Nestohh: Mobile App for Paying Guest Management

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Abstract.

Mobile apps are the recent virtual marketplace and are used for various day-to-day purposes; seeing the paradigm shift, we have developed an app “Nestohh” for listing and managing paying guest accommodation. Finding good paying guest accommodation physically is complicated and time-consuming and non-transparent. Our cross-platform mobile app (i) lists nearby rental paying guest vacancies with amenities, (ii) provides maintenance support for users once they start living in a PG, and (iii) offers a payment gateway to pay monthly rents. To make it reliable and cross-platform (available on android and iOS), the native app development framework Flutter is used integrated with Google Firebase services and Razorpay. The target users are people who leave their hometowns for studies, jobs, etc and shift to new cities. When a user checks in the app, they must sign-up and log in and a list of PGs shows up. They can check amenities, make a wish list, and further book and manage. The easy-to-use interface and interactive design make PG hunting an easy experience.

Keywords— App, Cross-platform, Flutter, Paying guest (PG), Payment.

1. INTRODUCTION

When someone new comes to a city, she needs shelter over her head that is near to her workplace, safe, filled with amenities, well managed, and within budget. Finding a good-paying guest facility can be overwhelmingly hectic and time-consuming. Physically comparing prices, and amenities and making payments isn’t always a pleasant experience. With the expansion of educational institutes and office spaces in cities, paying guest facilities are booming exponentially. A mobile app to manage customer demands and provide them with needed services while searching and further while staying in a PG will not only be an easy, effective, and time-efficient way but it’ll also be substantial in the long run. There are very less such platforms in the market currently whereas customers and their hassle to find a suitable rental paying guest accommodation is growing every day.

Fig. Logo of the app Nestohh

Our project is based on developing a cross-platform mobile application called ‘Nestohh’ using Flutter/Google Firebase/RazorPay API technologies that will simplify PG-hunt and manage payments and services on a single app platform. The app will be available for android and iOS. For starters, we have listed PGs with prices and amenities in different areas and ensured that we carefully adapt the listing criteria because we all understand how important it is to feel safe and homely in a PG. Once a user checks in, she needs to sign up and log in. After login in, the user is shown a list of paying guest options with amenities and prices. Once a customer selects and finalizes a particular PG, Nestohh app will take care of their monthly payments, routine room services, and complaints like menu changes and requests. It will help to eliminate the various problems a new person faces in a city while finding a suitable PG because of lack of information and will help new PG owners to market their properties. We have supported the app with a good database, efficient algorithms, and information that will be updated in real-time using Google firebase ensuring there is no problem for either party and everything is managed effortlessly with just a few clicks on their mobile phones.

2. LITERATURE SURVEY

We found that currently there are few mobile applications and websites present for paying guest/rental listing. They are primarily for rental house management and use technologies like Andriod studio, full-stack, Django, etc. The problems in the present system are (i.) a customer can get only a little information like address and contact number through the existing few apps. (ii.) Due to a lack of proper information about amenities, the customer might be misguided. (iii.) Slow app response and (iv) No post-booking management and support like payment and raising requests for housekeeping.

There are hotel room booking and flat booking services available like OYO & NESTAWAY but there are not many reliable PG booking and management services.

During our research, we referred to papers, articles, and websites related to housing management and digital payment safety. The framework presented in [1], [2], and [3] gives us an understanding of how rental management websites work. Further [4] and [5] take the idea of rental management systems and implement them for paying guest management. [8] and [9] give a checklist of things users look for when they finalize a PG.

The UI design was inspired by a few existing booking websites ([11], [12]). [15] gives an overview of online payment safety.

3. PROPOSED SYSTEM

The proposed system, Nestohh is a cross-platform mobile application that lists and manages PGs and maintains a repository of all related information of users. The app allows one to easily access the relevant information (location, food, price, facility) and make necessary judgments regarding the PG's selection, and even securely pay after selecting the best PG of their choice.

For this project, we went through works and papers published on rental house management systems and found out that these kinds of platforms aren't explored well in Bangalore city. We surveyed students currently staying in pgs to find out common opinions and it was found that 73% of them agreed that finding a new PG being completely new in the city was confusing and tiring and further involved unnecessary wastage of money, sometimes brokers are also involved.

Most of the sample population (~200) agreed that finding a good PG, with a feedback system in place, proper management, and payment processes needed to be made better.

Keeping the response and problems faced by people staying at PGs in mind, we made requirement studies, built system designs, chose technology stacks, and finally proceeded to development and implementation. The water flow design model was adopted for building the app. System development shows us the path in which the proposed system is developed from the beginning to the testing and deployment.

A few of our questionnaire data is as below:

Q1. Did you have to shift to Bangalore from other cities/towns for college/Work?

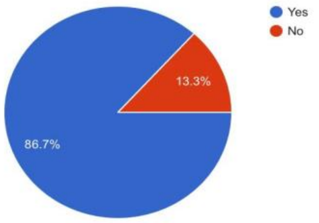


Fig. Pie chart 1

Q2. Finding a PG being completely new in the area was a confusing and tiring process:

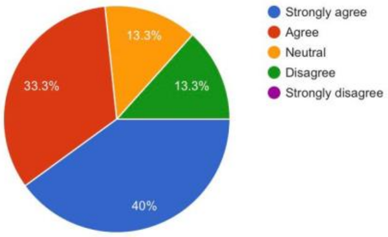


Fig. Pie chart 2

Q3. There’s no feedback system to raise complaints:

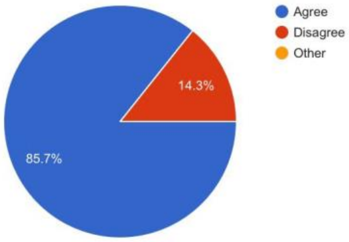


Fig. Pie chart 3

Q4. You had troubles while paying rent:

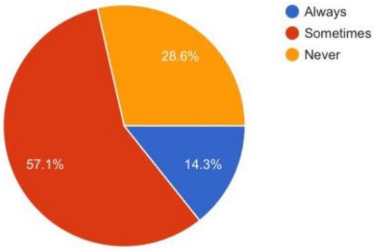


Fig. Pie chart 4

4. MODULES

(i). User Module

The users can be customers and PG owners.

For customers:

1. Registration/login
2. Check PG, amenities, prices
3. Book Room
4. Raise requests
5. Payment

For PG owners:

1. Registration/login
2. Add/Update amenities
3. Attend requests

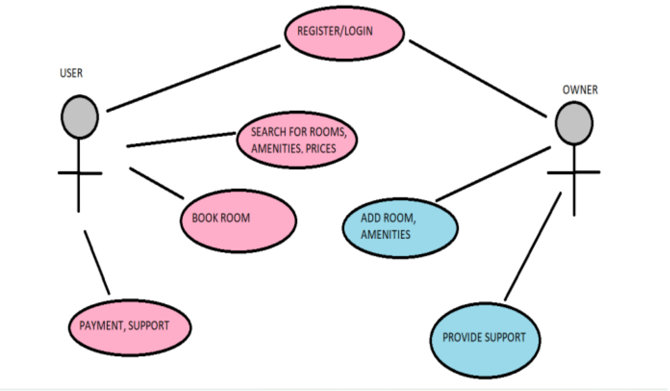

REGISTER/LOGIN
USER
OWNER
SEARCH FOR ROOMS, AMENITIES, PRICES
BOOK ROOM
ADD ROOM, AMENITIES
PAYMENT, SUPPORT
PROVIDE SUPPORT

Fig. User Module

(ii)Admin Module

The admin verifies and confirms login credentials, manages wish list, and notifies owners when a request is generated by users.

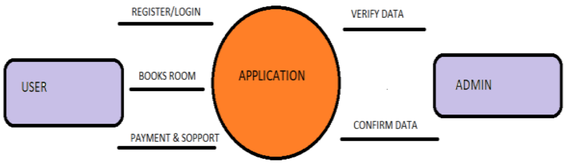

REGISTER/LOGIN
VERIFY DATA
USER
BOOKS ROOM
APPLICATION
ADMIN
PAYMENT & SOPPORT
CONFIRM DATA

Fig. Admin Module

(iii) App Overview

The users and the PG owners can register and login into the application. The users have access to the list of PGs, amenities, cost, feedback, service requests, and payment management. The PG owners can add and modify amenities and respond to user requests. The admin verifies the registration credentials and provides a secure payment gateway.

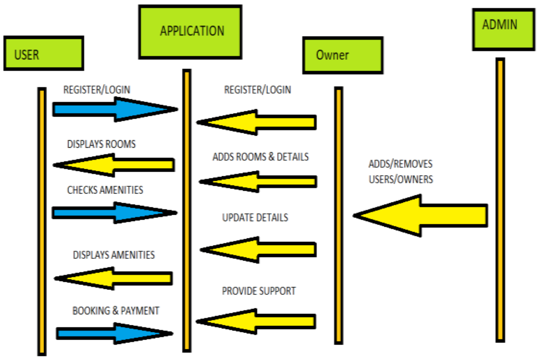

USER
APPLICATION
Owner
ADMIN
REGISTER/LOGIN
DISPLAYS ROOMS
CHECKS AMENITIES
DISPLAYS AMENITIES
BOOKING & PAYMENT
REGISTER/LOGIN
ADDS ROOMS & DETAILS
UPDATE DETAILS
PROVIDE SUPPORT
ADDS/REMOVES USERS/OWNERS

Fig. Different modules identified

5. OBJECTIVES

1. Making a cross-platform mobile application based on technologies like Flutter, Google firebase, and Razorpay
2. On the app, set up a sign-in page, list PGs, list their amenities, prices, etc. Set up admin management for PG owners and set up a payment gateway.

6. TECHNOLOGY AND MODEL USED

To achieve the mentioned objectives, the technology stacks used are as below:

1. Flutter

Firstly while choosing the technology, we wanted to choose such a technology in which we can build both IOS and Android apps. Since we didn’t want to make it separately, we found only two technologies Flutter and reactive native although both technologies are used to build the hybrid app when it came to choosing the technology, we figured out that Flutter is easier and it was meeting our requirements, It is object-oriented and built on a programming language called Dart which is similar to Java and its open-source and has large community support.

2. Google Firebase

Coming to the data database for storage we are using the Google Firebase is flutter is built by Google and firebase is handled by google so both are compatible with each other in a very good way

3. Razorpay

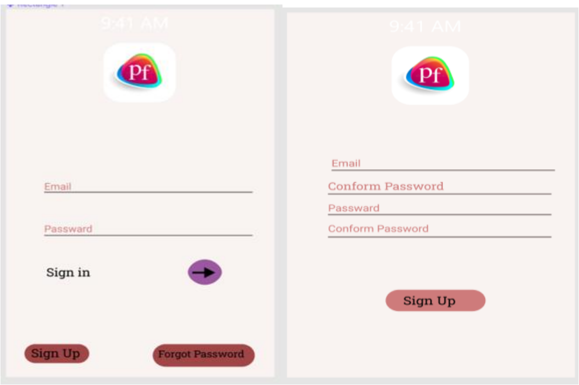
RazorPay, as we know, is one of the leading payment gateways and we can do credit card transactions, debit card transactions, and UPI Transactions so we have chosen it and for developers, it also provides a dummy payment gateway system.

7. RESULT AND ANALYSIS

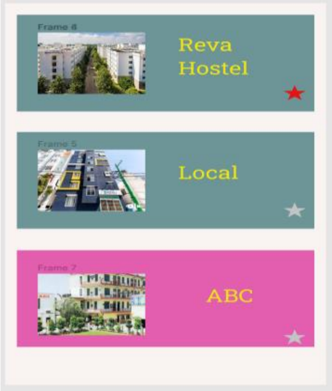
People find it convenient to use apps these days for various purposes. Searching for hostels and PGs is an inevitable and tiring process when someone moves to a new place. There are not sufficient paying guest accommodation listing mobile apps in the current app market. Apps like Nestaway and Oyo proved to be socially very beneficial for people for finding apartments and hotels with the ease of a few clicks, a similar platform for PGs is likely to bridge the gap between finding an ideal PG and the efforts needed to select one physically.

We have tried to keep the UI/UX minimal and simple, so the user finds it convenient to register, log in, and use the app.

Registration/ login page with sign-in/log-in options

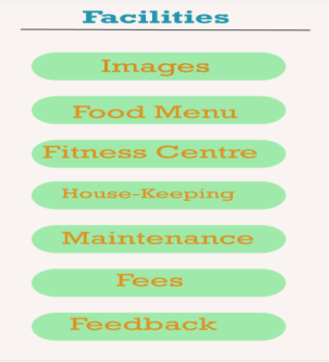

9:41 AM
Pf
Email
Passward
Sign in
Sign Up
Forgot Password
9:41 AM
Pf
Email
Conform Password
Passward
Conform Password
Sign Up

Home page


Frame 4
Reva Hostel
Frame 5
Local
Frame 7
ABC

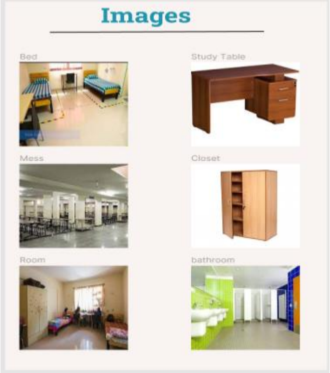
Amenities Page

After clicking on the image of any PG, the user will be directed to the Amenities page.


Facilities
Images
Food Menu
Fitness Centre
House-Keeping
Maintenance
Fees
Feedback

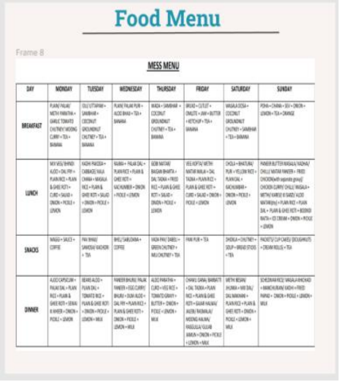
Images

It includes actual images of bed, study table, bathrooms, mess, gym, etc.


Images
Bed
Study Table
Mess
Closet
Room
bathroom

Food Menu

Weekly breakfast, lunch, dinner menu with timings.

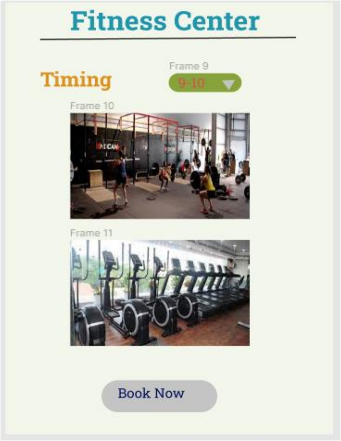


MESS MENU

DAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
BREAKFAST	PLAIN/ PALAK/ METHI PARATHA + GARLIC TOMATO CHUTNEY/ MOONG CURRY + TEA + BANANA	IDLI/ UTTAPAM + SAMBHAR + COCONUT GROUNDNUT CHUTNEY + TEA + BANANA	PLAIN/ PALAK PURI + ALOO BHAJI + TEA + BANANA	VADA + SAMBHAR + COCONUT GROUNDNUT CHUTNEY + TEA + BANANA	BREAD + CUTLET + OMLETE + JAM + BUTTER + KETCHUP + TEA + BANANA	MASALA DOSA + COCONUT GROUNDNUT CHUTNEY + SAMBHAR + TEA + BANANA	POHA + CHANA + SEV + ONION + LEMON + TEA + ORANGE
LUNCH	MIX VEG/ BHINDI ALOO + DAL FRY + PLAIN RICE + PLAIN & GHEE ROTI + CURD + SALAD + ONION + PICKLE + LEMON	KADHI PAKODA + CABBAGE/ AALU CHANA + MASALA RICE + PLAIN & GHEE ROTI + SALAD + ONION + PICKLE + LEMON	RAJMA + PALAK DAL + PLAIN RICE + PLAIN & GHEE ROTI + KACHUMBER + ONION + PICKLE + LEMON	GOBI MATAR/ BAIGAN BHARTA + DAL TADKA + FRIED RICE + PLAIN & GHEE ROTI + SALAD + ONION + PICKLE + LEMON	VEG KOFTA/ METHI MATAR MALAI + DAL TADKA + PLAIN RICE + PLAIN & GHEE ROTI + CURD + SALAD + ONION + PICKLE + LEMON	CHOLA + BHATURA/ PURI + YELLOW RICE + PLAIN DAL + KACHUMBER + ONION + PICKLE + LEMON	PANEER BUTTER MASALA/ KADHAI/ CHILLI/ MATAR PANEER + FRIED CHICKEN(with separate gravy)/ CHICKEN CURRY/ CHILLI/ MASALA + METHI/ [illegible]/ ALOO MATAR(dry) + PLAIN RICE + PLAIN DAL + PLAIN & GHEE ROTI + BOONDI RAITA + ICE CREAM + ONION + PICKLE + LEMON
SNACKS	MAGGI + SAUCE + COFFEE	PAV BHAJI/ SAMOSA/ KACHORI + TEA	BHEL/ SABUDANA + COFFEE	VADA PAV/ DABELI + GREEN CHUTNEY + IMLI CHUTNEY + TEA	PANI PURI + TEA	DHOKLA + CHUTNEY + SOUP + BREAD STICKS + TEA	PACKETS/ CUP CAKES/ DOUGHNUTS + CREAM ROLLS + TEA
DINNER	ALOO CAPSICUM + PALAK DAL + PLAIN RICE + PLAIN & GHEE ROTI + SEWAI & KHEER + ONION + PICKLE + LEMON	BEANS ALOO + PLAIN DAL + TOMATO RICE + PLAIN & GHEE ROTI + ONION + PICKLE + LEMON + MILK	PANEER BHURJI/ PALAK PANEER + EGG CURRY/ BHURJI + DUM ALOO + DAL FRY + PLAIN RICE + PLAIN & GHEE ROTI + ONION + PICKLE + LEMON + MILK	ALOO PARATHA + CURD + VEG RICE + TOMATO GRAVY + BUTTER + ONION + PICKLE + LEMON + MILK	CHAWLI/ CHANA/ BARBATTI + DAL TADKA + PLAIN RICE + PLAIN & GHEE ROTI + GAJAR HALWA/ JALEBI RABDI/ MOONG HALWA/ RASGULLA/ GULAB JAMUN + ONION + PICKLE + LEMON + MILK	METHI BESAN/ JHUNKA + MIX DAL/ DAL MAKHANI + PLAIN RICE + PLAIN & GHEE ROTI + ONION + PICKLE + LEMON + MILK	SCHEZWAN RICE/ MASALA KHICHADI + MANCHURIAN/ KADHI + FRIED PAPAD + ONION + PICKLE + LEMON + MILK

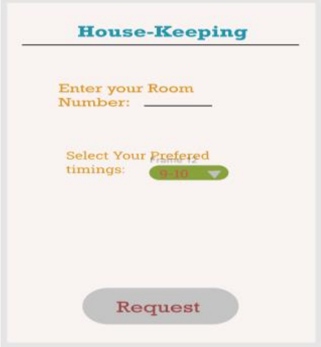
Gym

Timings and images of gym equipment.



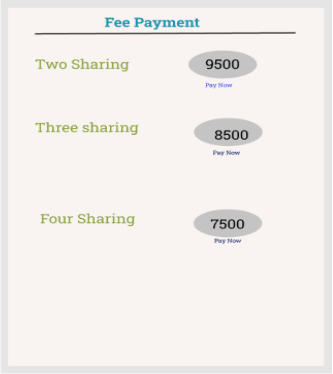
Housekeeping Request

A user will be able to enter his room number, select the housekeeping request they need, and pick a suitable time.


House-Keeping
Enter your Room Number:
Select Your Prefered timings:
Frame 12
9-10
Request

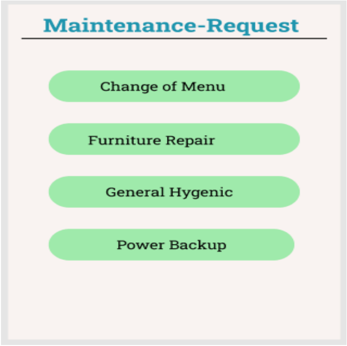
Fee Payment

Icons for payment for different kinds of shared accommodations with prices that will be redirected to razor-pay and other safe payment windows.


Fee Payment
Two Sharing
9500
Pay Now
Three sharing
8500
Pay Now
Four Sharing
7500
Pay Now

1. **Maintenance**

A page where users will be able to raise requests like change of bedsheet, repairs needed, or any other query/complaints.


Maintenance-Request
Change of Menu
Furniture Repair
General Hygenic
Power Backup

Following all the above steps, we are ready with our product. We will test it among a smaller crowd and check if any fault is detected and finally the product will be released to app stores.

8. LIMITATION AND FUTURE WORK

We have incorporated many features into our app. In the future, we would want to add Google Maps' location API and implement it across cities. Advanced filters like budget, distance from a landmark, most booked, etc. can be added to make the app more reliable and helpful for the user.

9. CONCLUSION

The Nestohh app is developed to help students/ working professionals find affordable PGs according to their budgets in the cities they migrate to. This app also provides information about the amenities and is equipped with price comparing and payment features. With the diversification of educational institutes and office spaces across numerous cities, paying guest accommodation is booming exponentially. Hence this app will prove to be valuable as it swaps the traditional PG hunting method of visiting it physically for a much more effective and time-efficient gateway i.e., online and it'll also be substantial in the long run since there are a handful of such platforms currently available in the market.

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Biographies

Photograph

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