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Sphere Accommodation & Services Management System

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ABSTRACT :

The increased migration of students, professionals, and people to different cities for education, employment, or any other reason has led to a need for affordable and convenient accommodation. The conventional way of looking out for hostels, PG, accommodation rental, and many such facilities is through the help of brokers, local recommendations, social media, and various online websites. This process might involve brokerage fees, scattered information, lack of property information, and comparison of available facilities. This project introduces Nexora, which is a web-based platform for accommodation and essential services. This website will be able to help users look out for suitable accommodation based on their needs and locations. This website will help property owners also to list out their properties for potential users.

It does not just limit itself to accommodation but also offers various services like mess, laundry, and vehicle facilities and thus helps a user meet all his needs from the same platform. Its location-based and proximity-based capabilities make it easier for the user to find accommodations that suit his needs in terms of convenience relative to his workplace or educational institution or desired location. The application has been built using Node.js and Express.js for its backend, MongoDB Atlas as its database management tool, Cloudinary as its media management tool, and JavaScript, Bootstrap, and CSS for frontend development. Nexora brings together accommodation and the required services in one platform and in doing so makes it easier to find accommodation and reduces reliance on middlemen by providing a one-stop solution to those searching for accommodation and other related services.

1. INTRODUCTION

Growing trends of migration of students, working professionals, and other people from one city to another for studies, jobs, business, and other reasons have led to increasing demands for cheap and easily accessible accommodation. In many cases, finding appropriate hostels, PGs, rented rooms, and shared accommodations is dependent on brokers, personal referrals, social media, and several digital platforms. Online housing websites have helped users in their search for accommodation by providing property details through online medium [1],

[2]. At the same time, scattered and unevenly distributed information related to housing may pose some challenges to users [3], [7]. Methods used in searching for accommodations face difficulties such as brokerage fees, lack of information about properties, inability to compare the different options available, as well as locating suitable accommodation near universities, colleges, or places of work. Challenges associated with online accommodation search, rental websites, as well as neighbourhood representation have been documented in previous research [2], [3], [5], [6]. Moreover, those individuals moving to a new city need to arrange food, laundry, and transport separately.

In order to overcome the aforementioned issues, Nexora is created as a web-based accommodation and essential services system. This makes it possible for students, professional workers, and others to find out about hostels, PGs, renting rooms, and other forms of accommodation that suit their needs and choice of location. Property owners can add their accommodation facilities in the system, and location-wise search and mapping make it easier to identify appropriate facilities close to their colleges, workplaces, or any other location they want [3], [6].

The application also includes other crucial features like mess, laundry, and vehicle facilities, making it possible for the user to make use of all the services via one single platform. It uses technologies like Node.js, Express.js, MongoDB Atlas, Cloudinary CDN, JavaScript, Bootstrap, and CSS. In this way, by using the combination of accommodation listing, owner listing, location services, map, and essential services, Nexora takes a centralized approach towards accommodation searching and requirements.

2. PROBLEM STATEMENT

Selecting appropriate housing in an unfamiliar city is not always easy and is usually a time-consuming task for students, employees, and others. The existing processes for seeking housing use brokers, local connections, social networks, and several online portals, which may result in scattered information, extra charges, and the inability to compare available housing options. Research has been done on online housing portals, which have highlighted the problems associated with housing search, rental process on housing portals, neighborhood representations, and disparity in renting information [2], [3], [6], [7].

Apart from the above problem, users can find it difficult to locate accommodation which is easily accessible to their colleges and/or places of

work and other desired destinations. Furthermore, accommodation and services are not searched from the same source at all. Once the user has found the right accommodation for himself, he has to separately arrange for services like mess, laundry, and conveyance.

Thus, the requirement is for an online platform which makes the process of searching for accommodation easy and convenient along with helping the property owner make their property available, location based search and mapping facility and bringing all the essential services at one place. The Nexora solution offers a platform where users can search for accommodation facilities based on their needs and location along with related essential services.

3. OBJECTIVES

- A centralized accommodation platform that is meant to help students, professionals and other people find appropriate accommodation solutions.
- To offer accommodation options like hostels, PGs, rented rooms, and shared accommodations that include property information.
- For property-owner listings to allow owners to post information about their available accommodation facilities.
- Implement location based and proximity searches to help users locate accommodations close to their colleges, workplaces, and preferred destinations.
- For integration of location exploration using maps in order to easily identify and compare different accommodation locations.
- In order to incorporate necessary services like mess, laundry, and vehicular services into one single unit.
- To decrease dependence on brokers as well as fragmented sources of accommodation and services by providing them all in one website.
- In order to create a user-friendly web interface that will make searching for accommodation easier.

4. LITERATURE REVIEW

There is an increasing role of digital platforms in the housing and accommodation sector, especially for online discovery and searches related to property [1], [2], [3]. The existing literature highlights the ways in which individuals make accommodation searches on digital platforms and the way in which housing information is presented in different neighbourhoods [3], [6]. The differences between the availability of rental housing information and the challenges faced by housing systems on digital platforms have been studied [4], [5], [7]. These studies show that online platforms can make housing information more accessible, while still taking into account factors such as availability, organization, and representation of housing information.

The other studies have investigated online accommodation services and their impact on housing markets, rentals, and cities [13], [15], [16], [17], [19]. The works concerned with student accommodation have also addressed accessibility, availability, and planning issues of student accommodations in various urban areas [21], [22], [24]. But, however, the existing literature mostly concentrates on studying online housing platforms, their impacts on housing market, or some particular types of accommodations. There should be one platform where accommodation and location-based search and other services are provided together.

The gap is tackled by Nexora through a provision of an online portal offering accommodations, owner information, proximity searches, map facilities, and other basic requirements such as mess, laundry, and car facilities. The portal expands on the concept of accommodation search online in a way that brings all these requirements into one single platform.

5. PROPOSED SYSTEM

The system which will be used in this research is named Nexora, and it refers to the web application that helps users look for accommodation and essential services. It is specifically targeted at students, professionals, and other people who need to find accommodation in an unfamiliar location [2], [3], [6]. It helps them search for hostels, PGs, rent rooms, etc.

The user will be able to find accommodation listings with details that are relevant and will also be able to use location and proximity search to find suitable accommodation near the university, office or any other preferred destination [3], [6]. Map integration makes it easier for the user to find information about the location of accommodation and the owner of the property can list his/her property.

The system also provides services such as mess, laundry, and car services which eliminates the necessity of finding these services individually. In researches conducted in regards to digital housing systems, the significance of housing information online, platform- based searching, and organizing of accommodation information has been brought into attention [2], [3], [5], [7]. The Nexora system meets these requirements with its integration of accommodation search and the related daily services together in one web-based system.

The application is implemented using the frontend technologies of JavaScript, Bootstrap, and CSS, backend technologies of Node.js and Express.js, database management technologies of MongoDB Atlas, and media handling of Cloudinary CDN.

This proposed system has the following main components:

- **User Module:** Helps users find accommodation and related facilities.
- **Owner Listing Module:** Helps property owners share information on available accommodations.
- **Room Search Module:** Shows the list of rooms available for stay, hostels, PGs, and rented out options.
- **Map Module:** Allows location-based searches with map integration.
- **Essential Services Module:** Offers access to mess services, laundry, and vehicular services.
- **Database and Media Module:** Manages system data using MongoDB Atlas and media management using Cloudinary CDN.

Therefore, Nexora will incorporate accommodation listings, owner listings, location-based searching, maps, and essential services into one. This strategy is supposed to help make the process of accommodation discovery more structured and minimize the need for reliance on various sources when moving to a new city.

6. SYSTEM ARCHITECTURE & METHODOLOGY

The framework is constructed from a modular architecture of a web-based platform with the objective of facilitating structured accommodation search, geolocation search, and access to various services [1], [3], [6].

Modular approach is applied to architecture:

• **Front end:** The front end is made up of JavaScript, Bootstrap, and CSS in order to make a friendly and responsive interface.

• **Back-end & Data-base:** The back-end is implemented using Node.js and Express.js. MongoDB Atlas is employed to store the data concerning users, owners, accommodations, and services.

• **Location and Map Integration:** The system offers location based searching to assist the user in locating accommodation around places they would like to visit. Location and map integration allows for easy exploration of accommodation locations [3], [6].

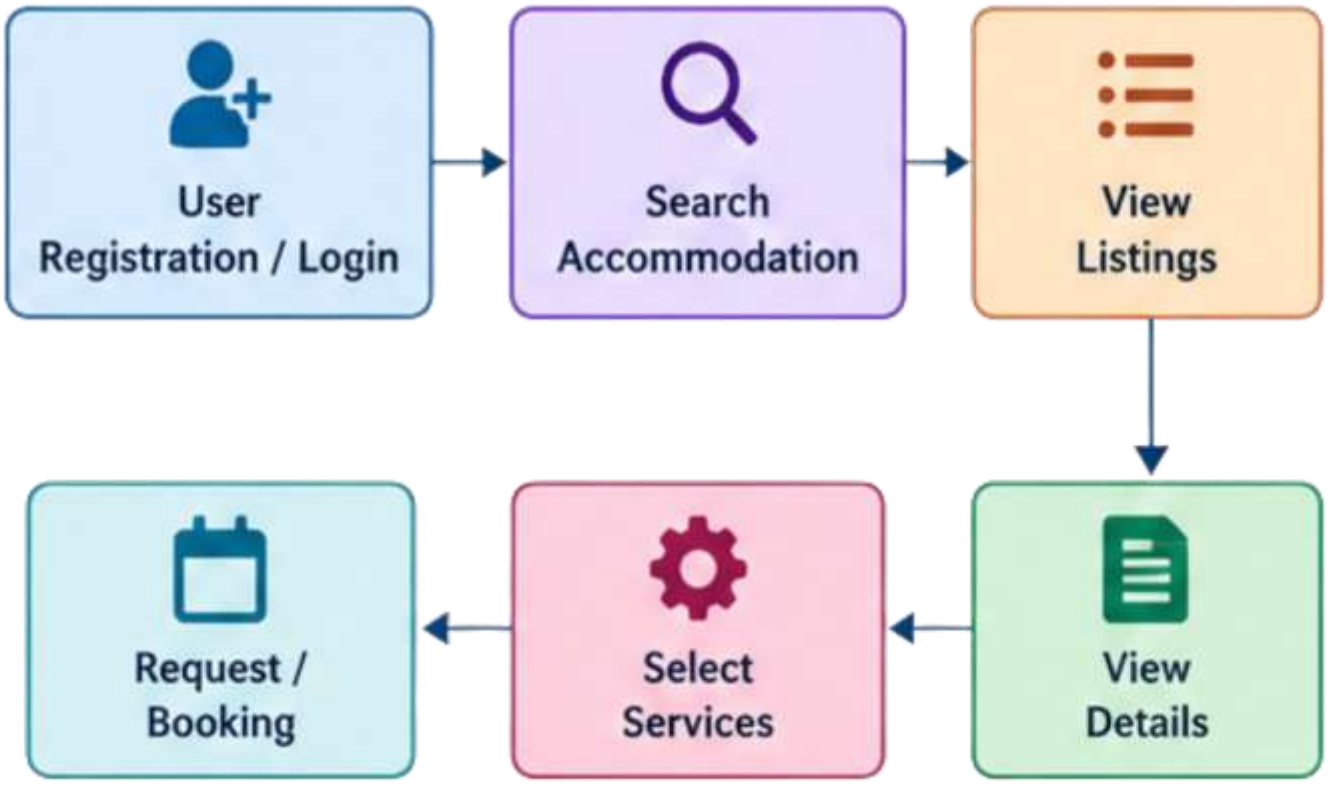
• **Media Management:** The Cloudinary CDN is employed in storing and serving the accommodation images as well as other media assets for the proper presentation of information.

• **Essential Services:** The platform combines services such as mess, laundry, and vehicular services to allow users to acquire accommodation and other services through one single platform.

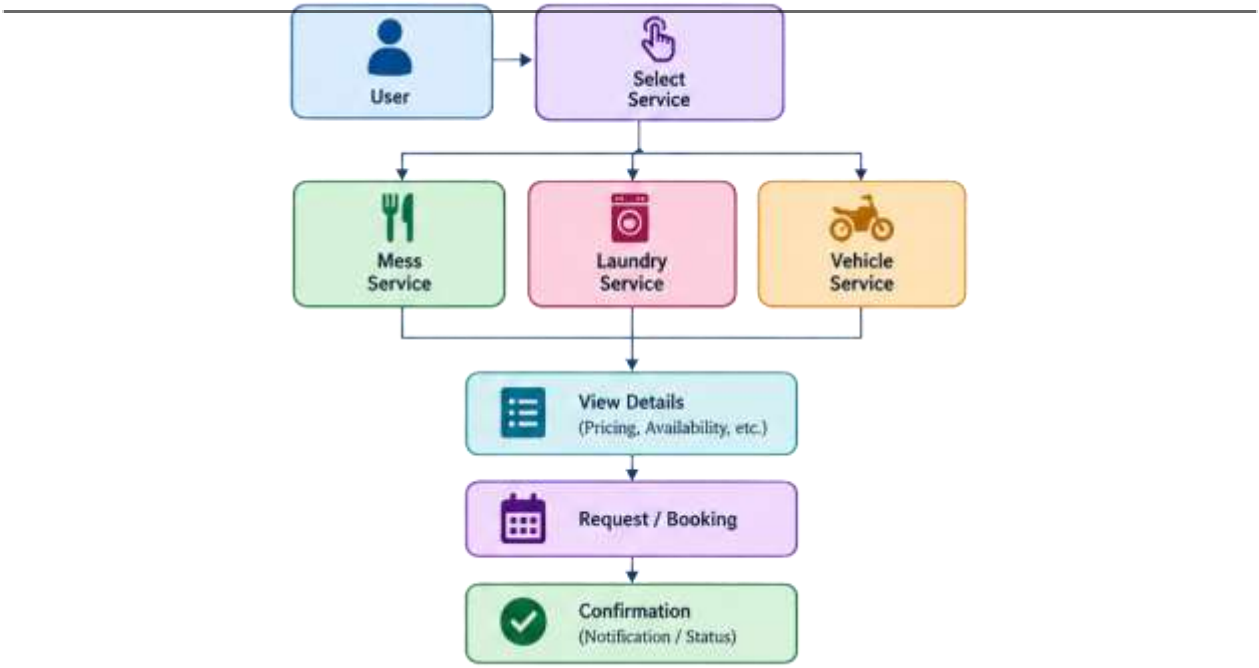
The system uses a modular approach to the development process, where the different system modules are developed according to the set requirements. The process of developing the system entails requirement analysis, system design, development of the front-end, back-end development, database integration, services integration, testing, and deployment. Testing is done regularly throughout the development process to make sure that accommodation search, owner listings, geographical services, database operations, and services operate according to the set requirements [2], [5], [8].

7 . DIAGRAMS

7.1 System Architechture Diagram



7.4 Essential Service Flow



8. IMPLEMENTATION AND RESULTS

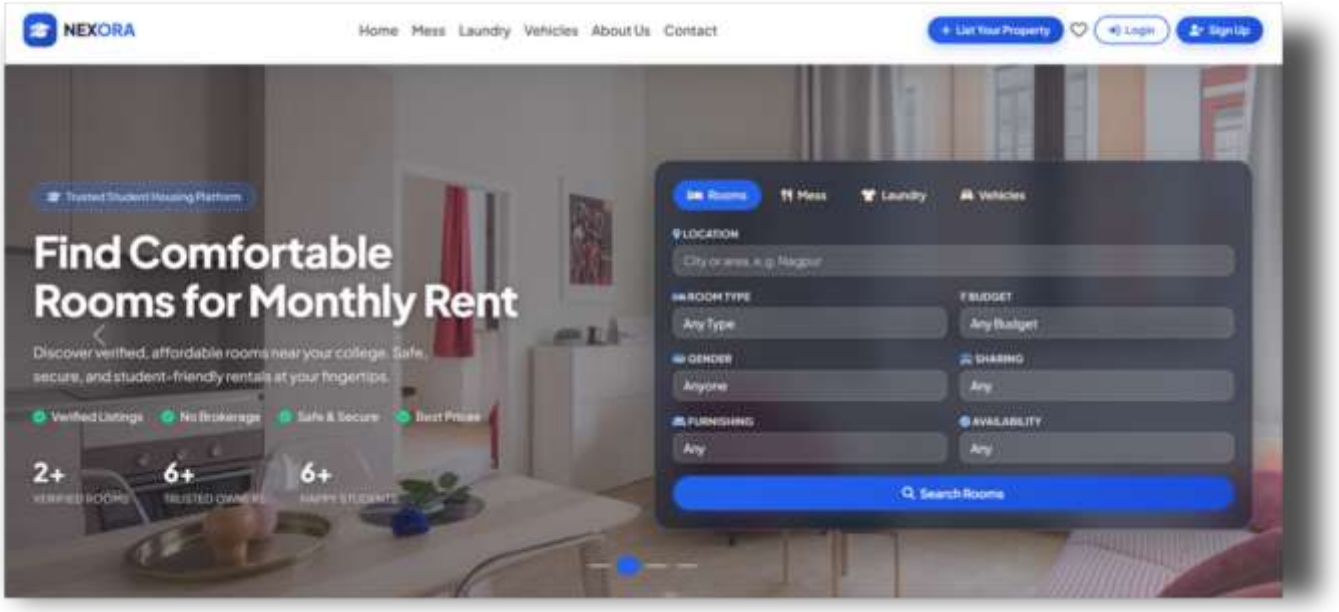
The Nexora platform was developed using the proposed technology stack for web development, namely JavaScript, Bootstrap, CSS, Node.js, Express.js, MongoDB Atlas, and Cloudinary CDN. The major components of the platform have been integrated together to offer the functionality for accommodation search, owner listing, geo-search, map integration, and provision of important services like mess, laundry, and vehicles [1], [3], [6]. The functional testing was performed to test the major functionalities of the platform.

Key outcomes:

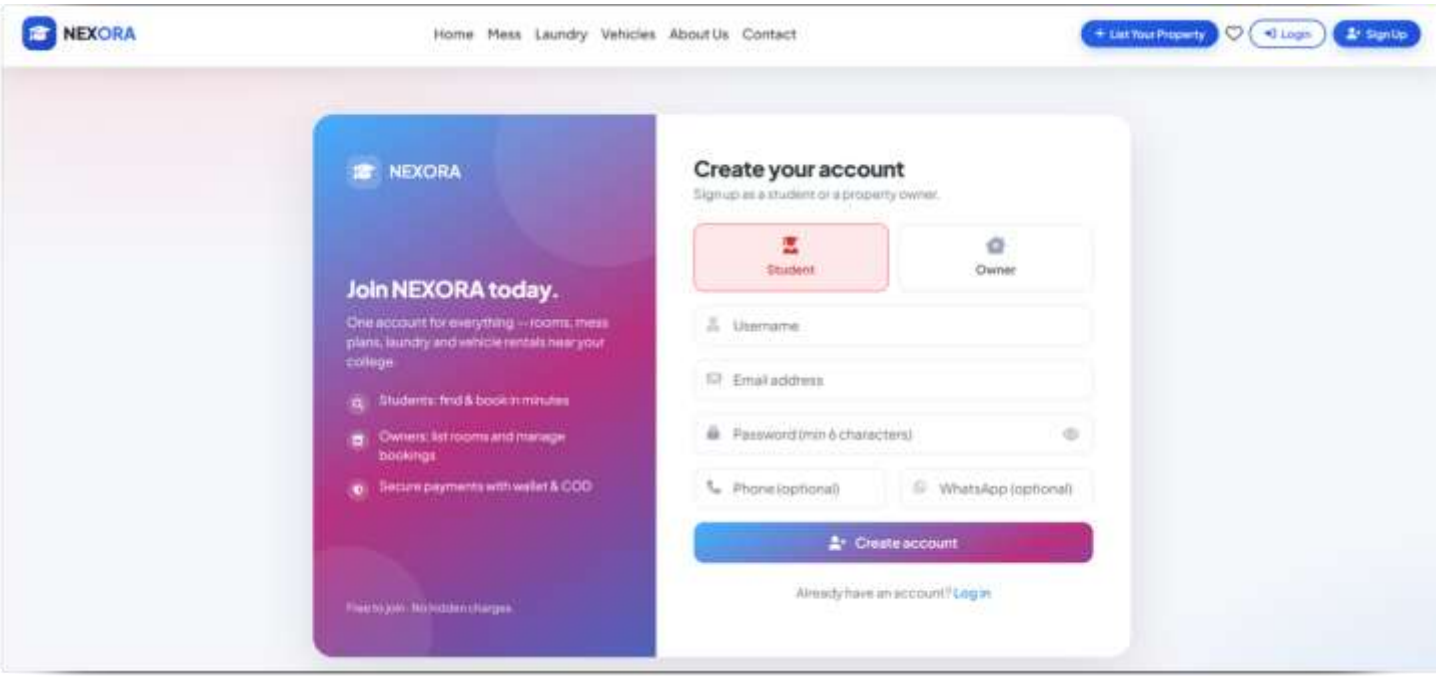
• **Discovery of Accommodation:** The website provides its user with an opportunity to access listings related to accommodation like rooms, hostels, PG's and many more, depending upon the requirement of the user [2], [3].
• **Owner Listings:** The property owner provides information regarding the availability of accommodations, forming a platform for linking accommodation listings to the user [1], [8].
• **Location-Based Search:** The proximity-based search feature assists users in locating places to stay based on their desired location and other locations like colleges and offices [3], [6].
• **Map Integration:** Map-based location integration makes it possible for the user to explore accommodation locations and know how close they are to desired destinations.
• **Essential Services:** Facilities like messes, laundry and vehicles are incorporated in the platform, eliminating the need for looking for these facilities separately.
• **System Performance:** The functional testing of the system modules provided an evaluation of the functionality of the main platform modules like accommodation listings, owner listings, search, location-based functionalities, database functionalities, and service modules.

In conclusion, the developed Nexora platform effectively combines the discovery of accommodation along with other necessary services in a single web-based system. This shows that the development of such a platform with property listing, location search, map integration, and other services is quite possible.

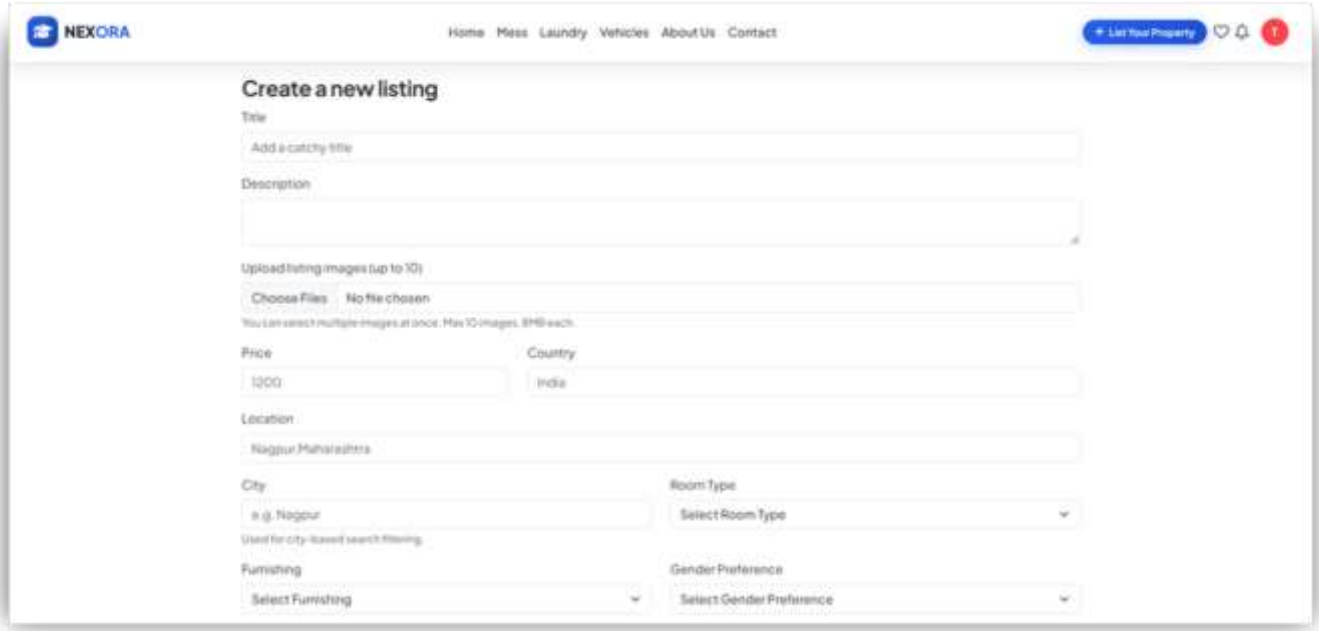
8.1 Home Page of Nexora



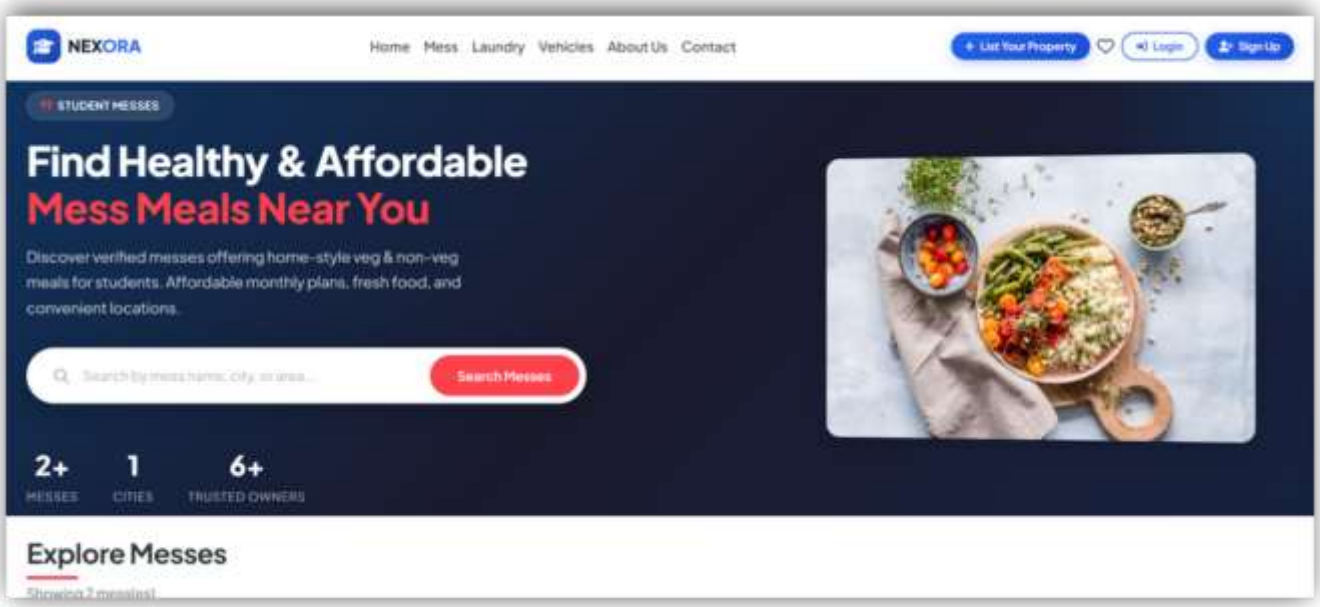
8.2 Registration and Login Page



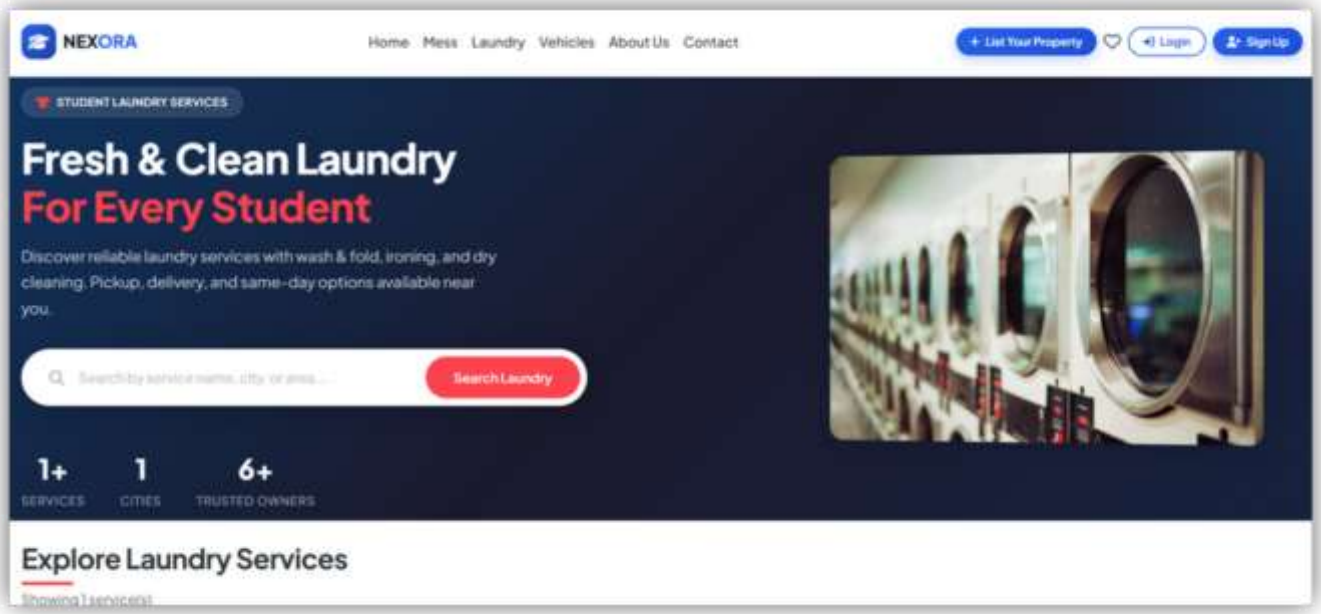
8.3 Accommodation Listing Page



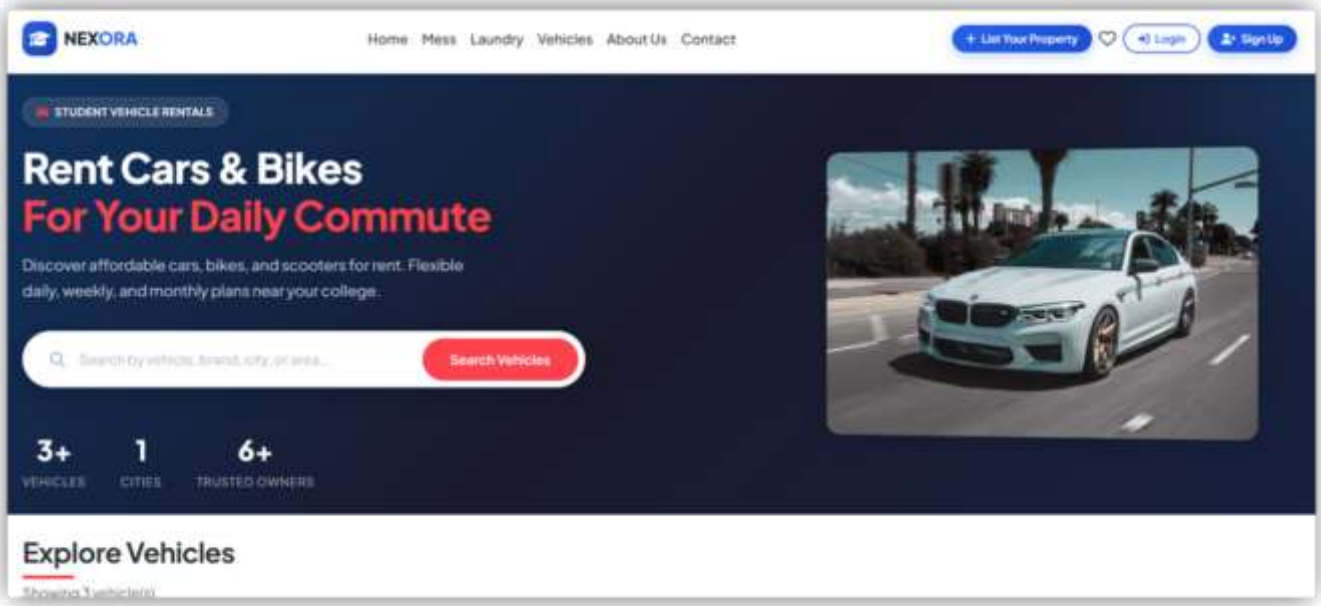
8.4 Mess Service Page



8.5 Laundry Service Page



8.6 Vehicle Service Page



9. CONCLUSION AND FUTURE WORK

The platform of Nexora that is created in the course of this research serves as a unified web-based solution for accommodation discovery as well as access to key services [1], [3], [6]. By using accommodation listings, listings of owners, location-based search, integration of maps and services like mess, laundry, and vehicle, the platform solves many problems which arise during searching of accommodation in a new city [2], [5], [7].Node.js, Express.js, MongoDB Atlas, Cloudinary CDN, JavaScript, Bootstrap, and CSS are the technologies used to provide the necessary infrastructure for building and maintaining the platform [3], [6], [8]. The platform helps students, working professionals, and other people by providing all the accommodation details and services in one place.

Future Work:

• **Accommodation Comparison:** It is possible to add a comparative element that would enable users to compare several properties on such criteria as rent, distance, facilities provided, type of accommodation, and others.
• **Neighbourhood Information:** The system can be enhanced further in order to provide more information about the facilities available near the user such as hospitals, markets, educational institutes, workplaces, public transport, etc.
• **Digital Relocation Planner:** Nexora can be extended with a relocation planner that organizes the user's accommodation, food, laundry, transportation, estimated expenses, and important nearby facilities into a single relocation plan.

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