PROJECT REPORT

WANDERLUST

A Personalized Travel Planning And Tracking

App

Submitted by:

Akriti Chandra
Sanjana Pandey
Shreya Singh
(Team Id: 591061)

Date: 9th November,2023

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1. Introduction

1.1 Project Overview

"Wanderlust: A Personalized Travel Planning and Tracking App" is a comprehensive mobile application designed to revolutionize the way people plan, experience, and remember their travels. The project's main goal is to address the common challenges travelers face when organizing and documenting their journeys. This innovative app offers a one-stop solution that combines travel inspiration, itinerary planning, bookings, on-the-go navigation, and post-trip reflection.

The core idea behind Wanderlust is to provide a personalized and immersive travel experience. The app uses user profiles to offer AI-driven travel recommendations that align with individual interests, budgets, and travel styles. It encourages users to explore new destinations and save their favorite ideas, making the travel planning process both inspiring and practical.

Wanderlust streamlines itinerary planning by enabling users to book flights, accommodations, and activities within the app. Real-time updates and offline navigation make it easier to navigate while traveling, reducing stress and uncertainty. Moreover, the app's unique feature allows users to create digital travel journals, documenting their experiences through photos, videos, and written entries. After the trip, these memories can be compiled into shareable travel stories, facilitating easy sharing with friends and family.

This project aims to create a user-centric, all-in-one travel companion that not only simplifies the travel planning process but also fosters a community of travelers. Wanderlust offers a user-friendly and personalized solution to make travel more enjoyable, memorable, and convenient.

1.2 Purpose

The purpose of the "Wanderlust: A Personalized Travel Planning and Tracking App" is to provide travelers with a comprehensive and user-friendly tool that serves several key purposes:

Travel Planning and Inspiration: Wanderlust helps users discover new destinations, activities, and experiences by offering personalized travel recommendations. It assists travelers in planning their trips by curating a wide range of options based on individual preferences and interests.

Itinerary Management: The app streamlines the process of organizing travel itineraries. Users can easily create, modify, and manage their travel plans, including flights, accommodations, and activities, all in one place.

Real-Time Updates and Navigation: Wanderlust offers real-time information on travel plans, such as flight changes and weather updates. It provides navigation assistance, helping users navigate unfamiliar destinations with ease, including offline access for areas with limited internet connectivity.

Post-Trip Documentation: The app enables users to capture and document their travel experiences through photos, videos, and written entries. This feature allows travelers to create digital travel journals and share their journeys with others, preserving memories for the future.

Community and Sharing: Wanderlust fosters a community of travelers who can connect, share tips, and collaborate on travel plans. Users can also share their travel stories and experiences with friends and family.

The overarching purpose of Wanderlust is to enhance the overall travel experience by simplifying the planning process, providing real-time support during travel, and helping travelers create lasting memories that they can easily share and cherish. It aims to make travel more accessible, personalized, and enjoyable for users, whether they are seasoned globetrotters or first-time adventurers.

2. Literature Survey

2.1 Existing Problem

In today's fast-paced world, individuals increasingly seek opportunities to explore new destinations, experience diverse cultures, and create lasting memories through travel. However, planning and managing these journeys can often be overwhelming, time-consuming, and disjointed due to the abundance of information available online. As a result, the need for a comprehensive, user-friendly, and personalized travel planning and tracking app has become increasingly apparent.

The problem at hand is the lack of a single platform that effectively caters to the unique and evolving needs of modern travelers, providing a solution that seamlessly combines travel inspiration, itinerary planning, bookings, on-the-go navigation, and post-trip reflection. Existing travel apps typically lack the personalization and comprehensiveness required to ensure a truly immersive travel experience.

Our app, Wanderlust, aims to address these challenges by offering a one-stop solution for travelers to discover, plan, and document their journeys. The key problems to be addressed by Wanderlust include:

Information Overload: Travelers are inundated with a wealth of online information about destinations, accommodations, activities, and local tips. This can lead to confusion and decision fatigue, making it difficult for users to curate their travel experiences effectively.

Fragmented Planning: Many travelers use multiple platforms and tools for different aspects of their trips, from flight bookings to accommodation reservations and activity planning. This fragmented approach makes it challenging to have a unified and organized itinerary.

Personalization: Travel preferences are highly individual, yet most existing travel apps fail to provide personalized recommendations, resulting in experiences that may not align with a user's interests, budget, or travel style.

On-Trip Assistance: During the journey, travelers often struggle with navigation, language barriers, and real-time updates on their plans, making it difficult to enjoy their trips without interruptions.

Post-Trip Reflection and Sharing: After returning from a trip, many individuals find it cumbersome to compile their memories and share them with friends and family. Existing apps may lack robust features for post-trip documentation and sharing.

Wanderlust seeks to create an innovative solution that integrates cutting-edge technology, data-driven personalization, and a user-friendly interface to revolutionize travel planning and tracking. Our goal is to provide travelers with a seamless, personalized, and memorable journey, helping them make the most of their wanderlust while minimizing the stress and hassle associated with travel planning and execution.

2.1 References

PAPER 1:

i)Intention use of travel itinerary:

"One of the major benefit of using smart travel plan apps is the creation of personalised travel itinerary. Within the apps usage environment, users being assisted by the travel-related information from the apps. The artifact i.e. travel itinerary contains useful information for the convenience of the app users.
By doing this, it provided the travel related information on the itinerary, specifically the information about the tour destination. Apps are furnishing useful information, i.e. tour destination, hotel choice,restaurant selection and attractions of the destination. The choice of travel destination is affectively and cognitively depend on how relevant is the travel plan [16]. Bekk, Spörrle [17] concluded that tourists require concrete information in helping them to decide the tour destination. With the personalizeditinerary provided, it makes the travel plan more efficient. Therefore, the use of technology adoption models are needed to explain the usage behavior. In this study, we developed an integrative frameworkin combining UTAUT and personal consumption theories to explain the motivations leading to the use of itinerary of smart travel apps."

ii)**Unified Theory of Acceptance and Use of Technology (UTAUT):**

"The shift to mobile phone environment for travel-related tasks led to a number of empirical researchesaimed to better understanding of consumer adoption of apps. Venkatesh, Morris [12] developed UnifiedTheory of Acceptance and Use of Technology (UTAUT) from the functional usage perspective. UTAUT have been implemented to predict private user's acceptance on online transaction [18], to explain

technology adoption and acceptance in organizational context [19], and to predict consumers when ordering food and beverages [20]. UTAUT provides a comprehensive model in combining both functional and adoption perspective. The UTAUT aims to explain user intentions to use a technology tool and subsequent usage behavior, which examines a different view from other adoption models. Specifically, the UTAUT is based on system perceptions in l inking the attitudinal and behavior [21]. We adopted this theory due to its strong predictive power from functional perspective. Many studies relating to apps usage had use UTAUT as the underlying theoretical base such as airline ticket purchase [22], tour mapping apps [23] and mobile payment in hotel [24]. In this study, the UTAUT model was adapted and consisted of performance expectancy, effort expectancy, social influence and facilitating condition."

iii)Performance expectancy

"Performance expectancy is defined as the degree of the use of technology applications in assisting the users to achieve their tasks [12]. Based on this definition, performance expectancy refers to the task completed with a personalized trip itinerary. Moreover, smart travel planning apps are producing itineraries that help the app users in planning their trips. Prior studies have confirmed that people would use the technology in order to learn about the tour destination [25]. In addition, the linkage between expected benefits of using the apps significantly influence the adoption of the apps. For example, rooms booked by the hotel reservation app [26] and hotel proprietary app [6].. In this study, the travelers can expect to plan their trip after using the itinerary generated by a smart travel planning app. We expect this could motivate travelers to keep on using this app."

iv)Social influence

"Social influence plays a key role in motivating one to perform tasks their peer think he/she should carry out [30]. In general, human tend to internalize these peer influence in molding the behavior [12]. This Kind of social support provides trust, respect, loyalty, common experience and shared social value in building the strong bond [31]. Social influence is one key drivers for behavioral intention of using new technology in tourism. For instance, Book, Tanford [32] examined the high level of support from influential people in one's social network could influenced travelers'

attitude and behaviors. The extant studies showed that social influence have direct influence on the acceptance of apps significantly [33,34].There is lack of study on the artifacts produced by the app."

PAPER 2:

INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME 9, ISSUE 03, MARCH 2020 ISSN 2277-8616

The Preferences of Potential Tourists in Utilizing Travel Agencies and Travel Application

Dalilah, Md Salleh[2]; Albattat, Ahmad[1*]; Nur Hafify Shazwani[2], Rosli; Theana, Nesamani[2]; Wan Hamisah, Wan Hassan[2]

Abstract— Tourism as an industry has been constantly growing with the pace of technological advancements. The breakthroughs of technology via e-commerce and high-speed Internet have allowed today's generation to deal with online booking system. Due to that, many researchers eager to identify the impact of online system towards the growth and survival of traditional travel agencies. The expansion of the Internet has led many traditional businesses to struggle while competing with online-based companies. Hence, this research project aims its focus in studying the preferences between travel agency business model and online travel booking applications used by tourists and consumers in determining their decision making when purchasing for trips and accommodation. The data analysis was recorded using a quantitative method by distributing 200 questionnaires to tourists who come to visit the city of Kuala Lumpur.

Index Terms— Preferences, Tourist, Travel Agency, Travel Applications

i) Tourist Preferences

"In general, a broad knowledge or certainty, less expense and awareness on issues associated with domestic travel are becoming the main concerns than overseas holiday travel. According to Vellas (2016), traveler who involve in business travel will be arranged with a trip that is taken based on work requirements and this normally conducted without concerning the needs and demands of the traveler as the decision and its financing are often finalized by someone else or the organization. The present study focused on overseas holidaymakers as the travel consumers. The focus group was based on little research related to the impact of the Internet from the travel consumers' perspective, where the purpose of the present exploratory study was to identify factors that influence travel consumer choices between using a travel agent and the self-service environment of the Internet when planning and arranging overseas holidays. Specifically, this study aimed to determine levels of awareness of the range of services that are available through travel agents and on the Internet, to identify whether there is a tendency to use travel agents for some services and the Internet for others or vice versa, to determine the service dimensions that are most important to people when planning and arranging their overseas holidays and, finally, to compare how people rate both travel agents and the Internet based on these factors."

ii)Tourism Pricing Levels

“Tourism and hospitality are circulated in a fast-paced social cycle, and the industries associated with them are largely application oriented. Driven by cost considerations, many organizations are trying to save money through minimizing their distribution costs, with a specific focus on intermediaries in the distribution chain (Torres & Mejia, 2017). The advances in information technology, especially the Internet, have enabled suppliers in many industries to sell their products and services directly to their consumers, hence leading to significant cost savings. Tourism can be considered as a unique area of business where a product cannot be observed or manipulated through direct experience prior to purchase. Instead, customers must purely rely on indirect or virtual experience (Bigné & Decrop, 2019). Due to that, appealing presentations of travel destinations have always been an important factor that determine tourism success. Here, the effort of traditional travel agents can be considered as successful in providing illustrated catalogues with significant amount of information that jazzed up potential customers with aesthetic photos, beneficial tips, maps and more (Fyall, Legohérel, Frochot & Wang, 2019)”

iii)Travel Application/Online Travel Sites

“ In technological contexts, the persistent development of information and communication technologies have enabled service providers to accumulate data regarding their consumers via database. This added value is the result of how behavioral data are collected through different platforms used by consumers or known as ―big data‖. Simultaneously, these roles of information and communication technologies have led to the development of new business models. Another development can be determined through the increasing use of new technologies in sharing and reviewing information related to tourist experiences (Buhalis & Foerste, 2015). To ensure the return from loyal customers to the service provider would acquire a strategic of need and vivid objective for tourism firms as those two would allow them to increase profitability and obtain competitive advantages in a long run (Abrar, Zaman & Satti, 2017). This also favors the creation and maintenance of mutually beneficial relationships (Toufaily et al., 2013), since those can be considered as an indicator of success in tourism marketing (Chen, Yen, Pornpriphet and Widjaja, 2015). Since few decades, information technology is playing a significant role in transforming and developing hospitality and tourism industry towards betterment. Explicitly, the Internet performs its duty as a powerful marketing and operational tool that revolutionized business operations with extraordinary opportunities for service

providers and consumers in this industry (Ali, 2016). Previously, hotels have traditionally been dependent on intermediates in order to convey information via promotion and sell their products. Nowadays, the emergence of ecommerce websites has developed a new and potentially powerful communication and distribution channel for hotels, as well as decreasing the gap between them and consumers (Ponte et al., 2015). Despite the wide recognition of the compatibility between the Internet and hotel industry, other initiatives should be taken by hotels in order to understand the importance of website quality and other relatable variables hat may shape the behavior and preference of their customers (Hsu et al., 2012). Website quality has gained great attention from academic and its practitioners equally because of its vital role in developing customers‘ purchase intentions. Jeong et al. (2003, p. 162) defined website quality as the ―overall excellence or effectiveness of a [website] in delivering intended messages to its audience and viewers‖. However, Chang and Chen (2008) criticized this definition as the significance of customer needs has been overlooked by defining the term as, ―users‘ evaluation of whether a web site‘s features meet users‘ needs and reflect the overall excellence of the web site‖ (p. 821). This study also adopts Chang and Chen‘s (2008) definition and supports the notion that focusing on consumers‘ perceptions. Some of the scholars such as Wang, Law, Guillet, Hung and Fong (2015) correlated website as virtual store of the company/service provider that serves their images and reputation, and users need to rely on websites‘ attributes to reach a purchase decision. Hence, to apply a successful estrategy to attract and retain customers, companies need to understand customers‘ perceptions of the most important website attributes. In this regard, Yeung and Law (2006) indicated that website design encompasses of its usability and functionality.”

iv)Tourist Experiences

“These are three phases of purchase and consumption of tourist products; before, during and after the tourism experience. The first phase is usually labelled as the recognition needs, consisting of two components, namely meaning of and motivation to travel (Cavagnaro & Staffieri, 2015). Travel meaning and motivation are the significant predictors for a travel to be undertaken and are related to the future outcome of satisfaction (Zhou, Dai & Zhang, 2007). Various alternative approaches have been developed to predict tourism demand over the past decades. Quantitative methods have dominated many existing literatures, and there are also several studies reported on the usefulness of qualitative approaches (Chu, 2008). There is a difference, in the length of the timeframe considered. While the motivation ignites a

specific process of decision making and leading to a travel choice in the short term, definition that attributed to travel has a more general connotation and goes beyond a specific travel choice or experience (Cavagnaro & Staffieri, 2015). In other words, values, meaning and motivation for travelling form a chain of influences on present and future travel behavior among individuals. As it is a hyper-connected generation with different travel arrangements and needs, the study of their motivations, representations, purchasing behavior and tourist practices are the considerable challenges, not only for academic research, but also for tourism professionals (Lo & Lee, 2011). Values are formed by encompassing broad dispositions and orientations that make them stable than other factors that influencing behavior. Their stability values are influenced significantly by present and future choices, and this thus highlights the importance of understanding the influence of the individual's position in the social structure and values when explaining (future) behavioral choices (Cavagnaro & Staffieri, 2015).”

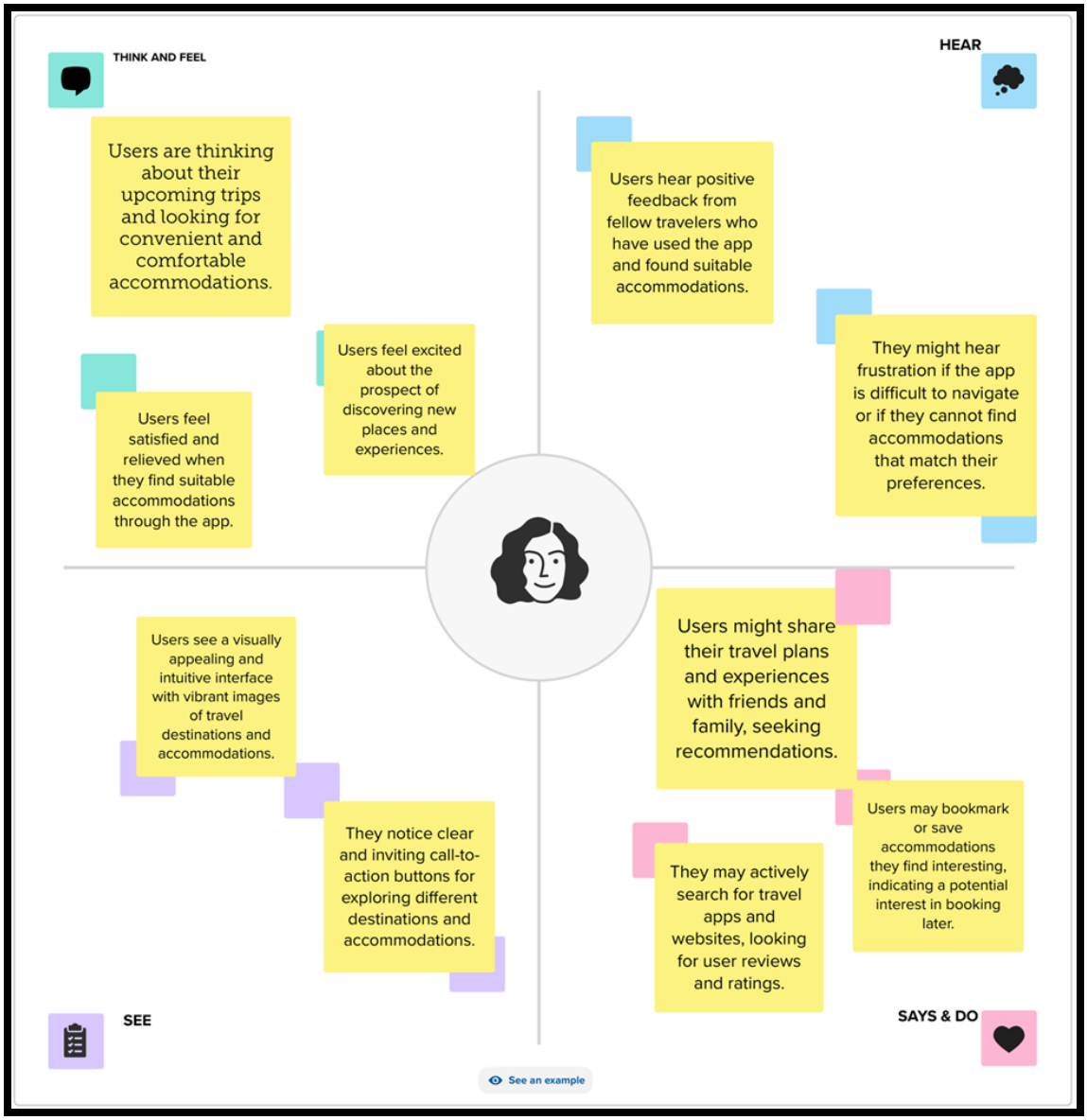
2.3 Problem Statement Definition

The problem at hand is the fragmented, overwhelming, and often inefficient nature of travel planning and tracking. Travelers face a plethora of challenges, including information overload from numerous online sources, disjointed itinerary management, a lack of personalized recommendations, on-trip navigation difficulties, and post-trip documentation hassles. Existing travel apps typically fall short in providing a unified and user-centric solution, resulting in a significant need for an app like Wanderlust that can streamline the entire travel experience.

3. Ideation and Proposed Solution

3.1 Empathy Map Canvas

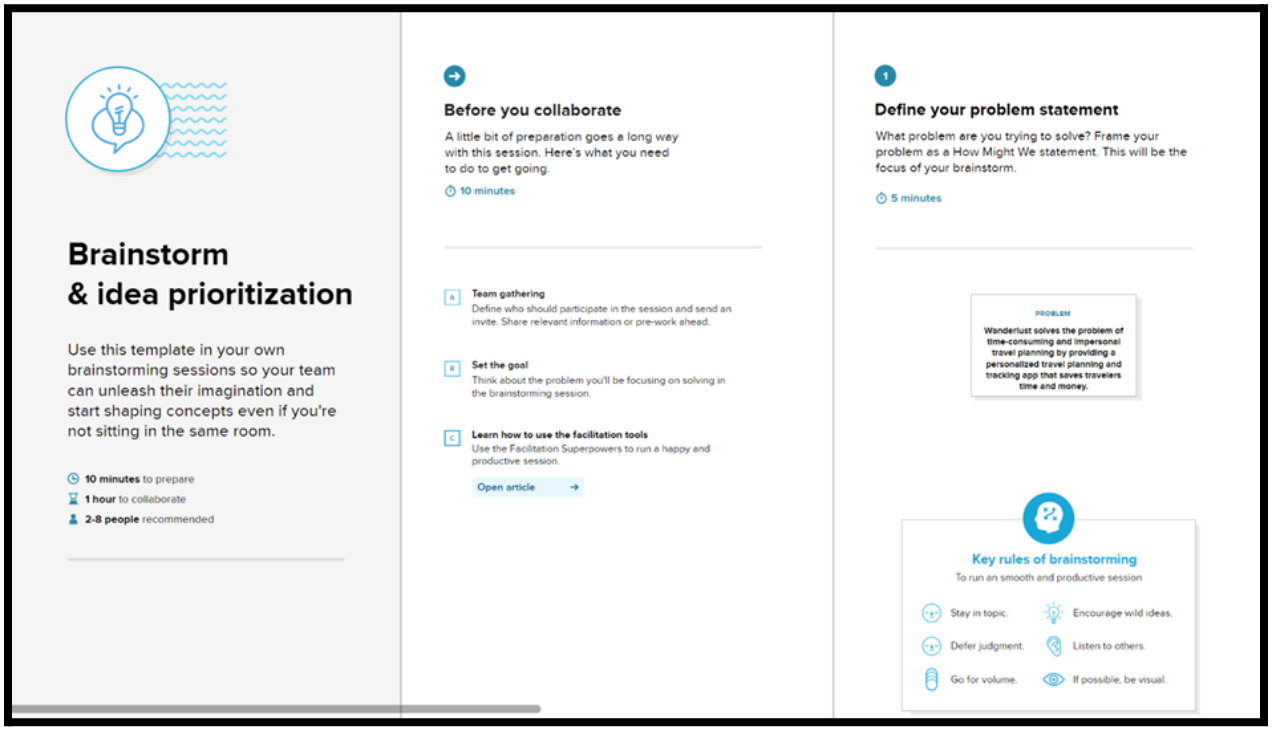
An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behavior and attitudes.It is a useful tool to help teams better understand their users.Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.



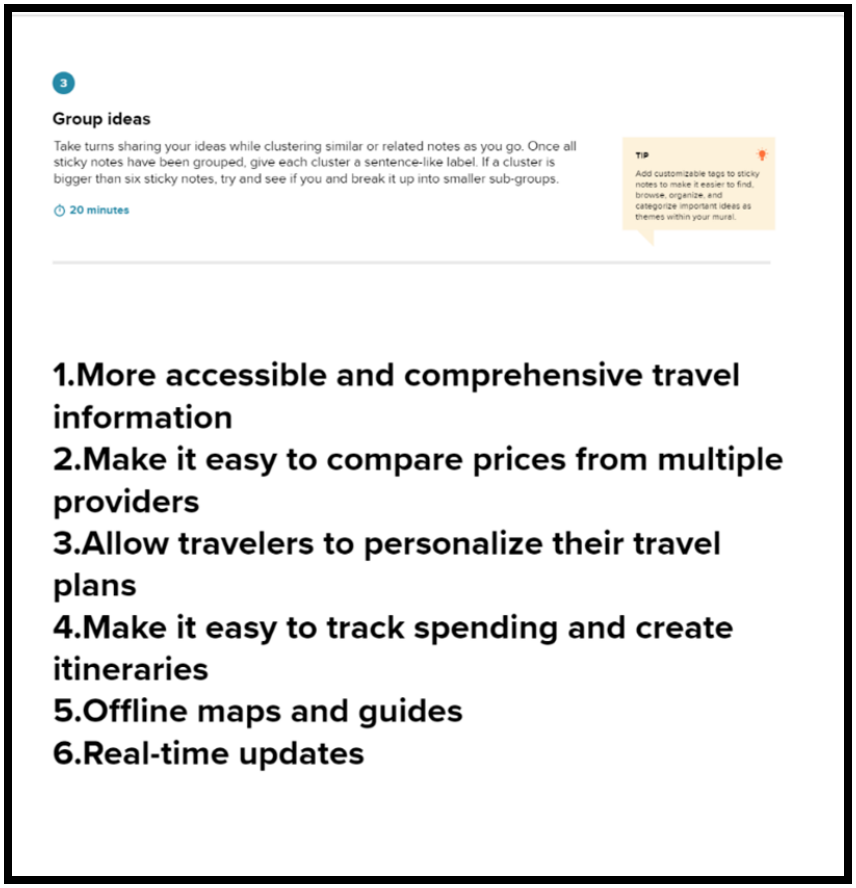
3.2 Ideation and Brainstorming

The ideation for the "Wanderlust" app envisions a comprehensive and innovative travel companion, addressing the common challenges travelers face when planning and tracking their journeys. Key concepts include personalized travel profiles that use AI for tailored recommendations, a curated inspiration feed to spark travel ideas, a user-friendly itinerary planner with real-time updates, and offline navigation for on-the-go assistance. The app also offers a digital travel journal for documenting experiences and sharing them as travel stories, fostering a user community for collaboration and sharing. Integration with booking platforms streamlines travel arrangements, while security and safety features provide peace of mind.
Multi-platform access ensures flexibility. These ideas collectively aim to create a user-centric, all-in-one solution for travelers, making their journeys more enjoyable, personalized, and memorable.
Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

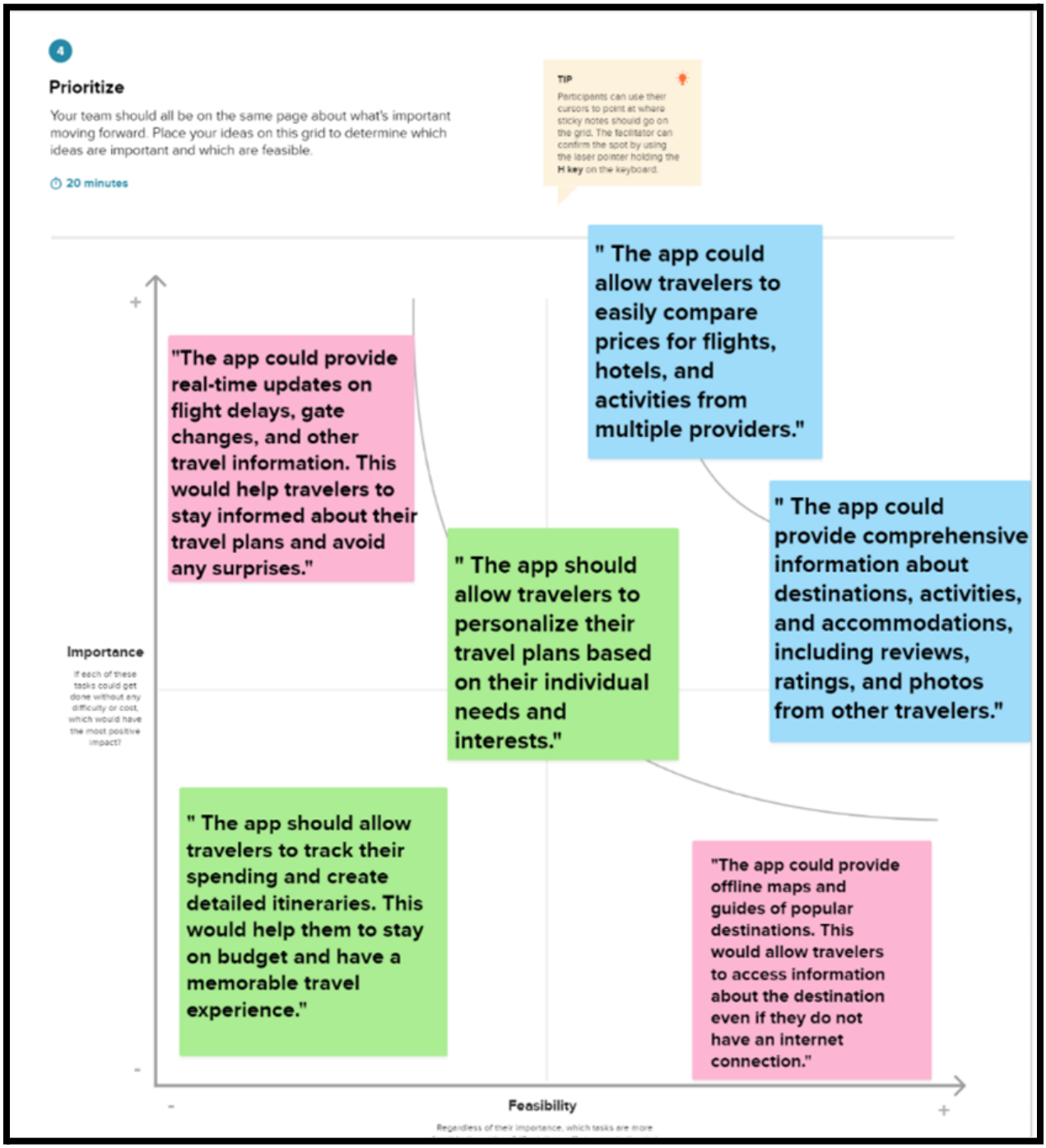
Step-1: Team Gathering, Collaboration and Select the Problem Statement



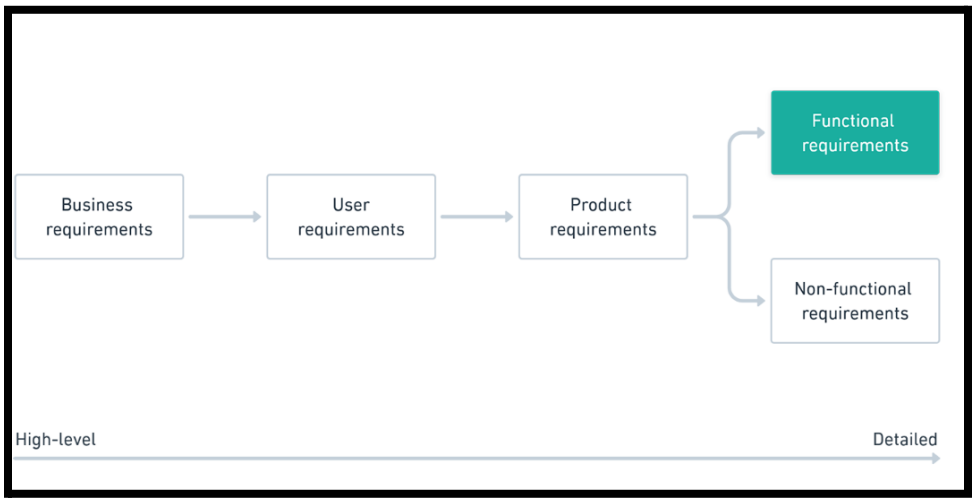
Step-2: Brainstorm, Idea Listing and Grouping


3
Group ideas
Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.
20 minutes
TIP
Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.
1.More accessible and comprehensive travel information
2.Make it easy to compare prices from multiple providers
3.Allow travelers to personalize their travel plans
4.Make it easy to track spending and create itineraries
5.Offline maps and guides
6.Real-time updates

Step-3: Idea Prioritization



4. Requirement Analysis



4.1 Functional requirements

The functional requirements of the Wanderlust app outline the specific features and capabilities that the app must have to address the identified problems and deliver a seamless travel planning and tracking experience. Here are key functional requirements:

- **User Registration and Profiles:**
  Users can create profiles with personal information, travel preferences, and past travel history.Profiles can be customized to reflect travel interests, budget, and travel style.

- **Travel Inspiration Feed:**
  Curated feed displaying travel inspiration, including destination highlights, travel stories, and user-generated content.Ability to search and filter inspiration content based on user preferences.

- **Itinerary Planner:**
  User-friendly tool to create, modify, and manage travel itineraries.
  Ability to add flights, accommodations, activities, dining options, and transport details.Real-time updates on itinerary changes and pricing.

- **AI-Powered Recommendations:**
  AI-driven recommendations based on user profiles for destinations, activities, and accommodations.Personalized suggestions for travel experiences and deals.

- **Real-Time Updates and Alerts:**
  Notifications for itinerary changes, gate updates, weather conditions, and traffic alerts.
  Alerts for flight delays, cancellations, and alternative options.

- **Offline Maps and Navigation:**
  Access to offline maps for destinations, providing navigation assistance in areas with limited internet connectivity.Turn-by-turn directions and point-of-interest information.

- **Digital Travel Journal:**
  Feature allowing users to create digital travel journals by adding photos, videos, and written entries.Ability to organize entries by trip, date, or location.

- **Shareable Travel Stories:**
  Users can compile their travel journals into shareable travel stories.Stories can be shared with friends and family through the app or on social media platforms.

- **Community and Collaboration:**
  User community for travelers to connect, share tips, and collaborate on travel plans.
  User-generated content, reviews, and recommendations.

- **Booking Integration:**
  Integration with booking platforms for flights, accommodations, and activities.Ability to make bookings and reservations directly within the app.

- **Security and Safety Features:**
  Emergency contact information and local emergency service details.Safety tips and guidelines for travelers.

- **Multi-Platform Access:**
  Cross-platform accessibility, including mobile devices, tablets, and desktop computers.

4.2 Non Functional requirements

Non-functional requirements specify the characteristics and qualities that the Wanderlust app should possess to ensure its performance, security, and user experience. Here are important non-functional requirements for the app:

1. **Performance:**

- **Responsiveness:** The app should respond quickly to user actions and provide a seamless user experience.
- **Scalability:** It must be able to handle increased user loads and data without a significant drop in performance.
- **Optimized for Various Devices:** The app should perform well on a variety of devices, screen sizes, and operating systems.

2. **Security:**

- **Data Privacy:** Ensure the security and privacy of user data, including travel plans, personal information, and payment details.
- **Secure Communication:** Use encryption to protect data transmitted between the app and servers.
- **Authentication and Authorization:** Implement secure login and access control mechanisms.

3. **Reliability:**

- **Availability:** The app should be available and accessible to users with minimal downtime.
- **Data Backup and Recovery:** Regularly back up user data to prevent data loss and ensure recovery in case of system failures.

4. **Usability:**

- **User Interface Design:** Ensure an intuitive and user-friendly design that is accessible to a wide range of users.
- **Accessibility:** Make the app accessible to users with disabilities, complying with relevant accessibility standards.

5. **Compatibility:**
- **Cross-Browser Compatibility**: Ensure compatibility with various web browsers for web-based versions of the app.
- **Cross-Device Compatibility:** Ensure the app functions on different devices and screen sizes.

6. **Scalability:**
- **Database Scalability:** Design the database architecture to scale as the user base and data volume increase.
- **Traffic Scalability:** The app should accommodate increased user traffic during peak periods.

7. **Performance Monitoring:**
- Implement tools and processes for monitoring app performance, identifying bottlenecks, and optimizing as necessary.

8. **Localization and Internationalization:**
- Support multiple languages and currencies to cater to a diverse, global user base.

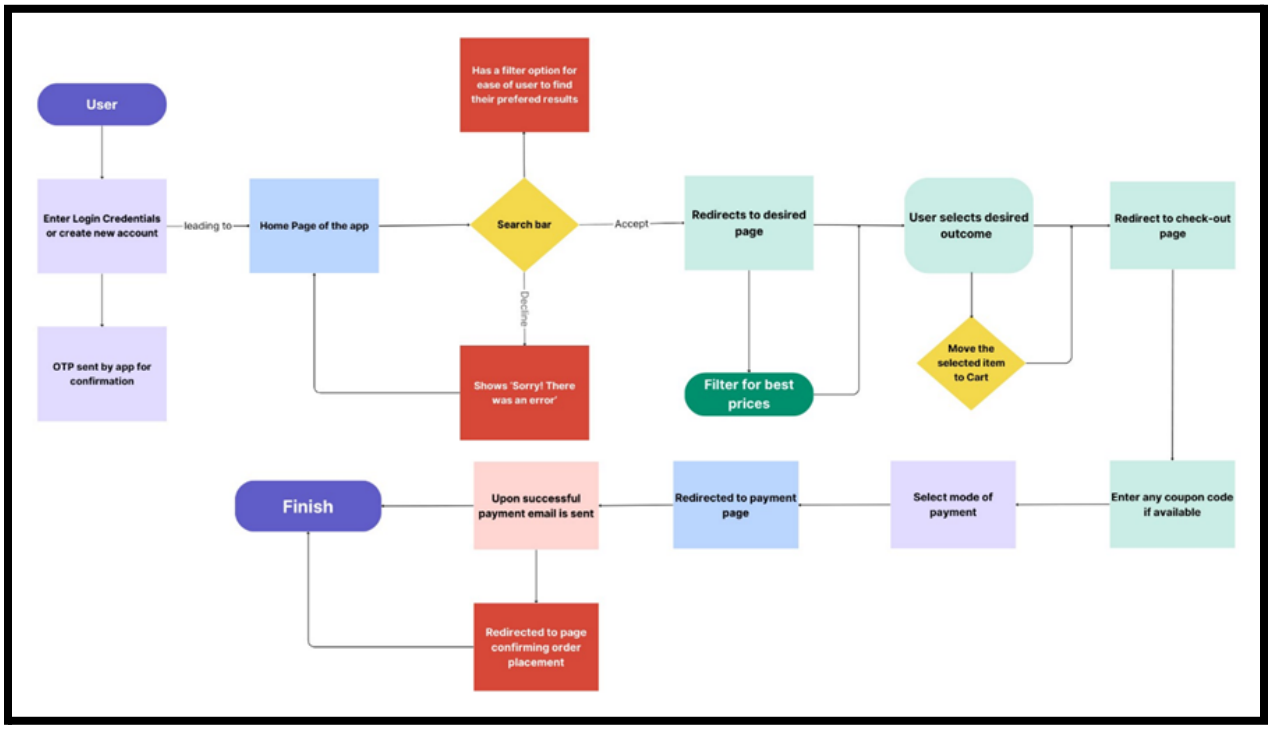
9. **Compliance and Regulations:**
- Ensure compliance with data protection and privacy regulations, such as GDPR, HIPAA, or relevant local laws, depending on the app's geographical scope.

10. **Load Testing and Stress Testing:**
- Conduct load testing to determine the app's performance under expected user loads and stress testing to identify its breaking point.

5. Project Design

5.1 Data Flow Diagrams & User Stories

- **Data Flow Diagrams:**



- **User Stories:**

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High
		USN-2	As a user, I will receive confirmation OTP once I have registered for the application	I can receive confirmation OTP & enter in the desired spot	High
		USN-3	As a user, I can log into the application by entering email & password		High
	Home	USN-1	As a user, I can select the field I'm interested in		High
		USN-2	As a user, I can select the offer provided by the service provider		Medium
	Search Bar	USN-1	As a user, I can search for my desired product or package	I can click on enter to be redirected to the desired page	High
		USN-2	As a user, I can filter my search results to get the best results		High
	Cart	USN-1	As a user, I can go to cart to overview the package/ bookings I selected	I can click the icon of cart provided to direct myself to the cart contents	High
	Check-out Page	USN-1	As a user, I can choose the choice of my mode of payment and make the necessary payments through this page.		High

- As a traveler, I want to create a personalized travel profile so that the app can offer me travel recommendations tailored to my interests and preferences.

- As a user, I want to discover travel inspiration in the form of destination highlights, user-generated content, and travel stories to help me plan my next adventure.

- As a traveler, I want to be able to easily plan and modify my travel itinerary, including adding flights, accommodations, activities, and dining options.

- As a user, I want to receive real-time updates on my travel plans, including flight changes, gate information, and weather alerts to stay informed during my journey.

- As a traveler, I want to access offline maps and navigation to help me navigate in areas with limited internet connectivity while on my trip.

- As a user, I want to create a digital travel journal by adding photos, videos, and written entries to document my travel experiences and memories.

- As a traveler, I want to compile my travel journal into shareable travel stories so that I can easily share my adventures with friends and family.

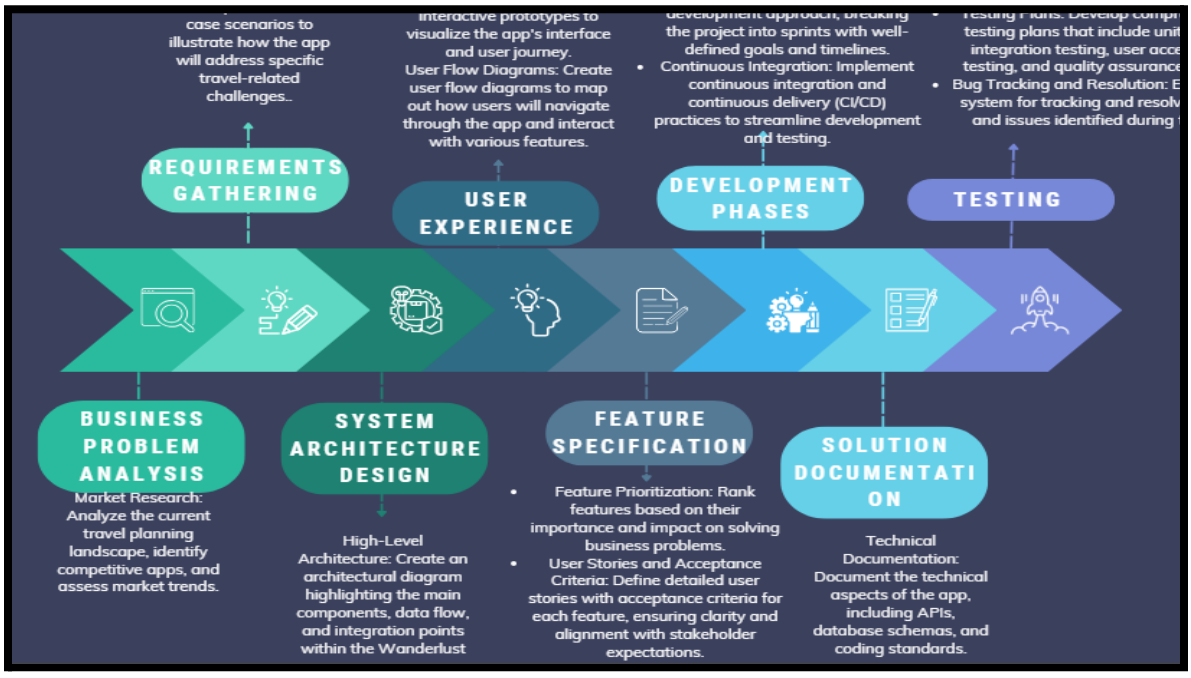
- As a user, I want to connect with other like-minded travelers, share travel tips, and collaborate on travel plans within the app's community.

- As a traveler, I want to be able to book flights, accommodations, and activities directly through the app for a seamless travel planning experience.

- As a user, I want the app to provide safety tips and emergency contact information to ensure my security and peace of mind while traveling.

5.2 Solution Architecture:

A solution architecture (SA) is an architectural description of a specific solution. SAs combine guidance from different enterprise architecture viewpoints (business, information and technical), as well as from the enterprise solution architecture (ESA).



6. Project Planning and Scheduling

6.1 Technical Architecture

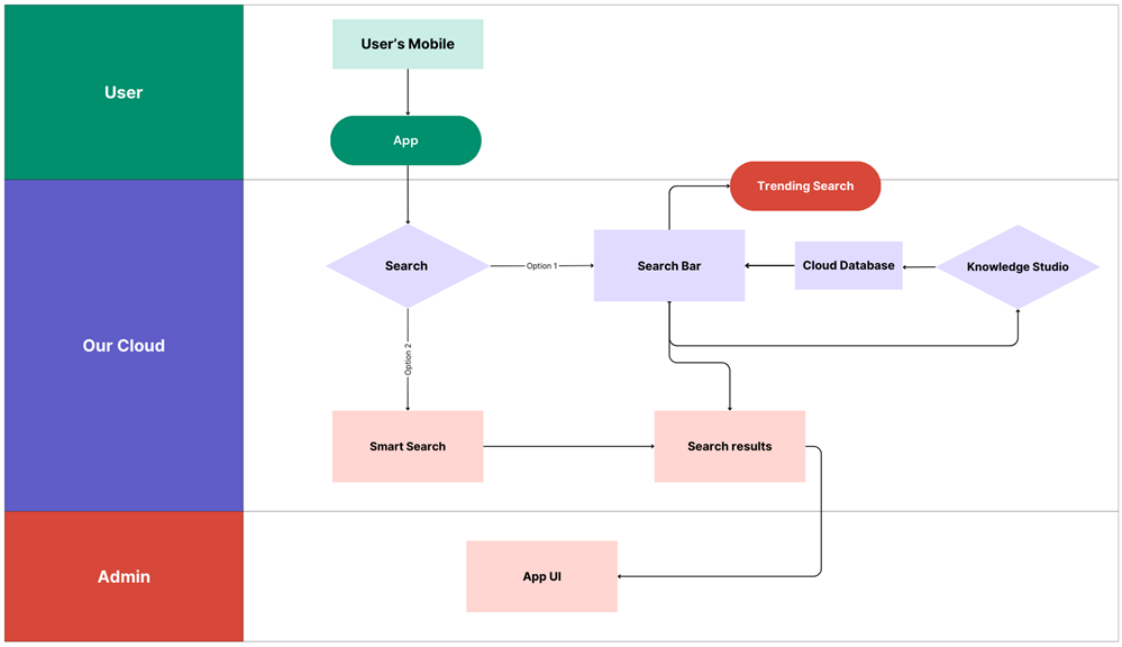


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User can login the App and use it for organizing and planning their travel or trips , also allows user to get personalized feed of recommended accommodations based on the locations	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Login Process	HTML, CSS, MySQL Php.
3.	Application Logic-2	Search for different locations and accommodations in the App itself.	Python, HTML, CSS, Kotlin.
4.	Application Logic-3	Recommendation of accommodations based on the locations.	Python, HTML, CSS, Kotlin. Google Maps API, Google locations API.
5.	Database	Locations ,Accommodations, Costs, Text , numeric, alphanumeric and Date and Time type, data type.	MySQL, NoSQL, Firrebase Realtime Database.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	For displaying maps and handling location-based services.	Google Maps API
9.	External API-2	For retrieving information about places, including details like name, address, user ratings, and reviews.	Google Places API
10.	Machine Learning Model	Manage UI-related data in a lifecycle-conscious way.	ViewModel.
11.	Infrastructure (Server / Cloud)	Cloud Server Configuration :	Local, Cloud Foundry, Kubernetes, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	• Kotlin Coroutines • Koin • SQLDelight • Accompanist	Technology of Opensource framework
2.	Security Implementations	• Authentication and Authorization • Data Storage • Code Obfuscation and Proguard • Authentication Tokens	• OAuth or JWT • Android's Secure Storage APIs or EncryptedSharedPreferences • Proguard or R8 • JWT
3.	Scalable Architecture	Presentation Layer (Android Compose UI): Scalability Through Compose: Android Compose allows for the creation of highly modular and reusable UI components. As your app's UI requirements grow, Compose facilitates the development of scalable and maintainable UI elements. New features and screens can be added without disrupting existing functionality, ensuring smooth scalability. Logic Layer (Backend Services): Scalability of Backend Services: By separating the presentation layer from the backend logic, you can scale each layer independently. Backend services can be designed as stateless, allowing them to handle an increasing number of user requests efficiently. Implementing load balancing techniques and deploying the backend on scalable cloud	Technology used

		platforms ensures that the logic layer can handle a growing user base and data processing demands. Data Layer (Database and Data Processing): Scalable Database Solutions: Utilize scalable database solutions, such as cloud-based databases or NoSQL databases, which can handle large volumes of data and read/write operations. Proper indexing and sharing techniques can be applied to distribute the database load efficiently as data grows. **Microservices Architecture:** Microservices architecture breaks down the application into smaller, independent services, each responsible for a specific functionality. For your travel app: • **Modular Development:** Microservices allow developers to work on isolated modules or services independently. New features can be added or existing ones can be updated without affecting the entire application, enabling faster development and deployment of new functionalities. • **Scalability Through Service Independence:** Each microservice can be deployed and scaled independently based on its specific requirements. For example, the recommendation engine responsible for personalized accommodations can be scaled independently from	

		other services. This ensures that resources are allocated precisely where they are needed, optimizing efficiency and responsiveness. • **Fault Tolerance and Redundancy:** Microservices can be designed for fault tolerance. If one service fails, it does not bring down the entire application. Redundancy and load balancing can be implemented to ensure continuous service availability, enhancing the app's reliability. • **Third-Party Integrations:** Microservices can be specialized to handle third-party integrations (e.g., payment gateways, mapping services). By isolating these integrations into microservices, they can be individually scaled based on usage patterns without impacting other parts of the application.	

S.No	Characteristics	Description	Technology
4.	Availability	**1. ** **Load Balancers:** • **Efficient Traffic Distribution:** Load balancers distribute incoming network traffic across multiple servers. In the context of your travel app, load balancers ensure that user requests are evenly distributed among several servers. This prevents any single server from becoming overloaded, ensuring consistent performance even during high traffic periods. • **Fault Tolerance:** Load balancers can detect unhealthy servers and redirect traffic to healthy ones. If a server fails, the load balancer automatically routes traffic to functioning servers, minimizing downtime and providing continuous service availability. • **Scalability**: Load balancers enable seamless scalability. As the user base grows, additional servers can be added, and the load balancer will distribute the traffic efficiently. This dynamic scaling ensures that your app can handle a higher volume of users without compromising performance. **2. ** **Distributed Servers:** • **Redundancy:** Distributing your application across multiple servers, possibly in different geographical locations, provides redundancy. If one server or data center experiences issues, other servers can handle the traffic, ensuring	Technology used

		continuous availability. • **Disaster Recovery:** Having servers in different regions or data centers provides a level of disaster recovery. If one region experiences a network outage or natural disaster, users can be redirected to servers in another region, minimizing service disruptions. • **Data Replication:** For personalized feeds and recommendations, data replication can be used. By replicating data across multiple servers, each server can serve personalized content without relying on a single centralized database. This approach enhances responsiveness and availability. **3. ** **Caching Mechanisms:** • **Content Delivery Networks (CDN):** CDNs cache static content (images, stylesheets, etc.) in servers distributed globally. When a user requests content, it is served from the nearest CDN server, reducing latency and ensuring fast content delivery. This is particularly useful for image-heavy travel apps where fast loading of images is crucial for user experience. **Edge Caching:** Edge caching brings content closer to users by caching it in servers located near user populations. This reduces the distance data needs to travel, improving response times and availability. ***5. ** **Content Delivery Optimization:** • **Data Compression:** Compress data	

		sent to clients to reduce bandwidth usage. This is especially relevant for mobile apps where data usage affects user experience and costs. • **Optimized Data Fetching:** Use efficient algorithms and data structures to fetch personalized recommendations. Minimize unnecessary data transfers and ensure that only relevant data is transmitted, reducing server load and response times.	
5.	Performance	**1. Number of Requests Per Second (RPS)** - Optimized Backend Endpoints: Design backend APIs to be efficient and optimized. Reduce unnecessary data in API responses and fetch only the required information. - Batch Requests: Instead of making multiple small requests, batch API requests where possible to reduce the overhead of multiple HTTP connections. **2. Cache Mechanisms:** - Client-Side Caching: Implement caching mechanisms on the client side to store static content locally. Compose provides mechanisms to efficiently manage local state, which can be used to cache UI components and data. - Server-Side Caching: Utilize server-side caching strategies to cache frequently accessed data and responses. Consider using in-memory caches or distributed caching solutions like Redis to store	Technology used

		dynamic data temporarily. **3. Content Delivery Networks (CDNs):** - Static Content CDN: Use CDNs to cache and deliver static assets such as images, stylesheets, and JavaScript files. This reduces the load on your servers and accelerates content delivery to users. - Edge Caching: Leverage edge caching provided by CDNs. Cached content stored at edge locations near users reduces latency and improves response times, enhancing the app's overall performance. **4. Optimized Data Fetching:** - Lazy Loading: Utilize lazy loading mechanisms in Compose to load data and UI components only when they are needed. This ensures that resources are used efficiently, especially in lists or grids where not all items are visible at once. - Pagination: Implement pagination for long lists to load data incrementally, reducing the initial load time and ensuring a more responsive user interface. **5. Image Loading and Compression:** - Image Loading Libraries: Use efficient image loading libraries like Coil or Glide. These libraries handle image caching, loading, and display, optimizing the loading of images in your app. - Image Compression: Compress images to reduce file sizes before they are loaded into the app. This reduces bandwidth usage and speeds up image loading times. **6. Minimize Network Requests:**	

		- Data Bundling: Bundle multiple API requests into a single request to reduce the number of network calls. Aggregate data on the server side to minimize the data sent over the network. - WebSocket: Consider using WebSocket for real-time updates instead of polling the server at regular intervals. WebSocket allows bidirectional communication between the client and server, enabling real-time notifications and updates. **7. Optimized Database Queries:** - Database Indexing: If your app uses a local database, ensure that database queries are optimized and utilize proper indexing. Indexes speed up data retrieval, especially when dealing with large datasets. - Offline Support: Implement local data storage and synchronization mechanisms to provide basic functionality even when the user is offline. This enhances the user experience and ensures the app remains usable in adverse network conditions. **8. Code and UI Optimization:** - UI Rendering Optimization: Compose provides tools to optimize UI rendering. Utilize the `remember` function and `state` to manage UI state efficiently. Avoid unnecessary recompositions by optimizing your UI components. - Code Splitting: Split your code into smaller modules to reduce the initial app download size. This is particularly important for large applications with extensive features.	

		9. Performance Monitoring and Profiling: - Profiling Tools: Use Android Profiler and other profiling tools to identify performance bottlenecks in your app. Analyze CPU usage, memory allocation, and network activity to pinpoint areas that need optimization. - Crash Reporting: Implement crash reporting tools to identify and fix issues quickly. Unhandled crashes can severely impact user experience and need to be addressed promptly. By carefully considering these design strategies, your travel app built with Android Compose can deliver high performance, ensuring a smooth and responsive user experience, even in scenarios involving a high number of requests, personalized content, and real-time recommendations. Regular testing, profiling, and optimization are key to maintaining optimal performance as your app evolves.	

6.2 Sprint Planning & Estimation

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration and Login	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Akriti, Shreya, Sanjana
Sprint-1	Registration and Login	USN-2	As a user, I can register for the application through Gmail.	1	High	Akriti, Shreya, Sanjana
Sprint-1	Registration and Login	USN-3	As a user, I can register for the application through Facebook.	2	Low	Akriti, Shreya, Sanjana
Sprint-1	Registration and Login	USN-4	As a user, I can register for the application through Gmail	2	Medium	Akriti, Shreya, Sanjana
Sprint-1	Dashboard	USN-5	As a user, I can see a dashboard that displays my upcoming trips, saved destinations, and travel inspiration.	3	High	Akriti, Shreya, Sanjana
Sprint 2	Personalized Travel Profile	USN-6	As a user, I can create a personalized travel profile by specifying my travel interests, budget, preferred destinations, and travel style.	4	High	Akriti, Shreya, Sanjana
Sprint 2	Inspiration and Discovery	USN-7	As a user, I can browse a curated feed of travel inspiration, including destination highlights, travel stories, and user-generated content.	4	High	Akriti, Shreya, Sanjana
Sprint 3	Smart Itinerary Planning	USN-8	As a user, I can create a new itinerary by adding flights, accommodations, activities, and dining options.	4	Medium	Akriti, Shreya, Sanjana

Sprint 3	Smart Itinerary Planning	USN-9	As a user, I can view my itinerary in a calendar view and make changes as needed.	4	High	Akriti, Shreya, Sanjana
Sprint 4	Real-Time Updates and Navigation	USN-10	As a user, I can receive real-time updates on my itinerary, including gate changes, weather alerts, and traffic information.	4	High	Akriti, Shreya, Sanjana
Sprint 4	Real-Time Updates and Navigation	USN-11	As a user, I can use the app's offline maps and navigation assistance to explore without an internet connection.	4	High	Akriti, Shreya, Sanjana
Sprint 5	Trip Journal and Memories	USN-12	As a user, I can add photos, videos, and written entries to my trip journal.	3	Medium	Akriti, Shreya, Sanjana
Sprint 5	Shareable Travel Stories	USN-13	As a user, I can compile my trip journal into a shareable story.	3	High	Akriti, Shreya, Sanjana
Sprint 6	User Community	USN-14	As a user, I can connect with other travelers in the app's community.	3	High	Akriti, Shreya, Sanjana
Sprint 6	Booking Integration	USN-15	As a user, I can book flights, accommodations, and activities directly from	4	Medium	Akriti, Shreya,

			the app.			Sanjana
Sprint 7	Security and Safety Features	USN-16	As a user, I can view and update my emergency contact information in the app.	2	High	Akriti, Shreya, Sanjana
Sprint 7	Security and Safety Features	USN-17	As a user, I can view local emergency service details in the app.	2	Medium	Akriti, Shreya, Sanjana
Sprint 8	Multi-Platform Access	USN-18	As a user, I can access my travel plans and memories on my smartphone, tablet, and desktop computer.	4	Medium	Akriti, Shreya, Sanjana

6.3 Sprint Delivery Schedule

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	9 Oct 2023	14 Oct 2023	20	14 Oct 2023
Sprint-2	20	4 Days	15 Oct 2023	18 Oct 2023	20	18 Oct 2023
Sprint-3	20	4 Days	19 Oct 2023	22 Oct 2023	20	22 Oct 2023
Sprint-4	20	4 Days	23 Oct 2023	26 Oct 2023	20	27 Oct 2023
Sprint-5	20	3 Days	27 Oct 2023	29 Oct 2023	20	29 Oct 2023
Sprint-6	20	4 Days	30 Oct 2023	2 Nov2023	20	2 Nov2023
Sprint-7	20	4 Days	3 Nov 2023	6 Nov 2023	20	6 Nov 2023
Sprint-8	20	2 Days	7 Nov 2023	8 Nov 2023	20	8 Nov 2023

7. Coding and Solutioning

7.1 User Authentication

Sign Up:

-Allow users to create accounts using their email addresses or social media accounts.
-Implement email verification for account security.
-Provide feedback on successful account creation and guide users through any errors.

Log In:

-Enable users to log in securely using their credentials.
-Implement multi-factor authentication for an extra layer of security.
-Display appropriate error messages for incorrect login attempts.

User Profile Management:

-Allow users to edit their profiles, including personal information and profile pictures.
-Provide an option to link or unlink social media accounts.
-Implement password reset functionality for forgotten passwords.

```
// Firebase authentication
val mAuth = FirebaseAuth.getInstance()

// Sign up
mAuth.createUserWithEmailAndPassword(email, password)
    .addOnCompleteListener { task ->
        if (task.isSuccessful) {
            // User created successfully
        } else {
            // Handle sign up failure
        }
    }
```

7.2 Trip Creation

Create a New Trip:

-Enable users to create new trips with a title and description.
-Provide options to set the destination, start date, and end date for the trip.
-Allow users to categorize trips (e.g., business, leisure) for better organization.

Add Itinerary Items:

-Allow users to add activities, attractions, and notes to their trip itinerary.

-Provide a date and time picker for scheduling itinerary items.
-Implement drag-and-drop functionality for easy itinerary reordering.

```
// Room database for local storage
val tripDao = TripDatabase.getInstance(application).tripDao()

// Insert a new trip
GlobalScope.launch {
    tripDao.insertTrip(newTrip)
}
```

7.3 Map Integration

Display Trip Destinations:

-Integrate Google Maps to display trip destinations.
-Provide markers for each destination on the map.
-Implement a smooth zoom and pan functionality for an interactive map experience.

Route Planning:

-Allow users to plan routes between destinations.
-Display estimated travel times and distances.
-Provide turn-by-turn directions and navigation features.

```
// Google Maps API integration
val mapFragment = supportFragmentManager.findFragmentById(R.id.map) as
SupportMapFragment
mapFragment.getMapAsync { googleMap ->
  // Add markers for trip destinations
  googleMap.addMarker(MarkerOptions().position(destinationLatLng).title("Destination"))
}
```

7.4 Itinerary Planning

Plan Daily Activities:

-Implement a calendar view for daily activities.
-Allow users to add, edit, and delete activities for each day.
-Provide notifications for upcoming activities.

Add Notes and Reminders:

-Enable users to add notes and reminders for specific activities.

-Implement push notifications for reminders.
-Allow users to set priority levels for different notes.

```
// RecyclerView for itinerary items
val recyclerView: RecyclerView = findViewById(R.id.recycler_view)
val adapter = ItineraryAdapter(itineraryItems)
recyclerView.adapter = adapter
recyclerView.layoutManager = LinearLayoutManager(this)
```

7.5 Budget Tracking

Set Budget:

-Allow users to set an overall budget for their trip.
-Break down the budget into categories such as accommodation, transportation, and activities.
-Provide visualizations and charts to track budget allocation.

Track Expenses:

-Enable users to log and categorize their expenses during the trip.
-Provide a real-time summary of expenses against the budget.
-Implement the ability to attach receipts or photos of receipts.

```
// SQLite database for budget tracking
val dbHelper = BudgetDbHelper(context)
val db = dbHelper.writableDatabase
// Insert expense
val values = ContentValues().apply {
    put(BudgetContract.ExpenseEntry.COLUMN_NAME_AMOUNT, expenseAmount)
    put(BudgetContract.ExpenseEntry.COLUMN_NAME_DESCRIPTION, expenseDescription)}
val newRowId = db.insert(BudgetContract.ExpenseEntry.TABLE_NAME, null, values)
```

7.6 Weather Information

Display Weather Forecast:

-Integrate a weather API to provide a 5-7 day forecast for each destination.

-Include temperature, precipitation, and wind information.

-Display weather icons and visuals for better user understanding.

Weather Alerts:

-Implement weather alerts for severe conditions that may affect travel plans.

-Provide recommendations based on the weather forecast (e.g., pack an umbrella).

-These detailed features aim to create a comprehensive and user-friendly travel planner app, covering various aspects of trip planning, booking, and management.

```
// Retrofit for weather API
val weatherService = Retrofit.Builder()
    .baseUrl(BASE_URL)
    .addConverterFactory(GsonConverterFactory.create())
    .build()
    .create(WeatherService::class.java)

// Get weather forecast
val response = weatherService.getWeatherForecast(destination, startDate,
```

7.7 Flight Booking

Search for Flights:

-Allow users to enter their departure and destination airports, along with departure and return dates.

-Utilize a flight booking API (e.g., Amadeus, Skyscanner) to fetch available flight options based on user input.

-Display a list of flights with details such as airlines, departure times, and prices.

View Flight Details:

-Enable users to view detailed information about a specific flight, including layovers, flight duration, and amenities.

-Provide visuals such as airline logos and seat maps for a better user experience.

-Implement filters and sorting options for users to customize their search results.

Book Flight Tickets:

-Facilitate a seamless booking process with a secure payment gateway.

-Allow users to select their preferred flight and enter passenger details for booking.
-Display a confirmation screen with booking details and an e-ticket.

```
// Use flight booking API (e.g., Amadeus, Skyscanner)
val flightApi = FlightBookingApi.getInstance()

// Search for flights
val flights = flightApi.searchFlights(origin, destination, departureDate,

// Display flight options and allow user selection
```

7.8 Hotel Booking

Search for Hotels:

-Enable users to search for hotels by entering the destination, check-in, and check-out dates.
-Utilize a hotel booking API (e.g., Booking.com, Expedia) to fetch available hotels based on user preferences.
-Display a list of hotels with details such as price, amenities, and user ratings.

View Hotel Details:

-Provide detailed information about a selected hotel, including room types, facilities, and guest reviews.
-Incorporate high-quality images of rooms and common areas to help users make informed decisions.
-Implement filters for hotel preferences such as price range, star rating, and amenities.

Make Hotel Reservations:

-Integrate a secure payment gateway to handle hotel reservations.
-Allow users to select a room type, enter guest details, and make a reservation.
-Display a confirmation screen with reservation details and a booking reference.

```
// Use hotel booking API (e.g., Booking.com, Expedia)
val hotelApi = HotelBookingApi.getInstance()

// Search for hotels
val hotels = hotelApi.searchHotels(destination, checkInDate, checkOutDat

// Display hotel options and allow user selection
```

7.9 Payment Integration

Secure Payment Gateway:

-Integrate a reliable and secure payment gateway (e.g., Stripe, PayPal) for handling financial transactions.

-Ensure the safety of user payment information through encryption and compliance with industry standards.

-Provide a smooth and user-friendly payment experience with clear instructions and feedback.

```
// Use a payment gateway SDK (e.g., Stripe, PayPal)
val paymentGateway = PaymentGateway.getInstance()

// Handle payment for flight booking
val paymentResult = paymentGateway.makePayment(flightCost)

// Handle payment for hotel booking
val paymentResult = paymentGateway.makePayment(hotelCost)
```

7.10 Booking History

View Booking History:

-Enable users to access a history of their booked flights and hotels.

-Display comprehensive details of each booking, including dates, itinerary, and payment information.

-Implement sorting and filtering options for better organization of booking history.

Manage Bookings:

-Allow users to modify or cancel their bookings within the specified timeframe.

-Provide clear information on cancellation policies and any associated fees.

-Send notifications or reminders for upcoming trips and check-ins.

```
// Room database for booking history
val bookingHistoryDao = BookingHistoryDatabase.getInstance(application)

// Insert booked flight
GlobalScope.launch {
    bookingHistoryDao.insertBooking(BookingType.FLIGHT, flightDetails)
}

// Insert booked hotel
GlobalScope.launch {
    bookingHistoryDao.insertBooking(BookingType.HOTEL, hotelDetails)
}
```

8. Performance Testing

8.1 Performance Metrics

Performance testing for an Android app involves evaluating its responsiveness, speed, stability, and scalability under various conditions. This type of testing is crucial to ensure that the app performs well and provides a positive user experience across different devices and network conditions. Here are some key aspects of performance testing for an Android app:

Load Testing:

Purpose: Evaluate how well the app performs under expected and peak loads.

Activities:

-Simulate multiple users interacting with the app simultaneously.

-Measure response times and resource usage under varying levels of load.

Stress Testing:

Purpose: Determine the app's behavior under extreme conditions.

Activities:

Push the app beyond its normal capacity to identify breaking points.

Monitor how the app recovers from high-stress scenarios.

Responsiveness Testing:

Purpose: Assess the app's responsiveness to user interactions.

Activities:

Measure the time it takes for the app to respond to user inputs.

Evaluate the smoothness of animations and transitions.

Network Performance Testing:

Purpose: Evaluate how the app performs under different network conditions.

Activities:

Test the app on various network speeds (3G, 4G, Wi-Fi) to ensure optimal performance.

Check how the app handles network interruptions and reconnects.

Memory Usage Testing:

Purpose: Identify memory leaks and ensure efficient memory management.

Activities:

Monitor the app's memory usage during different tasks.

Check for memory leaks that could lead to performance degradation over time.

Battery Consumption Testing:
Purpose: Assess the impact of the app on the device's battery life.
Activities:
Measure power consumption during various app activities.
Identify and optimize power-intensive operations.
Compatibility Testing:
Purpose: Ensure the app performs consistently across different Android versions and devices.
Activities:
Test the app on a range of Android devices with different specifications.
Verify compatibility with different screen sizes and resolutions.
Scalability Testing:
Purpose: Evaluate how well the app scales with increased user load or data.
Activities:
Test the app's performance with a growing user base or dataset.
Identify and address any performance bottlenecks.
Installation and Launch Time Testing:
Purpose: Assess the time it takes to install and launch the app.
Activities:
Measure installation time on different devices.
Evaluate the time it takes for the app to become usable after launch.
Offline Mode Testing:
Purpose: Evaluate how the app performs when offline or with limited connectivity.
Activities:
Test functionality in offline mode.
Verify that the app gracefully handles scenarios with intermittent or no connectivity.

Performance testing should be an integral part of the app development life cycle to ensure a smooth and efficient user experience across a variety of real-world conditions.

Performance Testing for Wanderlust Travel Planning App:
-Responsiveness: Evaluate how quickly the app responds to user actions, such as searching for flights, hotels, or activities.
-Stability: Test the app's stability under different conditions, like low network connectivity or high server loads.

-Load Testing: Assess how well the app performs under heavy user loads, simulating peak usage scenarios.
-Scalability: Check how well the app scales as the number of users or data increases.
-Usability: Assess the user experience and interface for ease of use and clarity.

Model Summary

Summary of the Model

```
model.summary()
```

```
Model: "sequential"
_________________________________________________________________
Layer (type)                 Output Shape              Param #
=================================================================
conv2d (Conv2D)              (None, 126, 126, 32)      896
_________________________________________________________________
max_pooling2d (MaxPooling2D) (None, 63, 63, 32)        0
_________________________________________________________________
flatten (Flatten)            (None, 127008)            0
_________________________________________________________________
dense (Dense)                (None, 150)               19051350
_________________________________________________________________
dense_1 (Dense)              (None, 68)                10268
_________________________________________________________________
dense_2 (Dense)              (None, 6)                 414
=================================================================
Total params: 19,062,928
Trainable params: 19,062,928
Non-trainable params: 0
```

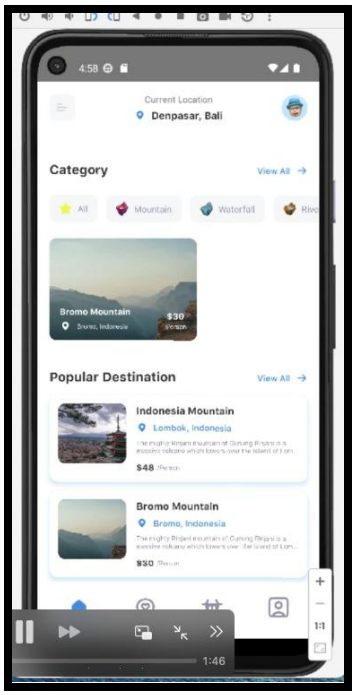
Accuracy

```
C:\Users\smartbridge\anaconda3\lib\site-packages\tensorflow\python\keras\engine\training.py:1844: UserWarning: `Model.fit_generator`
  warnings.warn('`Model.fit_generator` is deprecated and '
Epoch 1/30
41/41 [==============================] - 45s 1s/step - loss: 1.7747 - acc: 0.2061 - val_loss: 1.4693 - val_acc: 0.4132
Epoch 2/30
41/41 [==============================] - 53s 1s/step - loss: 1.5144 - acc: 0.3893 - val_loss: 1.3684 - val_acc: 0.4410
Epoch 3/30
41/41 [==============================] - 43s 1s/step - loss: 1.3444 - acc: 0.4624 - val_loss: 1.2694 - val_acc: 0.5122
Epoch 4/30
41/41 [==============================] - 49s 1s/step - loss: 1.2176 - acc: 0.5210 - val_loss: 1.1758 - val_acc: 0.5469
Epoch 5/30
41/41 [==============================] - 47s 1s/step - loss: 1.2179 - acc: 0.4982 - val_loss: 1.0858 - val_acc: 0.5694
Epoch 6/30
41/41 [==============================] - 48s 1s/step - loss: 1.1780 - acc: 0.5352 - val_loss: 1.0922 - val_acc: 0.5868
Epoch 7/30
41/41 [==============================] - 50s 1s/step - loss: 1.0955 - acc: 0.5836 - val_loss: 1.0062 - val_acc: 0.6111
Epoch 8/30
41/41 [==============================] - 53s 1s/step - loss: 1.0096 - acc: 0.6127 - val_loss: 1.0593 - val_acc: 0.5885
Epoch 9/30
41/41 [==============================] - 52s 1s/step - loss: 1.0005 - acc: 0.6200 - val_loss: 0.8735 - val_acc: 0.6701
Epoch 10/30
41/41 [==============================] - 50s 1s/step - loss: 0.9507 - acc: 0.6571 - val_loss: 0.8716 - val_acc: 0.6806
Epoch 11/30
41/41 [==============================] - 47s 1s/step - loss: 0.8568 - acc: 0.6822 - val_loss: 0.8149 - val_acc: 0.7083
Epoch 12/30
41/41 [==============================] - 47s 1s/step - loss: 0.8062 - acc: 0.7054 - val_loss: 0.7221 - val_acc: 0.7500
Epoch 13/30
41/41 [==============================] - 51s 1s/step - loss: 0.7450 - acc: 0.7262 - val_loss: 0.6855 - val_acc: 0.7465
Epoch 14/30
41/41 [==============================] - 54s 1s/step - loss: 0.7229 - acc: 0.7402 - val_loss: 0.6877 - val_acc: 0.7465
Epoch 15/30
41/41 [==============================] - 49s 1s/step - loss: 0.6481 - acc: 0.7739 - val_loss: 0.5801 - val_acc: 0.8038
```

```
Epoch 18/30
41/41 [==============================] - 52s 1s/step - loss: 0.6438 - acc: 0.7567 - val_loss: 0.5998 - val_acc: 0.7587
Epoch 19/30
41/41 [==============================] - 51s 1s/step - loss: 0.6158 - acc: 0.7782 - val_loss: 0.4134 - val_acc: 0.8594
Epoch 20/30
41/41 [==============================] - 52s 1s/step - loss: 0.4948 - acc: 0.8250 - val_loss: 0.4548 - val_acc: 0.8455
Epoch 21/30
41/41 [==============================] - 50s 1s/step - loss: 0.4633 - acc: 0.8358 - val_loss: 0.3721 - val_acc: 0.8472
Epoch 22/30
41/41 [==============================] - 50s 1s/step - loss: 0.4586 - acc: 0.8412 - val_loss: 0.3870 - val_acc: 0.8594
Epoch 23/30
41/41 [==============================] - 49s 1s/step - loss: 0.4216 - acc: 0.8470 - val_loss: 0.3280 - val_acc: 0.8819
Epoch 24/30
41/41 [==============================] - 45s 1s/step - loss: 0.3834 - acc: 0.8611 - val_loss: 0.3725 - val_acc: 0.8819
Epoch 25/30
41/41 [==============================] - 44s 1s/step - loss: 0.3818 - acc: 0.8644 - val_loss: 0.2590 - val_acc: 0.9062
Epoch 26/30
41/41 [==============================] - 42s 1s/step - loss: 0.3715 - acc: 0.8593 - val_loss: 0.2497 - val_acc: 0.9271
Epoch 27/30
41/41 [==============================] - 45s 1s/step - loss: 0.3030 - acc: 0.8954 - val_loss: 0.2159 - val_acc: 0.9323
Epoch 28/30
41/41 [==============================] - 43s 1s/step - loss: 0.2889 - acc: 0.9078 - val_loss: 0.1847 - val_acc: 0.9479
Epoch 29/30
41/41 [==============================] - 48s 1s/step - loss: 0.2697 - acc: 0.9050 - val_loss: 0.1973 - val_acc: 0.9410
Epoch 30/30
41/41 [==============================] - 43s 1s/step - loss: 0.2579 - acc: 0.9134 - val_loss: 0.1926 - val_acc: 0.9306
```

9. Results

9.1 Output Screenshots




4:59
Indonesia Mountain
Lombok, Indonesia
$48
/Person
The mighty Rinjani mountain of Gunung Rinjani is a massive volcano which towers over the island of Lombok. A climb to the top is one of the most exhilarating experiences you can have in Indonesia. At 3,726 meters tall, Gunung Rinjani is the second highest mountain in Indonesia...
Preview
4.8

10. Advantages and Disadvantages

Advantages:

- **Personalized Travel Planning**: The app offers personalized travel recommendations, making it easier for users to discover destinations and activities that align with their interests and budget.

- **All-in-One Solution**: Wanderlust combines multiple aspects of travel planning, tracking, and documentation into a single platform, reducing the need to use multiple apps.

- **Real-Time Updates:** Users receive real-time updates on their travel plans, ensuring they are well-informed about any changes, weather conditions, or traffic issues.

- **Offline Accessibility:** The inclusion of offline maps and navigation ensures that users can navigate even in areas with limited internet connectivity, making it a valuable tool for remote travel.

- **User-Generated Content**: The app fosters a community of travelers who can share their experiences as travel stories, creating a sense of connection and inspiration among users.

- **Convenient Booking**: Integration with booking platforms allows users to book flights, accommodations, and activities directly through the app, streamlining the entire travel process.

Disadvantages

Data Privacy Concerns: Storing personal travel information and preferences within the app may raise concerns about data privacy and security.

- **Learning Curve:** Some users, especially those less tech-savvy, may find the app's many features and options challenging to navigate initially.

- **Dependency on Technology:** Wanderlust's dependence on technology for navigation and real-time updates means it may not be suitable for travelers who prefer a more "unplugged" experience.

- **Limited Network Effects:** The app's community features and user-generated content may be less engaging if there are not enough active users or contributors.

- **Internet Connection:** While it offers offline features, some functionalities, such as real-time updates, rely on a stable internet connection, which can be problematic in certain remote destinations.

- **Cost:** Depending on the app's business model, premium features or subscriptions may incur additional costs for users.

11. Future Scope

The future scope of the Wanderlust app extends beyond convenience to address evolving travel preferences. With an eye toward sustainability, the app can integrate eco-friendly travel options and promote responsible tourism practices, aligning with the global movement toward more environmentally conscious travel. It can also cater to a broader spectrum of users, including business travelers and groups, offering tailored features like collaborative planning and expense tracking. Education and cultural exchange can take center stage, encouraging users to immerse themselves in the local culture by providing language learning tools, cultural insights, and educational content about their travel destinations. The inclusion of travel insurance options and smart insights can empower users with the information they need to make informed decisions, while fostering collaborations with travel insurance providers. Through its openness to third-party developers and the creation of an extensive developer ecosystem, Wanderlust can continue to expand its functionalities, allowing for the development of custom plugins and extensions that cater to specialized travel niches and unique user requirements. In summary, the future of the Wanderlust app is a journey of continuous evolution and enrichment, offering users a holistic and deeply personalized travel experience.

12. Conclusion

In conclusion, the Wanderlust app represents a promising solution to the multifaceted challenges of travel planning and tracking. With its user-centric approach, AI-driven recommendations, and an array of features for itinerary planning, real-time updates, and digital travel journaling, Wanderlust aims to enhance the way individuals explore and document their journeys. While the app offers significant advantages in convenience and personalization, it's important to consider the potential disadvantages, such as data privacy concerns and the learning curve for some users. However, the future scope of Wanderlust is bright, with ample opportunities for expansion, integration with emerging technologies, and a commitment to sustainability, education, and cultural exchange. By staying adaptive and responsive to evolving user needs and industry trends, Wanderlust has the potential to redefine the travel experience, making it more enjoyable, memorable, and accessible for travelers worldwide.

In a rapidly changing world, the Wanderlust app emerges as a trailblazer in travel technology, offering a comprehensive solution that caters to the diverse needs and preferences of modern travelers. Its personalized recommendations, real-time assistance, and seamless itinerary planning set a new standard for convenience and user-centered design. The app's potential for expansion and evolution is particularly exciting, as it can evolve to serve a global audience, embrace emerging technologies, and promote responsible travel practices. The vision of Wanderlust extends beyond mere convenience; it seeks to foster a deeper connection between travelers and the destinations they explore, encourage collaboration and shared experiences, and empower users with the knowledge and tools to make informed travel choices. Ultimately, Wanderlust has the capacity to not only streamline travel but also enrich the journey itself, opening up a world of possibilities for the future of travel planning and exploration.

13. APPENDIX

1. https://techbeacon.com/app-dev-testing/why-you-should-use-kotlin-android-development?utm_source=devglan
2. https://developer.android.com/reference/app-actions/built-in-intents/travel
3. https://www.youtube.com/watch?v=0qQ50bWkKrg
4. https://www.researchgate.net/publication/281490309_Android_Application_Travel_Guide
5. https://www.academia.edu/41583393/PROJECT_REPORT_ON_Tours_and_Travels_Management_System_SUBMITTED_TO_UNIVERSITY_OF_MUMBAI
6. https://onix-systems.com/blog/how-to-build-a-travel-mobile-app
7. https://www.youtube.com/watch?v=lOh1878J7z0-
8. Trip planner and Booking Android App | Android Studio Tutorial- https://www.youtube.com/watch?v=JOMxE1HcL7o
9. https://www.youtube.com/watch?v=PPhuxay3OV0
10. https://ijrpr.com/uploads/V3ISSUE11/IJRPR7861.pdf

Source Code

GitHub & Project Demo Link

- https://github.com/smartinternz02/SI-GuidedProject-587507-1697637943