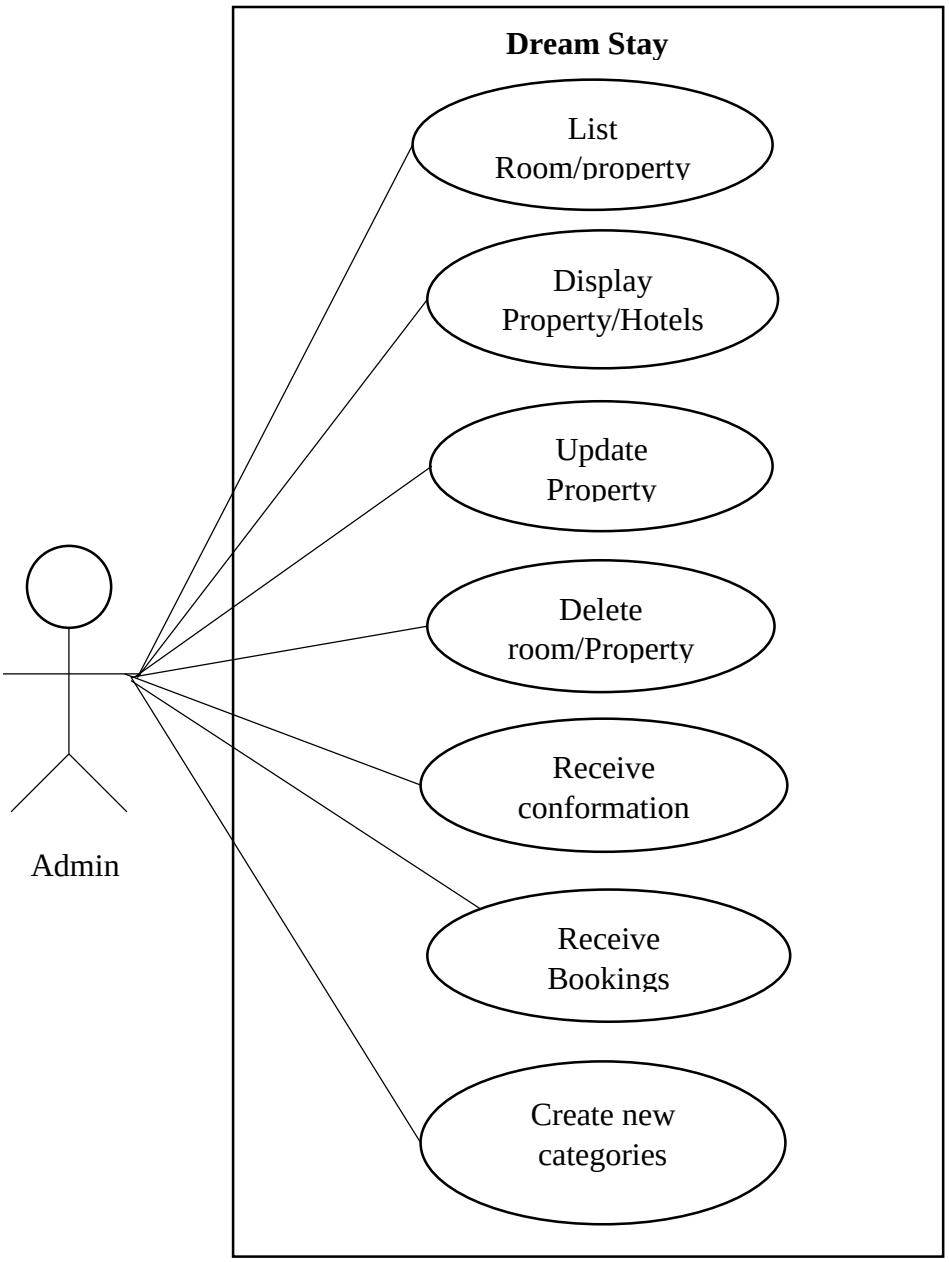

Figure 4: Use case diagram for admin

4.3.4 Description of algorithms

In booking and property rental system, a recommendation system using content-based filtering can enhance user experience by suggesting accommodations based on similarities in attributes such as location, amenities, price, and user preferences.

Content-Based Filtering Algorithm:

1. **Step 1: Start**
    - Begin the recommendation process.
2. **Step 2: Capture User Preferences**
    - As users interact with the system (e.g., search for properties, book accommodations), record their preferences such as location preferences, amenities preferences, price range, and ratings they provide for properties.
3. **Step 3: Profile Creation**
    - Create a user profile based on the recorded preferences. This profile may include attributes like preferred locations (e.g., beachside, city center), desired amenities (e.g., pool, Wi-Fi), budget constraints, and historical booking patterns.
4. **Step 4: Property Attribute Analysis**
    - Analyze the attributes of properties listed in the system, including location, amenities, price, ratings, and customer reviews.
5. **Step 5: Similarity Calculation**
    - Calculate the similarity between properties in the system and the user profile based on shared attributes. Common methods include cosine similarity for numerical features and Jaccard similarity for categorical features.
6. **Step 6: Recommendation Generation**
    - Recommend properties that are most similar to the user profile based on the calculated similarities. Prioritize properties that align closely with the user's preferences, ensuring personalized recommendations.
7. **Step 7: Stop**
    - End the recommendation process.

5 Expected outcome

The system is expected to provide an easy to use interface for users to buy items and search through the best deals for a best price.

6 References

[1] "Airbnb." [Online]. Available: https://www.airbnb.com/. [Accessed: Jul. 11, 2024].

[2] "Booking.com." [Online]. Available: https://www.booking.com/. [Accessed: Jul. 11, 2024].

[3] **J. Lops, M. De Gemmis, and G. Semeraro**, "Content-based recommender systems: State of the art and trends," in Recommender Systems Handbook, Springer, 2015, pp. 73-105.