

A Project Report on
“Air Bed and Breakfast(Airbnb)”

At



“Bhagwan Mahavir College of Computer Application”,

Bharthana-Vesu, Surat

As A Partial Fulfilment for The Degree Of
Bachelor of Science (Information Technology)

2022-2023

Guided By:

Asst. prof. Sneha Patel

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Bhagwan Mahavir College of Computer Application

Bharthana-Vesu, Surat

Affiliated With



Bhagwan Mahavir University, Surat, Gujarat, India



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Certificate

This is to certify that the summer project entitled "Airbnb" has been submitted by Koladiya Hiren- 20020406038 at **Bhagwan Mahavir College of Computer Application** as a partial fulfilment of the requirement for the degree of **Bachelor of Science (Information Technology)** for the academic Year 2022-23.

Place: BMCCA , Surat

Date: 13/4/2023

Asst. Prof. Sneha T. Patel
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Asst. Prof. Sneha T. Patel
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Place: BMCCA , Surat

Date: 13/4/2023

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This is to certify that the summer project entitled "Airbnb" has been submitted by **Vora Parth- 20020406095** at **Bhagwan Mahavir College of Computer Application** as a partial fulfilment of the requirement for the degree of **Bachelor of Science (Information Technology)** for the academic Year 2022-23.

Place: BMCCA , Surat

Date: 13/4/2023

Asst. Prof. Sneha T. Patel
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Place: BMCCA , Surat

Date: 13/4/2023

Asst. Prof. Sneha T. Patel
(Project Guide, BMCCA)

Asst. Prof. Sneha T. Patel
(Program Head)

Date: -21/01/2023

PROJECT PROGRESS REPORT

- 1. Project Group No:11**
- 2. Project Title: AIRbnb**
- 3. Project Guide Name: Asst.prof. Sneha Patel**
- 4. Progress Report No:1**
- 5. Progress Report Duration:** From 02/01/2023 to 20/01/2023
- 6. Project Group Student Names:**

1) Hiren Patel	2) Deep Sutariya
3) Ayan Vyas	4) Parth Vora
5)	6)

- 7. Project Detail:**

- 1) Project Name: Airbnb
- 2) Front End: ReactJS , NodeJS
- 3) Back End: MongoDB

- 8. Task Completed**

Sr. No.	Student Name(s)	Description
1.	Hiren Patel	UI/UX Design
2.	Parth Vora	Backend Structure
3.	Ayan Vyas	Roadmap
4.	Deep Sutariya	Research
5.		
6.		

- 9. Next Progress Report Date:** 24/02/2023

Project Guide Name: Assf.prof . Sneha Patel

Project Guide Sign:

Date: -24/02/2023

PROJECT PROGRESS REPORT

- 1. Project Group No:11**
- 2. Project Title: Airbnb**
- 3. Project Guide Name: Asst.prof.Sneha Patel**
- 4. Progress Report No:2**
- 5. Progress Report Duration:** From 21/01/2023 to 24/02/2023
- 6. Project Group Student Names:**

1) Hiren Patel	2) Deep Sutariya
3) Ayan Vyas	4) Parth Vora
5)	6)

- 7. Project Detail:**

- 1) Project Name: AIRbnb
- 2) Front End: ReactJS , NodeJS
- 3) Back End: MongoDB

- 8. Task Completed**

Sr. No.	Student Name(s)	Description
1.	Hiren Patel	Front End Design
2.	Deep Sutariya	Back End Creation
3.	Parth Vora	Database Setup
4.	Ayan Vyas	Gathered information regarding project
5.		
6.		

- 9. Next Progress Report Date:** 25/03/2022

Project Guide Name: Asst.Prof.Sneha Patel

Project Guide Sign:

Date: -25/03/2023

PROJECT PROGRESS REPORT

- 1. Project Group No:11**
- 2. Project Title: AIRbnb**
- 3. Project Guide Name: Asst.Prof.Sneha Patel**
- 4. Progress Report No:3**
- 5. Progress Report Duration:** From 25/02/2023 to 24/03/2023
- 6. Project Group Student Names:**

1) Hiren Patel	2) Deep Sutariya
3) Ayan Vyas	4) Parth Vora
5)	6)

7. Project Detail:

- 1) Project Name:AIRbnb
- 2) Front End: ReactJS , NodeJS
- 3) Back End: MongoDB

8. Task Completed

Sr. No.	Student Name(s)	Description
1.	Hiren Patel	Frontend continuation
2.	Ayan Vyas	Backend continuation
3.	Deep Sutariya	Database Creation
4.	Parth Vora	Payment Gateway
5.		
6.		

9. **Next Progress Report Date:** 29/04/2023

Project Guide Name:Asst.Prof.Sneha Patel

Project Guide Sign:

Date: -29/04/2023

PROJECT PROGRESS REPORT

- 1. Project Group No:11**
- 2. Project Title: AIRbnb**
- 3. Project Guide Name: Asst.Prof.Sneha Patel**
- 4. Progress Report No:4**
- 5. Progress Report Duration:** From 25/03/2023 to 28/04/2023
- 6. Project Group Student Names:**

1) Hiren Patel	2) Deep Sutariya
3) Ayan vyas	4) Parth Vora
5)	6)

7. Project Detail:

- 1) Project Name: AIRbnb
- 2) Front End: ReactJS , NodeJS
- 3) Back End: MongoDB

8. Task Completed

Sr. No.	Student Name(s)	Description
1.	Hiren Patel	Power point Presentation
2.	Deep Sutariya	Documentation Creation
3.	Vora Parth	Documentation Information
4.	Ayan Vyas	Testing Website
5.		
6.		

Project Guide Name:Asst.Prof.Sneha Patel

Project Guide Sign:

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- **Introduction**
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1. INTRODUCTION



Airbnb (ABNB) is an online marketplace that connects people who want to rent out their homes with people who are looking for accommodations in specific locales.

The company has come a long way since 2007, when its co-founders first came up with the idea to invite paying guests to sleep on an air mattress in their living room. According to Airbnb's latest data, it has in excess of six million listings, covering more than 100,000 cities and towns and 220-plus countries worldwide.

In this article, we break down how Airbnb works, how it makes money, and the pros and cons of using its online marketplace.

Missions:

"Airbnb's mission is to create a world where anyone can belong anywhere, and we are focused on creating an end-to-end travel platform that will handle every part of your trip."

Airbnb Mission Statement Analysis:-

- **Enhancing Lives**

The first component of Airbnb's mission statement shows the company's commitment to positively impacting the customers' experiences when interacting with it. The company customizes its services to affirm the needs of its extensive clientele.

- **Supporting Needs**

The final component of Airbnb's mission statement shows the company's effort to provide linkages and services that create a long-term impact. The reliable online vacation rental company focuses on creating a sense of belonging through a dependable approach.

- **Exceeding Expectations**

The demand of the first component links the second constituent in which Airbnb differentiates itself as an organization that doesn't compromise on quality services. When it says, "unlock the power of space," it displays its goal to "give it all." This means providing customers with the whole experience.

Introduction

1.1 Collage Profile

Bhagwan Mahavir College of Computer Application, Surat a highly commendable private institute, occupies a place amongst the technical institutes of the southern region of Gujarat. It is established in year 2008, financed and run by the Bhagwan Mahavir College Foundation, Surat. It is affiliated to Veer Narmad South Gujarat University.

The college is controlled by the executive board formed from the representatives of the Trust under constitution & by laws of the college. The college campus is located at the open green field areas with a beautiful location, situated at New city light Road, Bharthana-Vesu, Surat.

The College has excelled itself in many fields. It has occupied a prominent place in the education sphere of South Gujarat. The building surrounded by green fields and contains spacious classrooms, well documented library, a multipurpose hall, modern computer lab. It has at present around 350 students.

- **Vision**

In 21st century, IT technology has been growing in every area of business & society, while in competitive environment it is our vision to make the students more efficient in the field of Information Technology, which will help students to become more efficient skill oriented professional and ready to grab opportunities in the said field.

- **Mission**

Our mission is to provide learning experience through renowned educational institution which shall expose the students in computer application in day to day life. Imparting quality undergraduate education in the arena of Computer Application through well designed curriculum and train students to apply this education for lifelong high-quality careers and give them competitive benefit in the ever-changing and challenging global work environment of 21st century.

1.2 Project Profile

Project Title	AIRbnb
Type of Application	Web-Application
Duration	4 months
Internal Guide	Ms.Sneha Patel
Front End	React.js
Back End	Node.js
Language	React.js & Node.js
Submitted By	Hiren Patel Deep Sutariya Parth Vora Ayan Vyas

2. Proposed System

2.1 Scope & Objective

2.2 Advantages

2.3 Feasibility Study

2.1 Scope & Objective

Scope:

- **Property listings:** Airbnb allows hosts to list their properties, including apartments, houses, and rooms, for short-term rentals. The platform provides tools for hosts to manage their listings, including setting prices, availability, and house rules.
- **Guest search and booking:** Guests can search for properties on Airbnb based on location, price, and other criteria, and can book their chosen properties directly through the platform. Airbnb facilitates secure transactions and manages the payment process.
- **Host-guest communication:** Airbnb provides a messaging system that allows hosts and guests to communicate before and during the stay, facilitating the exchange of important information and building trust between the parties.
- **Reviews and ratings:** After a guest's stay, they can leave a review and rating for the property and host. These reviews and ratings are displayed publicly on the platform and help to build the host's reputation.
- **Additional services:** Airbnb offers additional services such as experiences, which are activities hosted by locals, and Airbnb Plus, a premium selection of verified homes with exceptional design and amenities.

Objective:

The main objective of Airbnb is to provide a digital platform for people to rent out their homes, apartments, or spare rooms to travelers seeking affordable and unique accommodation options. The company aims to create a community of hosts and guests who can connect and share experiences, while also providing a safe and reliable platform for transactions.

Airbnb's objectives include:

- Enabling hosts to earn extra income: By renting out their properties on Airbnb, hosts can earn extra income and utilize unused or spare spaces.
- Providing affordable and unique accommodation: Airbnb aims to provide travelers with a variety of unique and affordable accommodation options that are often cheaper than traditional hotels.
- Creating a community of hosts and guests: Airbnb aims to create a community of hosts and guests who can share experiences and connect with each other.
- Ensuring safety and security: Airbnb takes safety and security seriously and has implemented measures to protect both hosts and guests, including verified user profiles, secure transactions, and 24/7 customer support.
- Expanding access to travel: Airbnb aims to make travel more accessible by offering a wide range of accommodation options in different locations around the world.

2.2 Advantages

- **Low Cost:** Travellers looking to save money on lodging expenses should look no further than Airbnb; with their prepaid rentals and discounted prices, they are the perfect choice for many cities worldwide.
- **Locations are usually ideal:** Airbnb hosts provide the perfect jumping-off point for a city adventure. Strategically located in vibrant neighbourhoods, they're only steps away from some of the most exciting attractions and activities!
- **Variety and sizes:** With Airbnb, finding your ideal accommodation is a breeze! An array of sizes and styles await you – pick the one that best suits your requirements.
- **Unique Experiences:** With Airbnb, travellers can explore various rental experiences beyond traditional hotels. From houses to apartments and villas – each accommodation offers a unique chance to experience the destination appealingly!
- **Privacy & Flexibility:** You can have the best of both worlds—the convenience and flexibility of staying in a hotel without compromising privacy. Enjoy personalized service with no pesky shared spaces or strict policies – choose when you visit at your leisure!
- **Some hosts are truly Helpful:** Airbnb hosts are more than just providers of comfortable lodging; they offer the opportunity to explore a new place with an experienced guide. Whether it's directions, recommendations on where to go and what to do, or assistance in tackling any issues that may arise during your stay – Airbnb has got you covered!
- **Perfect for families:** Airbnb rentals are ideal for families who want to enjoy a vacation without burning holes in their wallets. With its flexible rates, convenience and privacy, Airbnb is the perfect way for parents and children to experience a city or a beach holiday without compromising comfort or safety.

2.3 Feasibility Study

There are various considerations when computing for revenue. It includes the rental fee, average stay per customer, and occupancy rate.

1) Rental Fee:-

The rental fee would depend on the property you are offering. The more amenities you put on a property, the higher the price. You can cater to different clienteles and offer rental spaces that accommodate their specific needs

2) Average Stay per Customer:-

Stay per customer will vary. Others will only stay for a day, but others can stay for days. If you offer different properties, project the average stay per property based on your research and estimates.

3) Occupancy Rate:-

The occupancy rate is lower in the first year since you are still establishing your name and foothold in the rental industry. It will start to increase in the succeeding years. Then you can estimate a full capacity of 90% since your rental spaces will not be occupied all year round.

• Projecting your Operating Expenses

Operating expenses incurred for Airbnb are the Airbnb hosting fee, consumables, cleaning and laundry services, and utilities.

• Airbnb Hosting Fee:-

The Airbnb platform charges a 3% hosting fee, which can increase if you use Super Strict cancellation policies or an Airbnb Plus host.

• Consumables:-

Providing consumables is a must if you are into a short-term rental. It can just vary as to the varieties of consumables you are offering. The basics are soap, shampoo, toothpaste, coffee, and coffee complements. Allocate your budget for these consumables not to exceed the projected expenses.

- **Cleaning Services:-**

Ensure cleanliness of the rooms or properties you are offering. Have an in-house services or on-call Eastern Suburbs cleaners who will clean right away after check-out of customers or in-between stays of longer-staying customers.

- **Laundry Services:-**

Fresh sheets and towels are a must for your customers. Take to laundry right away those with 1-2 days stay upon check-out and request of the longer-staying clients. You can have an in-house laundry service or have some laundry services do it for you.

- **Estimating the Needed Capital Expenditure (CAPEX)**

After acquiring the property, you may still need renovations, improvements, and water and electricity installation. That would be your total initial CAPEX for building and building improvements. You will also need to invest in home appliances, and furniture, and fixtures. Also, allocate budget for annual CAPEX for improvements and replacements.

- **Taxes**

Depending on your location, taxes may vary. Other cities charge higher taxes compared to other cities. So, consider this when deciding where to establish your Airbnb rental.

Operating Cost	% of Income	USD/Mo
Cleaning	13%	212
Supplies	11%	180
Utilities	7%	114
Reserve for maintenance	5%	82
Total	36%	588

Presented above are the significant factors affecting the financial feasibility of your Airbnb. You can also use a financial model template where you can input all your assumptions and estimates. It will provide you with a more in-depth analysis and metrics in assessing the viability of your prospect venture.

Chapter 3

3. System Analysis

3.1 Existing System

3.2 Need for New System

3.3 Detailed SRS

3.1 System Analysis:



Airbnb's Strengths

- **Brand:** It is the most recognized name in the vacation rental industry. —To find an Airbnb|| means to find alternative lodging for your next vacation;
- **Leadership:** The company is the leader for travelers looking for the best deal that doesn't want to be tied to a hotel reservation in a standardized room;
- **Price:** Booking an Airbnb is usually cheaper than a hotel room because the hosts normally don't have as many costs as a hotel;
- **Variety:** Hosts can list available rooms anywhere in the world, with no geographic limitations;
- **Experience:** With Airbnb, the experience is part of the journey. While hotels offer the same kind of experience, Airbnb provides unique spaces that are more than just a place to sleep;
- **Executive team:** The three founders are part of the leadership team, ensuring Airbnb its original vision and business model;
- **Public company:** Airbnb went public in December 2020, giving it access to capital from public markets for investments, and ensuring credibility and enhanced public image;
- **Margins:** The costs are carried by the hosts, enabling the platform to invest profits in marketing and operations.

Airbnb's Weaknesses :-

- **Regulations:** As there are few regulations regarding homestays, Airbnb was able to expand rapidly, but now some issues are rising and some of those can be pretty strict;
- **Quality control:** The accommodation can be anywhere, but with no standards, such as the ones that hotels need to follow;
- **Imitators:** The simplicity of the business makes it easier for new entrants to open a similar platform;
- **Marketing strategy:** It is not cohesive, since it has to appeal to both hosts and travelers, from different places all over the world;
- **SEO:** Airbnb will only appear in top search engine results if Airbnb is searched directly.

Airbnb's Opportunities :-

- **Experience:** Airbnb focuses on selling more than just a place to stay, and appealing to the uniqueness of the experience is essential for Airbnb's businesses;
- **Business expansion:** Airbnb may offer long-term rentals to meet this demand, besides traditional vacation stays;
- **Global expansion:** It can still expand to some markets, especially emerging ones;
- **Marketing campaigns:** Airbnb could engage in marketing campaigns targeting niches of travelers, creating an idea of exclusivity.

Airbnb's Threats :-

- **Legal framework:** Local and state governments keep changing laws and regulations regarding rentals, which can turn into a potential threat to business;
- **Competition:** As seen above, the list is notable, from direct competitors as much as from hotels and aggregators;
- **Lawsuits:** Airbnb has faced — and surely still will — lawsuits from hosts and travelers, due to its policies, fees (lack of) standards, variety of spaces and locations, etc.

3.1 Need for New System

As millions of people reemerge from a year of lockdown and the travel industry rebounds, Airbnb announced some big changes to the way its platform works. The most important is flexibility: Instead of searching for particular places at particular times in particular locales, Airbnb users can now turn to Airbnb for ideas. The company is also improving its host tools, making it easier for new hosts to get started on Airbnb and to manage an influx of new travelers.

In general, Airbnb doesn't seem to expect a return to pre-pandemic life once everyone is vaccinated and life returns to normal. Instead it seems to expect some key trends to continue, like remote work and long-term stays. Those things have helped keep Airbnb afloat during the pandemic, and have become a core part of the platform going forward.

As more companies let employees work from anywhere, some travelers might switch from taking two vacations a year to just working from somewhere new for a few months. Or they might become digital nomads, working and living from whatever yurt they could find on Airbnb that week. The company has recently been promoting the idea of "trying out a new city" before moving there, for instance, now that lots of people are free to leave the immediate vicinity of their employers.

Nearly a quarter of Airbnb stays were longer than 28 days in the first three months of 2021, the company found in a recent survey, and travel is happening to a much wider range of places. "The lines between travel, living and working are blurring," Airbnb CEO Brian Chesky said in the company's announcement, and Airbnb hopes to make it easier for people to move around the world in whatever way they want.

Airbnb is still largely used like a search engine, but increasingly wants to be more like Pinterest, offering ideas and inspiration for people looking for adventure. That also gives Airbnb an opportunity to show people places and homes they might not otherwise look for, which Chesky said on the company's most recent earnings call was a point of emphasis: "There's a lot of other opportunities for us, I think, to point demand to where we have available supply, which will allow us to steadily increase occupancy," he said.

As ever, the challenge for Airbnb is to balance the needs of hosts and guests. Guests want variability and flexibility, free cancellations and fun off-the-beaten-path places to stay. Hosts want consistent income, predictable demand and helpful communication when something goes wrong. Airbnb announced on Monday that it offers support coverage in new languages, has simplified its cancellation policies, and created a support team just for Superhosts.

The pandemic seems to have broadened Airbnb's sense of its place in the world. It once operated like an alternative to stodgy hotels, but is now embracing the idea that it can be an alternative to permanent housing as well. What WeWork wants to do for offices — unbundle them, and simplify the process of getting and using them — Airbnb wants to do for homes. It's not just out to get the Hyatts and Hiltons of the world anymore. It's coming for the one-year leases and the mortgage payments too.

3.3 Detailed SRS

To develop our new AIRbnb web application, we created a detailed software requirement specification (SRS) document that outlined the functional and non-functional requirements of the system. Our SRS document included the following information:

- **Introduction:** A brief overview of the purpose and scope of the Airbnb software system.
- **User Requirements:** A detailed description of the different types of users that will use the system, their needs, and the tasks they should be able to perform on the platform.
- **Functional Requirements:** A list of all the features and functionalities of the software system, along with descriptions of how they should work and what user actions trigger them.
- **Non-functional Requirements:** A set of criteria that the system must meet, such as performance, reliability, security, and accessibility.
- **System Architecture:** A high-level view of the software system's components, including the database, server, and client-side technologies.
- **User Interface:** A description of the user interface design, including wireframes, mockups, or interactive prototypes that illustrate how users will interact with the system.
- **Data Requirements:** A list of all the data that the system will need to store, including the structure of the database, data types, and relationships between tables.
- **Testing and Validation:** A plan for how the system will be tested and validated to ensure that it meets the requirements specified in the SRS.
- **Implementation and Deployment:** A plan for how the software system will be implemented, deployed, and maintained over time.
- **Assumptions and Constraints:** A list of assumptions and constraints that were considered during the development of the SRS, such as technical limitations, budget constraints, or time constraints.

4. System Analysis

4.1 Requirement Analysis

&Data Gathering

4.2 Timeline Chart

4.1 Requirement Analysis

- **Identify stakeholders:** Identify all stakeholders who will be affected by the system, including users, hosts, administrators, and third-party providers. Conduct interviews, surveys, or focus groups to understand their needs, preferences, and pain points.
- **Define user personas:** Develop user personas that represent typical users of the system, based on demographic, psychographic, and behavioral characteristics. Use these personas to guide feature prioritization and design decisions.
- **Develop use cases:** Develop use cases that describe typical user scenarios, such as searching for properties, booking a property, or leaving a review. Map out the user journey, including the steps, interactions, and feedback loops involved.
- **Identify functional requirements:** Identify all the features and functionalities that the system should have to meet user needs and expectations. Categorize these requirements into must-have, should-have, and nice-to-have categories, based on their priority and impact on the user experience.
- **Identify non-functional requirements:** Identify all the non-functional requirements that the system should meet, such as security, performance, reliability, scalability, and accessibility. Use industry standards and best practices to define these requirements.
- **Identify constraints and risks:** Identify any constraints or risks that may impact the development or implementation of the system, such as technical limitations, budget constraints, legal or regulatory compliance, or stakeholder conflicts. Develop mitigation strategies to address these issues.
- **Prioritize and validate requirements:** Prioritize the requirements based on their importance and feasibility. Validate the requirements with stakeholders through user testing, prototyping, or feedback sessions. Revise and refine the requirements based on user feedback and testing results.

4.1 Data Gathering

Airbnb relies heavily on data to make informed decisions and improve its platform for users. Here are some potential steps in the data gathering process for Airbnb:

- **Identify data sources:** Identify all the potential sources of data that are relevant to Airbnb, such as user profiles, property listings, booking and payment transactions, reviews and ratings, search queries, and social media mentions.
- **Collect data:** Collect data from the identified sources using various methods, such as web scraping, APIs, data feeds, surveys, and interviews. Ensure that the data is accurate, complete, and relevant to the research questions.
- **Clean and preprocess data:** Clean and preprocess the collected data to remove duplicates, errors, missing values, and outliers. Normalize, standardize, or transform the data as needed to ensure consistency and comparability.
- **Analyze data:** Analyze the data using various statistical and machine learning techniques to identify patterns, trends, correlations, and insights. Use data visualization tools to present the findings in a clear and actionable way.
- **Interpret and validate results:** Interpret the results of the data analysis in the context of the research questions and hypotheses. Validate the results through user testing, A/B testing, or other methods to ensure that they are reliable and actionable.
- **Identify opportunities and challenges:** Identify opportunities and challenges based on the insights and findings from the data analysis. Use this information to inform decision-making and strategy development for Airbnb.
- **Refine and update data gathering process:** Refine and update the data gathering process based on the results and feedback from stakeholders. Continuously monitor the data sources and quality to ensure that the data is relevant and reliable.

4.2 Time-line Chart

Task	Start Date	End Date	Duration
Project Planning	Jan 3	Jan 17	2 weeks
- Define project goals and scope	Jan 3	Jan 9	8 days
- Create project team and roles	Jan 1	Jan 4	4 days
- Develop project plan and schedule	Jan 5	Jan 15	10 days
- Finalize project plan with team	Jan 13	Jan 14	2 days
Requirement Analysis	Jan 15	Jan 30	2 weeks
- Identify key stakeholders	Jan 15	Jan 17	3 days
- Gather requirements from stakeholders	Jan 18	Jan 24	7 days
- Prioritize requirements	Jan 25	Jan 27	3 days
- Validate requirements with stakeholders	Jan 28 - Jan 31	4 days	
Design and Prototyping	Feb 1	Feb 28	4 weeks
- Develop user interface design	Feb 1	Feb 15	15 days
- Create mockups and wireframes	Feb 8	Feb 14	7 days
- Develop prototype for testing	Feb 15	Feb 21	7 days
- Test and refine prototype	Feb 22	Feb 28	7 days
Development and Testing	Mar 1	Mar 31	4 weeks
- Develop back-end functionality	Mar 3	Mar 20	18 days
- Integrate front-end and back-end	Mar 15	Mar 29	14 days
- Conduct unit testing	Mar 22	Mar 24	3 days
- Conduct integration testing	Mar 25	Mar 28	4 days
- Conduct system testing	Mar 29	Mar 31	3 days

Airbnb

Deployment and Launch	Apr 1	Apr 20	20 days
- Prepare production environment	Apr 1	Apr 4	4 days
- Deploy system to production	Apr 5	Apr 7	3 days
- Conduct final testing and debugging	Apr 9	Apr 14	6 days
- Create marketing and launch plan	Apr 12	Apr 14	3 days
- Launch system to the public	Apr 15	Apr 15	1 day
Post-Launch Monitoring and Evaluation	Apr 20	Apr 30	10days
- Monitor system performance	Apr 16	Apr 23	1 week
- Gather feedback from users	Apr 24	Apr 27	3 days
- Evaluate system success and failures	Apr 29	Apr 30	1 days

5. Tools & Environment Used

5.1 Hardware and Software

Requirement

5.1.1 Software Requirement

5.1.2 Hardware Requirement

5.1.3 Technology to be used

5.2 Server-Side and Client-side Tools

5.1 Hardware and Software Specification

5.1.1 Hardware Requirement

Operating System	Microsoft Windows 2010
RAM	Minimum 2 GB
Hard disk	Minimum 50 GB

5.1.2 Software Requirement

Operating System	Microsoft Windows 2010
Database	Mongo DB Compass & Robo 3T
Browser	Internet Explorer/Google Chrome Onwards

5.1.3 Developer Requirement

Operating System	Microsoft Windows 2010
Database	Mongo DB Compass & Robo 3T
Development Tools	Visual Studio Code

5.1.3 Client Configuration

Operating System	Microsoft Windows 2010
Database	Mongo DB & Robo 3T
Browser	Internet Explorer/Google Chrome Onwards

5.2Technology to be used

5.2.1 Front End Tools: react js

❖ React js

- ReactJS is a declarative, efficient, and flexible JavaScript library for building reusable UI components. It is an open-source, component-based front end library responsible only for the view layer of the application.
- It was created by Jordan Walke, who was a software engineer at Facebook. It was initially developed and maintained by Facebook and was later used in its products like WhatsApp & Instagram. Facebook developed ReactJS in **2011** in its newsfeed section, but it was released to the public in the month of **May 2013**.
- Today, most of the websites are built using MVC (model view controller) architecture. In MVC architecture, React is the 'V' which stands for view, whereas the architecture is provided by the Redux or Flux.
- A ReactJS application is made up of multiple components, each component responsible for outputting a small, reusable piece of HTML code. The components are the heart of all React applications. These Components can be nested with other components to allow complex applications to be built of simple building blocks. ReactJS uses virtual DOM based mechanism to fill data in HTML DOM. The virtual DOM works fast as it only changes individual DOM elements instead of reloading complete DOM every time.

5.2.1 Back End Tools: Node Js

❖ What is Node Js?

- Node.js is an open-source server environment
- Node.js is free
- Node.js runs on various platforms (Window, Linux, Unix, Mac Os X, etc.)
- Node.js uses java script on the server

❖ Why Node Js?

- Node.js uses asynchronous programming!
- A common task for a web server can be to open a file on the server and return the content to the client.
 - Here is how PHP or ASP handles a file request.
 1. Sends the task to the computer's file system.
 2. Waits while the file system opens and reads the file.
 3. Returns the content to the client.
 4. Ready to handle the next request.
 - Here is how Node.js handles a file request.
 1. Sends the task to the computer's file system.
 2. Ready to handle the next request.
 3. When the file system has opened and read the file, the server return the content to the client.
 - Node.js eliminates the writing, and simply continues with the next request.
 - Node.js runs single-threaded, non-blocking, asynchronously programming, which is very memory efficient.

❖ What can Node Js Do?

- Node.js can generate dynamic page content
- Node.js can create, open, read, write, delete, and close files on the server

- **Features of Node Js**

- Platform architecture
- Industry support
- Node.js in an open-source server environment
- Node.js runs on various platforms (Windows, Linux, Mac Os X, etc.)
- Object Oriented
- Synchronous code execution

5.2.3 Data Base: Mongo DB

- MongoDB stores data in flexible, JSON-like documents, meaning fields can vary from document to document and data structure can be changed over time
- The document model maps to the objects in your application code, making data easy to work with
- Ad hoc queries, indexing, and real time aggregation provide powerful ways to access and analyze your data
- MongoDB is a distributed database at its core, so high availability, horizontal scaling, and geographic distribution are built in and easy to use
- MongoDB is free to use. Versions released prior to October 16, 2018 are published under the AGPL. All versions released after October 16, 2018, including patch fixes for prior versions, are published under the Server-Side Public License (SSPL) v1.

- **What is MongoDB?**

MongoDB is a document database with the scalability and flexibility that you want with the querying and indexing that you need

- **Need to run MongoDB?**

- High availability through built-in replication and failover
- Horizontal scalability with native sharding
- End-to-end security
- Native document validation and schema exploration with Compass
- Management tooling for automation, monitoring, and backup
- Fully elastic database as a service with built-in best practices

6. System Design

6.1 Unified Modeling Language(UML)

6.2 Database Design

6.2.1 Data flow diagram

6.2.2 Data Dictionary

6.2.3 Database Relationship Diagram

6.3 E-R Diagram

6.4 User Interface Design (Screen Layout)

6.System Design

The system design of Airbnb involves a complex architecture that allows for the smooth functioning of its various features and services. Here are some key components of the Airbnb system design:

Front-end application: The front-end application of Airbnb is built using various technologies such as React, Redux, and GraphQL. This enables a responsive and intuitive user interface for searching and booking accommodations, managing bookings, and communicating with hosts.

Back-end services: The back-end services of Airbnb are responsible for managing various functions, including user authentication, property listing management, booking and payment processing, and customer service. These services are built using Node.js and run on Amazon Web Services (AWS) infrastructure.

Database: Airbnb uses a distributed database system that can handle the massive amount of data generated by its users. The database system consists of MySQL for transactional data and Cassandra for non-transactional data.

Search infrastructure: Airbnb's search infrastructure is designed to provide fast and accurate search results for its users. The infrastructure includes Elasticsearch, which allows for real-time indexing and search capabilities, and Kafka, which handles the high-volume messaging between services.

Recommendations and personalization: Airbnb uses machine learning algorithms to provide personalized recommendations to users based on their search history and behavior. The algorithms are powered by TensorFlow and run on Apache Spark clusters.

Security: Airbnb places a high priority on security and uses various technologies to protect user data and transactions. These technologies include SSL encryption, AWS security groups, and multi-factor authentication.

Mobile app: The Airbnb mobile app is built using React Native, which allows for a seamless experience across iOS and Android platforms.

6.1 Unified Modeling Language(UML)

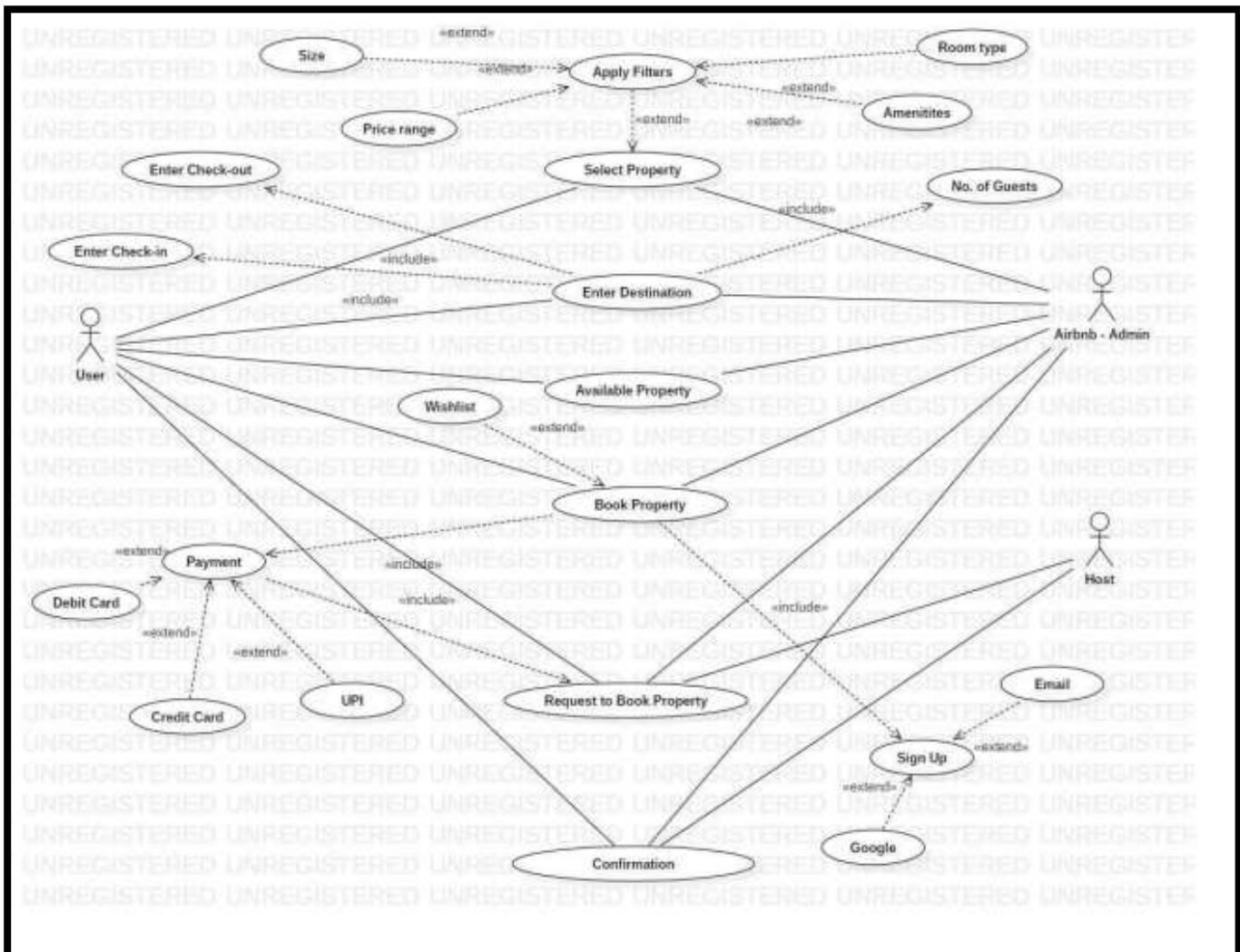
The Unified Modeling Language (UML) is a standard visual modeling language used in software engineering to design and document software systems. Airbnb may use UML to model and design its software architecture. Here are some examples of UML diagrams that could be used in the Airbnb system design:

- **Use case diagram:** A use case diagram is used to depict the various actions and interactions between actors and the system. In the case of Airbnb, actors could be users, hosts, administrators, or third-party services. Use case diagrams can be used to identify functional requirements and to communicate them to stakeholders.
- **Class diagram:** A class diagram is used to represent the static structure of a system, including classes, attributes, and relationships between classes. In the case of Airbnb, class diagrams could be used to model the various entities in the system, such as users, properties, bookings, and payments. Class diagrams can help to identify the key data structures and relationships in the system.
- **Sequence diagram:** A sequence diagram is used to depict the interactions between objects or components in a system over time. In the case of Airbnb, sequence diagrams could be used to model the flow of events during a user's booking process, including authentication, property search, booking confirmation, and payment

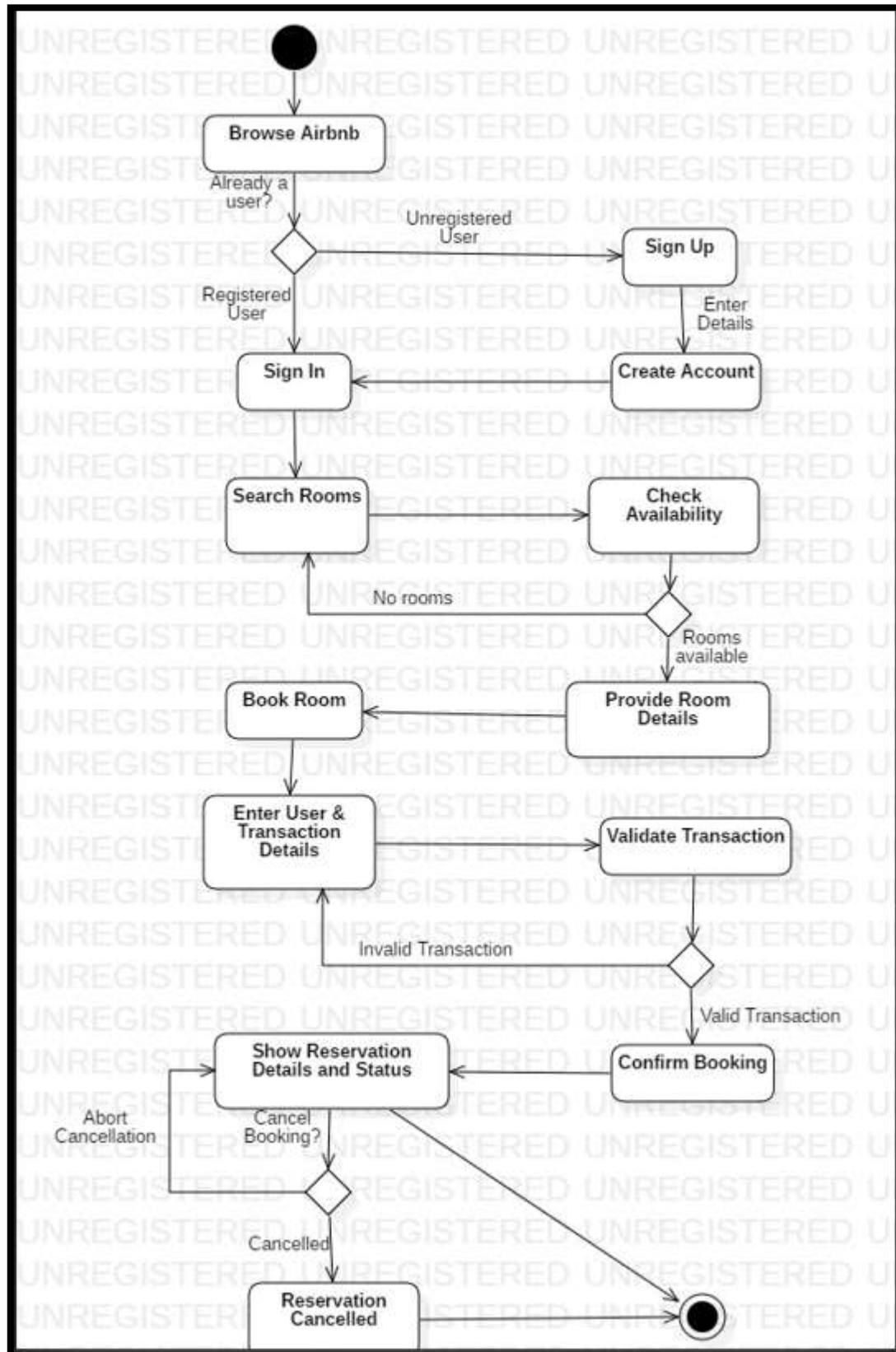
- **Activity diagram:** An activity diagram is used to model the flow of activities or processes in a system. In the case of Airbnb, activity diagrams could be used to model the process of property listing and management, including creating a listing, setting availability, and responding to booking requests. Activity diagrams can help to identify the key steps and decision points in a process.

6.2.1 Unified Modeling Language Diagram(UML):-

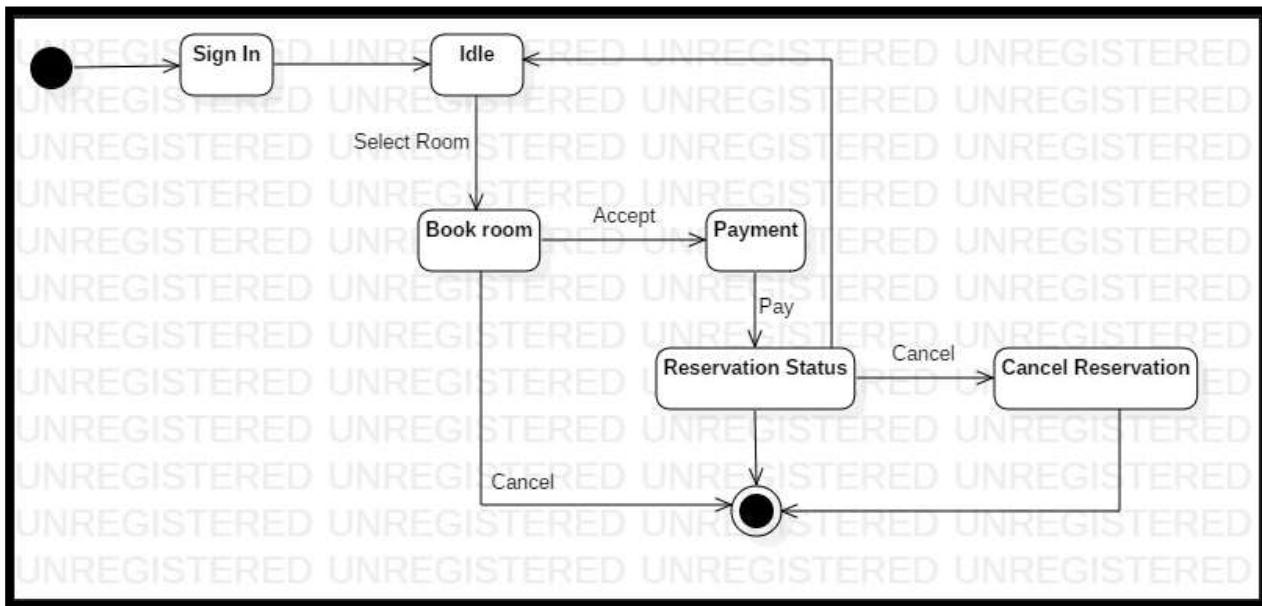
- Use case Diagram:-



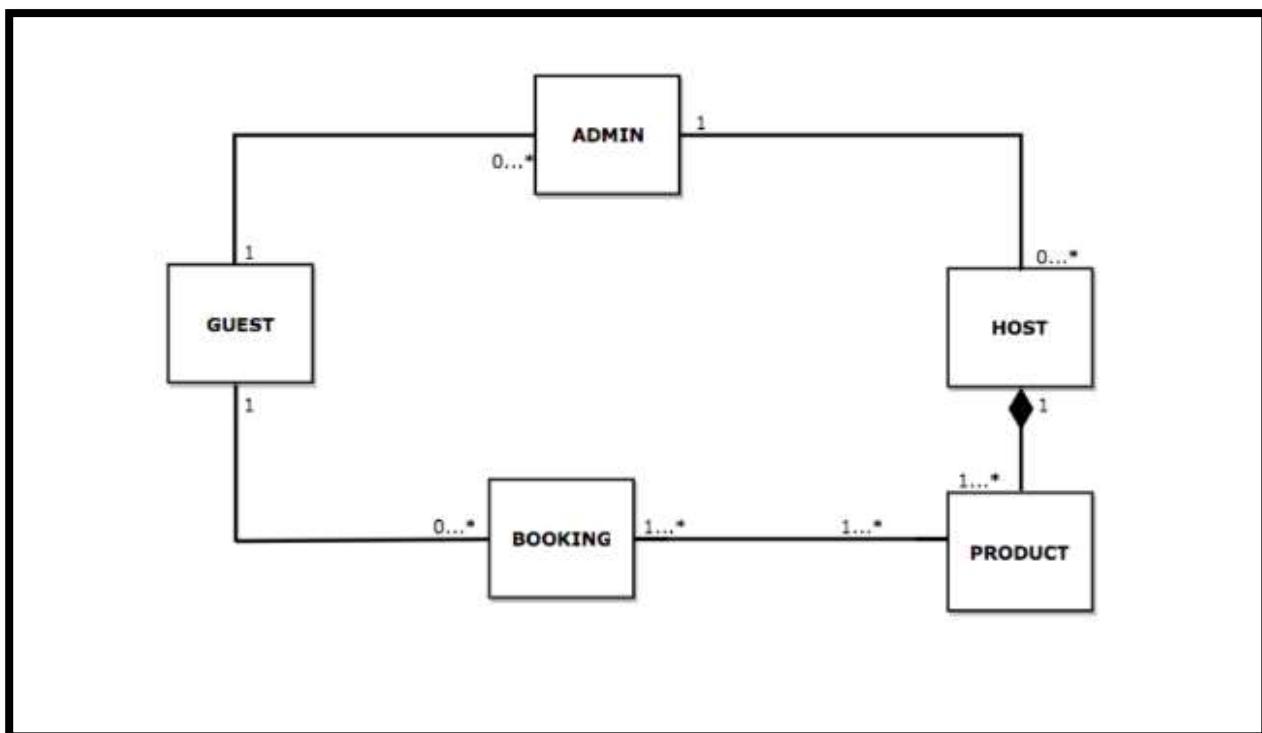
- Activity Diagram:-



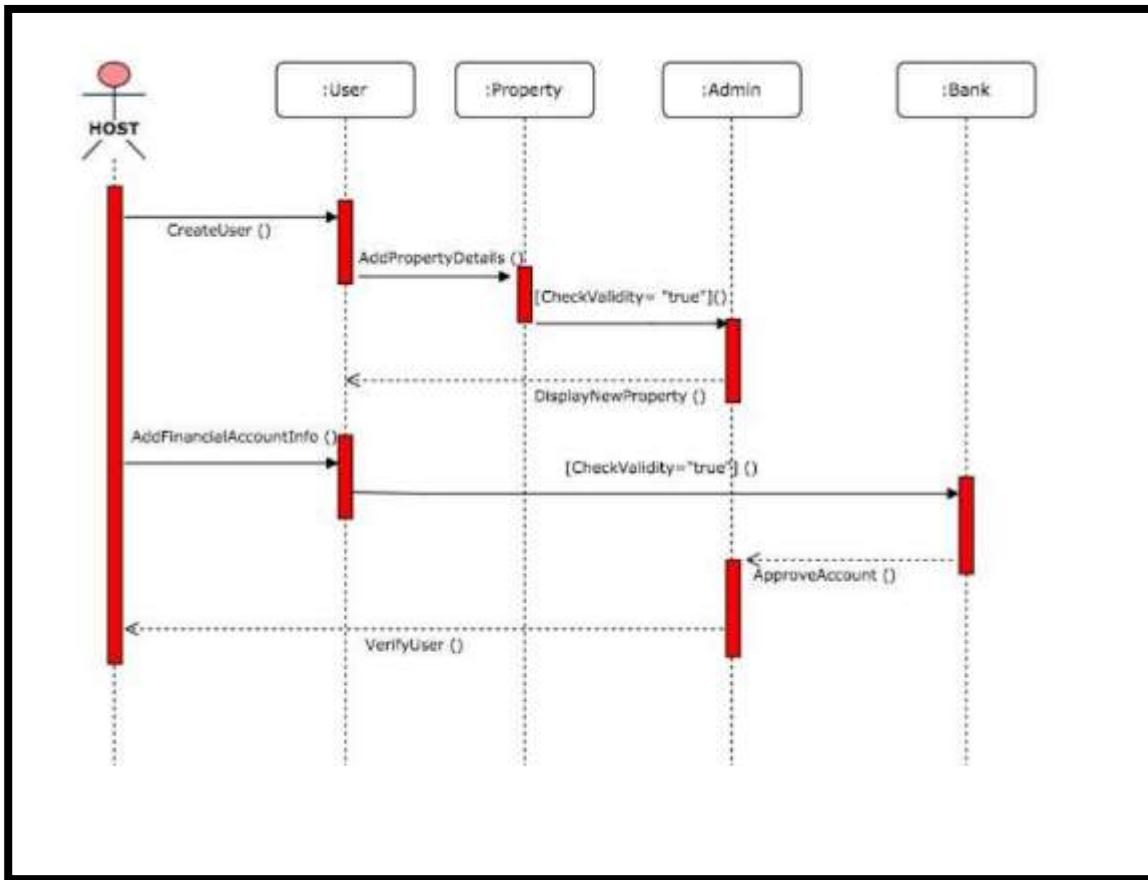
- State-chart Diagram:-



- Class Diagram (without attributes):-



- **Sequence Diagram:-**



A sequence diagram is a type of diagram that illustrates the interactions between objects or components in a system. In the case of Airbnb, a sequence diagram could be used to show the flow of interactions between a user and the Airbnb platform when making a booking.

sequence diagram for making a booking on Airbnb:

The user opens the Airbnb website or mobile app and searches for a specific location and date range for their stay.

The Airbnb platform receives the search query and returns a list of available listings that match the user's search criteria.

The user selects a listing from the search results and clicks on the booking button.

The Airbnb platform displays the details of the selected listing, including the price and availability for the selected dates.

The user selects the dates for their stay and enters any additional information required by the host, such as the number of guests and their contact information.

The Airbnb platform calculates the total cost of the booking and displays it to the user, along with any additional fees or taxes.

The user confirms the booking and submits payment through the Airbnb platform.

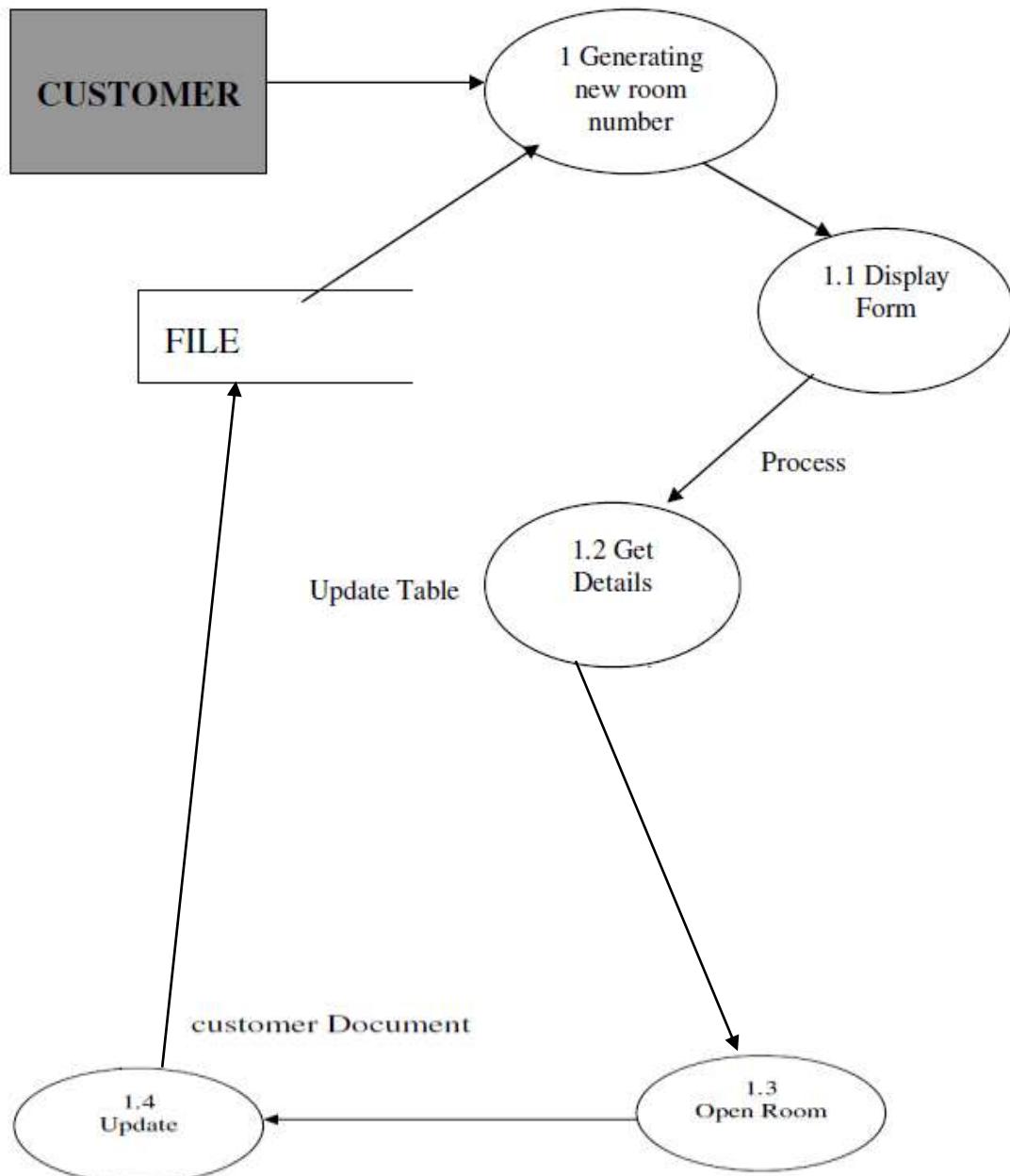
The Airbnb platform processes the payment and sends a confirmation email to the user and the host.

The host receives the booking request and has the option to accept or decline it.

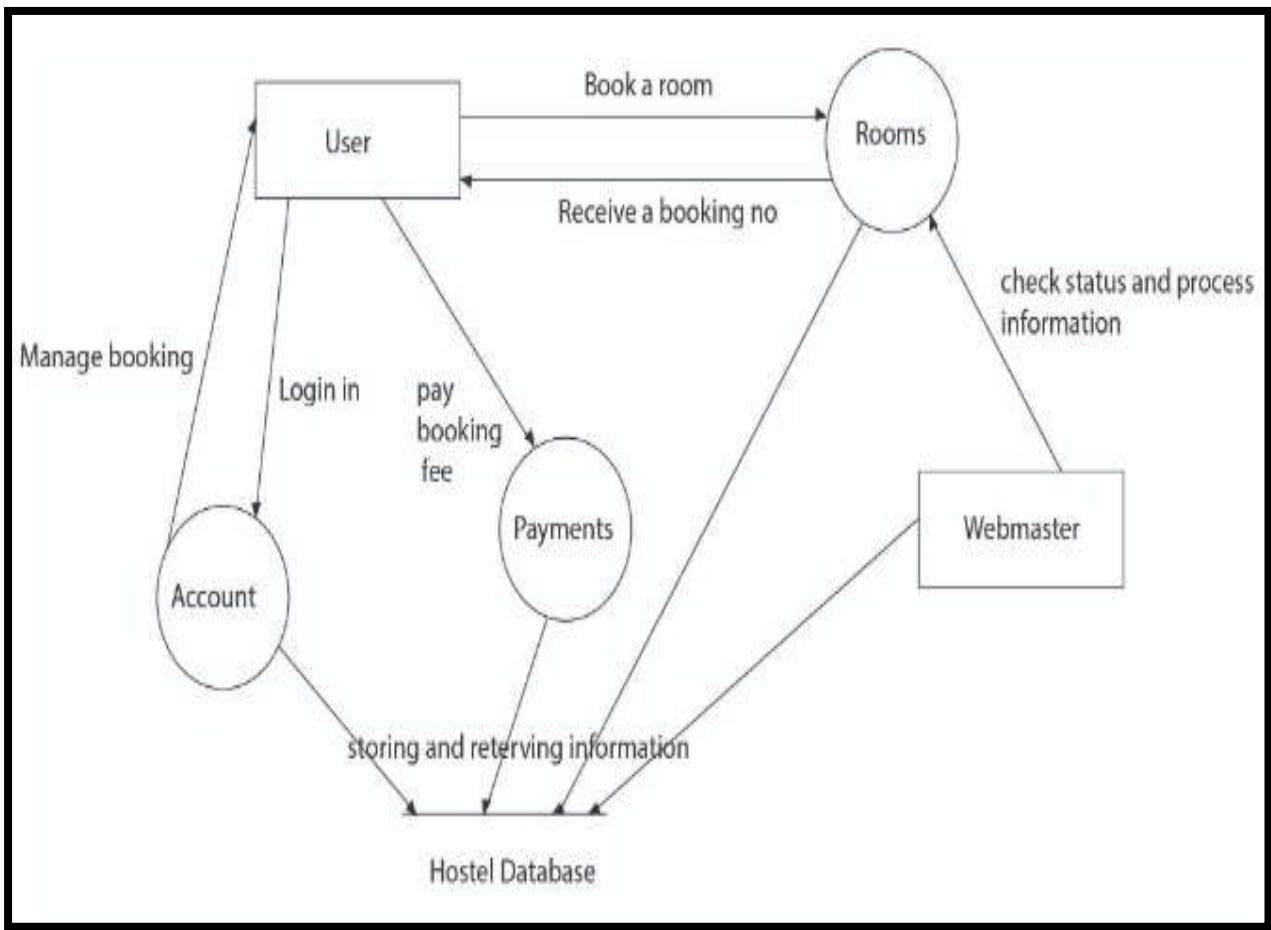
If the host accepts the booking, the Airbnb platform updates the booking status to "confirmed" and sends a confirmation email to the user.

The user can then communicate with the host through the Airbnb platform to arrange any details for their stay.

- OPENING A NEW ROOM:-



- Online hotel booking system



One of the unique features of Airbnb is the ability to search for and book accommodations based on specific criteria such as location, price, and amenities. Users can also filter results based on factors such as the type of property, the number of bedrooms and bathrooms, and whether or not pets are allowed.

In addition to traditional accommodations, Airbnb also offers a range of unique experiences such as cooking classes, guided tours, and outdoor adventures. These experiences are led by local hosts and allow travelers to immerse themselves in the local culture and community.

Overall, Airbnb provides a convenient and user-friendly platform for travelers to find and book unique accommodations and experiences around the world.

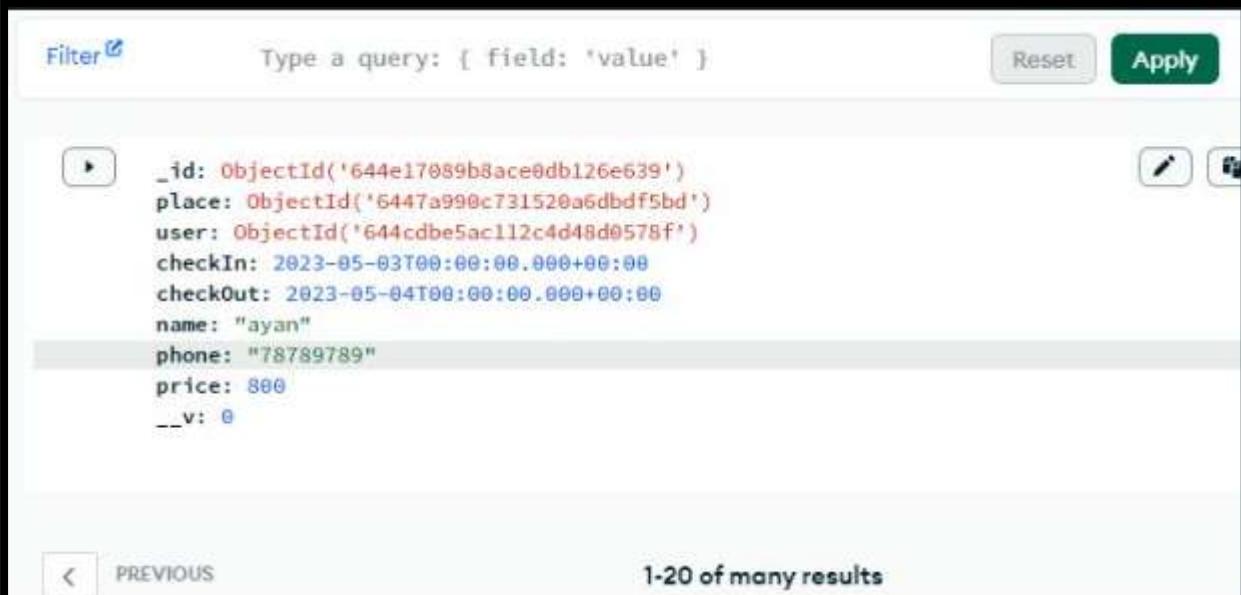
6.2.2 Database Design

- **Users table:**

```
_id: ObjectId('644cdbe5ac112c4d48d0578f')
name: "ayan"
email: "ayan@gmail.com"
password: "$2b$10$2nSuWmfkjIeUOsGt0yMuKe2j1vDTDCTZQl19u6dZY77CQv7RiroQK"
role: "user"
__v: 0

_id: ObjectId('644f4ec541d1c5ce06f3e10b')
name: "parth vora"
email: "parths@gmail.com"
password: "$2b$10$dVSDCFn2KT01hzccWd7ai.rf8AVeVIiaDu7nbmGpvZgRyGSFNBLfq"
role: "seller"
__v: 0
```

- **Bookings table:-**



The screenshot shows the MongoDB Compass interface with the 'Bookings' collection selected. At the top, there is a search bar labeled 'Type a query: { field: 'value' }' and buttons for 'Reset' and 'Apply'. Below the search bar, the results are displayed in a table format. One document is shown in full:

	<code>_id: ObjectId('644e17089b8ace0db126e639')</code>	
	<code>place: ObjectId('6447a990c731520a6dbdf5bd')</code>	
	<code>user: ObjectId('644cdbe5ac112c4d48d0578f')</code>	
	<code>checkIn: 2023-05-03T00:00:00.000+00:00</code>	
	<code>checkOut: 2023-05-04T00:00:00.000+00:00</code>	
	<code>name: "ayan"</code>	
	<code>phone: "78789789"</code>	
	<code>price: 800</code>	
	<code>__v: 0</code>	

At the bottom left, there is a 'PREVIOUS' button. At the bottom right, it says '1-20 of many results'.

- Place table:-

```
_id: ObjectId('644a2f90880df1idle6476f6')
owner: ObjectId('644a2d94880df1idle6476cd')
title: "The Apple Farm Stay"
address: " Shimla, Himachal Pradesh, India"
photos: Array
description: "A 100 year old heritage home revived and refurbished maintaining its ... "
perks: Array
extraInfo: "Every booking includes free protection from Host cancellations, listin..."
checkIn: 10
checkOut: 12
maxGuests: 8
price: 1500
__v: 0
```

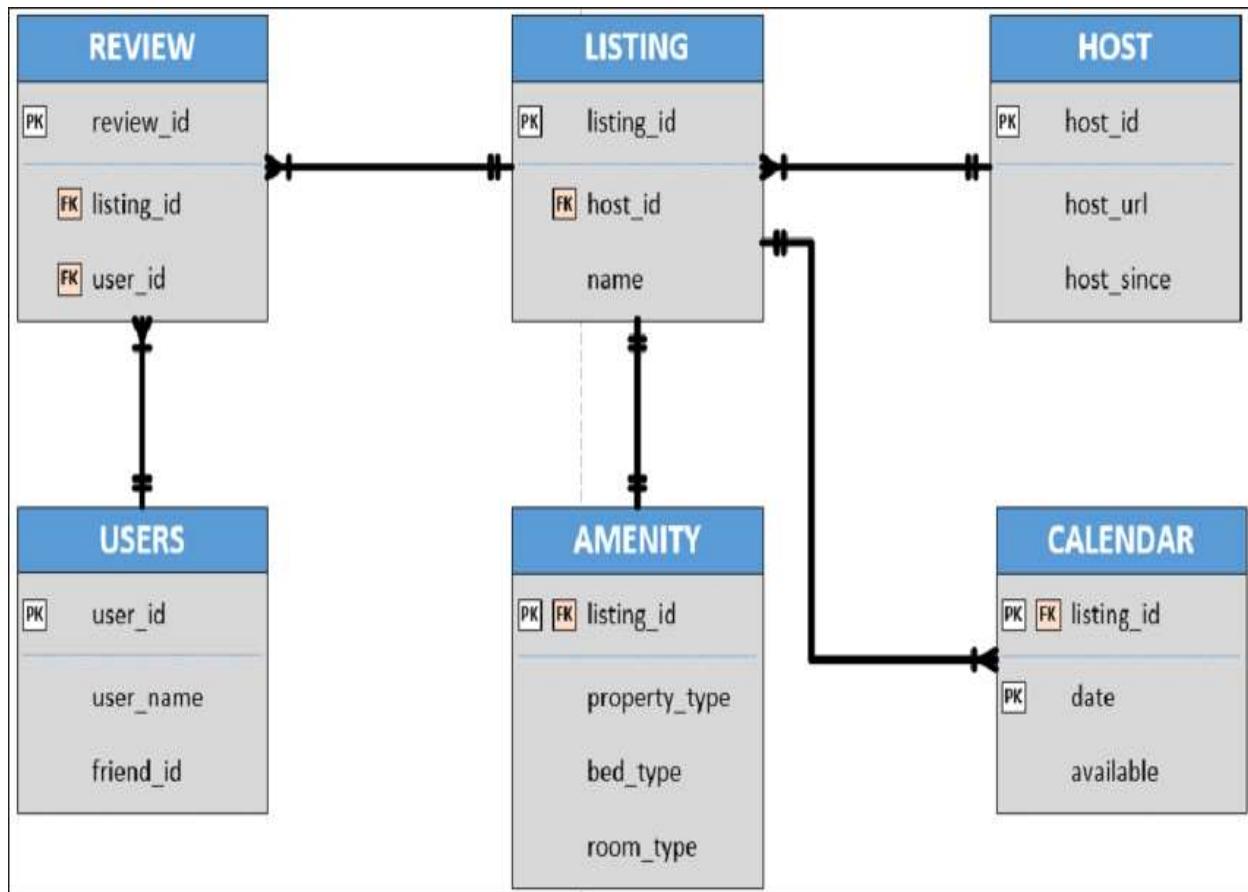
- Payment table:-

The screenshot shows a MongoDB query interface with a search bar and filter buttons. Two payment documents are listed:

```
_id: ObjectId('644e48e1a7c4ee4ab49c5658')
orderId: "order_LjydXJajENwppQ"
receiptId: "TNTnge0kgPyzSTVsRcF7Z"
amount: 2400
currency: "INR"
createdAt: 1970-01-20T11:27:32.064+00:00
status: "created"
__v: 0

_id: ObjectId('644e48fa49ca81901c323221')
orderId: "order_Ljydyll81VqFzQ"
receiptId: "GqTL5Gza5M6rDFYSmREZN"
```

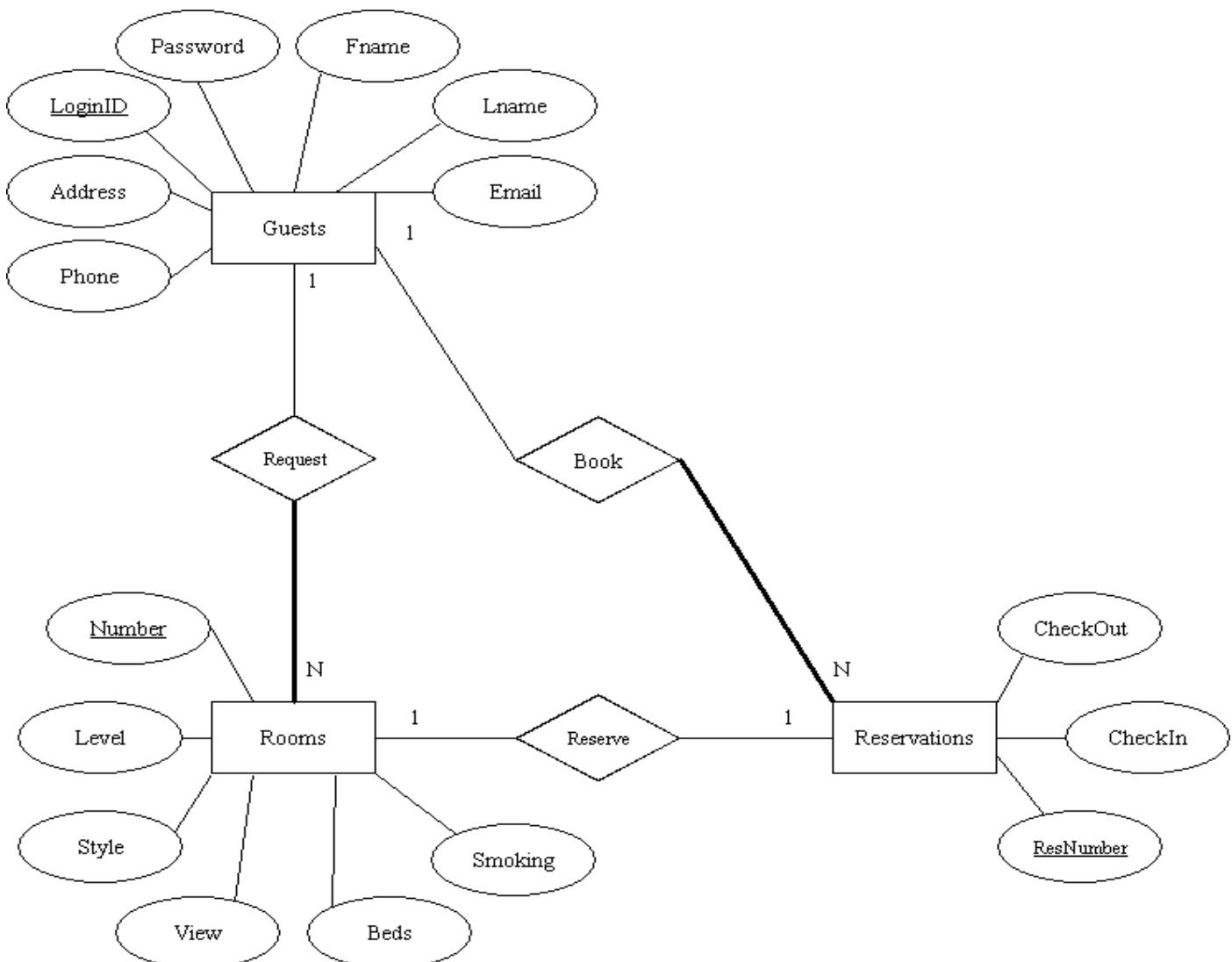
6.2.3 Database Relationship Diagram



The relationship between these tables is as follows:

1. The User table has a one-to-many relationship with the Booking table, as each user can make multiple bookings.
2. The Listing table also has a one-to-many relationship with the Booking table, as each listing can have multiple bookings.
3. The Booking table has a many-to-one relationship with both the User table and the Listing table, as each booking is associated with one user and one listing.
4. The Review table has a many-to-one relationship with both the User table and the Listing table, as each review is associated with one user and one listing.
5. The Listing table has a many-to-many relationship with the Amenities table, as each listing can have multiple amenities and each amenity can be associated with multiple listings.
6. The Listing table has a one-to-one relationship with the Host table, as each listing is associated with one host and each host can have multiple listings.

6.3 E-R Diagram

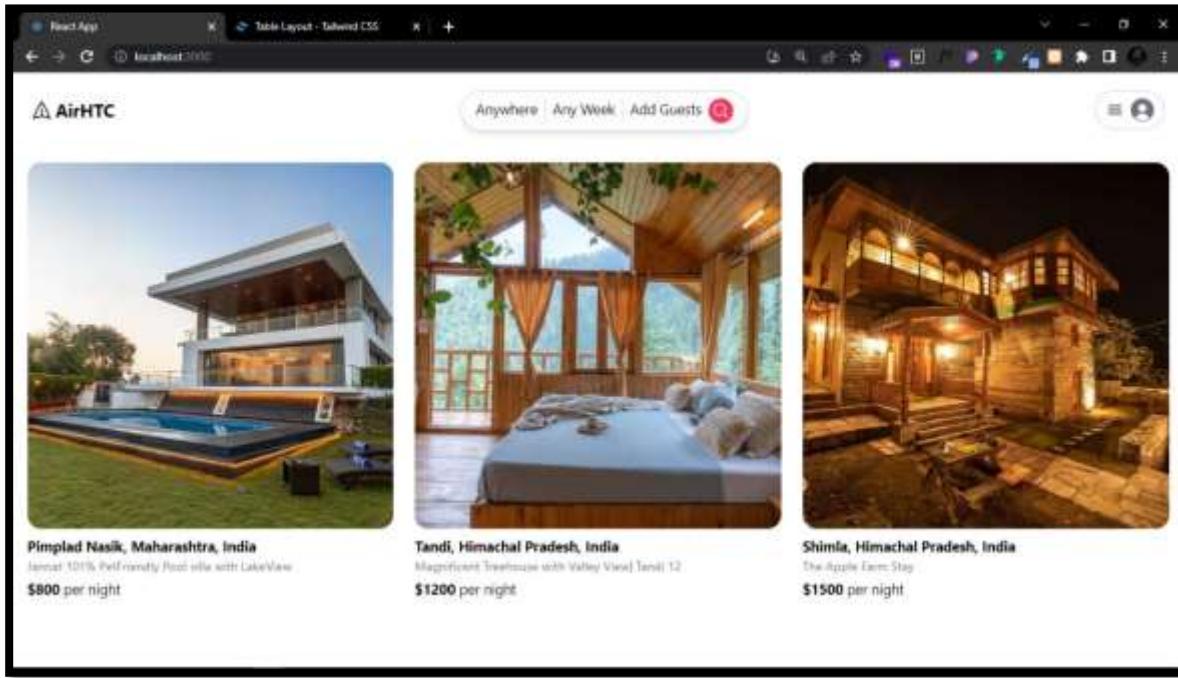


The relationships between these entities can be represented using various types of cardinality, such as one-to-one, one-to-many, and many-to-many. For example:

1. A user can make multiple bookings, write multiple reviews, and have multiple saved listings. Therefore, the relationship between Users and Bookings, Reviews, and Listings is one-to-many.
2. Each listing can have one host, but each host can have multiple listings. Therefore, the relationship between Listings and Hosts is one-to-many.
3. Each listing can have multiple amenities, and each amenity can be associated with multiple listings. Therefore, the relationship between Listings and Amenities is many-to-many.

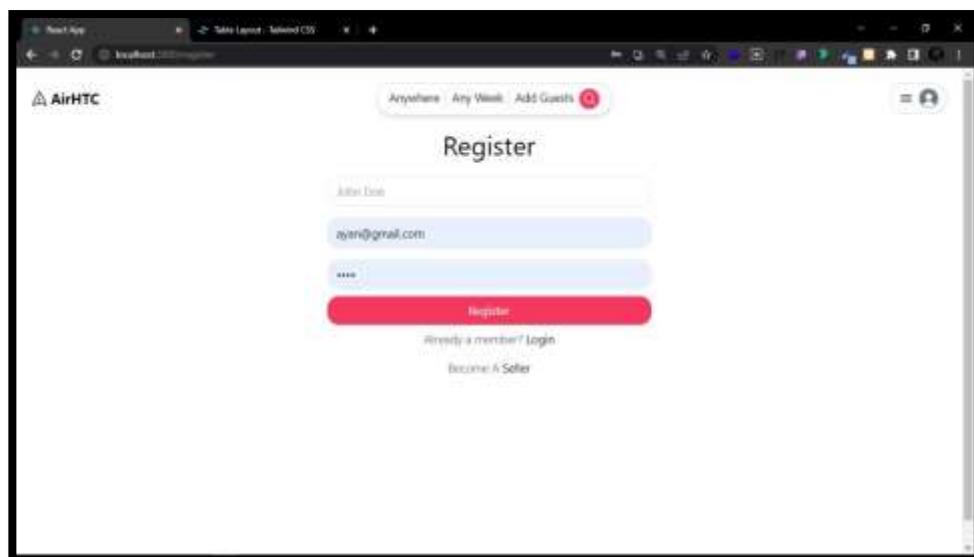
6.4 User Interface Design (Screen Layout)

- Home page:-



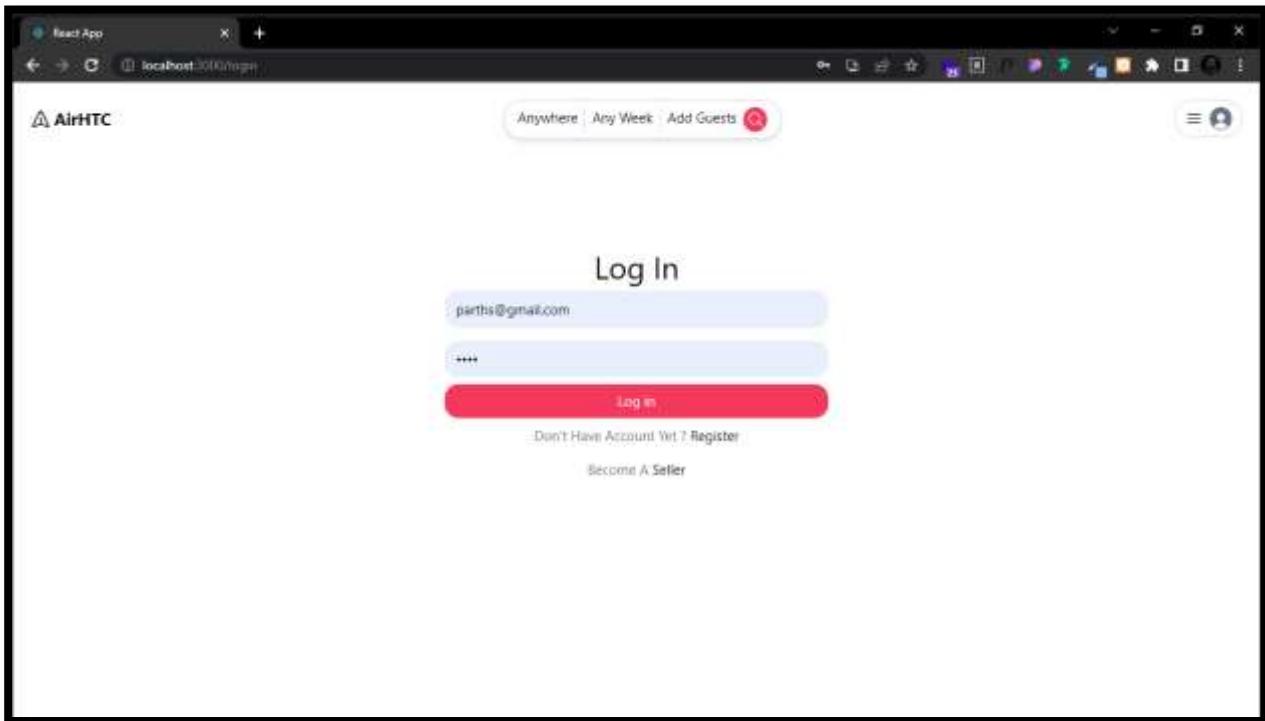
The Airbnb home page usually features a search bar where guests can enter their destination, check-in and check-out dates, and number of guests. Below the search bar, there may be some popular destinations or trending locations that guests can click on to explore.

- Register page:-



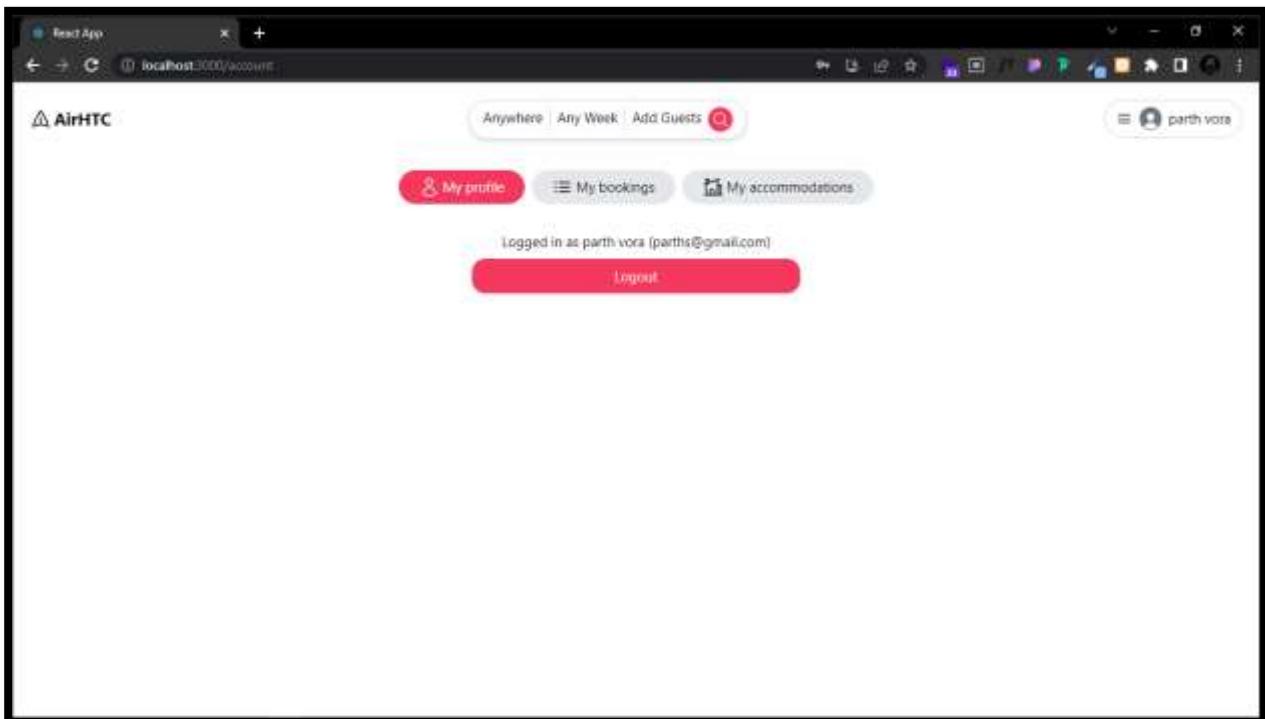
Once the guest has created their account, they can start exploring Airbnb listings and making bookings.

- **Login PAGE:-**



The Airbnb login page is the gateway to access your Airbnb account.

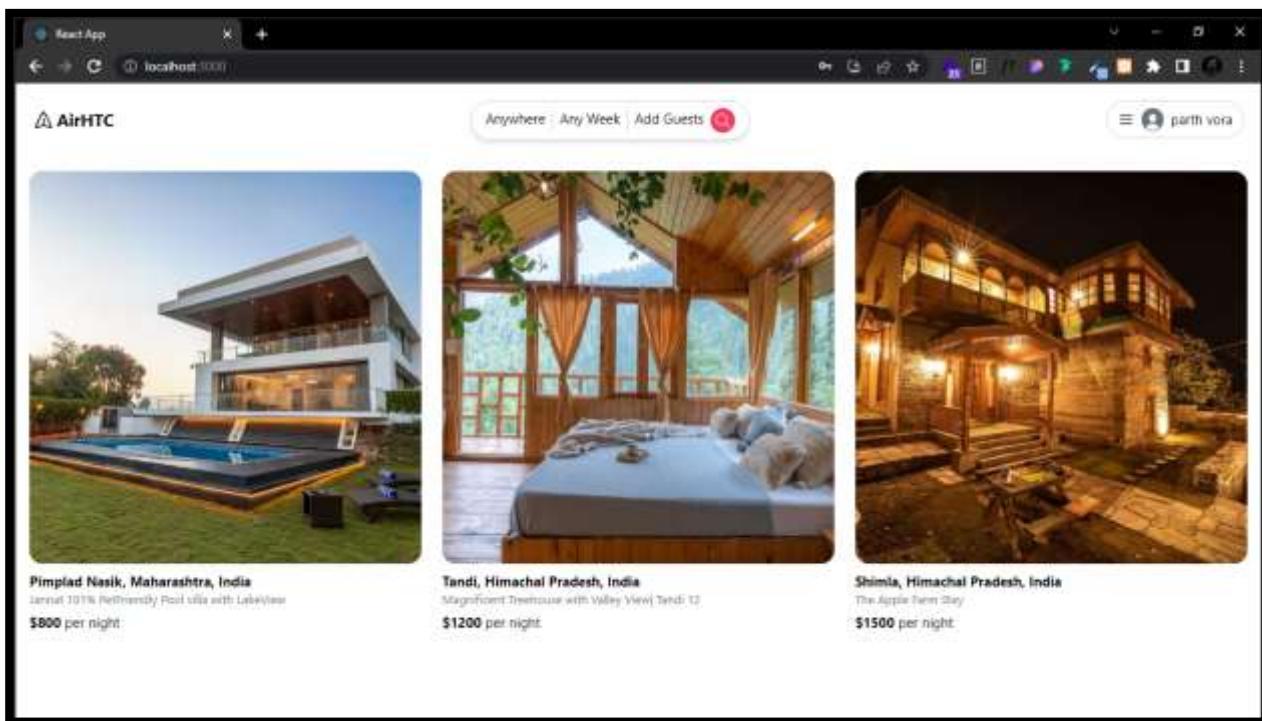
- **LOGOUT PAGE:-**



To log out of your Airbnb account, follow these steps:

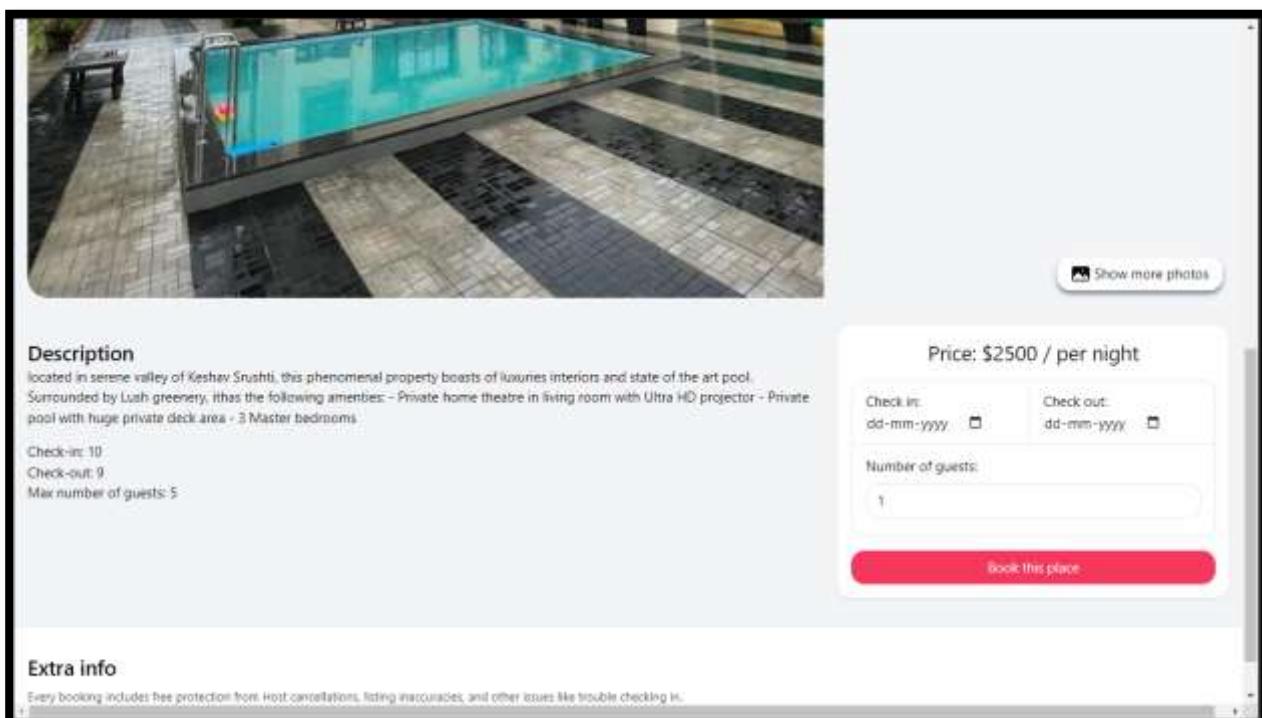
- Click on your profile picture or initials in the top-right corner of the Airbnb homepage.
- Select "Log out" from the drop-down menu.
- You will be logged out of your Airbnb account and redirected to the Airbnb

1. Booking PAGE:-

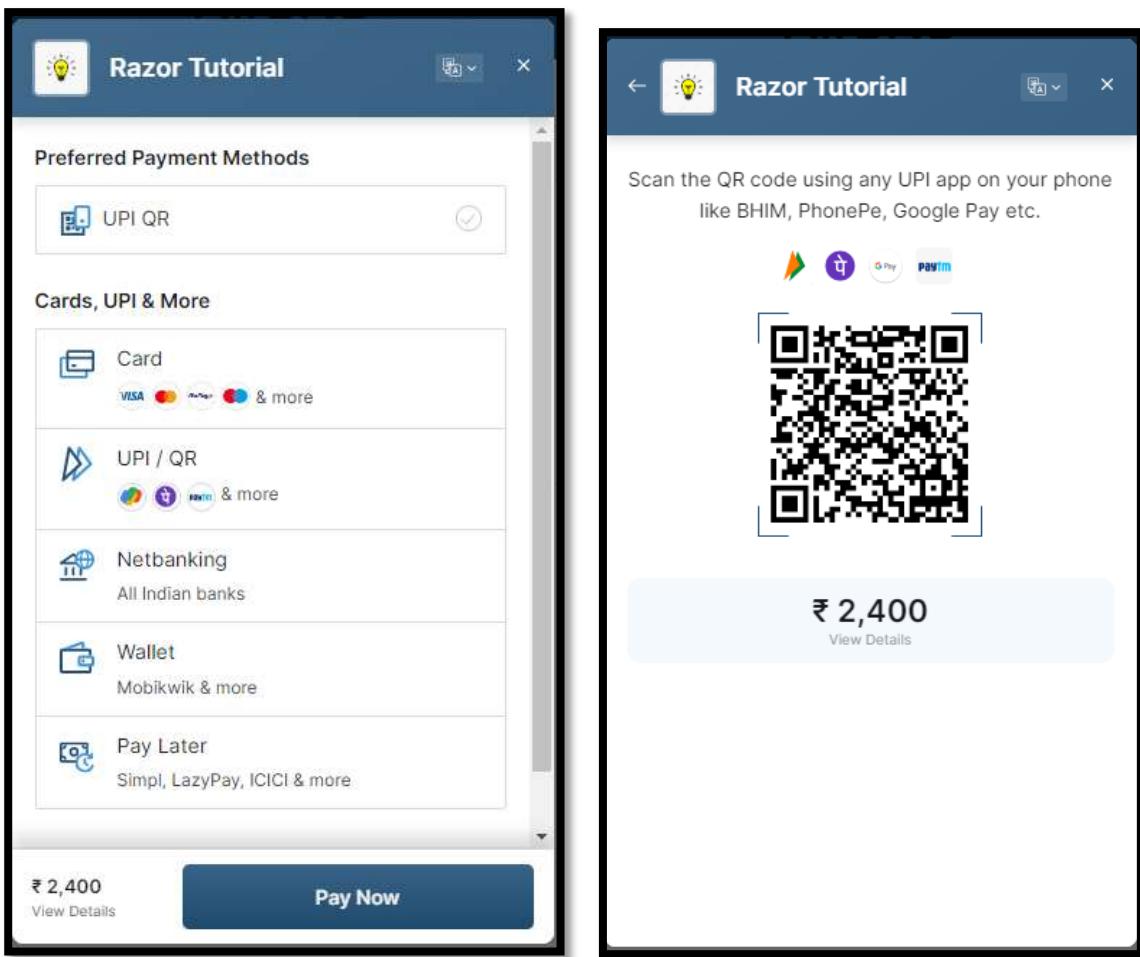


Airbnb booking page is designed to be user-friendly and informative, making it easy for travelers to find and book accommodations that meet their needs and preferences.

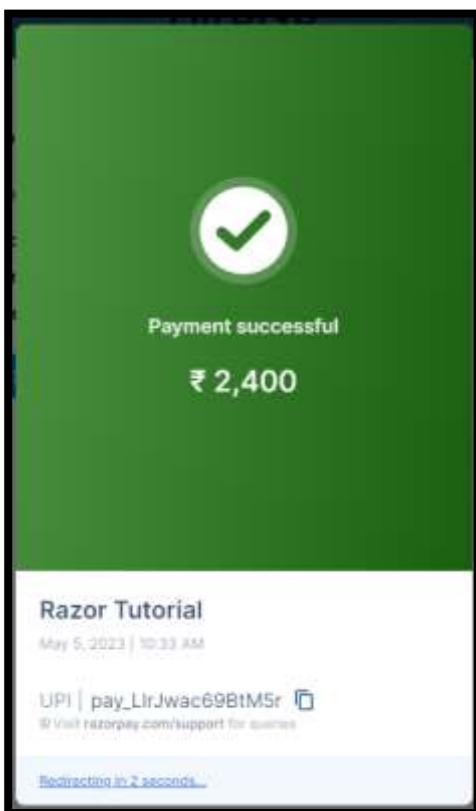
• Booking process:-



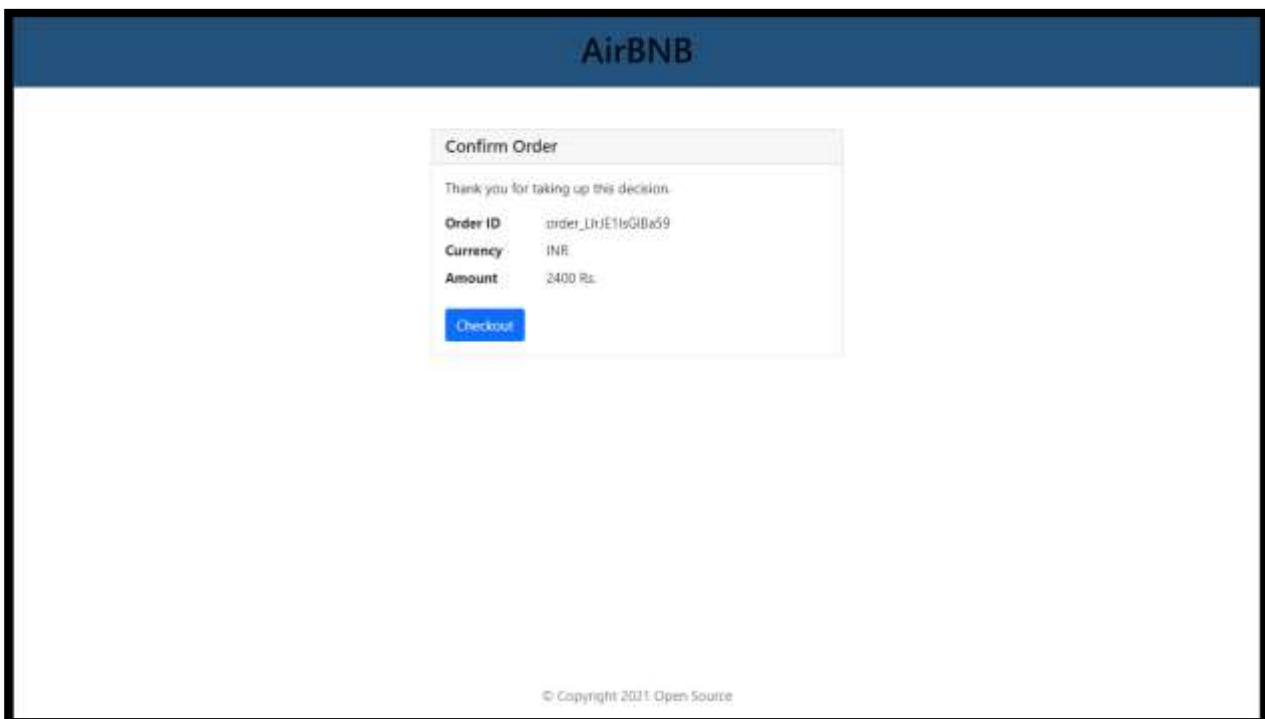
- **Payment process:-**



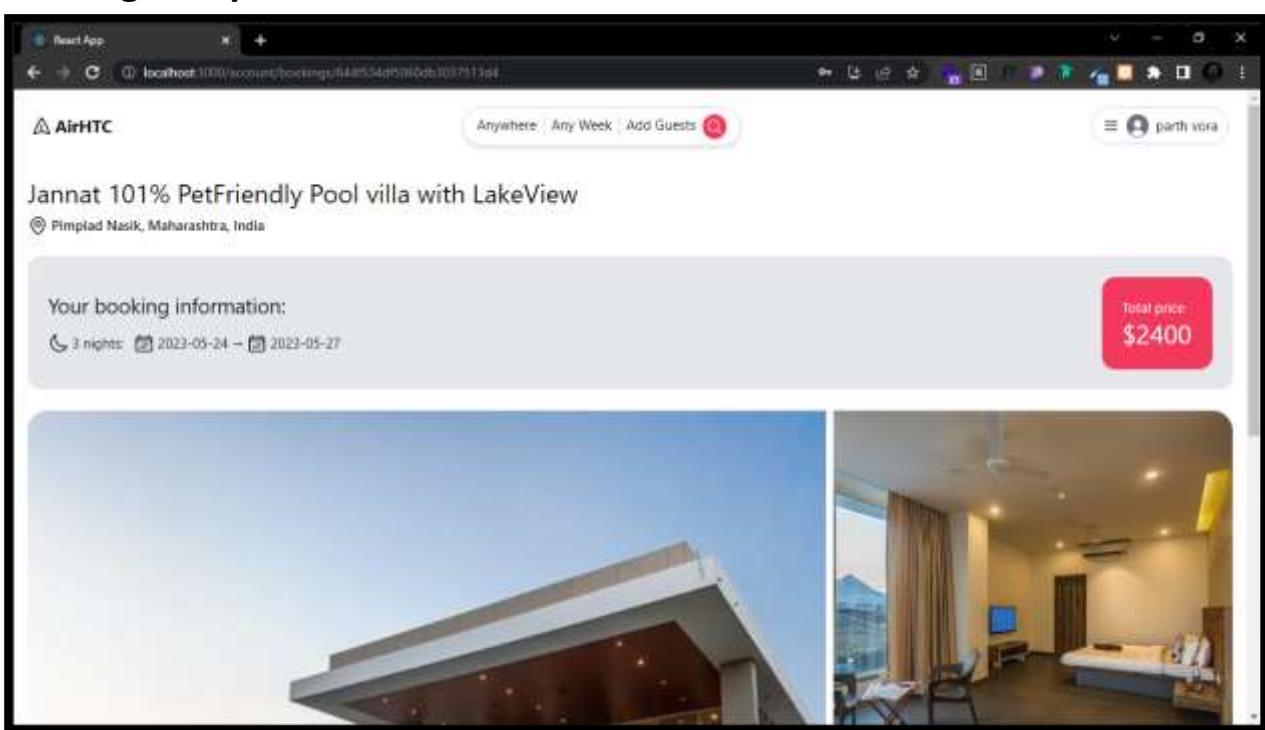
Payment complete:-

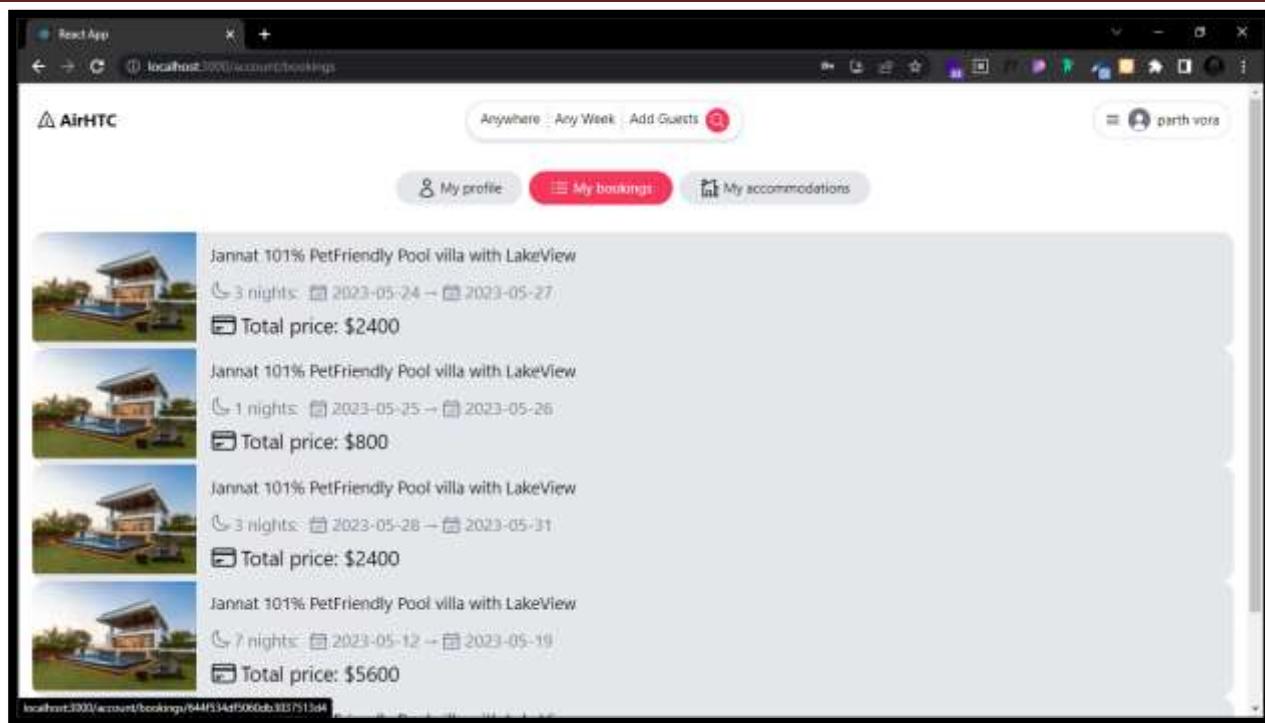


Confirm Booking:-



Booking Complete:-





The Airbnb booking process typically involves the following steps:

Search for accommodations: On the Airbnb homepage, enter your destination, dates, and number of guests to search for available accommodations.

Browse listings: After you've entered your search criteria, you'll see a list of available accommodations. You can browse the listings and use filters to narrow down your results based on your preferences.

Select a listing: When you find a listing that meets your needs, click on it to view more details about the property, such as the description, photos, amenities, and reviews from previous guests.

Check availability: On the listing page, check the availability calendar to make sure the property is available for your desired dates.

Enter booking information: If the property is available, click on "Book" and enter your booking information, such as your name, email address, and payment information. You'll also need to review and agree to the host's cancellation policy.

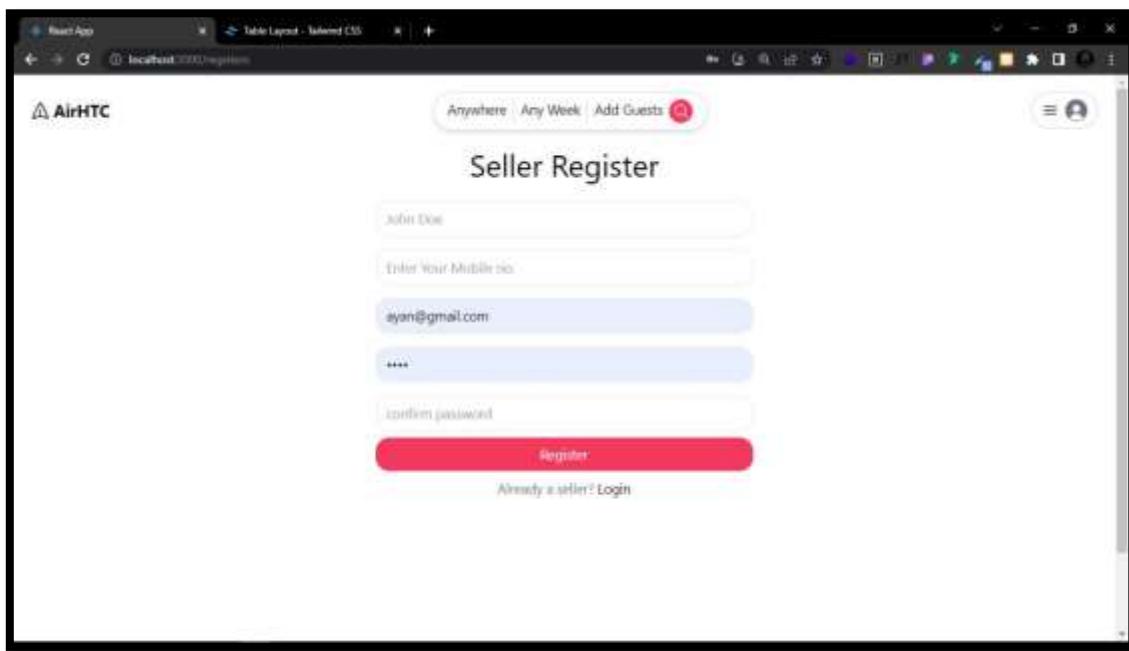
Confirm booking: After you've entered your booking information, review your booking details and confirm your reservation.

Communicate with the host: After you've confirmed your reservation, you can use Airbnb's messaging feature to communicate with your host and ask any questions you may have.

Check-in: On the day of your arrival, follow the host's check-in instructions to access the property.

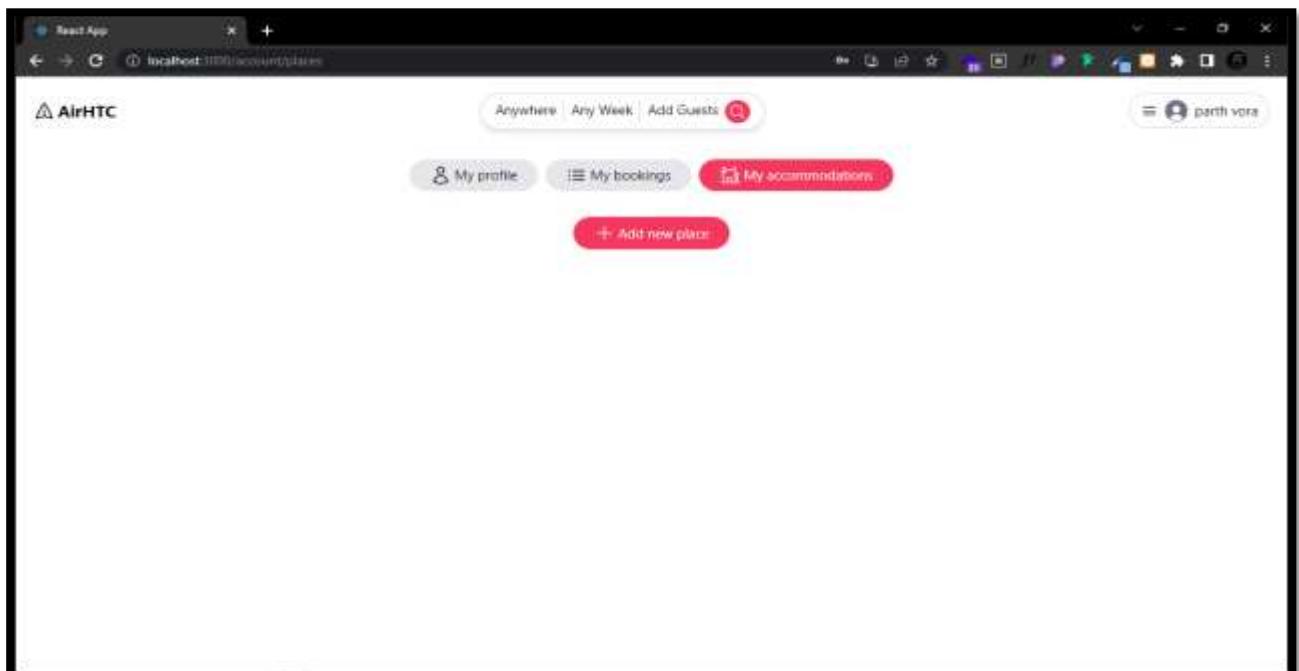
Check-out: On the day of your departure, leave the property in good condition and follow the host's check-out instructions.

- **Seller Register:-**



To become a host (seller) on Airbnb, you can click on the "Become a Host" button on the Airbnb home page or log in to your account and select "List Your Space". This will take you to the Airbnb Seller registration page.

- **ADD HOTEL PROCESS:-**



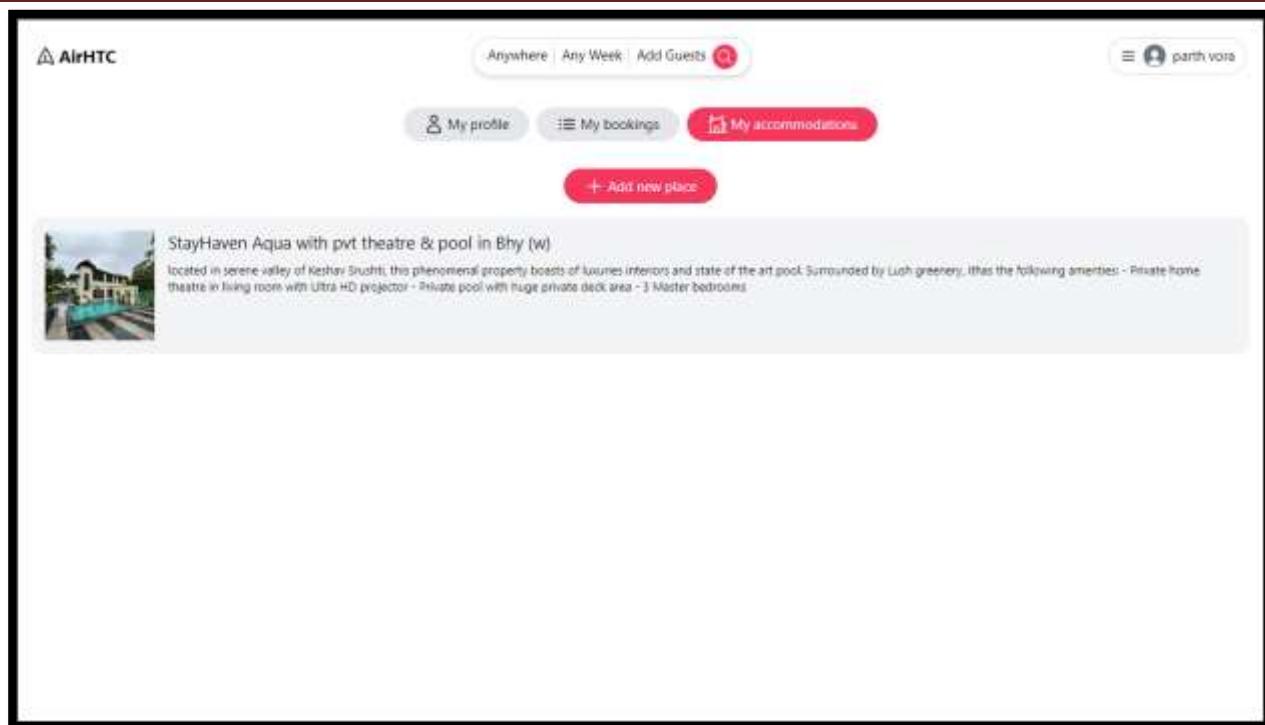
Add hotel to first click into add new place our seller login

Airbnb

The screenshot shows the Airbnb interface for managing accommodations. At the top, there's a search bar with 'Anywhere | Any Week | Add Guests' and a user profile for 'parth vora'. Below the search bar are three buttons: 'My profile', 'My bookings', and 'My accommodations' (which is highlighted in red). The main area is titled 'Title' with the placeholder 'Title for your place, should be short and catchy as in advertisement'. The current title is 'StayHaven Aqua with pvt theatre & pool in Bhy (w)'. The 'Address' field shows 'Mira Bhayander, Maharashtra, India'. Under 'Photos', there are two uploaded images of a house with a pool, and a button to 'Upload' more. The 'Description' field is empty. On the right side of the screen, there are several floating action buttons.

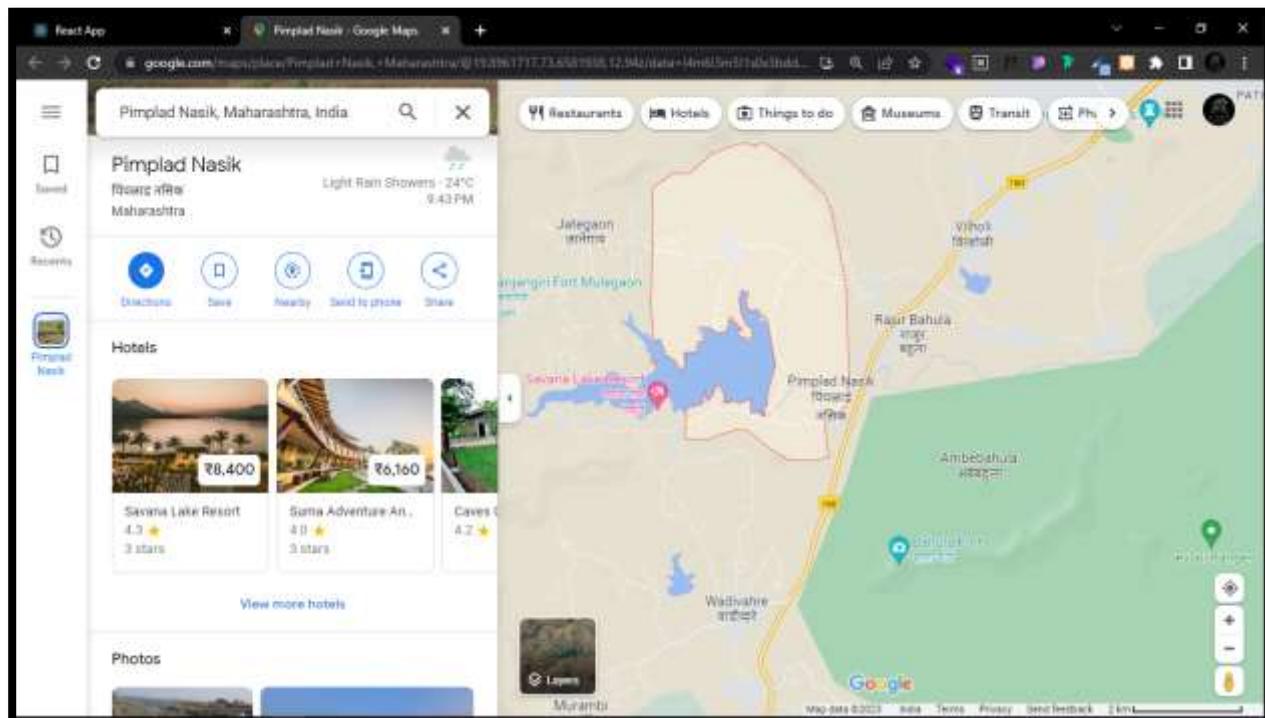
This screenshot shows the 'Check in&out times' section of the Airbnb listing creation process. It includes fields for 'Check in time' (10), 'Check out time' (9), 'Max number of guests' (5), and 'Price per night' (2500). A large red 'Save' button is at the bottom. Above this, there are sections for 'Perks' (with checkboxes for WiFi, Free parking spot, TV, Radio, Pets, and Private entrance), 'Extra info' (with a note about free protection), and 'Check in&out times' (with a note about cleaning between guests).

Add new place click and all data fill and save our data.



Adding a hotel or any other type of lodging to Airbnb can be a great way to reach a wider audience and increase your revenue. However, it's important to be responsive and attentive to your guests' needs to ensure a positive experience for everyone involved.

- **GOOGLE MAP LOCATION SEEN OUR PAGE:-**



Airbnb uses GPS to help guests find and navigate to their booked accommodations. When guests book a listing on Airbnb, the host's address is automatically displayed in the booking confirmation and can be accessed through the Airbnb app or website.

- ROUTE PATH:-

```

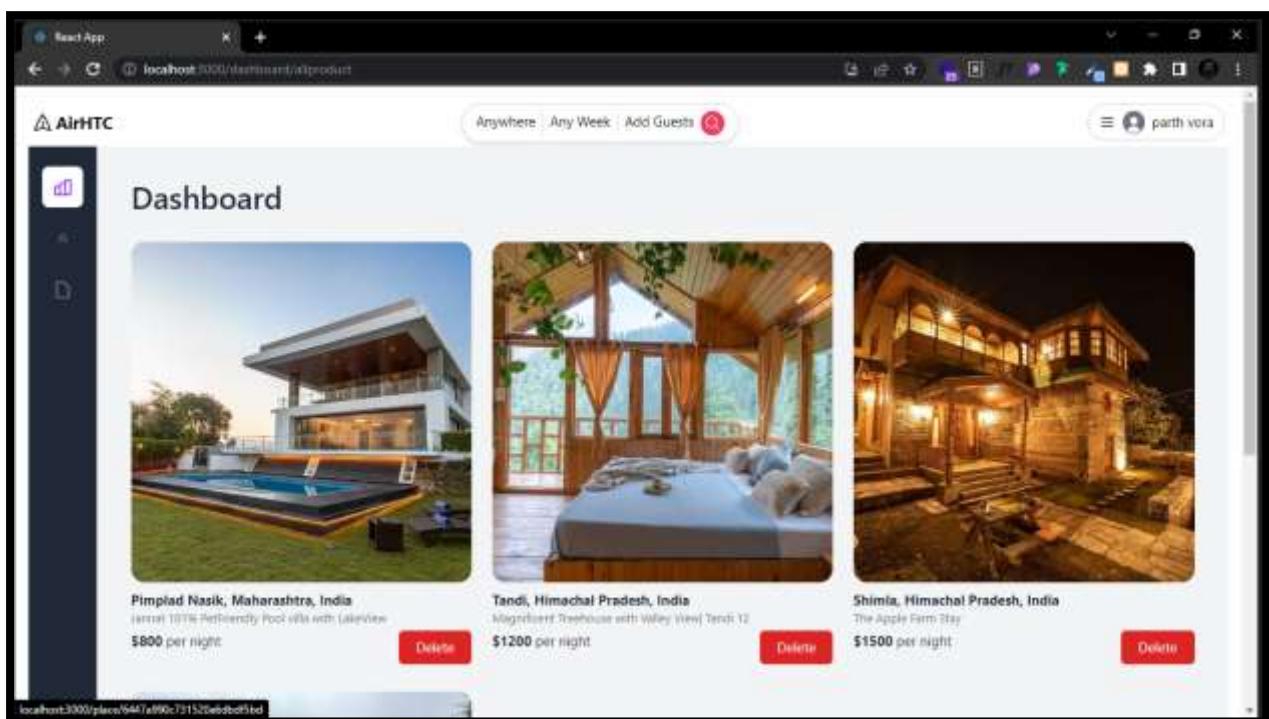
    app.get('/places', (req,res) => {
      mongoose.connect(process.env.MONGO_URI);
      const token = req.cookies.token;
      const {
        title,address,addedPhotos,description,price,
        perks,extraInfo,checkin,checkout,maxGuests,
      } = req.body;
      jwt.verify(token, process.env.JWTSECRET, () => {
        if (err) throw err;
        const placeData = await Place.create({
          ...useruserData,
          title,address,photos,addedPhotos,description,
          price,perks,extraInfo,checkin,checkout,maxGuests,
        });
        res.json(placeData);
      });
    });

    app.get('/user-places', (req,res) => {
      mongoose.connect(process.env.MONGO_URI);
    });
  }
}

```

Show all path ,id and element.

- Dashboard:-



The Airbnb admin dashboard is a tool for Airbnb administrators to manage and monitor the Airbnb platform.

07. System Testing

(Any Testing According to Project)

7.1 Unit Testing

7.2 Integration Testing

7.3 System Testing

7. Meaning and Psychology of Testing

- **Meaning**

Testing is the process of detecting errors. Testing performs a very critical role for quality assurance and for ensuring the reliability of software. The results of testing are used later on during maintenance also.

- **Psychology of Testing**

The aim of testing is often to demonstrate that a program works by showing that it has no errors. The basic purpose of testing phase is to detect the errors that may be present in the program. Hence one should not start testing with the intent of showing that a program works, but the intent should be to show that a program doesn't work. Testing is the process of executing a program with the intent of finding errors.

Different testing levels:-

7.1 Unit Testing

Unit testing focuses verification effort on the smallest unit of software i.e. the module. Using the detailed design and the process specifications testing is done to uncover errors within the boundary of the module. All modules must be successful in the unit test before the start of the integration testing begins.

In this project each service can be thought of as a module. There are so many modules like Login, HWAdmin, MasterAdmin, Normal User, and PManager. Giving different sets of inputs has tested each module. When developing the module as well as finishing the development so that each module works without any error. The inputs are validated when accepting from the user.

In this application developer tests the programs up as a system.

Software units in a system are the modules and routines that are assembled and integrated to form a specific function.

7.2 Integration Testing

After the unit testing we have to perform integration testing. The goal here is to see if modules can be integrated properly, the emphasis being on testing interfaces between modules. This testing activity can be considered as testing the design and hence the emphasis on testing module interactions.

In this project integrating all the modules forms the main system. When integrating all the modules I have checked whether the integration affects the working of any of the services by giving different combinations of inputs with which the two services run perfectly before Integration.

7.3 System Testing

Here the entire software system is tested. The reference document for this process is the requirements document, and the goal is to see if software meets its requirements.

8. Limitations

Airbnb has some limitations and challenges that users and stakeholders should be aware of. Here are some of the key limitations of Airbnb:

1. **Regulatory challenges:** Airbnb has faced regulatory challenges in many jurisdictions around the world, as local governments seek to balance the benefits of short-term rentals with concerns around safety, noise, and community impact. This can lead to uncertainty and restrictions for hosts and guests in certain locations.
2. **Trust and safety concerns:** Although Airbnb has implemented various safety measures, such as background checks and reviews, there is still a risk of fraud, theft, and other safety issues. This can make some users hesitant to use the platform or to stay in a stranger's home.
3. **Quality control:** While Airbnb has guidelines and standards for listings, the quality of accommodations can vary widely. Some users have reported issues with cleanliness, maintenance, and accuracy of listings.
4. **Limited liability:** Airbnb's liability for damages or losses related to a booking is limited, and the company advises users to obtain their own insurance coverage. This can leave hosts and guests at risk in the event of an accident or other incident.
5. **Limited accessibility:** While Airbnb has made efforts to improve accessibility for people with disabilities, not all listings may be fully accessible, and some users may face challenges in finding suitable accommodations.

9. Future Enhancement

Airbnb may focus its future development efforts:

1. **Expanding into new markets:** Airbnb has already expanded into various countries, but there are still many markets that it could potentially enter, including Asia, Africa, and South America.
2. **Improving search and discovery:** Airbnb may continue to invest in improving its search and recommendation algorithms to help users find the most relevant and personalized listings.
3. **Enhancing user experience:** Airbnb may continue to invest in improving the user experience, including streamlining the booking process, providing better customer support, and offering more personalized features for hosts and guests.
4. **Integrating with other services:** Airbnb may explore partnerships or integrations with other travel services or platforms to provide a more seamless and comprehensive travel experience for its users.
5. **Addressing regulatory challenges:** As Airbnb continues to grow, it may face increased regulatory challenges in various jurisdictions, so it may need to continue to work with regulators and stakeholders to find solutions that balance the needs of hosts, guests, and communities.

10. References

10.1 Webography:

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