LONDON METROPOLITAN UNIVERSITY

Islington college
(इस्लिङ्टन कलेज)

Module Code & Module Title

CS6P05NI Final Year Project

Assessment Weightage & Type

25% FYP Interim Report

Semester

2024-25 Autumn/Spring

Project Title: Sastoyatra

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Assignment Due Date:8th december

Assignment Submission Date:8th december

Word Count (Where required):9313

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Contents

TABLE OF FIGURES

1. Introduction

Nepal, a country known for its unparalleled natural beauty and cultural richness, has long been a sought-after destination for global travelers. With breathtaking landscapes ranging from the towering Himalayan peaks to the fertile plains of Terai, Nepal attracts a diverse audience, including trekkers, adventure seekers, and cultural enthusiasts. In 2019, Nepal welcomed 1.19 million tourists, marking a significant contribution to the country's GDP through tourism-related activities . (Prasain, 2024)

However, despite its immense potential, Nepal's tourism industry faces significant challenges in meeting the expectations of modern travelers. In today’s digital age, tourists increasingly rely on online platforms for trip planning, booking, and connecting with local services. Unfortunately, a large proportion of Nepal’s local service providers, including guides, porters, and travel agencies, lack digital visibility. This gap prevents them from reaching a broader audience, leaving many tourists dependent on costly or unreliable services. Additionally, the absence of structured and transparent systems for booking and evaluating local services undermines the overall travel experience. Bridging this gap between travelers and local service providers is crucial for maximizing the economic benefits of tourism while ensuring a better experience for visitors.

The proposed project, *SastoYatra*, aims to address these challenges by creating a user-friendly platform that connects travelers with verified local guides, porters, and agencies through a transparent bidding system. By enhancing accessibility, affordability, and reliability, the project seeks to elevate the travel experience while empowering Nepal’s tourism ecosystem to thrive in an increasingly competitive market.

1.1. Project Introduction

In a world where technology continues to transform various facets of our lives, it's not surprising that the realm of charitable food donation is also benefiting from these advancements. The Weaste Food Donation App, known as "Food Share," represents a significant step forward in leveraging technology to address the critical issue of food scarcity and waste. The Food Share app seeks to revolutionize the way we approach food donations and redistribution.
The client's name is Yuvraj Tamang, and he worked at ING Food Company. He provides daily lunch food supplies for workers in different companies like Innovate Tech, Virav, and more. He needs an online food donation application that can easily collect surplus food to donate to homeless or poor people. The system should solve the issue of managing waste food and help in preventing food wastage by managing food dumping. Recognizing these dual issues, the Food Share app aims to bridge the gap between surplus food sources and those in need, while also reducing food wastage. This innovative digital solution serves as a bridge between surplus food providers and those in need, leveraging technology to streamline the process of redistributing excess food to marginalized communities.

1.2. Problem as Scenario

Despite Nepal’s growing popularity as a global tourism destination, the industry struggles to provide efficient and reliable services due to several systemic challenges. Firstly, only 35% of small-scale tourism-related businesses in Nepal have an online presence, making it difficult for them to compete with larger, well-established agencies (gyanwali, 2022). This lack of digital representation limits travelers' access to affordable and personalized services, forcing many to rely on word-of-mouth recommendations or unverified providers. Secondly, the market is fragmented and unstructured, with no centralized platform to connect travelers with local guides or agencies. As a result, tourists often experience difficulties in finding and booking services, leading to dissatisfaction and mistrust (gyanwali, 2022) .

Furthermore, the absence of standardized review systems or transparent pricing mechanisms creates a lack of accountability among service providers. Travelers frequently report inconsistent service quality and price exploitation, especially in rural areas where oversight is limited. Meanwhile, small businesses in these regions, despite their potential, miss out on significant economic opportunities due to inadequate visibility and marketing tools (Prasain, 2024).This not only impacts individual providers but also reduces the equitable distribution of tourism benefits across Nepal.

The disconnect between travelers and local service providers has broader economic and social implications. For travelers, it results in subpar experiences and reduced trust in Nepal as a travel destination. For local communities, it diminishes the income and growth potential that tourism could otherwise provide. Addressing these issues through a structured, transparent, and digitally connected platform is essential to ensuring a sustainable and inclusive tourism industry that benefits both visitors and local stakeholders.

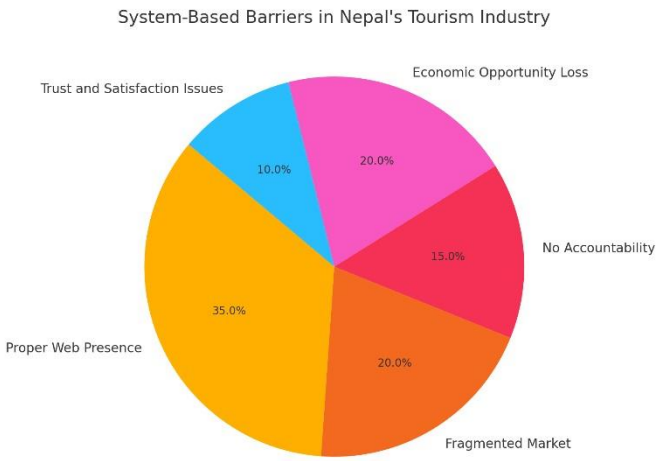

Figure 1 Problem Scenerio

1.3. Project as Solution

The challenges mentioned above can be effectively addressed through the development of a user-friendly platform called *SastoYatra*. As a modern travel solution tailored for Nepal, *SastoYatra* aims to bridge the gap between travelers and local service providers by leveraging digital tools to enhance accessibility, transparency, and reliability in the tourism sector. This platform will empower both travelers and local businesses, ensuring a seamless and efficient travel planning experience.

The major solutions provided by the project include:

- **Registration System for Guides, Porters, and Agencies**
  A robust registration system will allow local service providers to create verified profiles, showcasing their services, skills, and availability to potential travelers.
- **Search and Filter Feature for Travelers**
  Travelers will be able to search for guides, porters, or agencies based on location, skills, pricing, availability, and ratings, enabling them to find the most suitable service providers for their needs.
- **Transparent Bidding System**
  Service providers can submit competitive bids for traveler requests, fostering transparency and giving travelers the flexibility to choose based on their preferences.
- **Evaluation and Feedback System**
  A review and rating system will ensure that travelers can evaluate and provide feedback on their experience, helping maintain service quality and build trust within the platform.
- **Integrated Payment Gateway**
  A secure payment gateway will enable seamless transactions between travelers and service providers, reducing the risk of payment disputes and enhancing convenience.

1.4. Aims and Objectives

1.4.1. Aim

The food donation system aims to minimise food waste by efficiently redistributing surplus food to needy communities, fostering a more equitable and sustainable food distribution network.

1.4.2. Objectives

The major activities are as follows

- Develop the mobile application in Kotlin with Jetpack Compose for a modern, responsive, and intuitive interface.
- Secure registration system both for travelers and service providers with verification by the admin upon the submission of documents by service providers.
- Build search and filtering features to enable travelers to choose service providers based on their location, skills, availability, ratings, and pricing.
- Provide the ability to create a bidding system where service providers can make competitive offers per the requirements of travelers.
- Provide a booking system that allows the traveler to plan his/her itinerary with ease.
- Rating and feedback provision—these ensure transparency and quality assurance as far as service providers are concerned.

- Secure payment gateway for safe and easy transactions between users and providers.
- Design dynamic user profiles for travelers and service providers in order to maintain the record of their booking, payment history, review, and feedback about each other.
- Give tools to small-scale guides/agencies to showcase their services in order to reach more customers.

2. Background

2.1. Technology and Tools Used

2.1.1. Technology

The technology can be used for system development where the waste food management system has Django, DRF, Kotlin, jetpack compose, and MySQL databases.

2.1.1.1 Django and Rest Framework:

Django is a high-level web framework; it is in prevalent usage for building the backend structure of websites and web applications. The capability of Django includes database management, user authentication, and overall architecture of the site. Most of the descriptive work in the REST API should go to specify media type or media types used to drive application state and represent resources. It consists of using Django for back-end development on which REST APIs and the Admin Panel web would be developed.

2.1.1.2. MySQL database:

MySQL is one of the most popular open-source relational databases, used for storing and managing data within the food donation systems. It is used as a primary store for data, hosting and maintaining all the information that will be required within different functions and operations of the system. The system will

interact with MySQL through the creation, retrieval, updating, and management of the stored data in the system.

2.1.1.3. Kotlin and Jetpack Compose:

Kotlin is a statically typed, object-oriented programming language that is interoperable with the Java virtual machine (JVM), Java Class Libraries and Android. The Kotlin programming language was originally designed to improve the Java programming language and is often used in conjunction with Java. Despite being the preferred development language of Android, Kotlin's interoperability with Java has led it to be used with many application types. (Lutkevich, 2020)
is a modern UI toolkit that is designed to simplify UI development in Android. It consists of a reactive programming model with conciseness and ease of Kotlin programming language. It is fully declarative so that you can describe your UI by calling some series of functions that will transform your data into a UI hierarchy. When the data changes or is updated then the framework automatically recalls these functions and updates the view for you. In this article, we will see some of the basic topics which are helpful before starting with Jetpack Compose. (geeksforgeeks, 2024)

2.1.2. Tools

The tools are used for system architecture development and documentation. There are some tools are used like MS Word, balsamic, Figma, and lichi-chart, which are given below and are used in the project development and design phase.

1.1.2.1. MS-Word

MS Word is a word-processing tool that allows one to create, edit, format, and print text documents. It provides a wide category of features covering spell checking, formatting of paragraphs, inserting pictures, creation of tables, and so on. The friendly interface combined with vast possibilities makes it a perfect utility in performing a lot of work from simple writing tasks up to complex documentation. This is used in the documentation throughout this coursework.

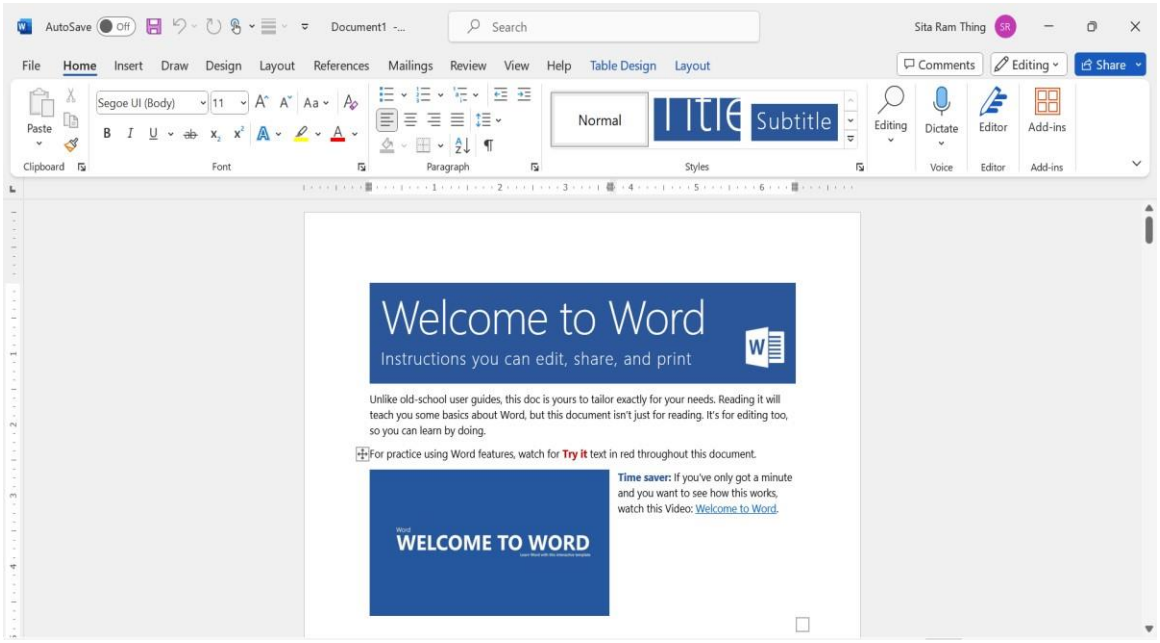

Figure 1 MS-word tools

1.1.2.2. Balsamiq

Balsamiq is a simple wireframing tool. This tool offers the creation of wireframes and mockups for desktop software, web applications, and websites. Balsamiq Wireframes is the most user-friendly, quickest, and best-supported wireframing application available on the Internet. It is used to create the wireframe of the system.

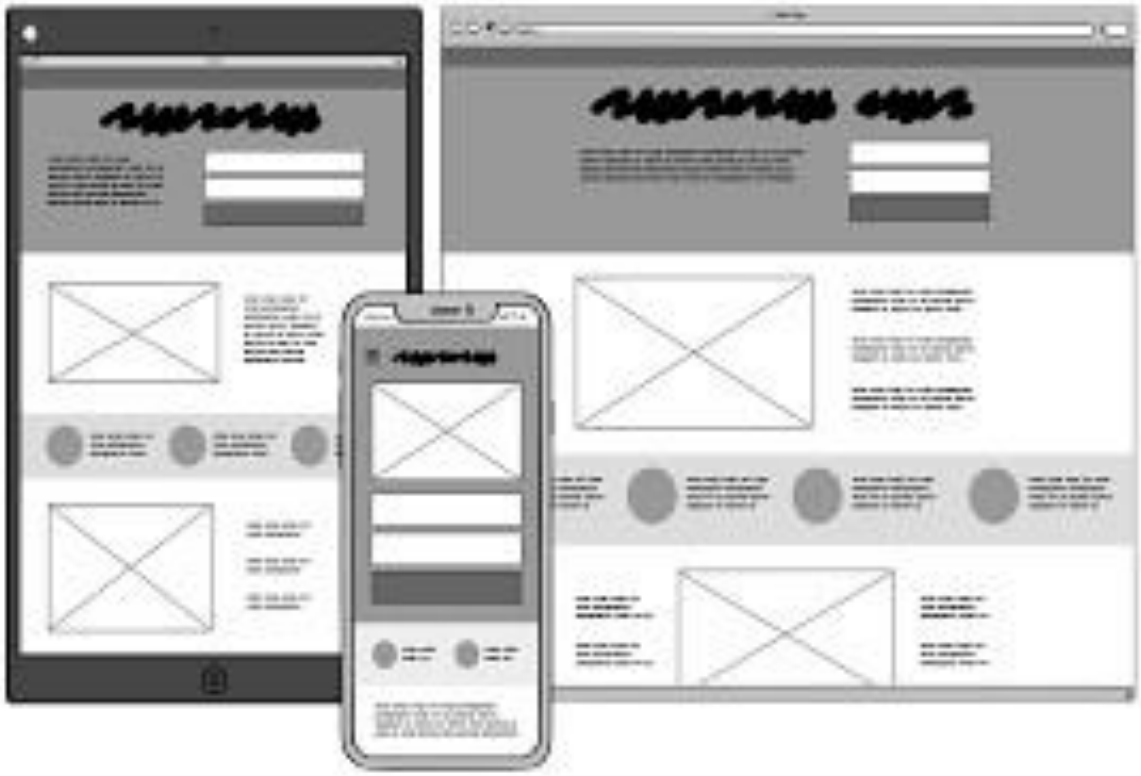

Figure 2 Balsamiq tool

2.2. Methodology

2.2.1Agile Methodology

The Agile methodology is a project management and software development approach that emphasizes flexibility, collaboration, and customer-centricity. It is the latest model used by major companies today like Facebook, google, amazon, etc. It follows the iterative as well as incremental approach that emphasizes the importance of delivering of working product very quickly. (What is Agile Methodology?, 2024) There are many frameworks under agile methodologies such as:

Figure 3 Agile Scrum Framework

2.2.3RUP Methodology

The rational unified process (RUP) is a software engineering and development process focused on using the unified modeling language (UML) to design and build software. Using the RUP process allows you to operate business analysis, design,

testing and implementation throughout the software development process and its unique stages, helping you create a customized product. (RUP: Definition, Phases, Advantages and Best Practices, 2024)

RUP has 5 phases; they are shown below:

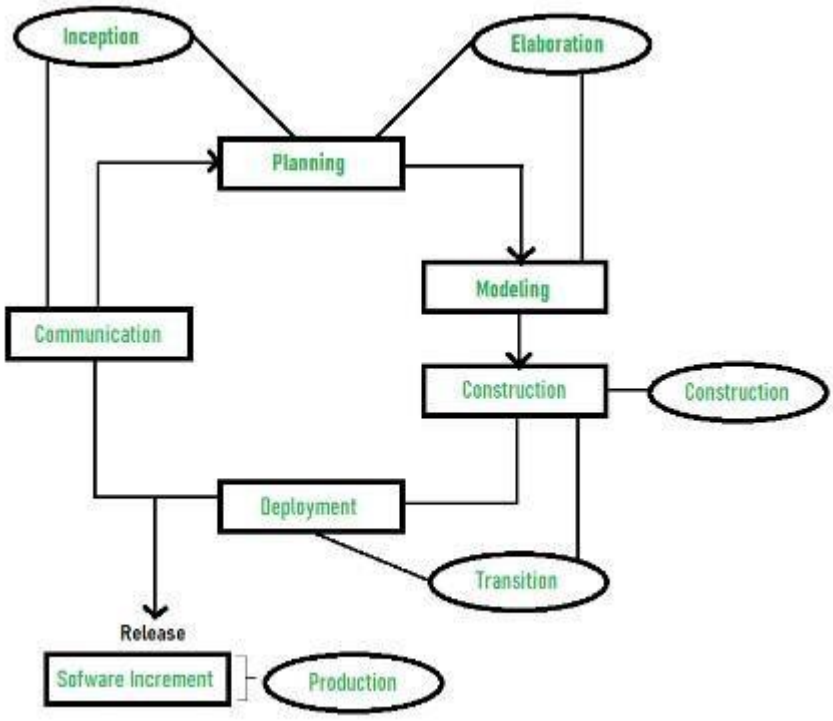

Figure 4 RUP methodology

2.2.4 **S**elected Methodology

2.3.4.1 Incremental Methodology

The incremental model in software engineering is a modern approach to project management that involves dividing a complex project into smaller, self-contained modules known as increments.

Each increment represents a partial system with added functionality, allowing for the project's gradual development. The key feature of this model is its iterative process, where increments are developed, tested, and integrated one after another into the evolving system. This iterative approach facilitates frequent testing, quick feedback, and early defect detection. (Sachan, 2024)

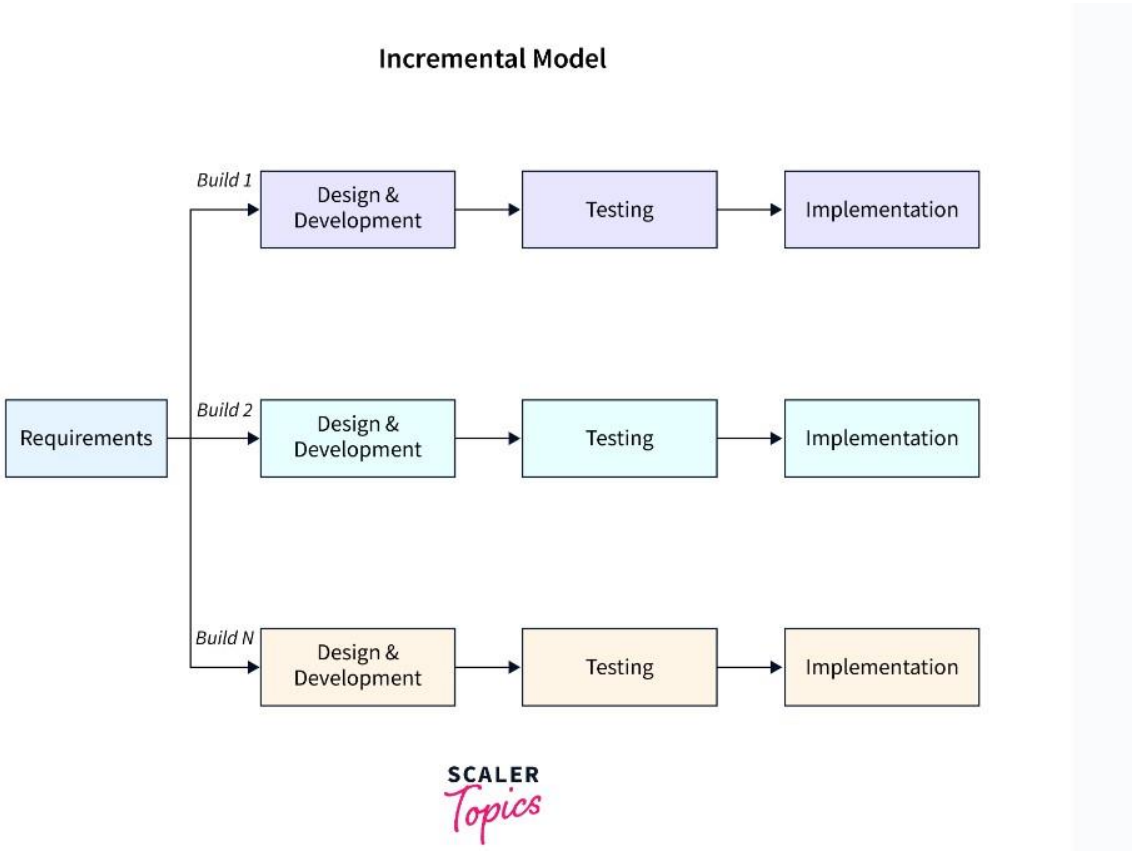

Figure 5 Incremental Methodology

I have chosen Incremental methodology to help complete my project Sastoyatra. The reason I chose Incremental excluding other methodologies listed down below:

- Progressive Delivery

  This will also allow the project to be developed and tested incrementally. The system enables early delivery of functional modules, such as a login system and

profile management, while continuing to develop other features, such as a payment gateway or search system.

- Flexibility and Ability to Adapt

  It allows the incorporation of feedback and changes in requirement during the process. This is particularly useful for an industry as dynamic as tourism, wherein user needs or market demands change.

- Risk Management

  Dividing the project into increments helps identify and mitigate risks early. For instance, issues with payment integration can be addressed before moving to features like the bidding system.

- Resource Optimization

  Resources can be invested in incremental ways: first, by prioritizing feature development, such as a secure login system and smooth UI/UX

2.3. Similar Systems

2.3.1. Similar System Consideration

SastoYatra is a project to be developed, taking inspiration from various other travel and service management systems. Various such systems developed in the past aimed at joining the travelers and service providers in one way or another for easy tour planning, reservations, and communications. This section covers a number of those systems from where the core concepts of the project were derived. There are also discussions on the design of the systems, functionality, and critical analysis that have helped in shaping the unique features and operation of SastoYatra.

2.3.1.1. Tripadvisor

TripAdvisor, Inc. is an online travel research company, empowering users to plan and have the perfect trip. TripAdvisor's travel research platform features reviews and opinions from its community of travelers about destinations, accommodations

(hotels, bed and breakfasts, specialty lodging and vacation rentals), restaurants and activities throughout the world through its flagship TripAdvisor brand. TripAdvisor-branded websites include tripadvisor.com in the United States and localized versions of the website in 34 countries, including in China under the brand daodao.com. Beyond travel-related content, TripAdvisor websites also include links to the websites of its travel advertisers allowing travelers to directly book their travel arrangements. In addition to the flagship TripAdvisor brand, TripAdvisor, Inc. manages and operates websites under 21 other travel media brands, connected by the common goal of providing comprehensive travel planning resources across the travel sector.

Features:

- **User Reviews**: Millions of reviews for hotels, restaurants, and activities worldwide.
- **Bookings**: Options to book hotels, tours, and activities directly from the app.
- **Community Forums**: Advice and discussions from fellow travelers.
- **Destination Guides**: Detailed guides for cities and countries.

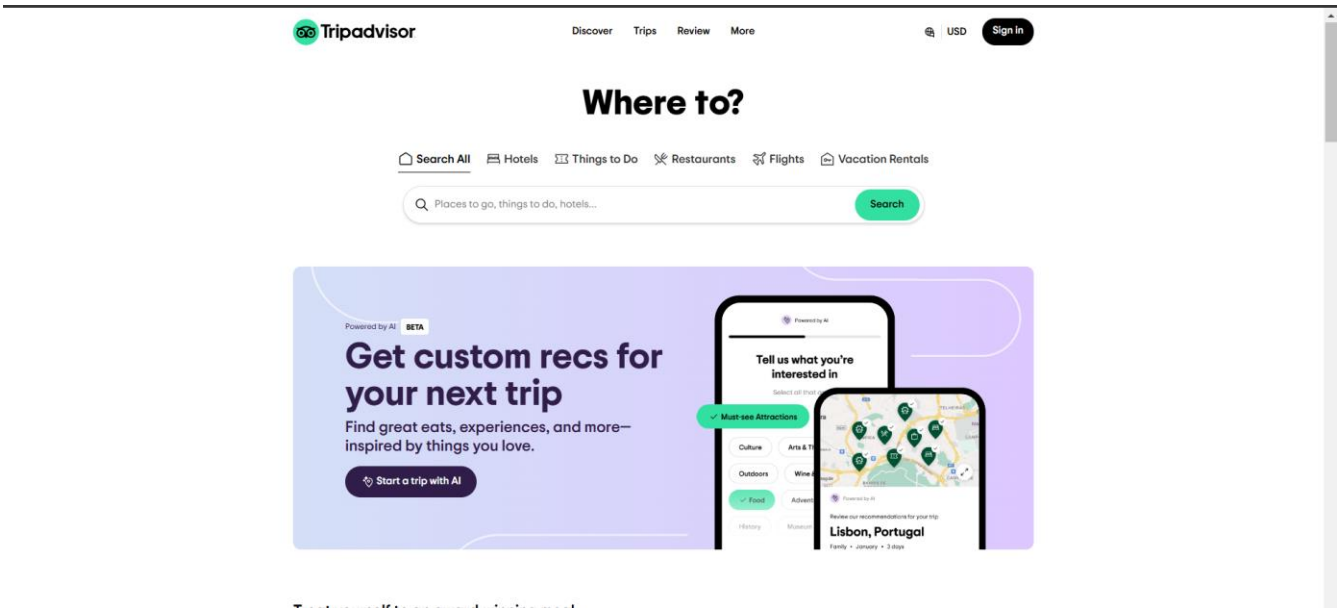

Figure 6 Tripadvisor

2.3.1.2. GetYourGuide

GetYourGuide is a popular travel app and platform that helps travelers discover and book activities, tours, and tickets for attractions worldwide. The app focuses on providing curated experiences led by professional guides, making it a convenient choice for travelers seeking well-organized activities.

Features:

- **Tour Bookings**: Access to tours, tickets, and activities led by vetted guides.
- **Instant Confirmation**: Mobile ticketing and secure payment for bookings.
- **Curated Experiences**: Localized and curated experiences with verified operators.

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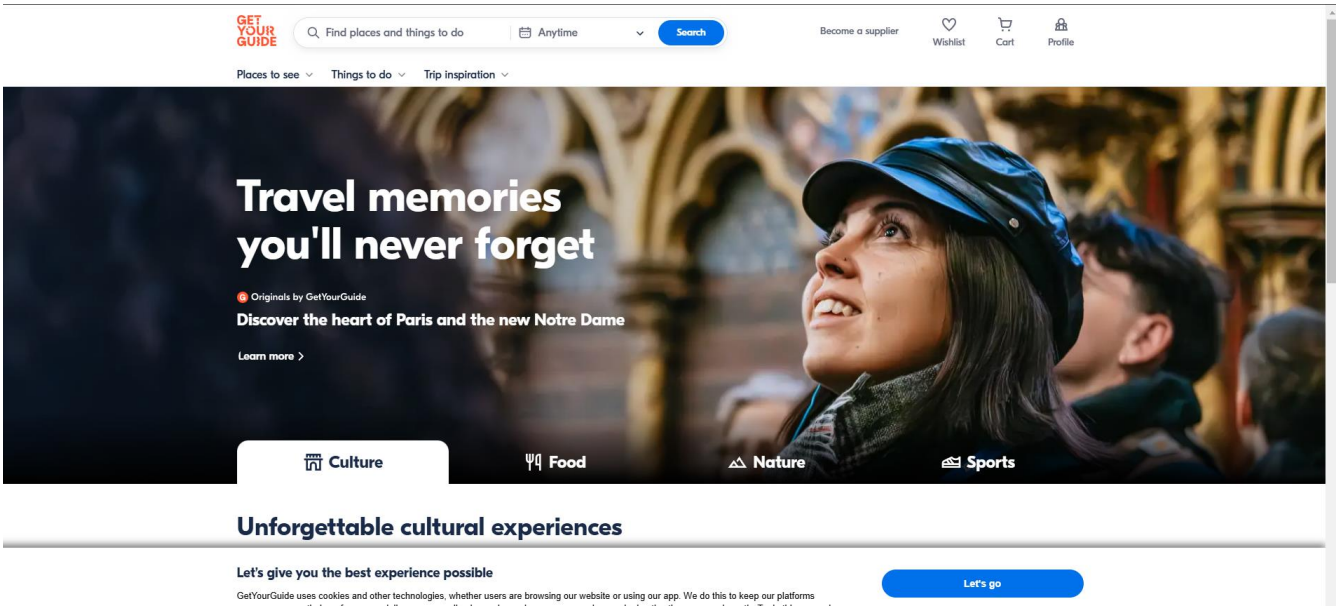

Figure 7 GetYourGuide

2.3.1.3. TourRadar

TourRadar is an online marketplace that focuses on multi-day tour and adventure booking, operated by professional operators all over the world. It gives travelers access to different pre-set group and private tours, thus becoming an ideal option for those travelers looking for complete travel itineraries handled by agencies that they trust.

Features:

- **Multi-Day Tours**: Verified operators offering detailed itineraries for multi-day trips.
- **Group Tours**: Options to join pre-arranged group tours globally.
- **Booking and Payment**: Secure payment and support for large-scale trips.

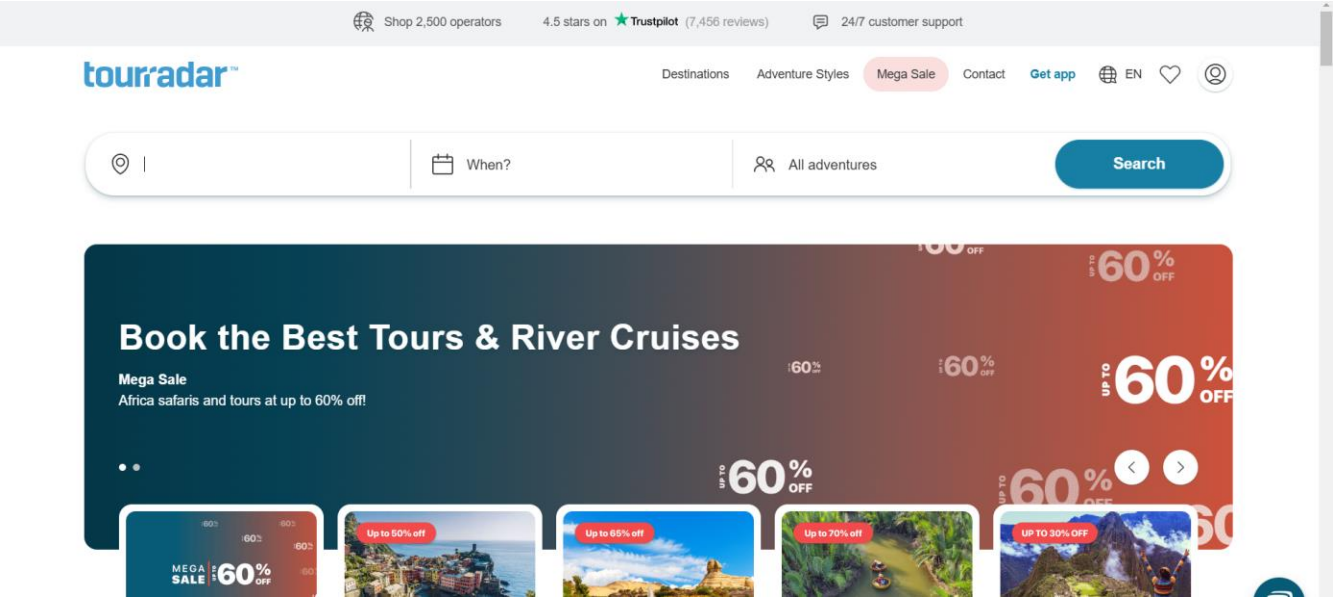

Figure 8 TourRadar

2.3.2. Similar System Comparison

Features	**SastoYatra**	TripAdvisor	**GetYourGuide**	**T**ourRadar
Service Provider Bidding	Yes	NO	NO	NO
Bookings	Direct booking with service providers	Links to third-party websites	Direct booking for tours, tickets, and activities	Direct booking for multi-day tours

User Reviews	Yes	Yes	Yes	Yes
Community Forums	No	Yes	No	NO
Bidding bassed	Yes	NO	NO	NO
Tour Customization	Yes, highly customizable trip requests	No, generic recommendations	Minimal customization for tours	Yes, pre-planned multi-day tours
Unique Selling Point	Personalized trips with bidding system	Comprehensive reviews and destination insights	Curated local experiences	Specializes in multi-day group and private tours

The comparison involves three parallel systems that may be presented and contrasted against SastoYatra, highlighting their respective features. What sets SastoYatra apart is its innovative bidding system, introduced for the first time, making it uniquely advantageous. Additionally, features like user ratings and an intra-app online payment system have been proposed, inspired by other existing platforms.

TripAdvisor offers a comprehensive range of travel information and reviews on accommodations, restaurants, and attractions but does not support direct booking or personalized trip planning. GetYourGuide specializes in professionally curated experiences with secure booking options but limited customization. TourRadar focuses on multi-day tours with pre-planned itineraries and secure payment methods but lacks flexibility for personalized trips.

SastoYatra bridges these gaps by enabling customized trip requests, direct communication with service providers, and a unique bidding system that ensures travelers receive the best deals.

3. Work to Date

3.1. Requirement Gathering

Purpose:

SastoYatra makes connecting travelers with local service providers-guides, porters, and travel agencies-easier. It tries to make travel planning personal and effective by allowing users to post their trip requests, receive bids, and select the best service providers based on their preferences. The application brings travelers and local experts together through technology, developing better travel experiences and more robust local tourism economies.

Intended Audience:

- Travelers: Both individual and group travelers, depending on their travel needs for services like a trekking guide, porters, or cultural tours.

- Service Providers: These are the local travel agencies, freelance guides, and porters providing services related to trekking, sightseeing, and adventure activities.

- Admin: The system administrator is responsible for managing user accounts, verifying service provider documents, and observing the overall operation of the platform.

Project Scope:

- User-Friendly Interface: A user-friendly mobile and web application will be needed for the travelers and also the service providers. An admin panel shall be developed in order to keep a check on the system. Users shall be facilitated with this interface to post a request for the trip, quote for that trip, or view and manage the bookings accordingly.

- Registration and Verification: Allow for a secure registration system for travelers and service providers. The service providers need to provide verification documents for credibility and safety for the travelers.

- Trip Request and Bidding System: Allow travelers to post their detailed trip requests and let service providers place bids to ensure competitive pricing and quality of service.

- Search and Filter System: Provide a complete search system whereby travelers can find the best destinations, service providers, and trips that will happen later, filtered according to preference, such as language, type of service, and budget.

- Communication Platform: Include a messaging system that would enable travelers to communicate with service providers for discussion and clarification about the trip.

- Payment Gateway: Provide a secure and efficient payment gateway where the travelers confirm their booking, and the service providers confirm the receipt of money.

- Ratings and Reviews: Include a review and rating system wherein travelers rate the service providers in order to establish some sort of trust-based ecosystem.

3.1.1. Survey Conducted (with users)

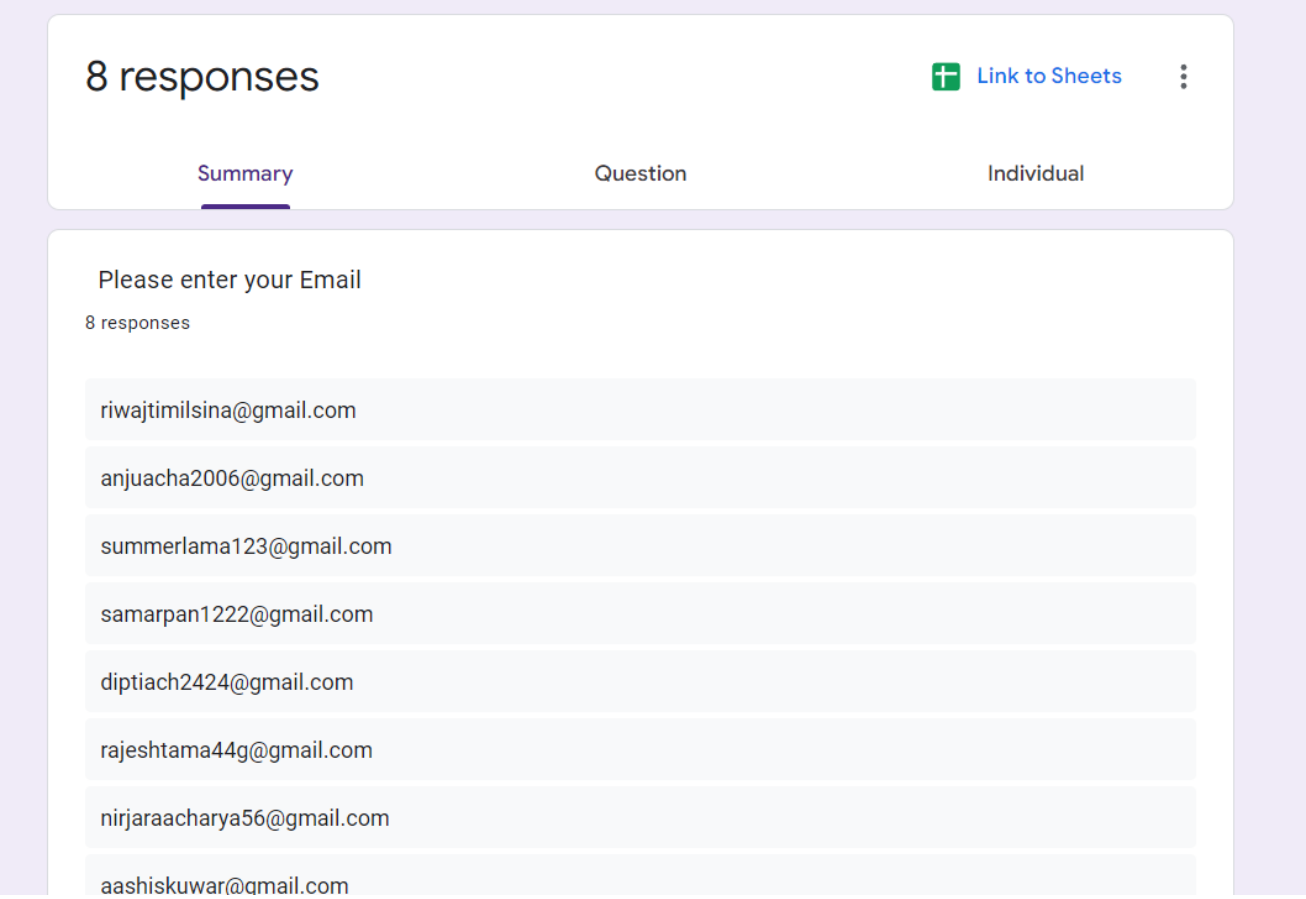

Figure 9 Survey form response list

The user survey response link is:

https://docs.google.com/forms/d/e/1FAIpQLSf3suX7PsDyby9rpBTbKHV9Dhpt1U3Snm2YU8SEzMgzDUHAUQ/viewform?usp=dialog

3.1.2. Feature List (As per systems and roles)

3.1.2.1. Web

Admin:

➢ Track Payments: Keep track of all the transactions that occurred, including paid, cancelled, and refunded.

➢ Dispute Resolution: The mediation and resolution of disputes between the travelers and service providers.

➢ Approve Service Providers: The service provider accounts are verified and approved by document validation.

3.1.2.2. Mobile:

Traveler

➢ Trip Requests: Create postings for detailed trip requirements, including destinations, dates, and services needed.

➢ View and Compare Bids: Customers can see the bids of the service providers and assess.

➢ Bookings Management: Confirm or cancel bookings and check out the trip details.

➢ Secured Payments: Make payments to service providers through the platform.

➢ Review and Rate: After trips, the facility to review and rate service providers.

Service Provider

➢ View Trip Requests: To access the trip requests and filter out those that concern their services and location.

➢ Place Bids: Place bids with the price and details of services.

➢ Manage Calendar: Update availability and schedule trips.

➢ Messaging System: The messaging system will allow communication with travelers to clarify details about the trip.

➢ Manage Profile: This will allow the practitioner to update their personal information, certifications, and service offerings.

➢ Earnings Overview: Track earnings and manage their payout.

3.2. Use Case

A use case diagram is a type of visualization used to depict the interactions between actors and a system. It highlights the different use cases of the system

and shows how various actors interact with them. The Use Case Diagram, as shown below, illustrates these interactions effectively.

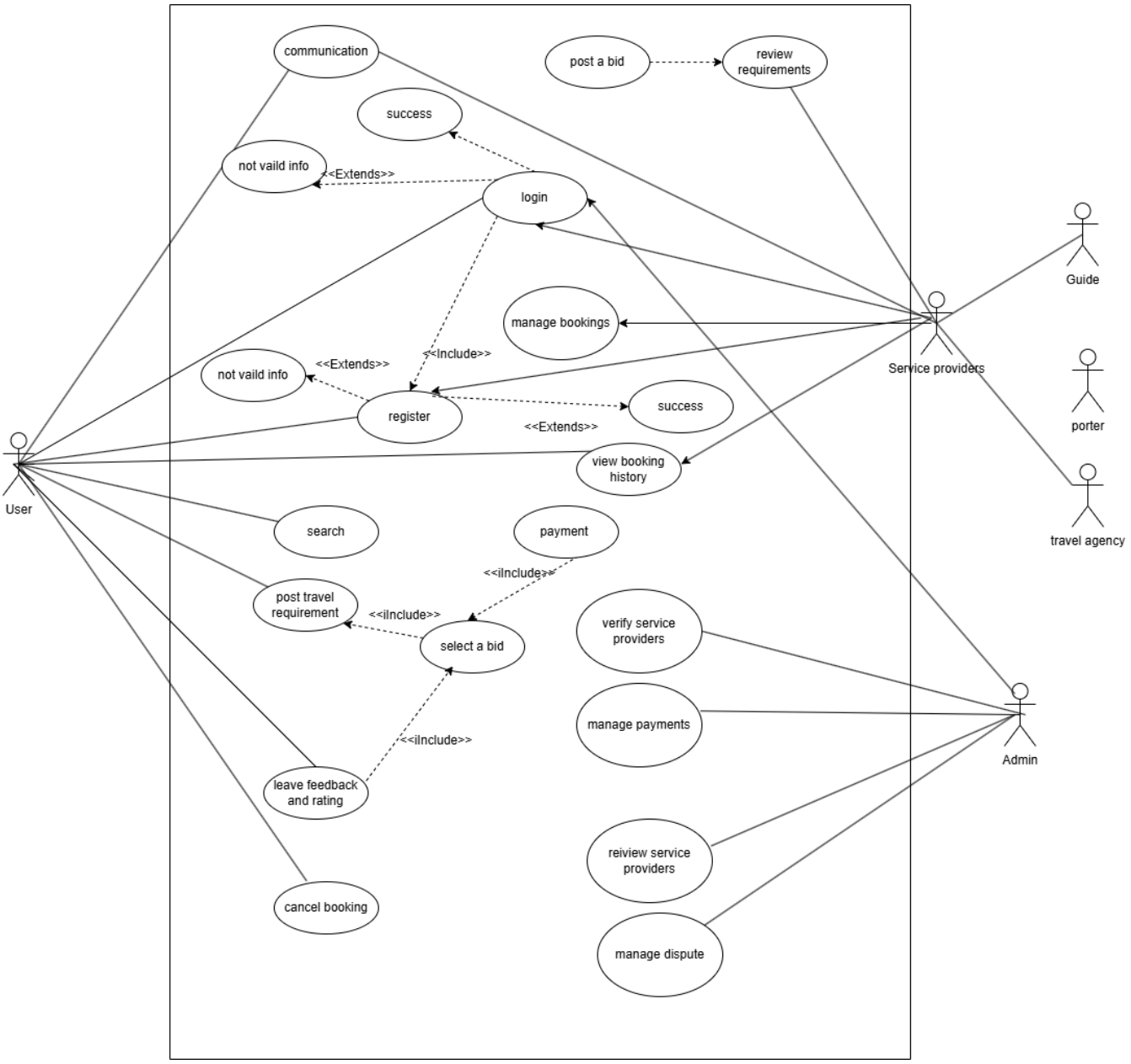

Figure 10 UseCaseDiagram

3.2.1. High-Level Use Case

The system provides a comprehensive set of use cases, most of which are high-level use cases aimed at enhancing system design and development. Each high-

level use case focuses on offering a brief explanation of each procedure as it evolves, ensuring it is easily recognized by the customer.

The high-level use case is given below:

3.2.1.1. Register user.

Use Case:	Register
Actors:	Traveler, Service Provider (Guide, Porter, Travel Agency)
Descriptions:	The system allows all users to input their information. Once submitted, the system verifies and registers the details. If the information is valid, a success message is displayed; otherwise, an error message appears.

3.2.1.2. Login System

Use Case:	Login

Actors:	Traveler, Service Provider, Admin
Descriptions:	After completing registration, users log in using valid credentials. If the login is successful, they gain access to the platform's features. However, entering invalid credentials results in an error message.

3.2.1.3. Post Trip Request

Use Case:	Post Travel requirement
Actors:	Traveler
Descriptions:	Travelers can initiate a trip request by specifying destinations, travel dates, required services, and personal preferences. Once the request is submitted, service providers are immediately notified and can submit their bids.

3.2.1.4 View and Compare Bids

Use Case:	Select a bid
Actors:	Traveler

Descriptions:	Travelers can review and compare bids provided by service providers. Each bid includes pricing, service details, and ratings, enabling travelers to make well-informed decisions.

3.2.1.5. Manage Bookings

Use Case:	**Manage Bookings**
Actors:	Traveler, Service Provider
Descriptions:	Travelers have the option to confirm or cancel their bookings, while service providers can access and manage their assigned trips, ensuring efficient scheduling and smooth operations.

3.2.1.6. Secure Payment

Use Case:	Payment
Actors:	Traveler

Descriptions:	Travelers can make secure payments for confirmed bookings using an integrated payment gateway. Once the transaction is completed, payment confirmation is sent to both the traveler and the service provider.

3.2.1.7 Review and Rate

Use Case:	Leave feedback and rating
Actors:	Traveler
Descriptions:	After completing their trip, travelers can provide reviews and rate service providers based on their experiences. This contributes to fostering a trust-based ecosystem.

3.2.1.8. Approve Service Providers

Use Case:	Verify Service Providers
Actors:	Admin

Descriptions:	Admins review the documents submitted by service providers and either approve or reject their accounts, ensuring the safety and credibility of the platform for travelers.

3.2.1.9. Track Payments

Use Case:	Track Payments
Actors:	Admin
Descriptions:	Admins oversee all financial transactions, including traveler payments and service provider payouts, ensuring their accuracy and resolving any disputes that may arise.

3.2.1.10. Communication

Use Case:	Communication
Actors:	Traveler, Service Provider
Descriptions:	Travelers and service providers can communicate through the platform to clarify trip details, discuss requirements, and resolve issues before or during the trip.

3.2.1.12. View Trip History

Use Case:	View Booking History
Actors:	Traveler, Service Provider
Descriptions:	Both travelers and service providers can access a record of completed trips, which facilitates reviewing previous experiences and enhancing the planning of future trips.

3.2.1.12. Dispute Management

Use Case:	Dispute Management
Actors:	Admin
Descriptions:	In cases of conflicts between travelers and service providers, such as payment disputes or service issues, users can escalate the matter to admins for resolution.

3.3. Sequence Diagram

3.3.1.Register

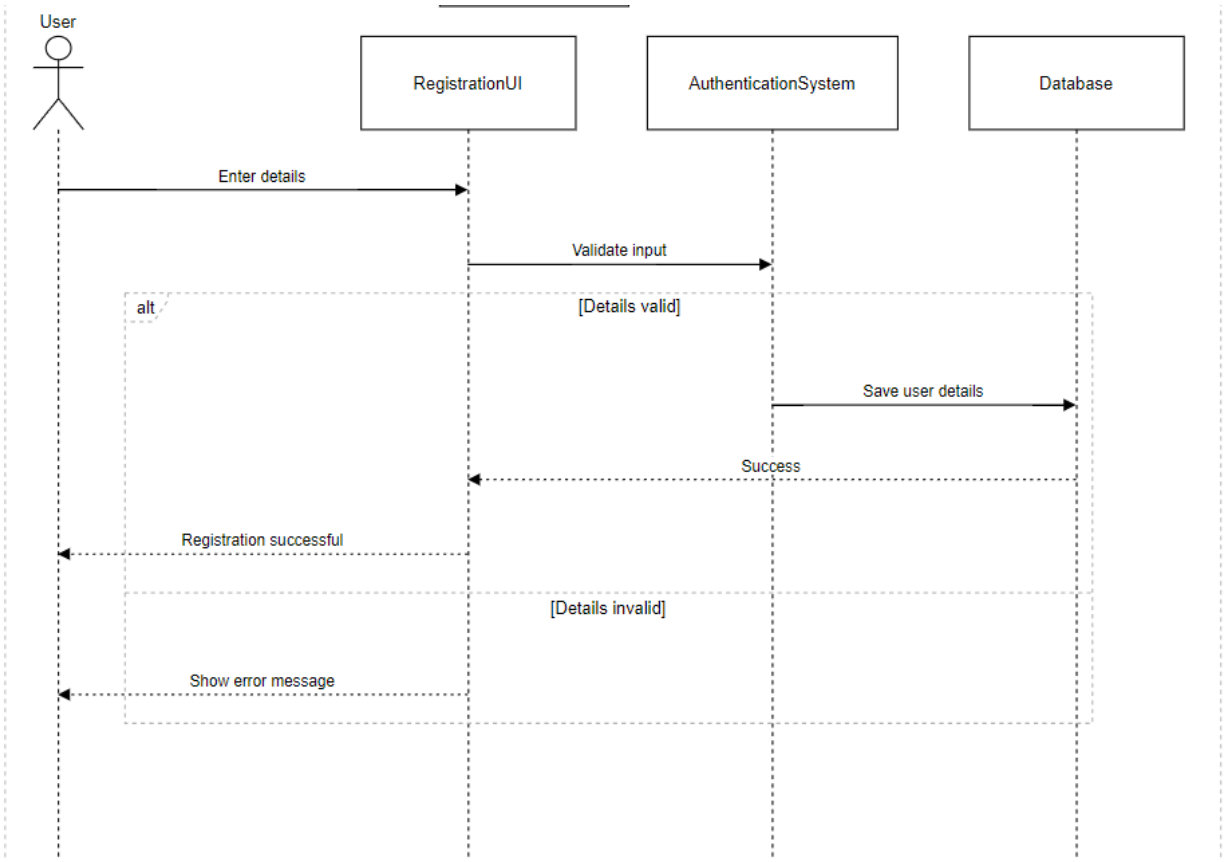

Figure 11 register sequence diagram

3.3.2. Login

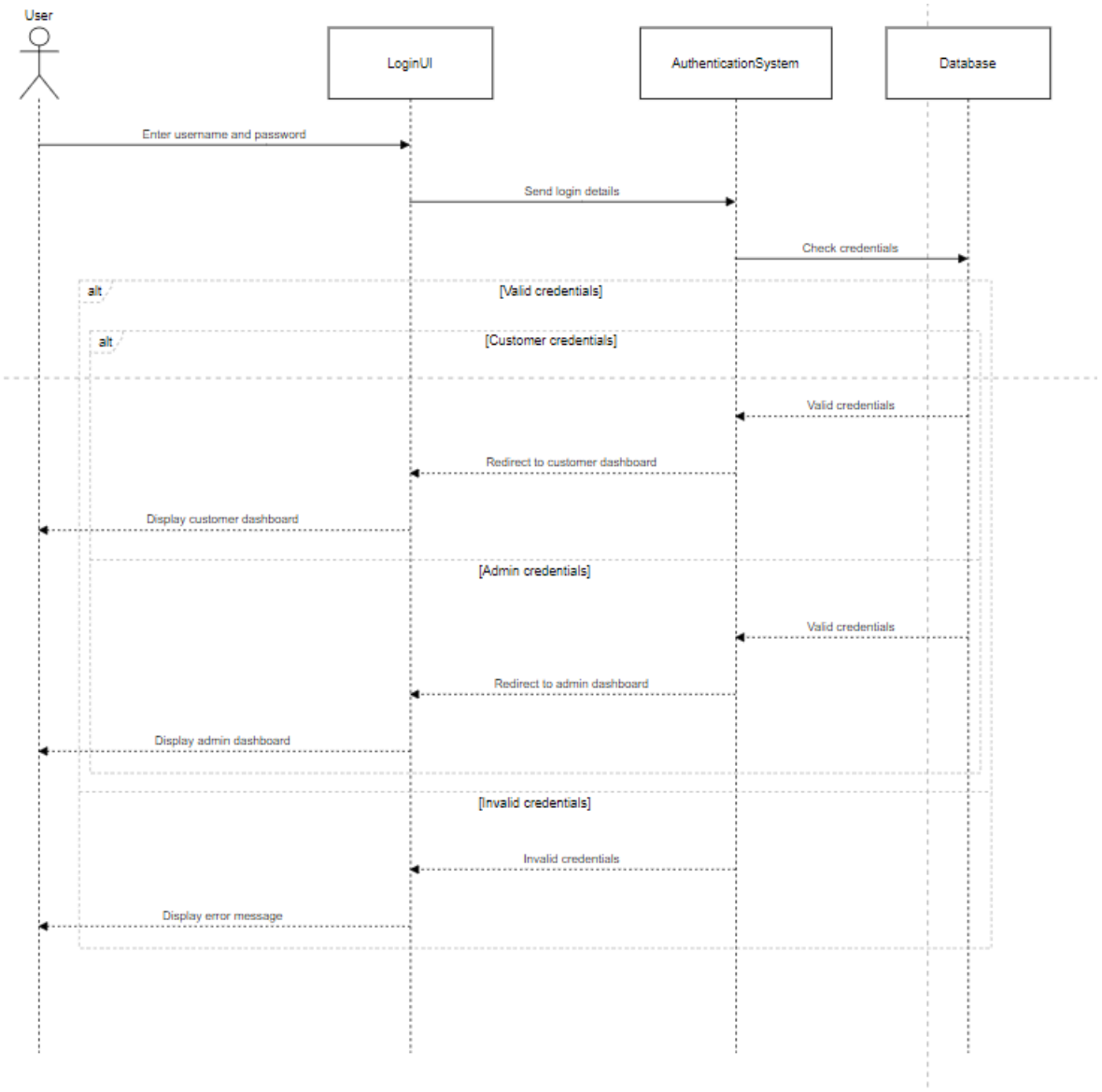

Figure 12 login sequence diagram

3.3.3. Post Travel requirement

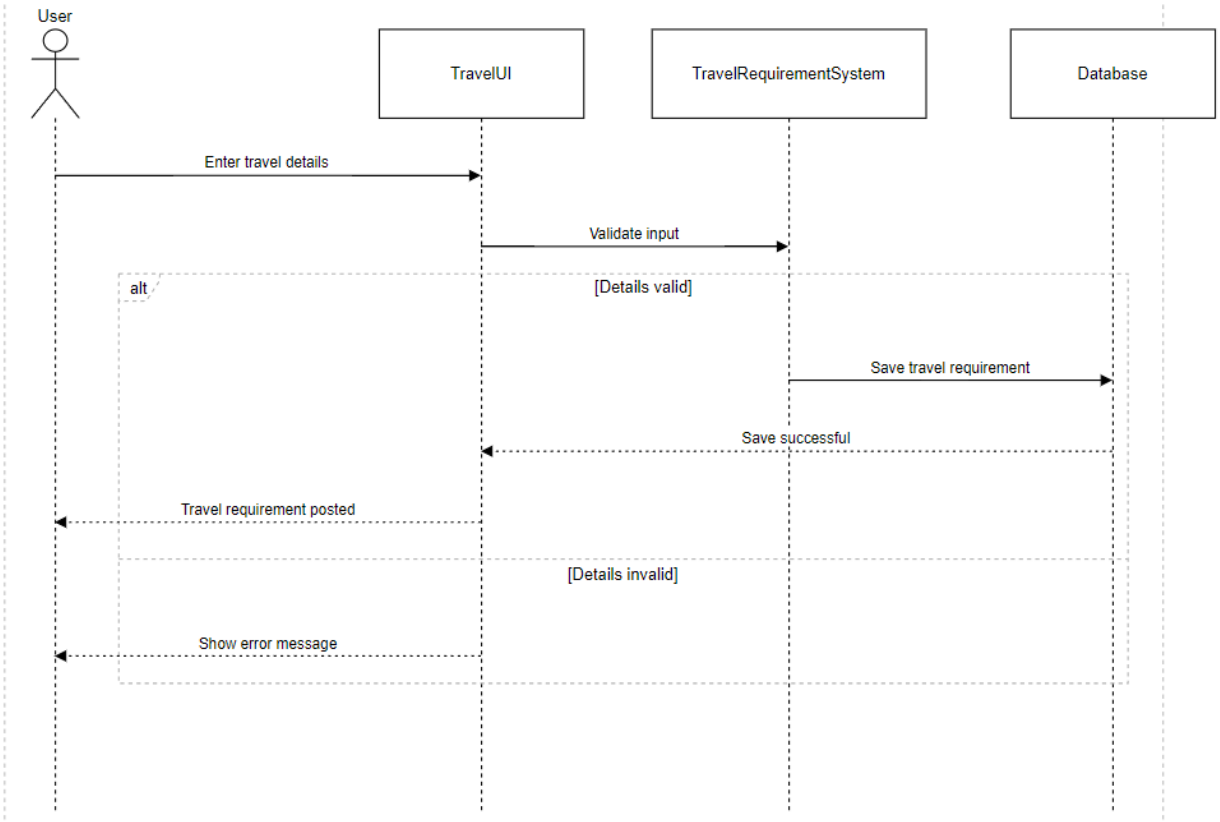

Figure 13 post travel requiremetn sequence diagram

3.3.4. Bidding system

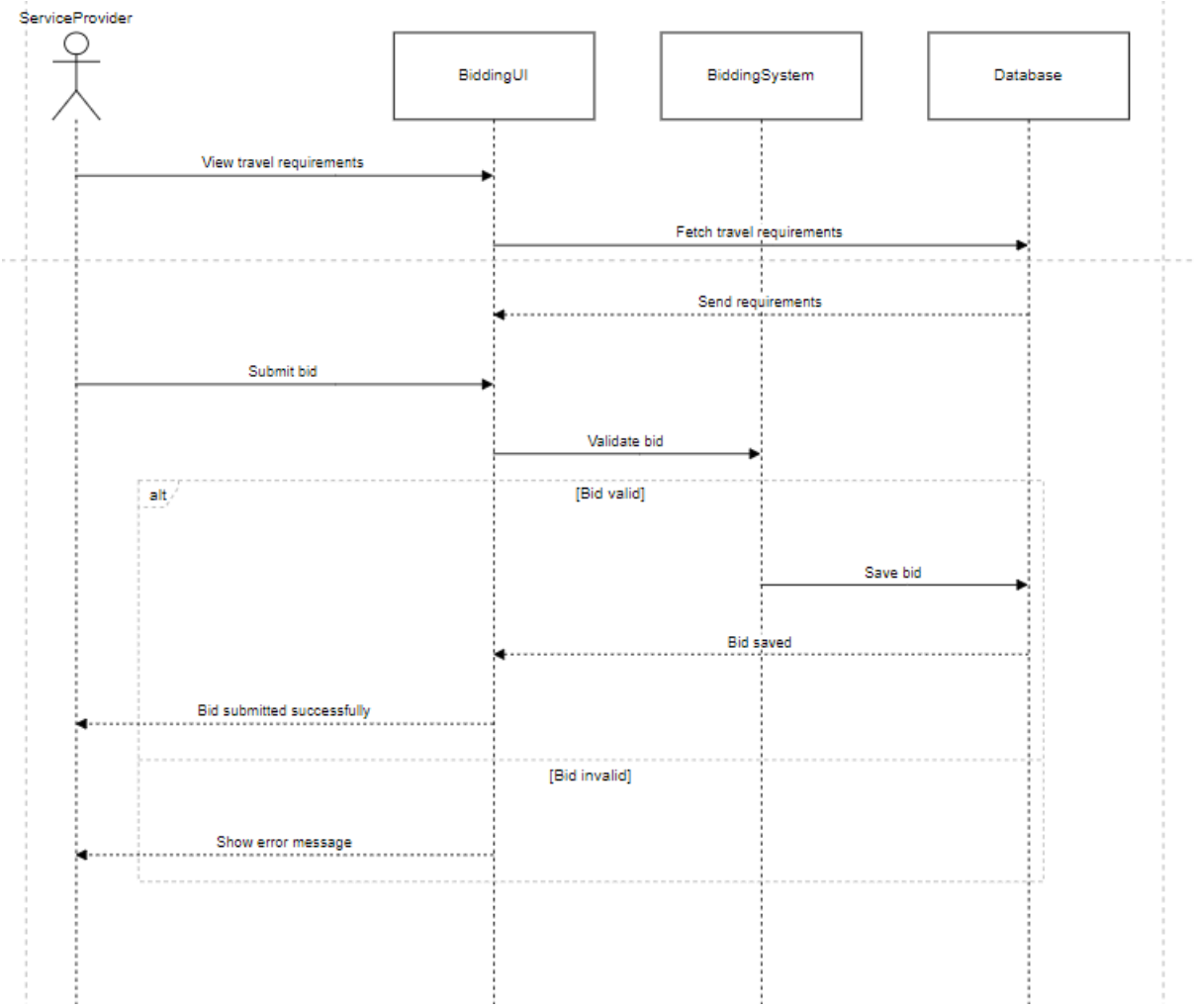

Figure 14 bidding system sequence diagram

3.3.5. Booking System

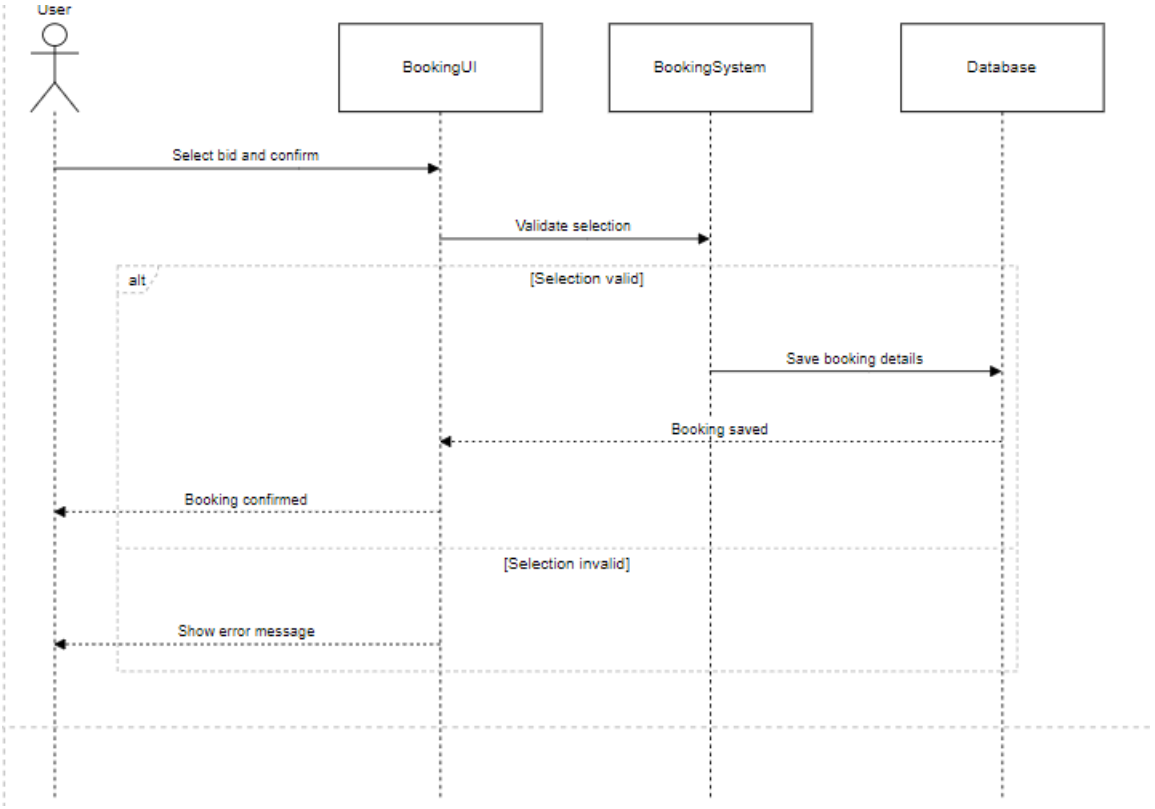

Figure 15 Booking System sequence diagram

3.3.6. Payment System

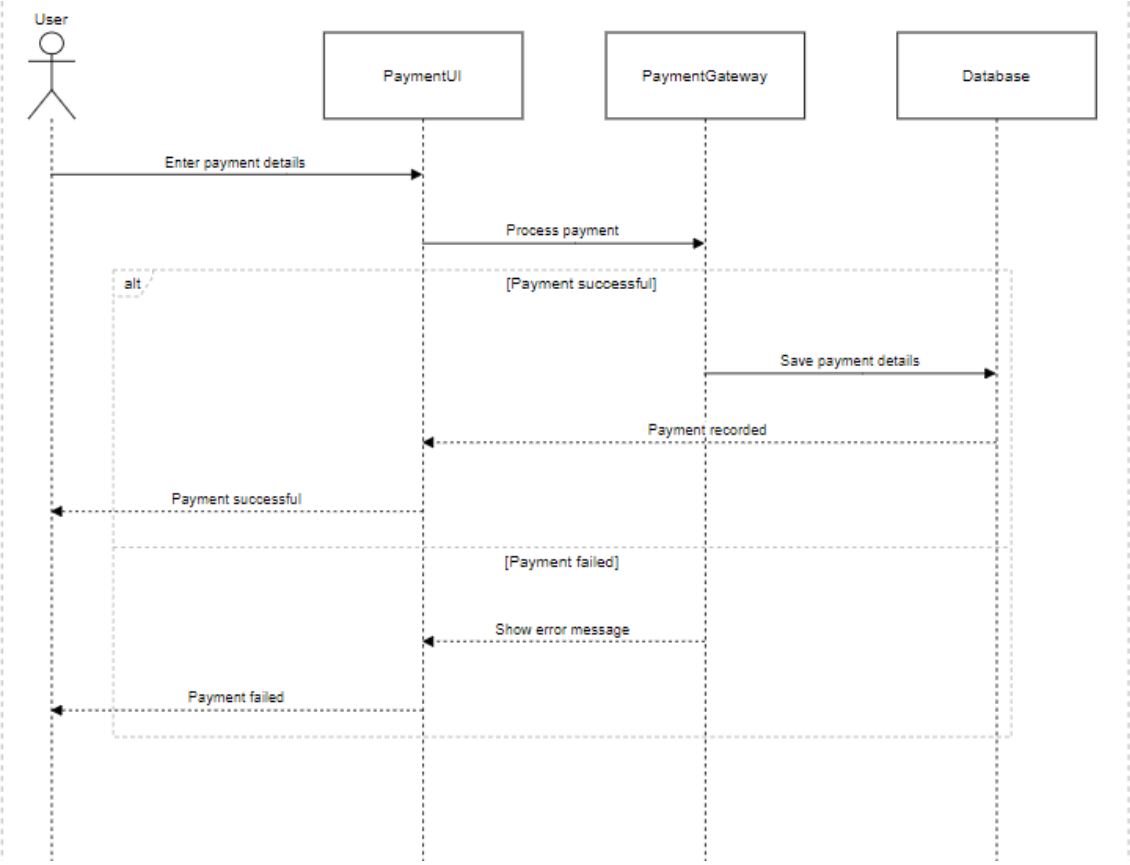

Figure 16 Payment System sequence diagram

3.3.7. Feedback system

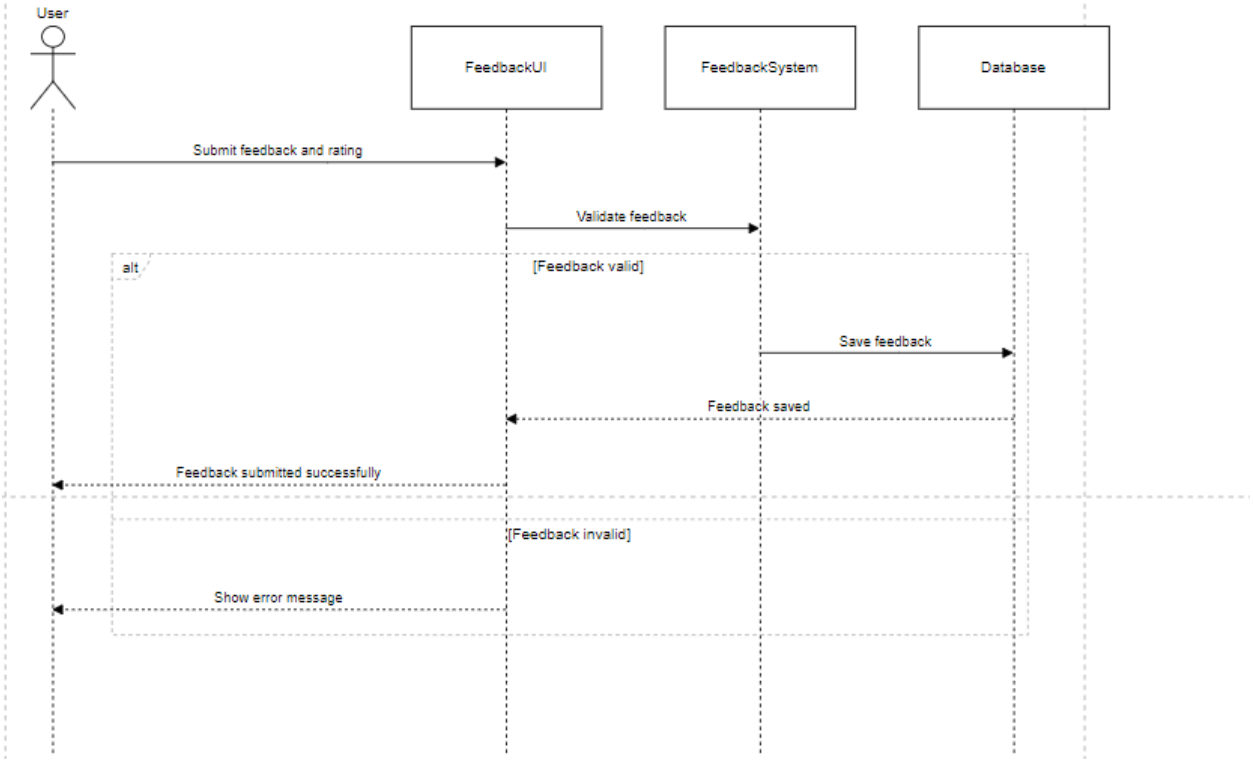

Figure 17 FeedBack system sequence diagram

3.3.8. Service provider verification

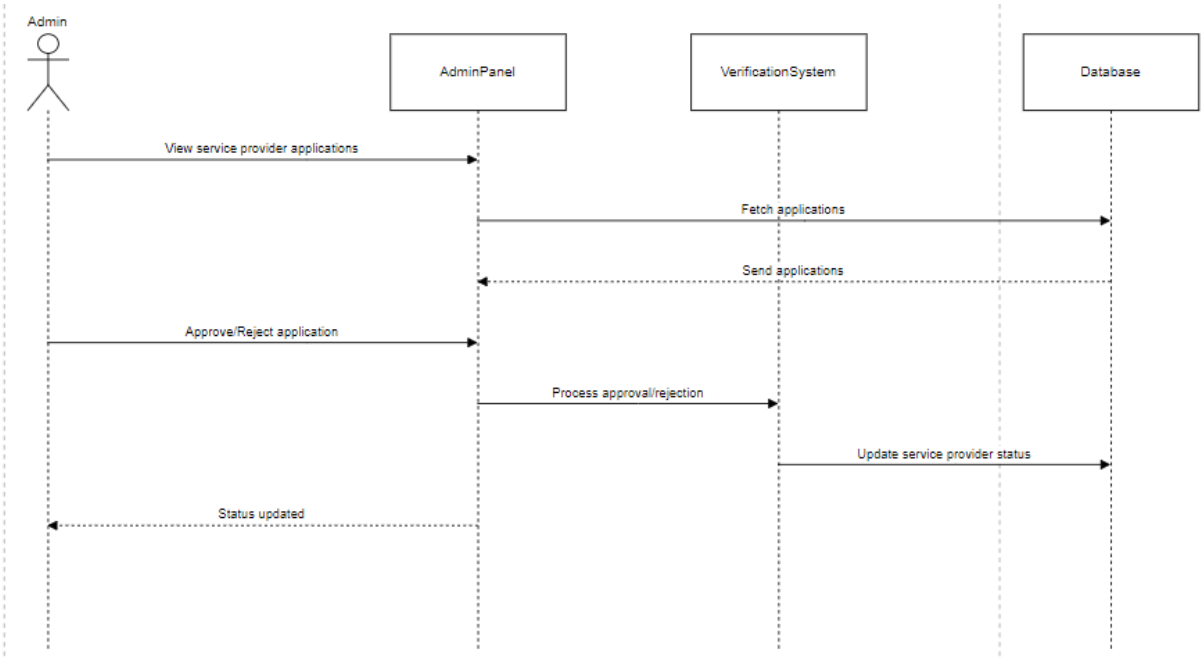

Figure 18 Service provider verification sequence diagram

3.3.9. Review and post a bid

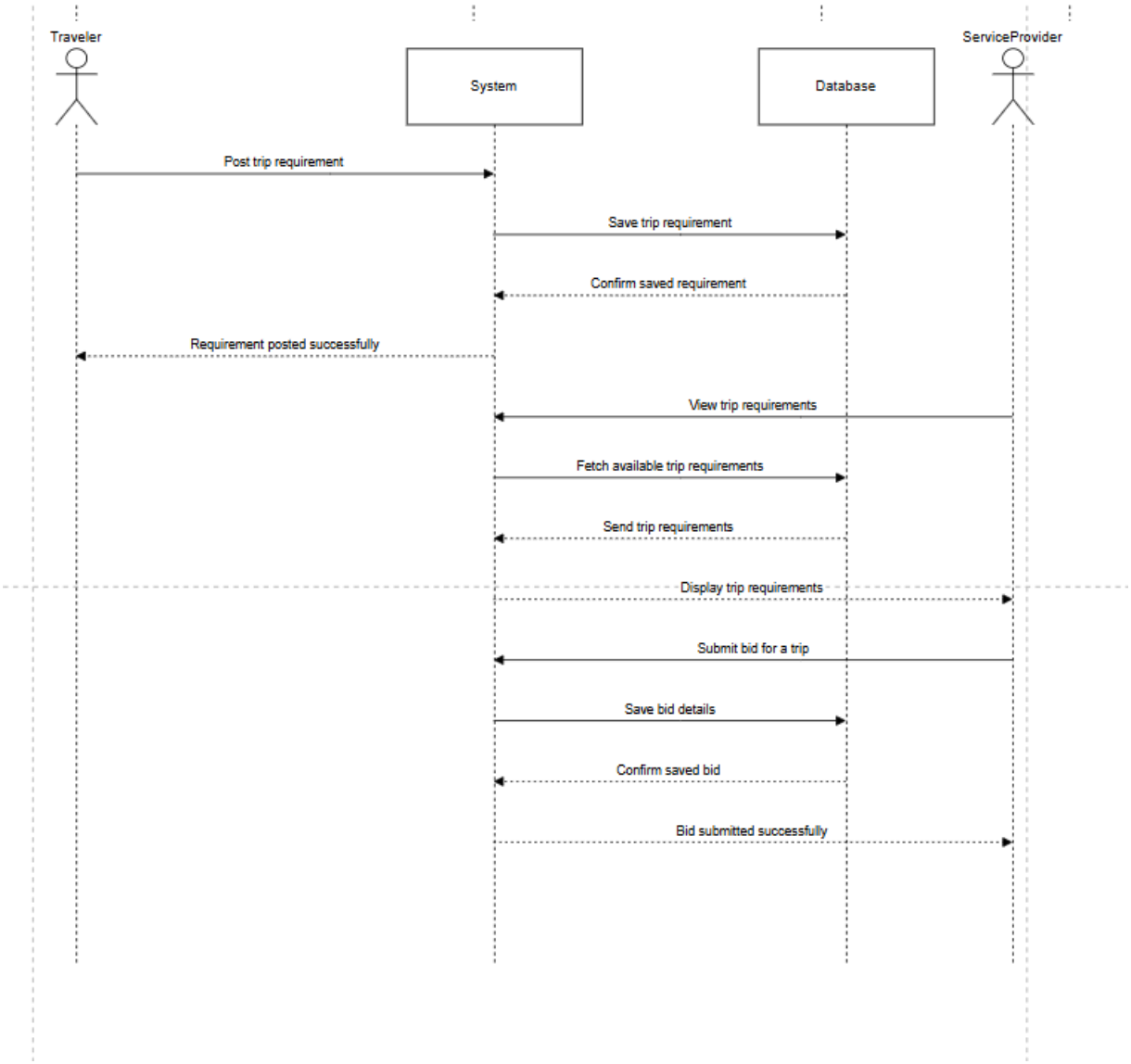

Figure 19 Review and post a bid sequence diagram

3.4. Context Diagram

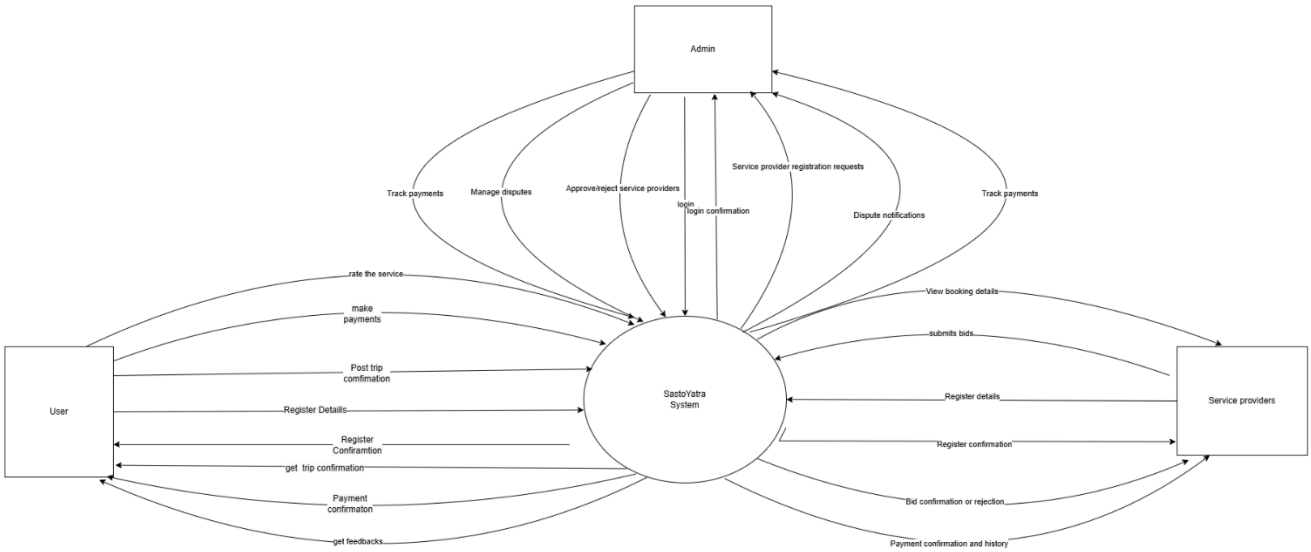

Figure 20 Context Diagram

3.5. Data Flow Diagram Level -1

Figure 21 DFD Level-1

3.6. Activity Diagram

3.6.1. Post Travel Requirements

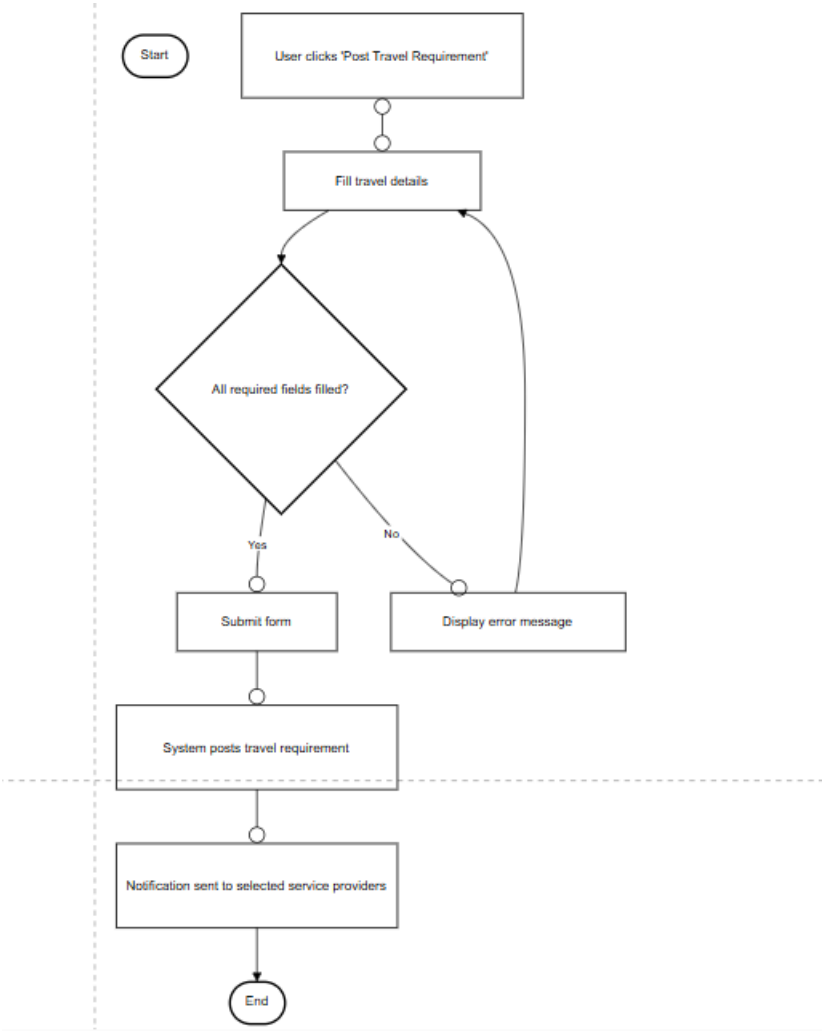

Figure 22 Post Travel Requirements activity diagram

3.6.2. Post a bid

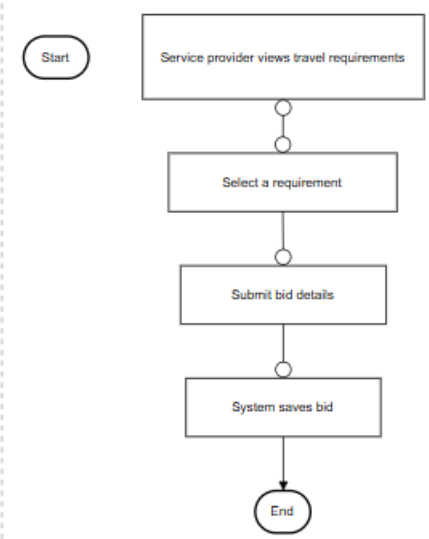

Figure 23 Post a bid activity diagram

3.6.3. Bookings

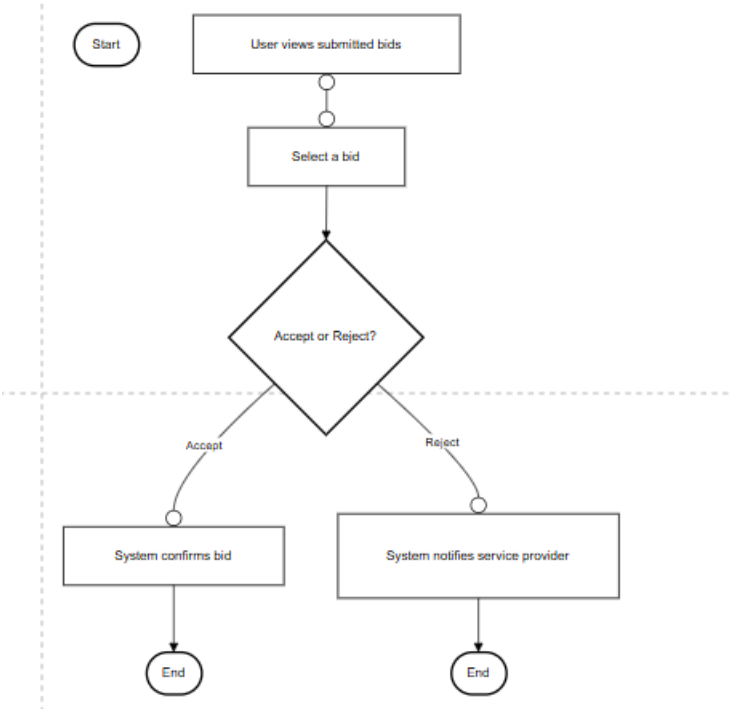

Figure 24 Bookings activity diagram

3.6.4. Rating and feedback

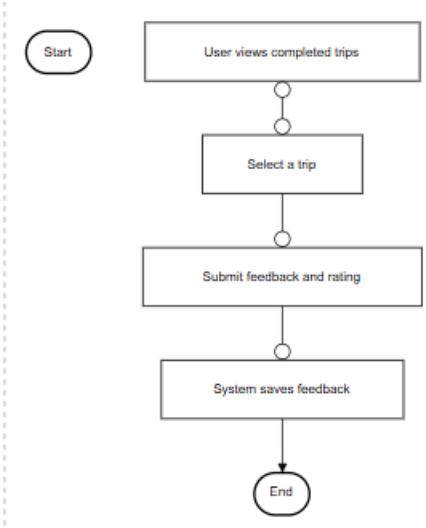

Figure 25 Rating and Feedback activity diagram

3.6.5. Manage payments

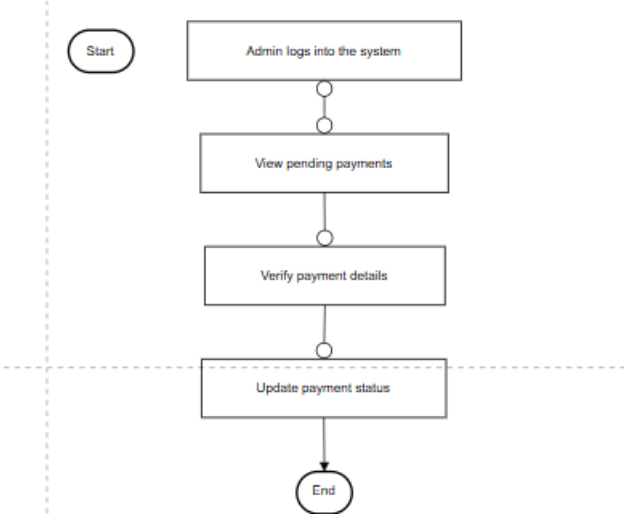

Figure 26 Manage payments activitu diagram

3.6.6. Verify Service Provider

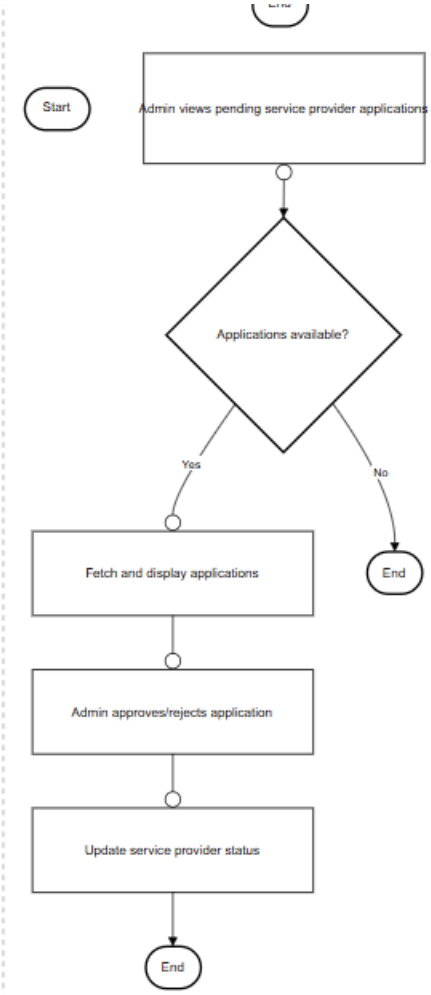

Figure 27 Verify Service Provider activity diagram

3.6.7. Cancel Bookings

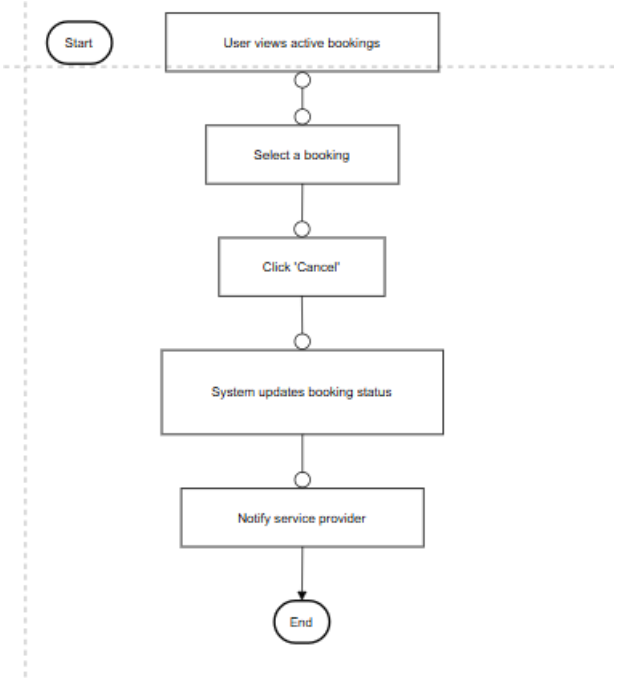

Figure 28 Cancel Bookings activity diagram

3.7. Wireframes

3.7.1 Mobile UI

3.7.1.1 Welcome Screen

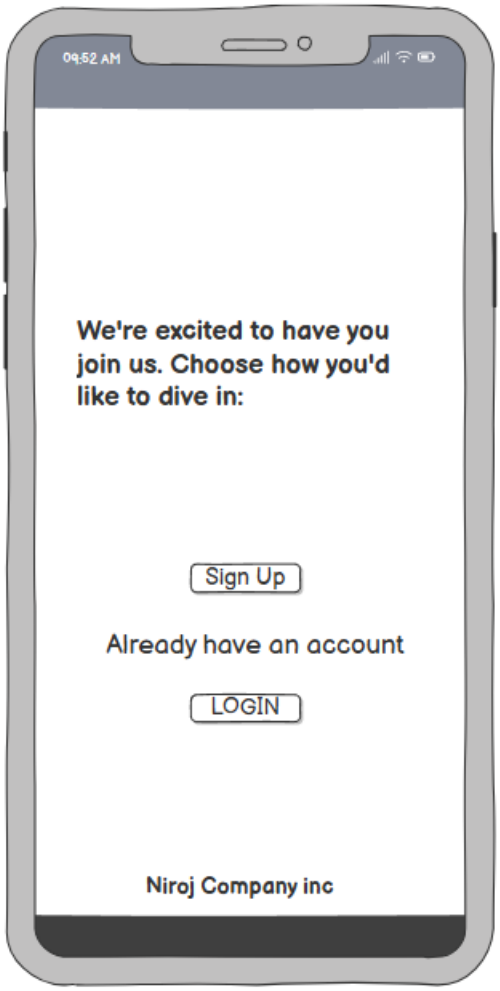

Figure 29 Welcome screen mobile UI

3.7.1.3 Login Screen

Figure 30 Login screen mobile UI

3.7.1.4 Register Screen

Figure 31 Register screen mobile UI

3.7.1.5 Forgot Password Screen

Figure 32 Forgot password screen mobile UI

3.7.1.6. Dashboard for Users

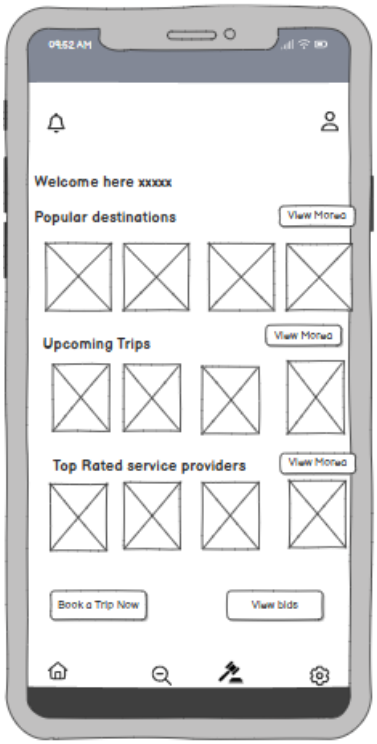

Figure 33 Traveler home screen

Figure 34 Filter service providers Ui

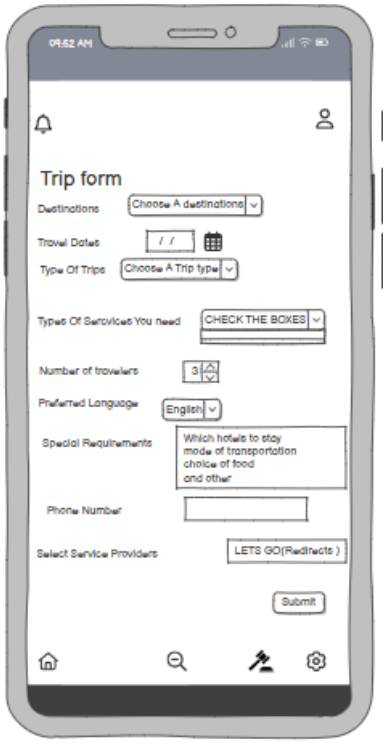

Figure 35 Trip requiremetnt form ui

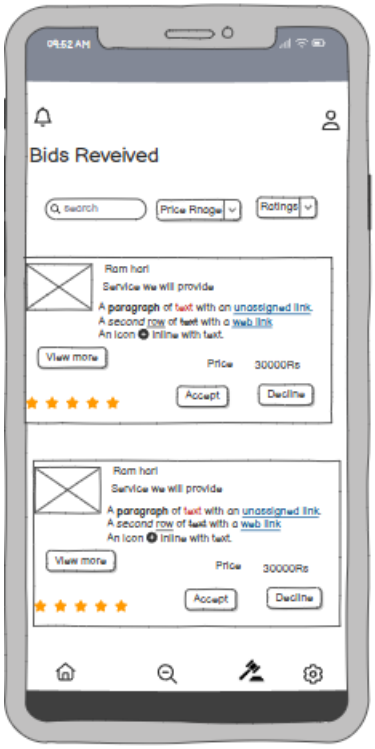

Figure 36 Bids received ui

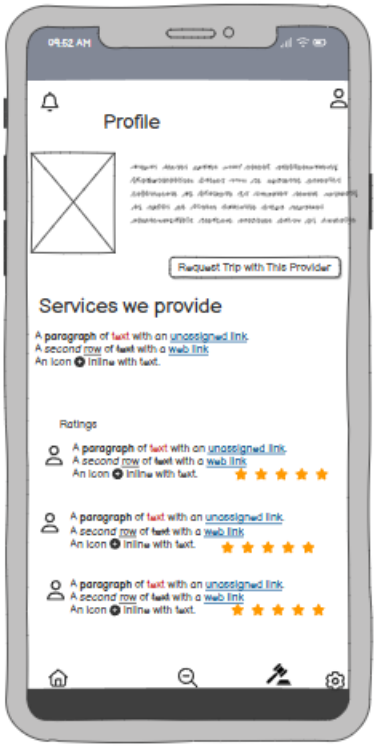

Figure 37 service provider profile ui

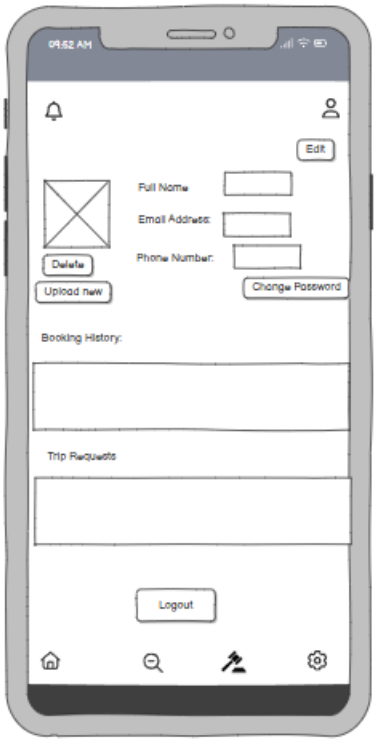

Figure 38 user ui

3.7.1.7. Dashboard for service providers

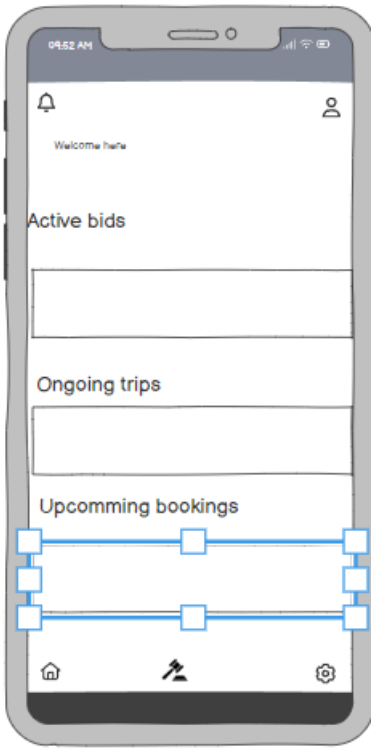

Figure 39 Home page

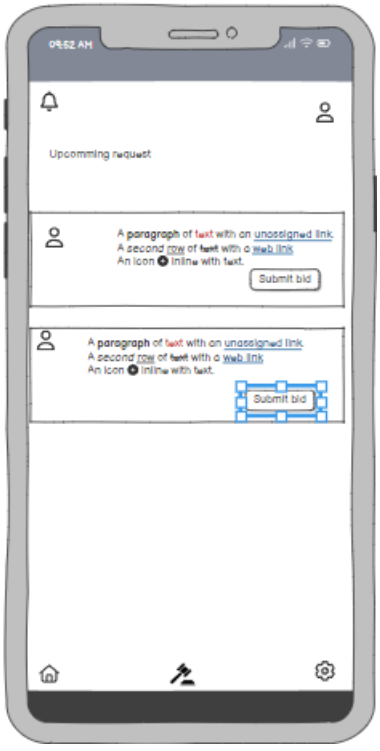

Figure 40 Request page

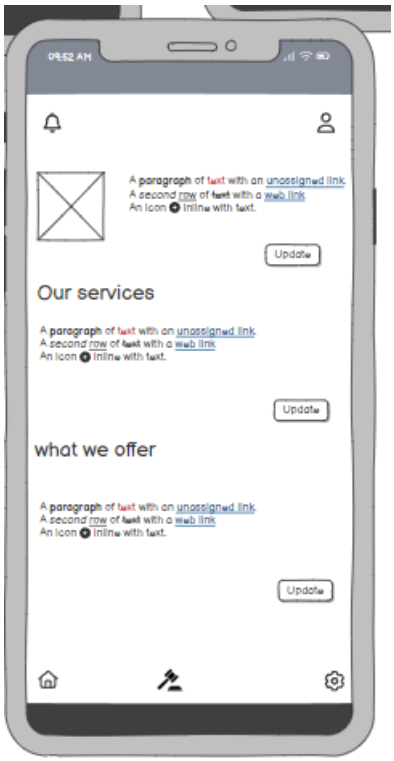

Figure 41 Profile page

3.7.1.8. AdminDashboard

3.7.2. Web UI for Admin

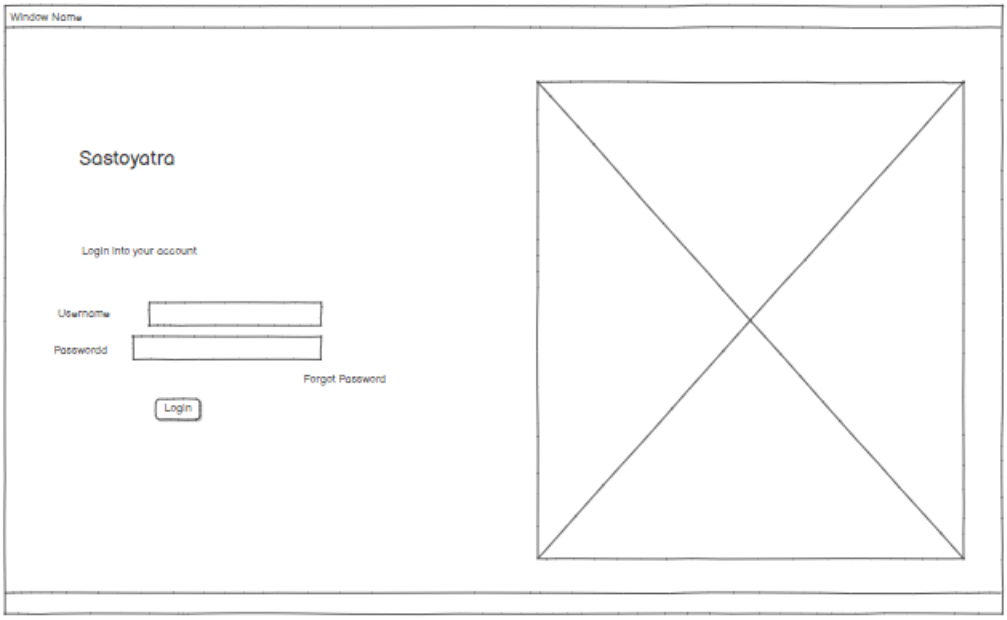

Figure 42 : Admin login page web UI

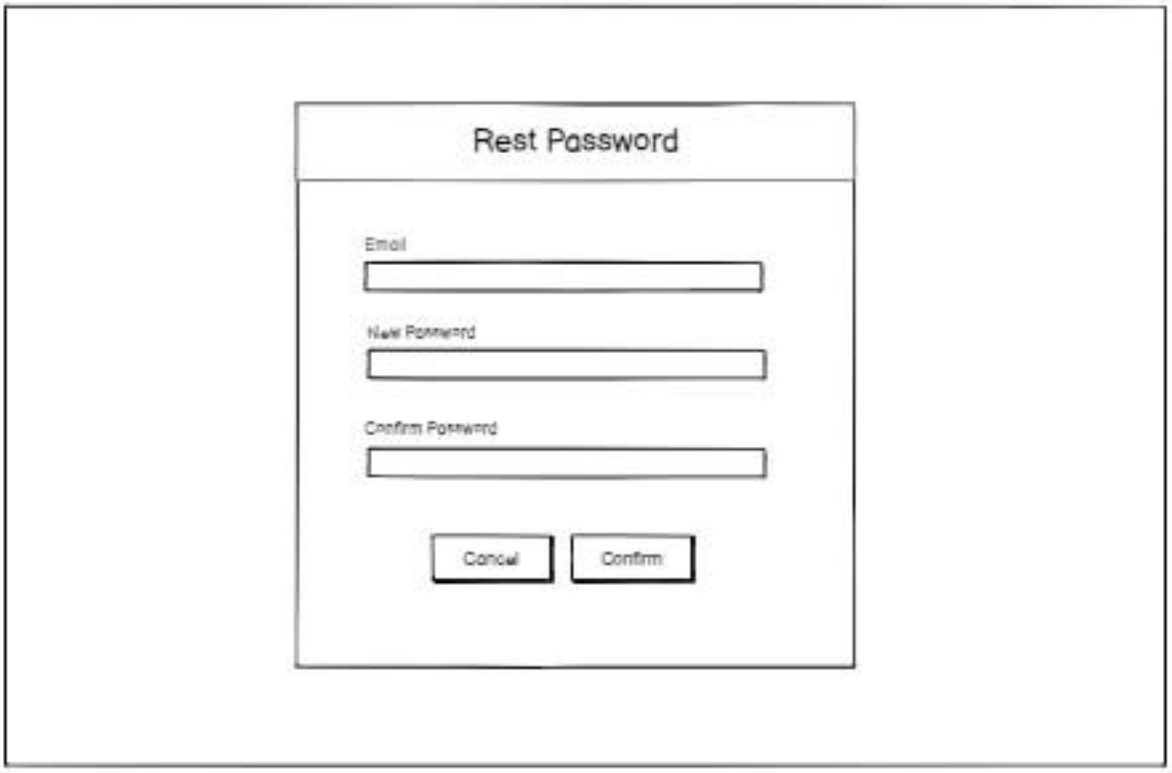

Figure 43 Admin forgot password UI.

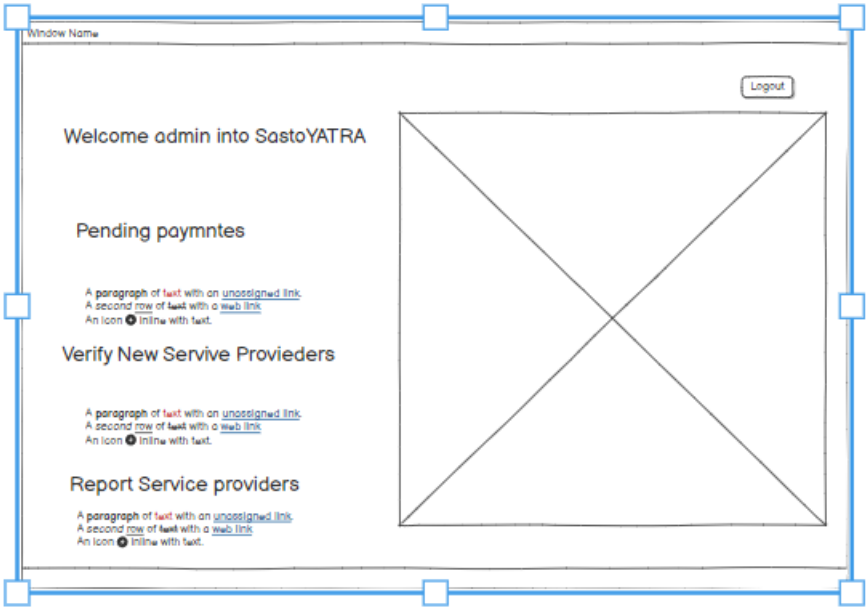

Figure 44 Admin dashboard

3.8. ER-Diagram

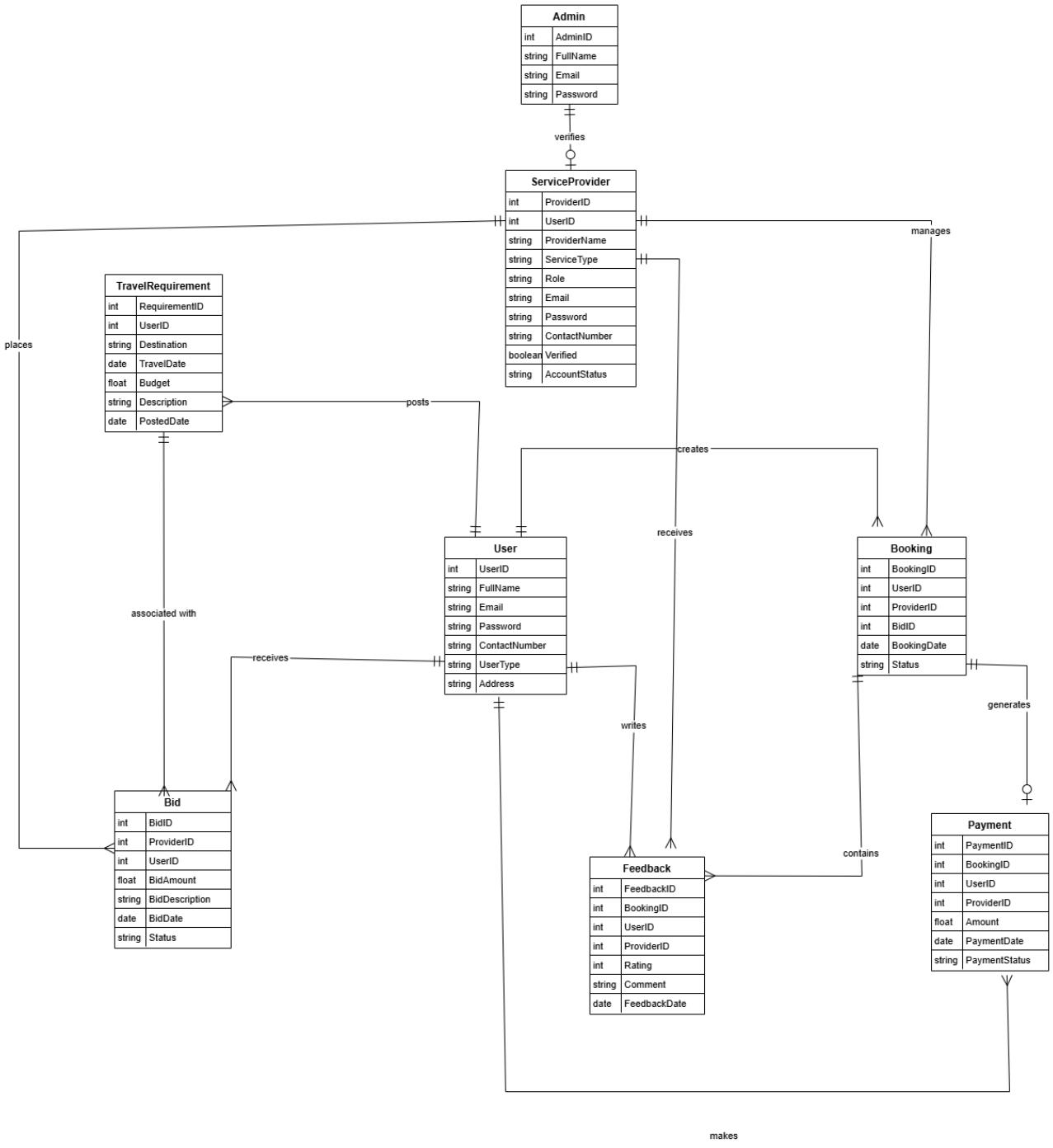

Figure 45 Er Diagram

3.9. System Architecture Diagram

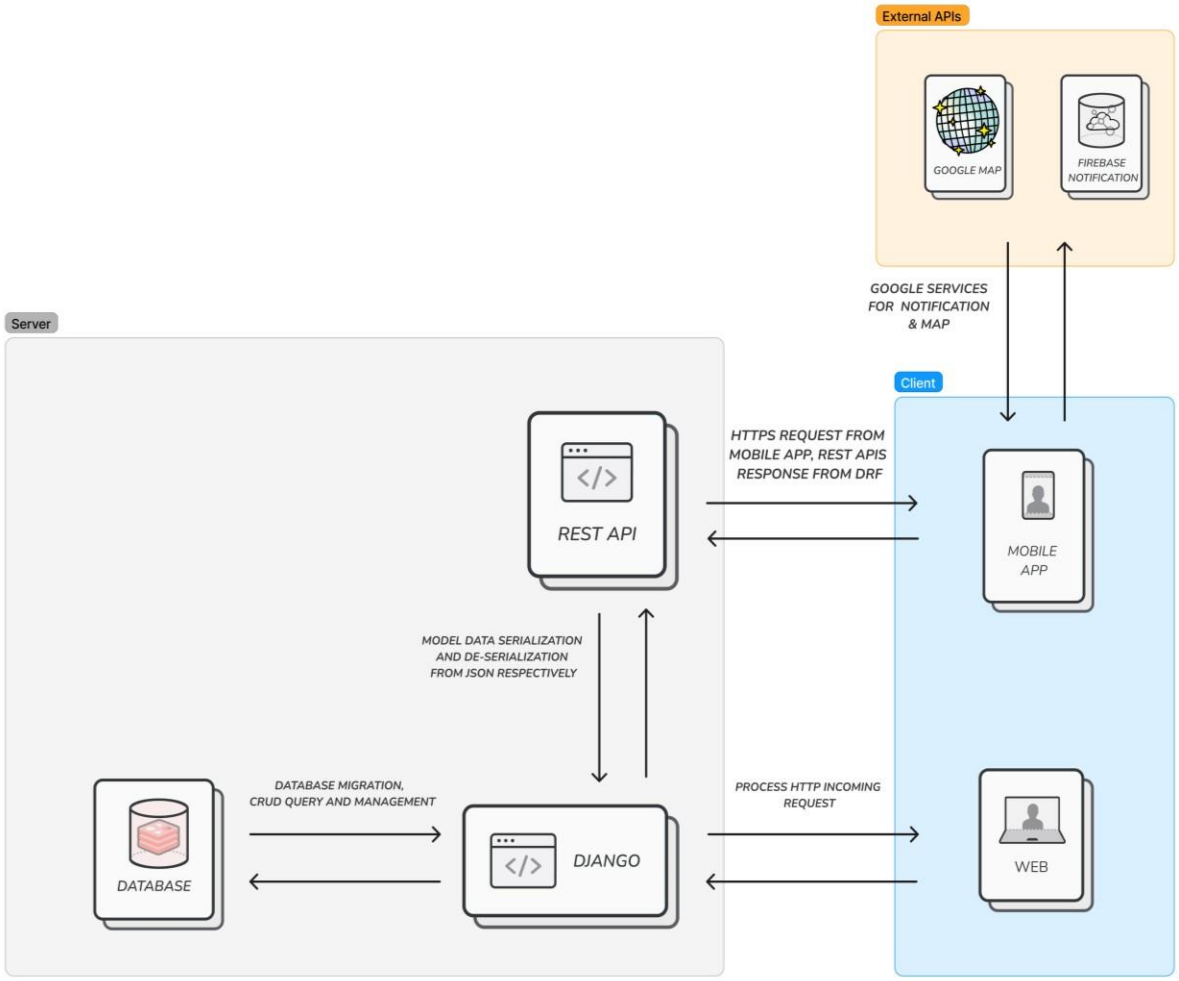

Figure 46 System Architecture Diagram

3.10. Class Diagram

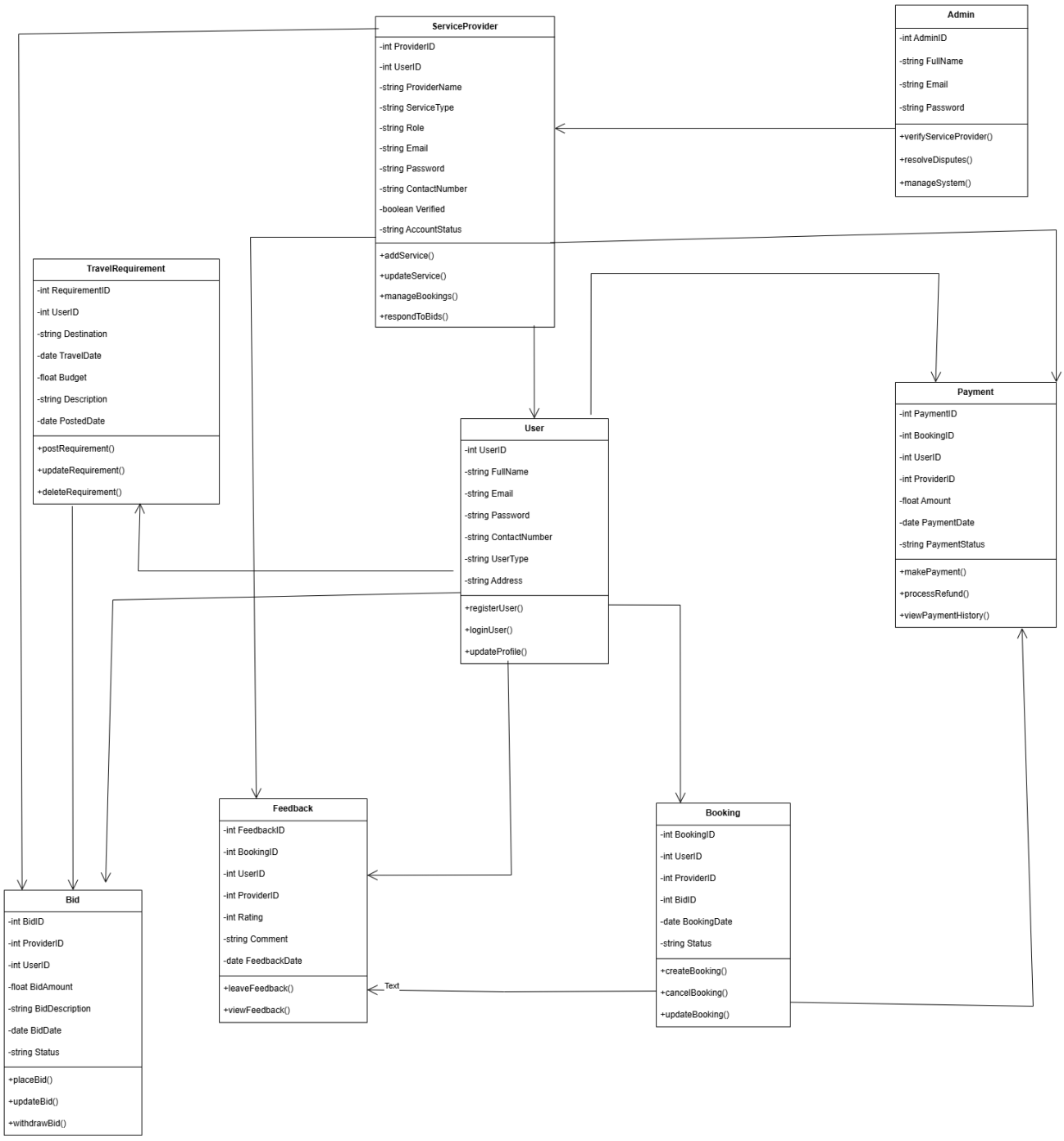

Figure 47 Class Diagram

Figure 45: Class diagram of food donation application

3.11. Milestone Chart

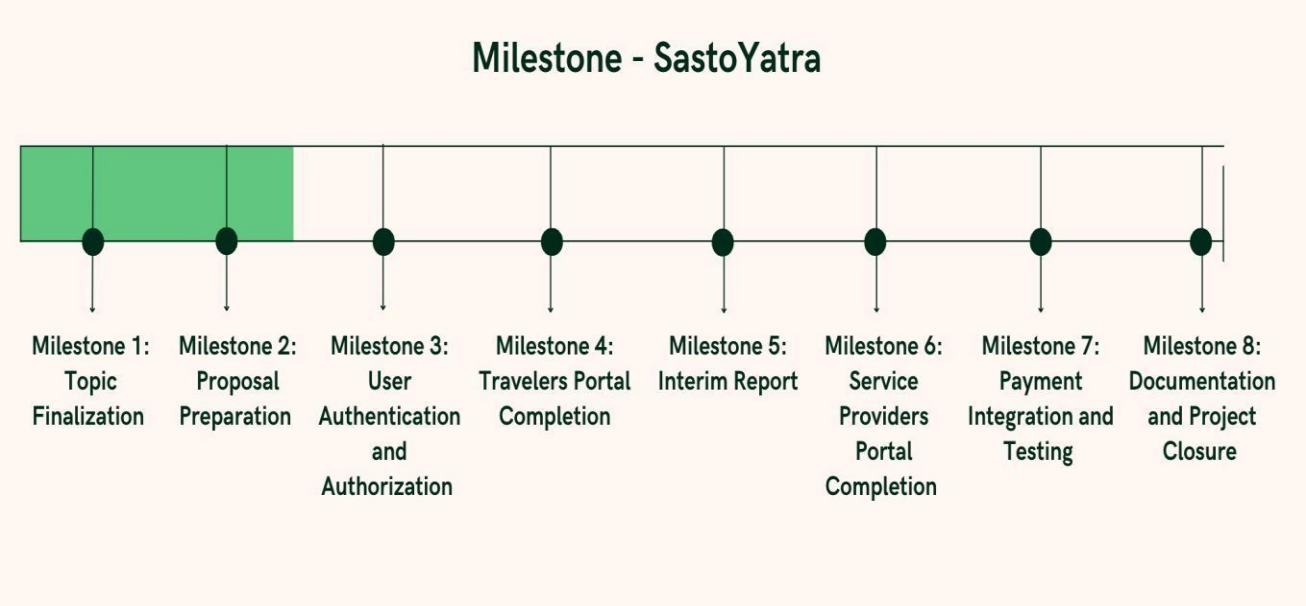

Figure 48 Milestone Chart

3.12. WBS

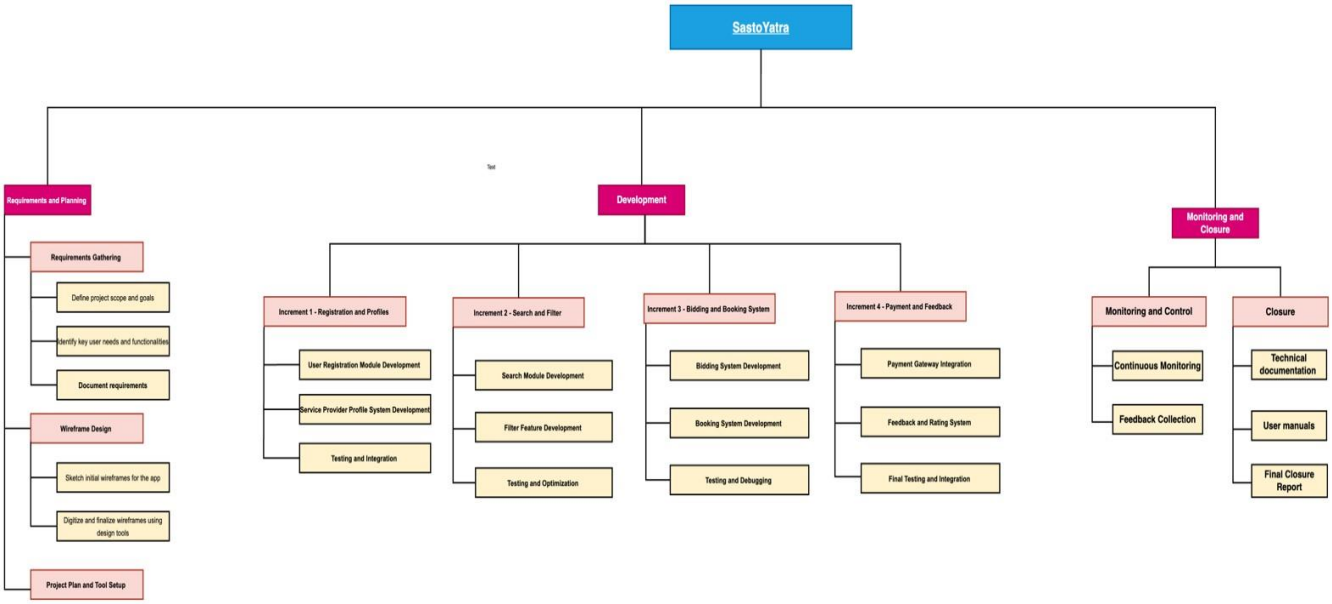

Figure 49 : Work Breakdown Structure

3.13. Gantt Chart

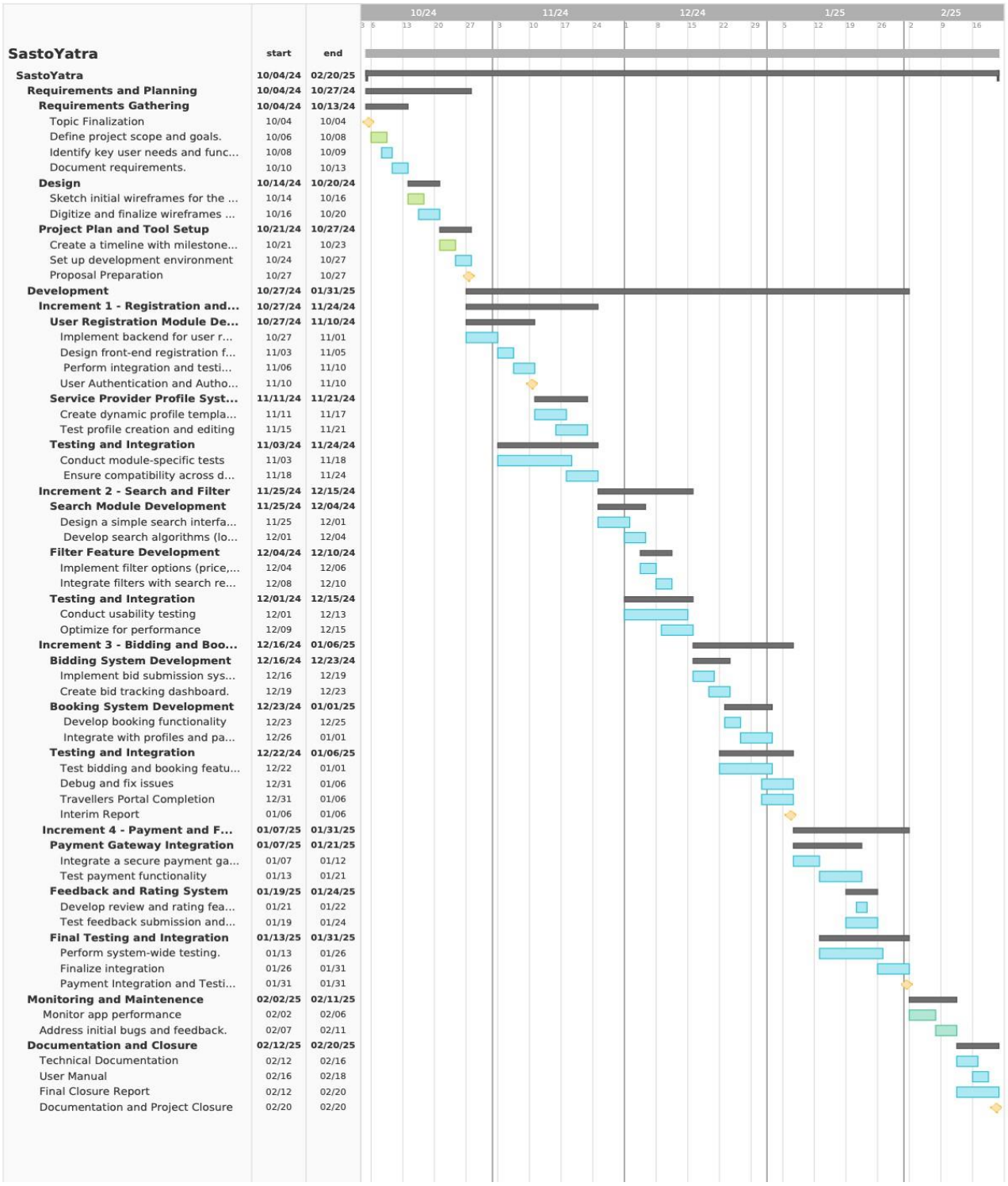

Figure 50 Gantt Chart

3.14. Analysis of progress

3.14.1. Progress Table

S.N.	Task	Status	Progress
1	Research the topic and client finalized	Completed	100%
2	Project requirements collection and project planning	Completed	100%
3	Proposal writing	Completed	100%
4	UML diagram	Completed	100%
5	Database development	Incomplete	50%

3.14.2. Progress Review

The development progress of the project **SastoYatra** runs accordingly with the timeline outlined in the Gantt chart. Certain tasks are at a fully developed stage,

while others partially have been developed, having 50% or 10%, depending on their complexity. The rest are to be initiated during the upcoming sprints.

Thorough research and discussion with the client were carried out on the project scope and system requirements, which are completed in time. Database development was started afterwards and presently work has reached 50%, while the rest of the started work includes Authentication, UI Development of Web Application, and UI Development of Mobile Application. All these aforementioned tasks have achieved 10% completion in each area. In active development are: Mobile Walkthrough, welcome dashboard, and dashboards for different roles.

The overall development progress of the system is in a good position, with the key foundational components being completed and the project moving at a good speed. This includes the implementation of critical features in the upcoming sprints: posting a trip, bid management, a payment system for cancellations and payments handling, and a notification system that includes bid update notifications and booking confirmations. These features, though complex, are indispensable toward the core functionalities of the platform. The meeting with the client and subsequent questionnaires came in handy and gave insight to improve the system, and successive stages of development include these user requirement specifications. Though some tasks still remain pending, the project is getting executed efficiently; the team holds focus on accomplishment within the scheduled time span.

The main aim is to achieve a complete feature set, including feedback and ratings, within the project deadline, so the platform will be sturdy and ready for users.

3.15.3. Progress Timeline

S.N.	Task	Status	Progress
1	Research the topic and client finalized	Completed	100%

2	Project requirements collection and project planning	Completed	100%
3	UML diagram	Completed	100%
4	Database development	Incomplete	50%
5	Web admin login UI, reset password UI, home page UI development	Incomplete	10%
6	Login Authentication	Incomplete	10%
7	Rest API development	Incomplete	10%
8	Mobile walk-through screen UI, welcome screen UI, login, register UI, forget password screen UI and different user role dashboard UI development	Incomplete	10%
9	Payment management from the web admin side	Not Started	0%

10	Trip posting and bid management functionalities development	Not Started	0%
11	Notification system for bid updates and booking confirmations	Not Started	0%
12	Feedback and rating system implementation	Not Started	0%

3.14.3. Action Plan

The project began off with the extensive research of finding out the functional and non-functional requirements of the system, followed by UML diagrams to clearly get the architecture of the system. First, the design had to be done for a robust MySQL database that could handle data efficiently, given the diverse roles and functionalities that were supposed to exist within the system.

For now, I have completed the non-coding activities, such as requirement analysis, creation of UML diagrams, and database design. However, I am yet to start the Django Rest API development or the actual coding for the frontend and backend systems.

The next step will involve the actual coding of the web application. I am going to start with the admin panel, where major functionalities will be in the admin login, logout, password reset, and management of data within the system. Regarding the mobile application, further steps include making UI screens for walkthroughs, login and registration, password recovery.

Once database and API coding start, my concentration will shift toward integrating the back end and the front end by allowing smooth interaction. Actual development of the UI in both the web and mobile applications then follows, and a Room Database is included in the case of a mobile app to store the static data locally to save API calls.

First, the admin authentication for web users, followed by solving the authentication errors regarding mobiles. When the login and registration are fully functional, I will be able to proceed ahead with building user dashboards for travelers, service providers, and admins to let them navigate and perform respective actions.

Next, I will implement the bidding and booking features, ensuring proper API calls between the mobile, web, and backend. Firebase push notifications and Google Maps integration will be added to enhance the user experience.

The final stage is the complete testing and debugging for a smooth error-free system. Following the test, deployment and delivery of the system will be performed.

The project will deliver a fully functional web application for admin tasks, and a mobile application for travelers and service providers that shall enable efficient travel management and service coordination through SastoYatra.

4. Future Work

Moving on, the improvement will be done in such a manner that there is an optimum user experience on both mobile and web for SastoYatra. For the mobile interface, it will be implemented in Kotlin with Jetpack Compose, whereas the web design will be made responsive and friendly using HTML, CSS, and Bootstrap. Moreover, it is planned to implement a local mobile database for better performance by storing certain data locally, which would reduce server load and hence increase the app's performance.

First is to resolve the challenges of mobile user logins and service provider verification. After that, it will be very easy to design intuitive user dashboards that allow for easy navigation and functionality. These will be the dashboards that will make the management of trips, bidding processes, and selection of service providers easy. Real-time features, such as notifications and Google Maps integrations, will be applied to ensure users can locate service providers with convenience and explore the destinations of their trips.

The testing shall be vast before the completion of the project, to ensure the user interface is smooth and easy to use, and also performs in a reliable manner. Future work includes refining mobile-server data synchronization for consistency across platforms and enhancing the functionality of the system for travelers, guides, porters, travel agencies, and admin users. This will deliver a user-friendly, comprehensive platform to varied user groups for ease of planning their travel and management of service providers, thus making the process easier and efficient.

It will be further enhanced into a full-fledged multi-platform system that caters to Android, iOS, and web users. Chat and messaging for real-time communication between travelers and service providers, with advanced analytics for the optimization of user journeys, will be some of the intended future features. In the end, the aim is

to have an all-inclusive, scalable, and feature-rich travel management platform that would provide a seamless user experience for any kind of user.

Future scope and timeline have been elaborated in tabular form, explaining how each task will be completed within the duration of the project.

All the future work is shown in the table as given below:

S.N.	Due future work	Descriptions
1.	Web dashboard for admin and mobile dashboard for different users	Develop the **web dashboard** for admins to manage travel data, service providers, bookings, and user details in tabular format. The **mobile dashboard** will provide tailored interfaces for users, including travelers and service providers. This will be completed in the upcoming sprint.
2.	Login, register and forget password authentication from mobile device	Login, registration, and password recovery features need to be fully integrated with the backend for mobile users. This is under development and will be completed in the next sprint.
3.	Admin Verification of service providers	Admin will have the ability to verify service providers by reviewing their submitted documents and ensuring they meet the platform's standards. Only verified service providers will be allowed to participate in bidding and bookings.
4.	Local database for storing temporary data	Develop a local database to store static or temporary data on mobile devices using the Room Database for offline functionality.

5.	Frontend to backend data phase and post for data store	Ensure that mobile users can **post, modify, and retrieve data** from the backend. Features like posting travel requirements and updating profiles will be supported in the next phase.
6.	Local and Firebase push notification	Implement **push notifications** using Firebase to notify users about bids, booking confirmations, and other updates. This feature will be included in the next sprint.
7.	Feedback system	Develop a feedback system that allows users to leave ratings and reviews for service providers. If a service provider receives a low rating (below 2) twice, the admin will review their account and take necessary actions.
8.	Bidding system	Implement a **bidding system** where service providers can place bids on user-posted travel requirements. Users will receive multiple bids, review them, and select the best one based on price, quality, or service rating. This feature will be completed in the next sprint.
9.	Booking history management	Develop the functionality to allow users to view their booking history, including past and canceled bookings. This is planned for the next sprint.

10.	Testing	The final due work of the system testing the internal testing is every feature completed to test but the final testing whole system test to find any errors or bugs.

5. Conclusion

To summarize, this report highlights the foundational steps taken in the development of **SastoYatra**, covering the project selection, creation of a comprehensive project plan, and documentation of development processes. Key components such as the mobile front-end UI for login, registration, forgot password, walkthrough, and dashboard are currently under development but not yet complete. Similarly, the back-end **Django Rest API** and database design have been structured, and a basic UI for login functionality has been demonstrated in this report. Despite various challenges encountered throughout the development journey, each milestone reached has reinforced the project's momentum.

The **SastoYatra Final Year Project (FYP)** aims to establish an all-encompassing platform that facilitates interactions among travelers, service providers, and administrators. The development process commenced with thorough research, system design, and database modeling to create a robust architectural foundation. A significant emphasis has been placed on ensuring seamless integration between the frontend and backend through a well-organized Rest API.

For mobile development, **Kotlin with Jetpack Compose** has been employed to craft an intuitive and engaging user interface. On the web platform, **HTML, CSS, and Bootstrap** are used to develop a responsive and user-friendly admin interface. To enhance performance, a local database has been introduced to support offline functionalities, and login and registration authentication issues are being actively resolved. Development progress includes the creation of tailored dashboards for travelers, service providers, and administrators, incorporating essential features such as **travel requirement posting, bidding, and booking**.

Future enhancements involve integrating **push notifications using Firebase** to keep users updated on bids, bookings, and system notifications. Additionally, a feedback system will enable users to review and rate service providers, ensuring quality control through admin intervention for providers with low ratings. These features will improve user engagement and maintain platform credibility.

The project remains focused on delivering a **user-centric and inclusive solution**, catering to the specific needs of administrators, travelers, and service providers. The ultimate goal is to develop a reliable and efficient **Android and web-based platform** for streamlined travel management and service coordination. As the project progresses, attention will shift toward final testing to ensure a seamless user experience, followed by deployment and delivery of a polished and fully functional system.

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7. Appendix

7.1. Technology Use

7.2.1. Django Rest Framework

Django's admin panels allow site administrators to manage web application content without requiring complex coding. When paired with Django REST Framework (DRF), Django supports the creation of RESTful APIs, enabling smooth communication between system components and mobile apps. In a food donation system, this allows users to enter surplus food details via a mobile app or website, while recipient organizations can request specific food types. Django simplifies backend development, and when combined with DRF, it provides robust APIs for efficient system communication.

7.2.1. Kotlin jetpack compose.

The users interact indirectly with Kotlin and Jetpack Compose through the front end of the system. Intuitive and responsive interfaces designed using these tools allow users to seamlessly explore various features and functionalities. By leveraging Kotlin and Jetpack Compose in frontend development, users experience visually appealing and user-friendly interfaces, significantly improving their overall interaction with the mobile app

7.2. SRS Documentation

A software requirement specification, also known as an SRS, is a document that describes what features and functionalities a software is supposed to deliver. It also details the features the product should possess to meet the requirements of all stakeholders involved in the business and the users. According to the SRS protocol document, the subsequent document will give an overview of the proposed software's four D's, which are described below.

- Define the product’s purpose
- Describe what is being built
- Detail each and every requirement
- Deliver all of them for approval

Revolving around all these conventions, each of them will be thoroughly explained to describe exactly what the system is about and what it aims in achieving at its completion.

7.4.1. Purpose

Project Title: SastoYatra – A Comprehensive Travel Management System

Project Category: Web and Mobile Application

This document aims to define the functionality and technical specifications of SastoYatra, covering aspects such as user experience, system capabilities, constraints, and supported interfaces. The ultimate goal is to streamline the travel planning process for travelers and service providers, ensuring seamless interactions.

7.2.1.1. Intended Audience

This document is intended for:

- **Developers**: To implement features and ensure alignment with project goals.
- **QA Engineers**: To test system functionalities as per defined requirements.
- **Stakeholders**: To understand the system's purpose and ensure its delivery meets expectations.
- **End Users**: Travelers, service providers, and admins who will interact with the system.

7.2.1.2. Project Scope

Undoubtedly, Nepal highly needs an effective travel management system, and for that, the traditional approach needs to be changed completely. The main motto of SastoYatra is to facilitate the users with a platform that will enable them to connect with the service providers—guides, porters, and travel agencies—to effectively plan their trips. It offers secure payment tracking, trip tracking, and record management.

Advanced security features of the system assure users of data protection and assurance of privacy based on all the relevant standards. Digitization of processes is enabled as it eliminates old, cumbersome, manual ways of doing things on fragmented platforms. The records of the transactions and booking are stored on a cloud-based system by SastoYatra. The system will be developed in steps, with user feedback and subsequent incorporation, in addition to obtaining approval from the client at each step of the way to ensure all requirements are covered. The project shall be completed on time and provide a very friendly, robust travel management solution.

7.2.1.3. Existing System

The dominant manual ways of the travel management system in Nepal are supported by telephone calls, e-mails, and physical documentation in managing bookings or contacts between the traveler and the service provider. This traditional system is highly error-prone and inefficient, not to mention lacking transparency and the conveniences expected by modern users.

The key drawbacks in this existing manual system are:

- **Time-Consuming and Inefficient:** The manual process is highly paperwork- and coordination-intensive, making it cumbersome and difficult to use.
- **Vulnerable Records:** Information such as payment and trip details is recorded in physical files or simple digital formats, making them susceptible to loss, damage, or unauthorized access.
- **Security Issues:** Manual systems lack robust security measures, increasing the probability of data breaches or mismanagement of sensitive information.
- **Limited Accessibility:** Travelers must contact service providers directly, leading to frequent delays and missed opportunities due to poor coordination.

7.2.1.4. Proposed System

SastoYatra's system mainly aims at giving comfort to both the traveler, service providers, and administrators, replacing traditional, fragmented ways of managing the journey. Thus, the proposed system will apply the power of technology for seamless interactions, secure transactions, and effectively managing the needs related to traveling. Presented below are possible benefits that could be reaped from this system by the concerned user group in each category.

Advantages for Travelers

- They can easily search and compare various service providers through their profiles, ratings, and reviews.
- Posting trip requirements and receiving competitive bids from service providers becomes easier.
- Booking trips and making secure payments are simplified, with all records saved for future reference.
- Travelers are allowed to view and manage their booking history, enhancing their overall travel experience.

Advantages for Service Providers

- Service providers can easily go through trip requests and bid to win projects.
- Bookings management, performance tracking, and responding to traveler feedback are streamlined.
- Providers can log in and access dashboards to view financial records and booking statuses.
- The system ensures that verified service providers have increased visibility and credibility, attracting more clients.

7.2.2. System Perspective

Register Users

Travelers and service providers can register on the platform by providing personal details and credentials. Admins verify service provider registrations to ensure reliability and quality services.

Register Service Providers

Admins sign up new service providers, including guides, porters, and agencies, by adding their names, descriptions, skills, certifications, and relevant documents. Once registered, service providers can access the system to bid on trips and manage bookings.

Online Posting of Trip Requirements

Travelers can post detailed trip requirements, such as destination, budget, and travel dates. The system displays these trip requests to all verified service providers, enabling them to submit competitive bids.

Bidding and Booking Management

Service providers review trip requests and submit their bids. Travelers compare bids based on value, provider ratings, and reviews, then confirm bookings directly through the system.

Payment and Transactions

The system offers secure online payment options for booking confirmations. Payment details and transaction statuses are tracked and stored for future reference.

Rating and Feedback System

After a trip, travelers can rate and review service providers. This feedback helps ensure service quality and accountability within the platform.

Notification System

Notifications regarding bid updates, booking confirmations, and other updates are sent to travelers and service providers, ensuring smooth and timely communication.

The **SastoYatra** system provides an efficient and transparent travel management platform, benefiting all users involved in trip planning and execution.

7.2.3. User Class and Characteristics

User Class and Characteristics for SastoYatra

The SastoYatra system has three primary user roles: **Travelers**, **Service Providers**, and **Admins**. The functionalities of each user class are as follows:

UC 1: Travelers

- **UC 1.1:** Can register themselves on the platform.
- **UC 1.2:** Can log in to the system using valid credentials.
- **UC 1.3:** Can post trip requirements, specifying details like destination, budget, and dates.
- **UC 1.4:** Can view and compare bids submitted by service providers.
- **UC 1.5:** Can book trips and make payments through secure online methods.
- **UC 1.6:** Can provide ratings and reviews for service providers after completing a trip.
- **UC 1.7:** Can view their booking history and transaction records.

UC 2: Service Providers

- **UC 2.1:** Can register on the platform and upload required documents for verification.
- **UC 2.2:** Can log in after admin approval of their account.
- **UC 2.3:** Can view trip requirements posted by travelers.
- **UC 2.4:** Can submit bids with proposed services and pricing.
- **UC 2.5:** Can manage bookings, including accepting or rejecting confirmed trips.
- **UC 2.6:** Can track performance metrics, including ratings and feedback from travelers.

UC 3: Admins

- **UC 3.1:** Can approve or reject service provider registration requests.
- **UC 3.2:** Can resolve disputes between travelers and service providers.
- **UC 3.3:** Can monitor system activities, including bookings, payments, and user interactions.
- **UC 3.4:** Can generate reports for system performance and financial transactions.
- **UC 3.5:** Can handle support queries raised by users (travelers or service providers).

7.2.4. Operating System

OE 1. The SastoYatra application should run as:

- A web-based platform for Admins accessible via major web browsers.
- A mobile app for Travelers and Service Providers, built exclusively for Android using Kotlin and Jetpack Compose.

7.2.5. Assumptions and Dependencies

AS 1. All user data, including trip details, bids, and feedback, shall be securely accessible to the client organization for system management and monitoring.

AS 2. Posting of trips, submission of bids, and any other real-time interaction require an internet connection.

7.2.6. Design and Implementation Constraints

CO 1. The mobile application requires an active internet connection for key functions like trip posting, bidding, and booking confirmations.

CO 2. The application is optimized for Android devices and may not function properly on devices with outdated software or smaller screens.

CO 3. The web interface is designed for use on modern browsers with JavaScript enabled for full functionality.

7.2.7. Functional Requirements

A Functional Requirement describes the service that shall be provided by the program. It supplies information about a portion of software or an entire system. Quite simply put, a function is the mixture of the system's inputs, its behavior, as well as the results it provides. A calculation, data manipulation, business process, human interaction, or any other unique functionality defines what functionality someone might expect from the system. A schematic outline regarding each and every function of the system, along with their descriptions and requirements, is thus explained below:

User Registration

<table>
<tr><th>Req. ID</th><th>Requirement Description</th><th>Priority</th><th>Complexity</th></tr>
<tr><td>FR 1.</td><td>Travelers and Service Providers can register on the platform.
<table>
<tr><th colspan="2">System Requirement</th></tr>
<tr><td></td><td>Users fill out a registration form with personal details and credentials.</td></tr>
<tr><td></td><td>The system validates the input to ensure all fields are complete.</td></tr>
<tr><td></td><td>A confirmation email is sent for verification.</td></tr>
<tr><td></td><td>Upon clicking the confirmation link, users are redirected to a successful registration page. If validation fails, an error message is displayed.</td></tr>
</table></td><td>High</td><td>High</td></tr>
</table>

Trip requirement Posting

<table>
<tr><th>Req. ID</th><th>Requirement Description</th><th>Priority</th><th>Complexity</th></tr>
<tr><td>FR 2.</td><td>Travelers can post trip requirements detailing their travel plans.

System Requirement
<table><tr><td></td><td>Travelers fill out a trip requirement form with details like destination, travel dates, and budget.</td></tr><tr><td></td><td>The system stores the information and displays it to verified service providers for bidding</td></tr></table></td><td>High</td><td>High</td></tr>
</table>

Bidding System

<table>
<tr><th>Req. ID</th><th>Requirement Description</th><th>Priority</th><th>Complexity</th></tr>
<tr><td>FR 3.</td><td>Service Providers can submit bids for trip requirements.
<table>
<tr><th colspan="2">System Requirement</th></tr>
<tr><td></td><td>Service Providers access posted trip details and submit their bids</td></tr>
<tr><td></td><td>The system notifies Travelers of new bid submissions.</td></tr>
</table></td><td>High</td><td>Medium</td></tr>
</table>

Booking Management

<table>
<tr><th>Req. ID</th><th>Requirement Description</th><th>Priority</th><th>Complexity</th></tr>
<tr><td>FR 4.</td><td>Travelers can confirm bookings from received bids.
<table>
<tr><th colspan="2">System Requirement</th></tr>
<tr><td></td><td>Travelers review bids and select their preferred Service Provider.</td></tr>
<tr><td></td><td>A booking confirmation is generated and recorded in the system.</td></tr>
</table></td><td>High</td><td>High</td></tr>
</table>

Feedback and Rating

Req. ID	Requirement Description	Priority	Complexity

<table>
<tr>
<td>FR 5.</td>
<td>Travelers can leave ratings and reviews for Service Providers.

System Requirement
<table><tr><td></td><td>After completing a trip, Travelers can provide feedback and rate their experienc</td></tr><tr><td></td><td>The system updates the Service Provider’s profile with new ratings and reviews</td></tr></table></td>
<td>High</td>
<td>High</td>
</tr>
</table>

Payment Processing

<table>
<tr><th>Req. ID</th><th>Requirement Description</th><th>Priority</th><th>Complexity</th></tr>
<tr><td>FR 6.</td><td>Travelers can make secure payments for confirmed bookings.<table><tr><th colspan="2">System Requirement</th></tr><tr><td></td><td>Integration with a secure payment gateway to process transactions.</td></tr><tr><td></td><td>The system tracks and stores payment details for future reference.</td></tr></table></td><td>High</td><td>High</td></tr>
</table>

7.2.8. External Interfaces Required

Once all the features and requirements have been described, the development should be based on the following.

7.2.8.1. User Interface

The UI design will prioritize simplicity and ease of navigation, reducing user confusion. Each page will feature a clear color scheme and a descriptive title that aligns with its function. Visual elements such as images will display relevant data effectively. Wireframes will provide a structural layout of the UI to ensure a user-friendly experience.

7.2.8.2. Hardware

- The system will support admin in web and service provider and user in mobile applications.
- The system is applicable on any device with an internet connection.

7.2.8.3. Software

- Frontend Programming Languages: JavaScript (React for web), Kotlin (for mobile).
- Frontend Frameworks: React (web), Jetpack Compose (mobile).
- Development Tools for Frontend: Visual Studio Code, Android Studio.
- State Management: Redux or Context API (for React).
- Backend Programming Language: Python
- Backend Frameworks: Django, Django Rest Framework.
- Backend Development Tools: PyCharm, Postman.
- Database Server: MySQL.

7.2.8.4. Communication Protocol

The necessary interaction between the database and the web app is achieved through HTTP requests and their corresponding responses.

7.2.9. Non-Functional Requirements

Non-Functional Requirement defines the quality attribute of a software system. They are used to assess the quality of the software on aspects that are not directly related to its functionality but are, however, crucial for the success of the software. Systems that fail to meet users' expectations may have been developed without adequate consideration of non-functional aspects. Some of the system attributes to be justified are described below.

Reliability

Attribute ID	Requirement Description	Priority	Complexity
R.1.	The application should not crash upon opening.	Maximum	High
R.2.	The application must respond within acceptable time.	Maximum	Normal

Security

Attribute ID	Requirement Description	Priority	Complexity
S.1.	Information transmission must remain undisrupted.	Maximum	High
S.2.	Only authorized and verified users can access the system.	Maximum	Normal

Maintainability

Attribute ID	Requirement Description	Priority	Complexity

M.1.	The system should be easy to maintain.	Maximum	High
M.2.	Code should be simple and clear for future developers.	Maximum	Normal

Performances

Attribute ID	Requirement Description	Priority	Complexity
P.1.	The application should provide a seamless UI/UX experience.	Maximum	High

Availability

Attribute ID	Requirement Description	Priority	Complexity
A.1.	The system should be accessible from any internet-enabled device.	Maximum	High

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7.3 Survey form

This survey form aims to gather project requirements and understand the challenges society faces in managing travel services. Based on the survey, the primary goal of the system is to connect travelers with reliable local service providers, such as guides and porters. By analyzing the responses, the system incorporates features that address the most crucial needs identified through the survey.

The server form response details are given below:

Figure 51 Survey response email

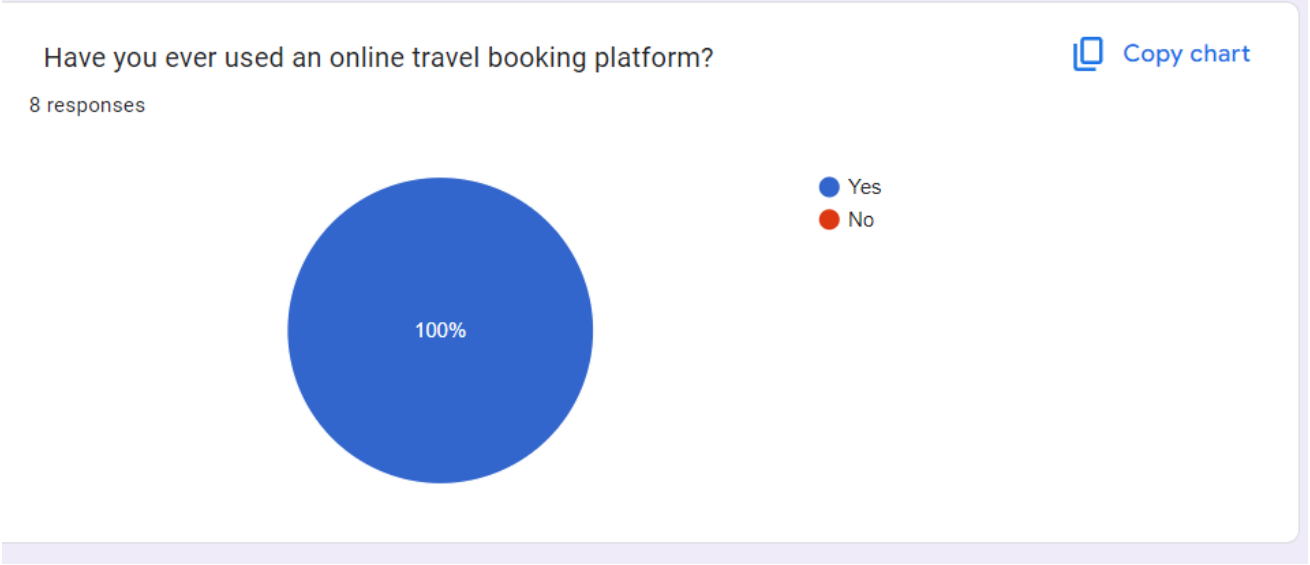

Figure 52 online travel resposne

Figure 53 chalanges on travel services respose

Figure 54 current method to book response

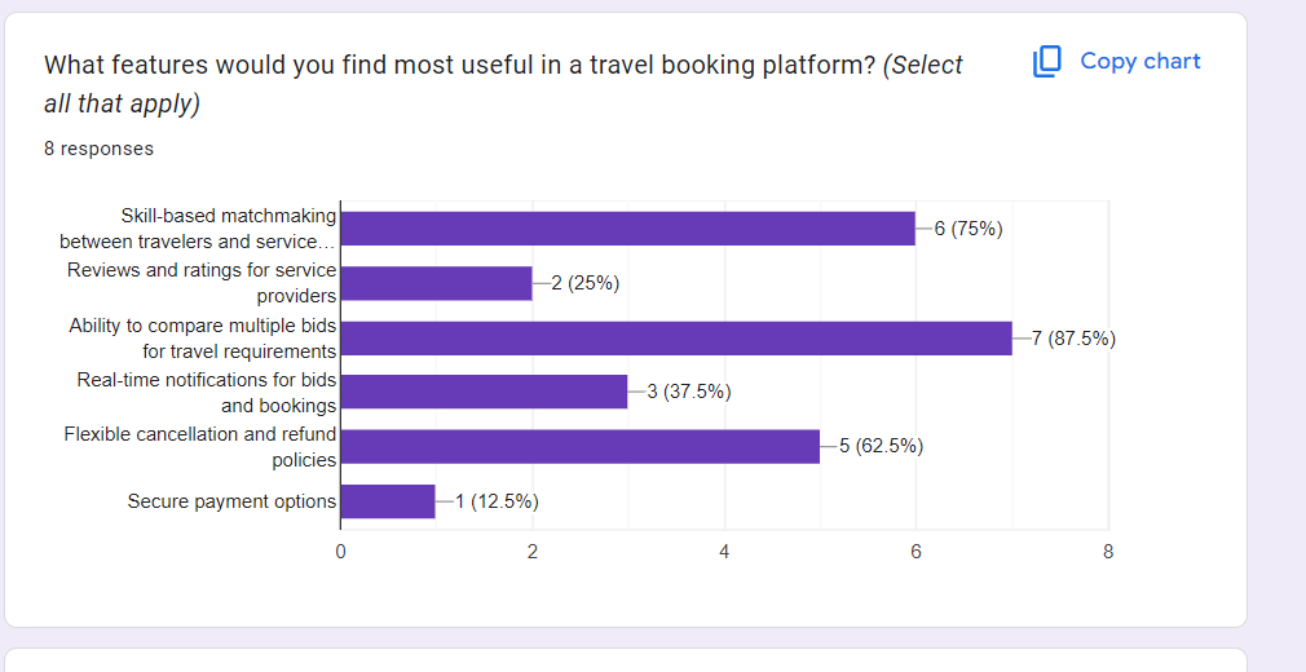

Figure 55 features wanted on platform response

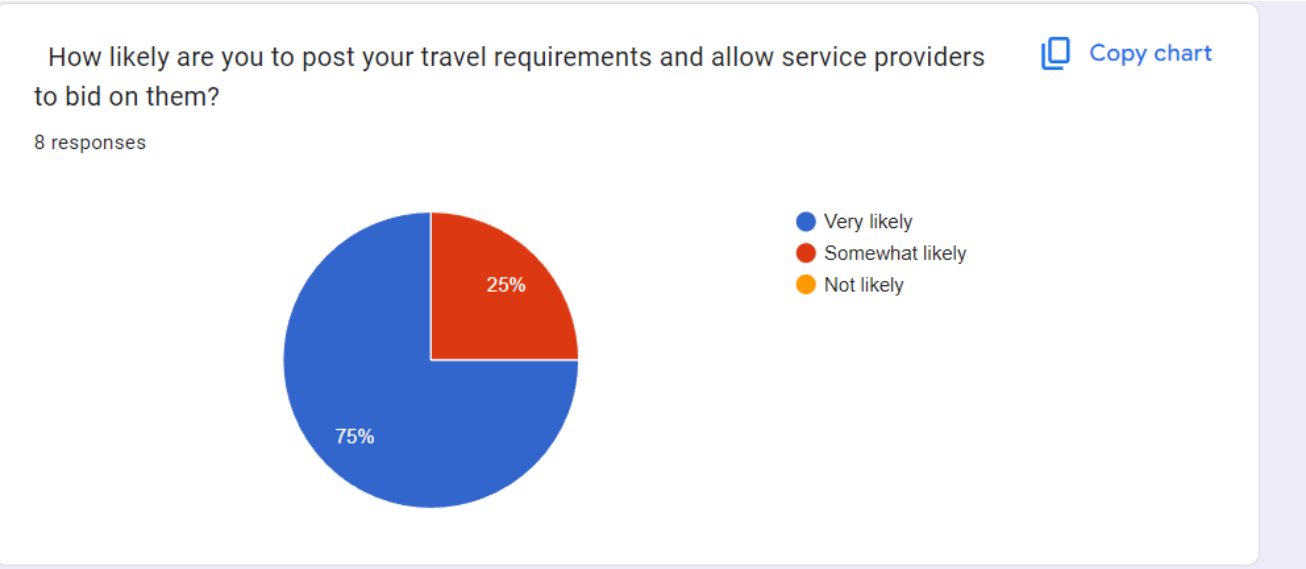

Figure 56 bidding response

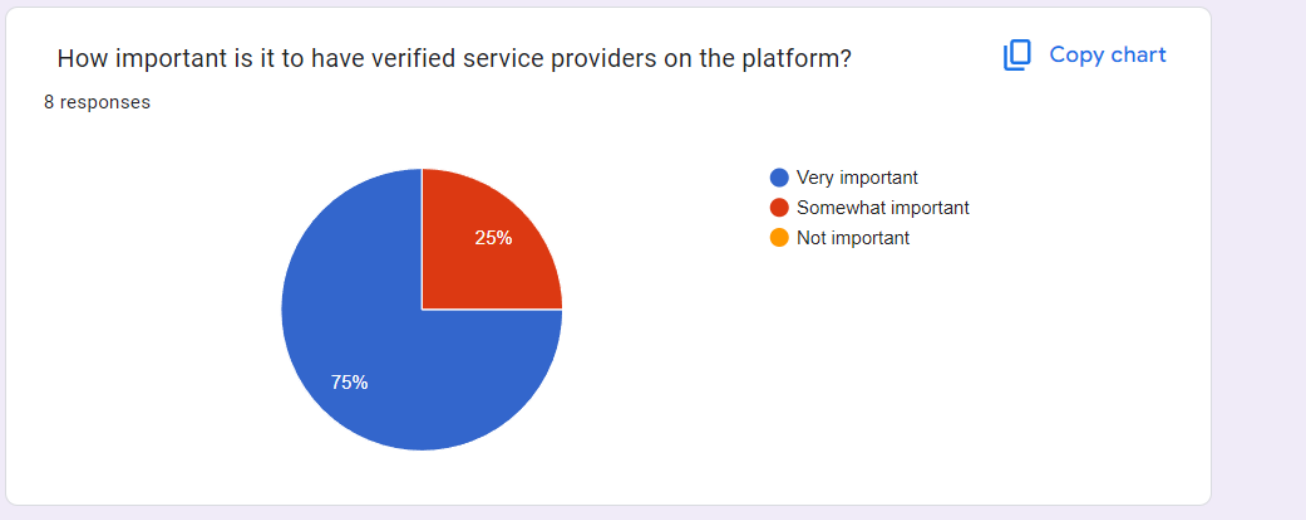

Figure 57 Importance of verified service provider response

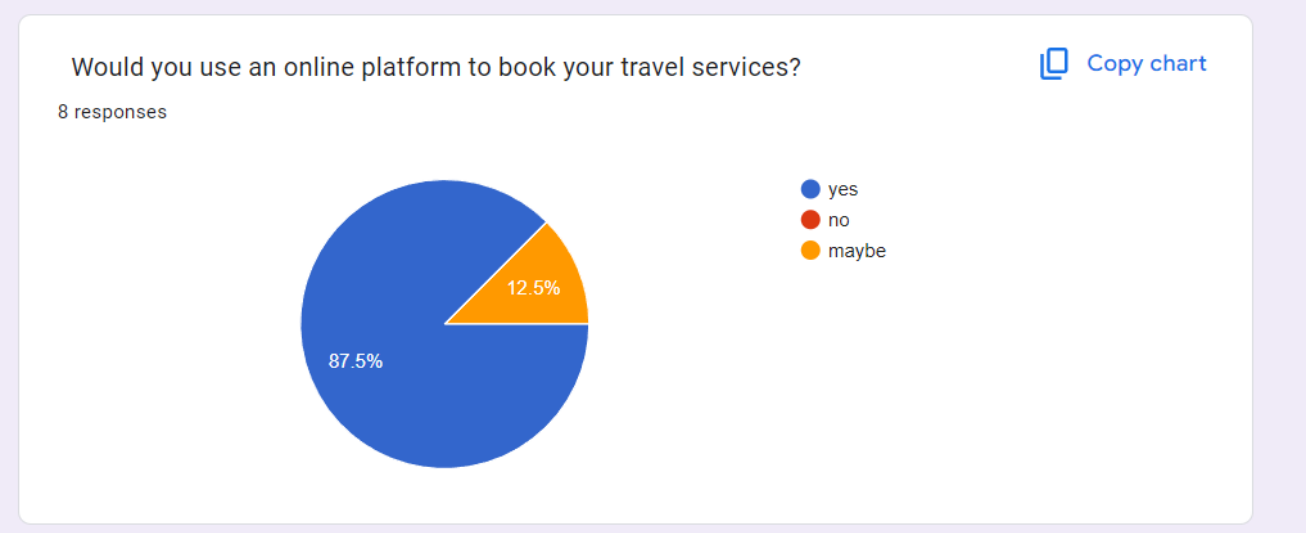

Figure 58 using a online platform to book respose

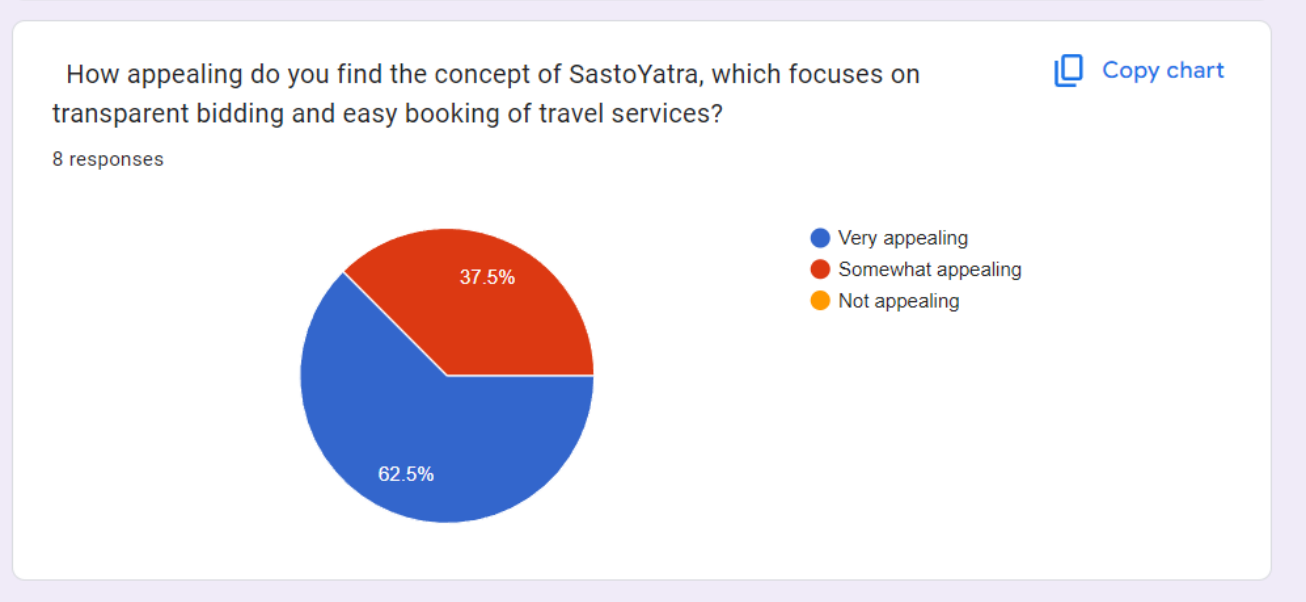

Figure 59 respose on sastyatra app features