Institute of Technology University of Moratuwa

TrekTempo (Smart Travel App)

Software Requirements Specification

Version 1.0

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1. Introduction

The Software Requirements Specification (SRS) for the travel app aims to outline the functional and non-functional requirements for the development of a comprehensive website and mobile application.Its primary goal is to simplify and optimize various aspects of travel management, offering travelers, tour operators, and guides a seamless platform to plan, and enjoy their journeys. Through intuitive interfaces and advanced features, both the website and mobile applications will empower users to explore destinations, and activities, receive personalized recommendations, and access real-time assistance during their travels. The website will serve as the central dashboard for tour operators and guides to manage bookings and itineraries, while the mobile application will cater to travelers, providing them with access to trip details, and support services on the go. The SRS will define the system's features, user roles, security measures, performance expectations, and integration requirements, ensuring a robust and efficient solution for streamlined travel management.

1.1.Purpose

The purpose of the Software Requirements Specification (SRS) for the travel app is to establish a detailed and comprehensive framework for the development of the project. This document serves as a guiding blueprint for the development team, stakeholders, and end-users alike, delineating both functional and non-functional requirements of the web and mobile applications. By clearly articulating the system's objectives and features, the SRS ensures a unified understanding among all involved parties, fostering alignment and coherence throughout the development process. Moreover, the SRS functions as a vital communication tool, facilitating dialogue and resolving any potential ambiguities or discrepancies. Furthermore, it plays a crucial role in project planning, enabling accurate estimation and efficient resource allocation. By adhering to the specifications outlined in the SRS, the travel app is poised to deliver a robust, user-friendly solution that fulfills the diverse needs of travelers, tour operators, and guides while upholding standards of functionality, usability, security, and performance.

1.2.Product Scope

The Travel App is an integrated software solution designed to revolutionize the management of travel-related services and enhance the overall traveler experience. This comprehensive system comprises both a web application and a mobile application, catering to the needs of travelers, tour operators, and service providers alike. The website serves as the centralized platform for itinerary planning, and customer support, while the mobile application offers convenient access for travelers to browse destinations, security alerts, share events and access trip details on the go. With the travel app in place, travel management becomes efficient, accessible, and tailored to the preferences of each traveler, ultimately enhancing satisfaction and driving sustainable growth in the tourism industry.

1.2.1. Aim and Objectives

Aim:

Our aim for the travel app is to redefine the journey experience through the integration of cutting-edge technology. We envision a platform where every moment is infused with opportunities for authentic exploration, fostering profound cultural connections, and ensuring unwavering safety and independence for travelers. By harnessing innovative features and intuitive design, our goal is to create a seamless and immersive experience that empowers travelers to discover new destinations with confidence, engage with local cultures authentically, and navigate their journeys with ease. With our travel app, we aim to set a new standard for travel experiences, where technology enhances every aspect of the journey, ensuring memorable and enriching adventures for all.

Objective:

1. The travel app aims to inspire users to explore new destinations by providing personalized recommendations, off-the-beaten-path attractions, and interactive maps to facilitate discovery.
2. Our app helps users plan cost-effective trips by offering budgeting tools, price comparisons for accommodations and activities, and curated travel packages tailored to different budget ranges.

3. Safety is a top priority. The app provides real-time safety alerts, emergency contacts, and tips for staying safe in unfamiliar environments, empowering travelers to make informed decisions and navigate safely.
4. By offering detailed destination guides, self-guided tours, and language translation features, the app reduces reliance on tour guides, allowing users to explore independently and at their own pace.
5. The app keeps users informed about upcoming special events, festivals, and local happenings through event calendars, notifications, and itinerary planning tools, ensuring they don't miss out on unique cultural experiences.
6. Our app serves as a one-stop resource hub, offering information on accommodations, transportation options, dining recommendations, local customs, and essential travel tips, empowering users to plan and execute their trips efficiently and confidently.

1.2.2. Project Boundary

1. Application Scope: The travel app encompasses the development of both a website and a mobile application dedicated to travel management. It includes features such as trip planning, itinerary creation, activity reservations, safety alerts, and destination recommendations. However, it excludes functionalities unrelated to travel management, such as social media integration, gaming, or e-commerce.
2. User Roles: The app caters to the needs of travelers (local, foreign), System operators, and service providers. It provides functionalities tailored to each user role, allowing travelers to plan and plan trips, system operators to manage itineraries, and service providers to list offerings and communicate with travelers. However, it does not extend to advanced travel agent services or full-scale tour guide functionalities.
3. Safety and Emergency Services: While the app offers safety features such as real-time alerts and emergency contacts, it does not encompass comprehensive emergency response services beyond information and notifications. Users should seek professional assistance in case of emergencies.
4. Platforms: The travel app is developed as a website accessible through standard web browsers and a mobile application compatible with major

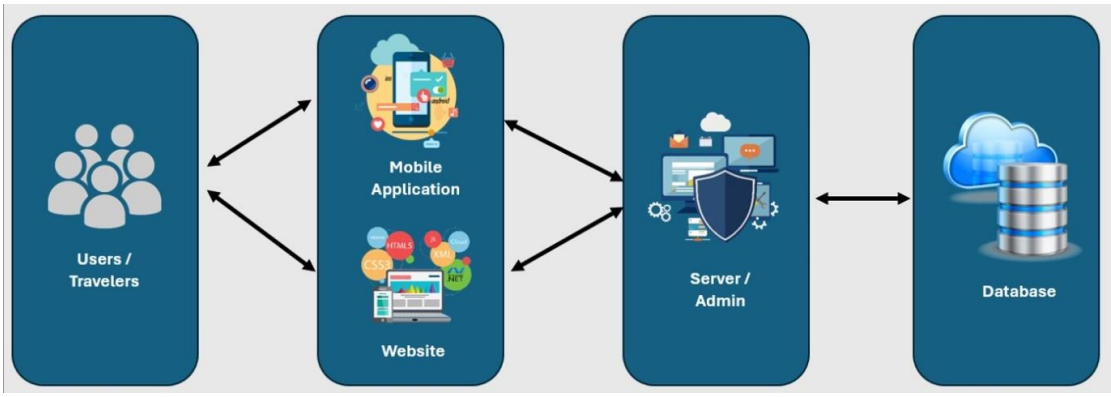
platforms like iOS and Android. It does not include separate applications for desktop or smart TVs.

5. Localization: The app supports multiple languages based on the target user base. However, it does not include extensive localization efforts beyond language translations and localization of date and time formats.
6. Scalability: The app is designed to handle a reasonable number of users, travel bookings, and interactions. However, it does not include specific provisions for scaling to support a significantly larger user base without additional considerations and performance optimizations.

By delineating these project boundaries, stakeholders can understand the travel app's scope, limitations, and areas of focus, facilitating effective planning and successful execution of the project.

2. Overall Description

2.1.Product Perspective



2.2. User Classes and Characteristics

- **Traveler**:

Role: Primary user of the travel app, responsible for utilizing various functionalities to plan, book, and manage travel arrangements.

Responsibilities: Accessing the web-based and mobile interfaces to browse travel options, make bookings, receive notifications, and interact with the app's features.

Interactions: Engages with the system through web browsers on desktop or mobile devices and interacts with mobile applications for on-the-go access.

Actions: Submits booking requests, updates profile information, receives email notifications, interacts with API endpoints for third-party services.

- **Administrative Staff:**

Role: Responsible for managing the administrative aspects of the travel app, including user accounts, bookings, notifications, and system configurations.

Responsibilities: Accessing the web-based interface to oversee user activity, manage bookings, send notifications, and configure system settings.

Interactions: Engages with the system primarily through the web-based administrative interface for efficient management tasks.

Actions: Manages user accounts, processes bookings, sends email notifications, configures API endpoints for integration with third-party services.

2.3. Operating Environment

The travel app thrives in a versatile digital domain, catering to travelers' needs across a multitude of devices and platforms. It seamlessly integrates with iOS and Android operating systems, embracing their unique features to ensure an intuitive user experience. Harmonious interaction with a myriad of software components, such as mapping services, payment gateways, and social media platforms, enriches its functionality, offering comprehensive travel services. Leveraging APIs and web services, the app fetches real-time data, from flight schedules to local attractions, ensuring users stay informed throughout their journey. Behind the scenes, a robust database management system optimizes performance and scalability, efficiently storing and retrieving user information and preferences.

Operating within a robust network infrastructure, the app ensures seamless communication between client devices and backend servers. Security measures are paramount, with encryption protocols safeguarding data transmission, and stringent authentication mechanisms protecting user privacy. Continuous updates and maintenance underscore the app's commitment to optimal performance and security, with the development team vigilantly monitoring for software bugs and vulnerabilities. In essence, the travel app embodies a dynamic and interconnected ecosystem, prioritizing user satisfaction through its seamless operation, stringent security protocols, and relentless pursuit of excellence.

- Front-end & Back-end: React JS , HTML, CSS, JavaScript, Node JS , Express JS

- Version Control: GitHub
- Wire Frames: Figma
- Mobile Application: Flutter (Dart)
- Database: MongoDB

2.4. Design and Implementation Constraints

1. Regulatory Compliance:

- Compliance with regulatory policies such as GDPR (General Data Protection Regulation) or PCI DSS (Payment Card Industry Data Security Standard) may impose strict requirements on data handling, storage, and security measures, limiting certain development choices.

2.Hardware Limitations:

- The app's performance may be constrained by hardware limitations, particularly on older devices with limited processing power, memory, or storage capacity. Developers must optimize the app to run efficiently across a variety of hardware platforms.

3.Interface Compatibility:

- Integrating with external applications or services, such as payment gateways or mapping APIs, requires adherence to specific interfaces and protocols. Developers must ensure compatibility with these interfaces to facilitate seamless data exchange.

4.Technology Stack:

- The choice of technologies, tools, and databases may be limited by organizational standards, existing infrastructure, or compatibility requirements with other systems. Developers may need to work within predefined technology stacks to ensure interoperability and supportability.

5.Security Considerations:

- Stringent security considerations, such as encryption protocols, authentication mechanisms, and access controls, may limit certain development options. Compliance with industry best practices and security standards is essential to protect user data and ensure trust in the app.

6.Design Conventions and Standards:

- Adherence to design conventions and programming standards, either dictated by the customer's organization or industry best practices, may restrict certain design choices or implementation approaches. Consistency in design and code quality is crucial for maintainability and scalability.

7.Parallel Operations:

- Concurrent access to shared resources, such as database connections or server resources, may require careful coordination and synchronization to avoid data corruption or performance bottlenecks. Developers must implement parallel operations judiciously to ensure smooth app functionality.

8.Language Requirements:

- If the app targets a global audience, language localization may be necessary to support multiple languages and cultural preferences. Developers must consider language requirements during design and implementation to accommodate diverse user needs.

2.5. Assumptions and Dependencies

Assumed factors that could affect the requirements stated in the SRS (Software Requirements Specification) for the travel app include:

- Third-Party Component Reliability:

The assumption that third-party components, such as mapping services, will function reliably and as expected may impact the app's requirements. If these components encounter downtime, performance issues, or changes in functionality, the app's features and user experience may be affected.

- Availability of APIs and Web Services:

Assumptions regarding the availability and stability of APIs and web services used to fetch real-time data, such as flight schedules or hotel availability, could impact the app's requirements. Changes or discontinuation of these services may necessitate adjustments to the app's functionality or alternative data sources.

- Regulatory Compliance Changes:

Assumptions about regulatory compliance requirements, such as data privacy laws or payment processing regulations, may affect the app's requirements. Changes in regulatory frameworks could necessitate updates to the app's security measures, data handling practices, or user consent mechanisms.

- Operating System Updates:

Assumptions about the future availability and adoption of operating system updates, such as iOS or Android versions, may influence the app's requirements. Compatibility with new OS features or changes in user interface guidelines may need to be considered in the development process.

- Hardware Evolution:

Assumptions regarding advancements in hardware technology, such as processing power, screen resolutions, or sensor capabilities, may impact the app's requirements. The app's performance optimizations and feature enhancements may need to align with the capabilities of future hardware platforms.

- External Dependencies:

Assumptions about dependencies on external factors, such as integration with social media platforms or access to location services, may affect the app's requirements. Changes in external APIs, service agreements, or platform policies could necessitate updates to the app's functionality or user experience.

- Commercial Component Availability:

Assumptions about the availability and licensing terms of commercial components, such as database management systems or analytics tools, may impact the app's requirements. Changes in pricing, support, or functionality of these components could influence the app's architecture and implementation decisions.

- Market Trends and User Preferences:

Assumptions about evolving market trends and user preferences, such as preferred travel booking methods or communication channels, may affect the app's requirements. User feedback, market research, and competitor analysis should be considered to ensure the app meets user expectations and remains competitive.

Addressing these assumptions requires proactive communication, risk management, and flexibility in the development process to adapt to changing external factors and ensure the successful delivery of the travel app.

3.External Interface Requirements

3.1 User Interfaces

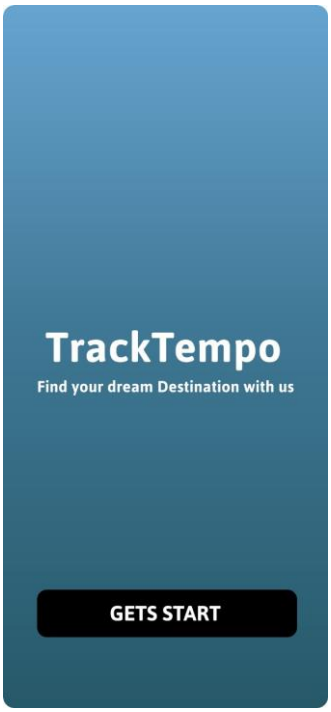


Figure 1.Starting Page

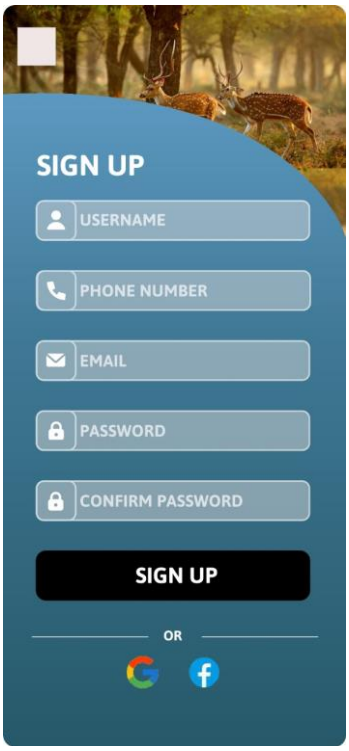


Figure 3. Sign Up Page

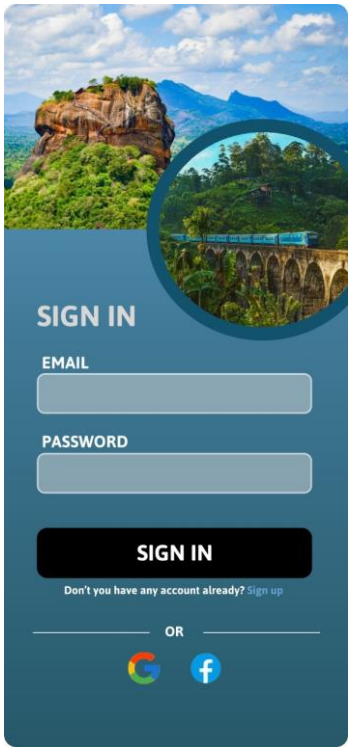


Figure 2. Sig in Page

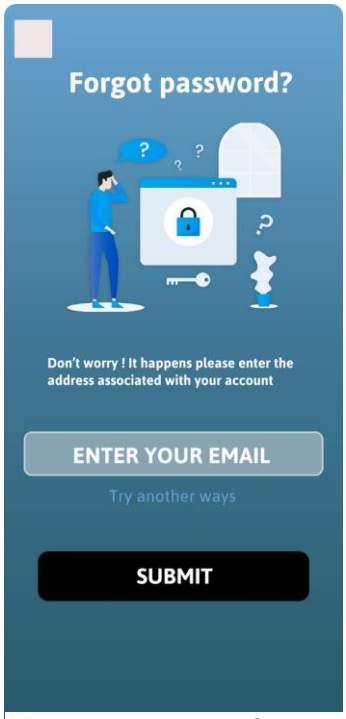


Figure 5.Forgot password interface.

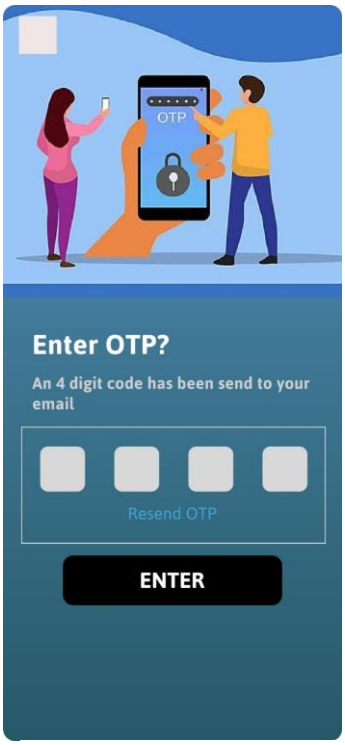


Figure 4. OTP entering interface.

3.2 Hardware Interfaces

1. Mobile Devices:

The mobile application component of the system interfaces with users through their smartphones or tablets. The software supports popular mobile devices running on iOS or Android operating systems. The hardware interfaces include touchscreens, cameras, network connectivity (Wi-Fi or mobile data networks), and other device-specific capabilities.

2. Server

The web application component of our system depends on server infrastructure for hosting and executing the software. This infrastructure includes various hardware interfaces such as web servers, database servers, and network components. The software is deployed on web servers like Apache HTTP Server or Nginx, which offer computational resources and hosting capabilities. These web servers handle user requests and serve web pages to clients. Additionally, the software interacts with database servers responsible for storing and retrieving data related to futsal bookings and facility management. The communication between the software and server infrastructure is facilitated through the underlying network infrastructure, which comprises routers, switches, and firewalls. These network components ensure reliable connections and secure data transmission between the web application and server environment.

3.3 Software Interfaces

The travel app will feature web-based interfaces designed for travelers and administrative staff to access their respective functionalities. These interfaces will be accessible through web browsers, providing users with intuitive and user-friendly platforms to interact with the app's features. Additionally, mobile applications will be developed for travelers, allowing them to conveniently access and utilize the app's functionalities directly from their smartphones. These mobile apps will offer a seamless and optimized experience, enabling travelers to engage with the app while on the move, enhancing accessibility and usability.

E.g. Google Map API, Server operating system

3.4 Communications Interfaces

The travel app requires various communication interfaces to facilitate seamless interactions between its software components, users, and external systems. These interfaces encompass communication functions and protocols that enable essential features such as email notifications, web browser interactions, network server communications, and data synchronization.

1. HTTP/HTTPS:

- The app utilizes HTTP (Hypertext Transfer Protocol) or its secure variant, HTTPS, for communication between the web application, mobile application, and backend servers. HTTP/HTTPS enables the exchange of data and requests/responses over the internet. It is used for actions such as user authentication, booking submissions, retrieving travel information, and fetching data from the server. The use of HTTPS ensures secure and encrypted communication to protect sensitive user information.

2. SMTP:

- To facilitate email notifications, the app integrates with Simple Mail Transfer Protocol (SMTP). SMTP is utilized for sending transactional emails, including booking confirmations, reminders, and updates, to users and administrators. It ensures reliable delivery of emails through appropriate email servers.

3. API Endpoints:

- The app exposes API endpoints to enable seamless integration with third-party services, such as payment gateways. These endpoints allow external systems to interact with the app's functionality, enabling features like online payment processing and integration with external platforms.

4. System Designs

4.1 Use case Diagram.

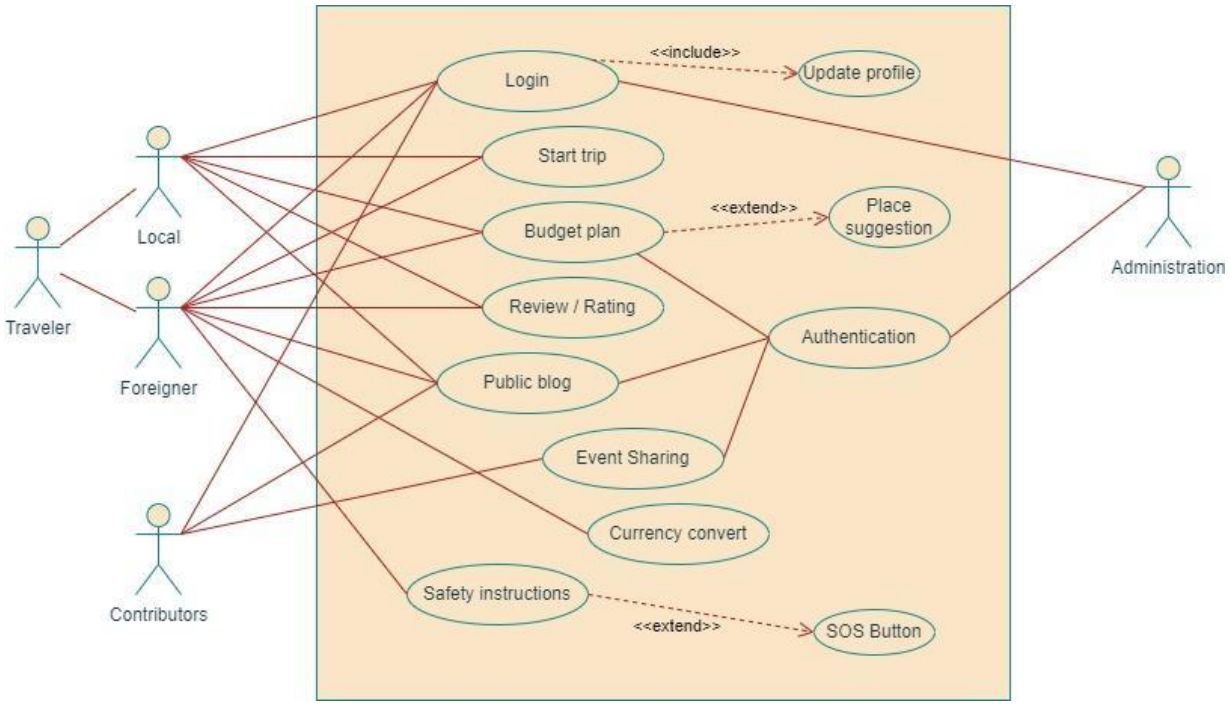


Figure 6. Use Case diagram of the System

4.1.1 Use case Description.

Use Case ID	UC001	
Use Case	Login	
Priority	High	
Primary System Actor	User (Traveler, Contributors)	
Other participant Actors	Administrator	
Description	Users and administrators can log in to the travel app. Travelers can access their personal accounts to manage trips, budget planning, and preferences, while accommodation providers have access to their respective listings and availability. Administrators maintain system-wide management capabilities.	
Pre-conditions	The user has a registered account in the system. The user has access to the mobile application. The user has an active internet connection.	
Trigger	The user selects the login option on the application.	
Flow of Events	Actor Action	System Response
	1. The system presents a login form to the user. 2. The user enters their login credentials, including email address and password. 3. The user submits the login form. 4. The system validates the entered credentials. 5. If the entered credentials are valid: 5.1. The system authenticates the user and grants access to the respective user role (Traveler, Contributors) 5.2. The system displays the	1.

	corresponding dashboard or home screen for the user role. 6. If the entered credentials are invalid: 6.1. The system displays an error message indicating that the credentials are incorrect. 6.2. The user can retry entering the credentials or choose to recover their account. 7. If the user is an administrator: 7.1. The system checks the user's role and grants access to the administrator management panel. 7.2.1. The system displays the administrator dashboard or home screen. 8. The user interacts with the application using the available features according to their role. (Traveler, Contributors)	
Post-conditions	The user is logged into the system and has access to their respective features and functionalities.	
Alternative Flows	Forgotten Password: ● If the user forgets their password, they can request a password reset. ● The system provides a "Forgot Password" option on the login form. ● The user selects the option and enters their registered email address.	

	• The system sends a password reset email to the user's provided email address. • The user receives the email and follows the instructions to reset their password. Account Lockout: • If the user fails to provide correct login credentials after a specified number of attempts, the system locks their account temporarily. • The system displays a message indicating that the account is locked. • The user is prevented from logging in until the lockout period expires. • The user can contact the system administrator for assistance in unlocking their account.
Assumptions	• The system has appropriate security measures in place to protect user login information. • The login process follows standard authentication protocols. • The administrator management panel is accessible only to authorized administrators.

Use Case ID	UC002	
Use Case	Budget Planning	
Priority	High	
Primary System Actor	Traveler (Local , Foreign)	
Other participant Actors	Administrator	
Description	Travel budget planning means figuring out how much money you have for your trip and deciding how to spend it wisely on things like transportation, lodging, food, activities, and extras. You research the costs, prioritize what's important, and leave room for surprises. Tracking your expenses along the way helps you stay on budget.	
Pre-conditions	The user has a registered account in the system. The user has access to the mobile application. The user has an active internet connection.	
Trigger	The user selects the Budget Planning option on the application.	
	Actor Action	System Response

Flow of Events	1. Traveler navigates to the "Budget Planning" section within the app. 2. Traveler enters details such as expense categories, estimated costs, and durations for the trip. 3. The system calculates the total budget, providing a breakdown of expenses by category. 4. The system displays the budget plan to the traveler, allowing them to review and save it.	1. The system presents the Traveler with a user-friendly interface for budget planning, accessible from the app's main menu. 2. As the Traveler inputs details, the system dynamically updates the budget planning form, providing fields for expense categories, estimated costs, and trip durations. The system may offer suggestions or templates to streamline the input process. 3. After the Traveler completes entering the details, the system performs real-time calculations to determine the total budget. It then generates a breakdown of expenses by category, displaying this information to the Traveler. 4. Once the budget plan is calculated, the system presents it to the Traveler in a clear and organized format. The Traveler can review the budget plan, make any necessary adjustments, and then choose to save it for future reference or further editing.
Post-conditions	The traveler's budget plan is saved within the app for future reference.	
Alternative Flows	If the traveler exceeds the allocated budget for any category, the system provides alerts and suggestions for adjustments to stay within budget.	
Assumptions	Travelers have access to accurate and up-to-date information regarding expenses related to their trip.	

Use Case ID	UC003	
Use Case	Review / Rating	
Priority	High	
Primary System Actor	Traveler (Local , Foreign)	
Other participant Actors	-	
Description	This use case empowers travelers to share their experiences and insights by providing reviews and ratings for services, accommodations, attractions, and other aspects of their travel journey. Travelers can offer detailed feedback, including ratings on various parameters and optional written reviews, allowing others to make informed decisions based on their experiences. The system ensures transparency and credibility by displaying these reviews and ratings to other users, fostering a collaborative and community-driven travel environment.	
Pre-conditions	The user has a registered account in the system. The user has access to the mobile application. The user has an active internet connection.	
Trigger	The traveler selects a service or experience they wish to review or rate within the app.	
Flow of Events	Actor Action	System Response
	1. Traveler selects the service/experience to review or rate. 2. Traveler provides a numerical rating based on their experience. 3. Optionally, the traveler writes a detailed review providing additional insights and feedback. 4. Optionally, the traveler writes a detailed review providing additional insights and feedback.	1. The system presents the Traveler with a list of services or experiences available for review or rating. The Traveler can select the specific service or experience they wish to review from the provided options. 2. Upon selecting the service or experience, the system prompts the Traveler to provide a numerical rating based on their experience. The system may use a rating scale (e.g., stars, points) to facilitate the rating process. 3. After providing the numerical rating, the

		system offers the Traveler the option to write a detailed review to provide additional insights and feedback. The system provides a text editor where the Traveler can compose their review. 4. If the Traveler chooses to write a detailed review, the system allows them to input additional insights and feedback. The system may include formatting options (e.g., bold, italic) to enhance the review's readability.
Post-conditions	The traveler's review and rating are saved within the system and made visible to other users.	
Alternative Flows	If the traveler encounters any issues while submitting the review, the system provides error messages and prompts the traveler to retry.	
Assumptions	Travelers provide honest and constructive feedback, contributing to the overall quality and reliability of the review system.	

Use Case ID	UC004	
Use Case	Public Blog	
Priority	High	
Primary System Actor	Traveler (Local , Foreign)	
Other participant Actors	Administrator	
Description	This use case enables contributors and travelers to share their experiences, insights, and stories through publicly accessible blogs within the application. Users can craft engaging blog posts with rich text, images, and multimedia content to narrate their adventures, provide travel tips, or showcase destinations. The system facilitates seamless publishing and sharing of blog posts, fostering a vibrant community where users can inspire and inform each other through their travel narratives.	
Pre-conditions	The user has a registered account in the system. The user has access to the mobile application. The user has an active internet connection.	
Trigger	The user selects the "Public Blog" option from the app's menu.	
Flow of Events	Actor Action	System Response
	1. User navigates to the "Public Blog" section within the app. 2. User creates a new blog post, composing content and adding multimedia elements as desired. 3. User previews and edits the blog post to ensure quality and coherence. 4. User submits the blog post for publishing.	1. The system provides a user-friendly interface within the app's navigation menu, allowing the User to easily locate and access the "Public Blog" section. 2. Upon selecting the option to create a new blog post, the system presents the User with a text editor and multimedia insertion tools. The User can compose the content, add images, videos, and other multimedia elements to enhance the post. 3. After composing the blog post, the system offers the User the option to preview the post before finalizing

		it. The User can review the content, formatting, and multimedia elements, and make any necessary edits to ensure quality and coherence. 4. Once the User is satisfied with the blog post, they can submit it for publishing. The system processes the submission and publishes the blog post to the public blog section of the app, making it accessible to other users. 5. The system validates and publishes the blog post, making it accessible to other users.
Post-conditions	The blog post is successfully published and viewable by other users within the application.	
Alternative Flows	If the user encounters any technical issues while composing or submitting the blog post, the system provides error messages and troubleshooting guidance.	
Assumptions	Users adhere to community guidelines and standards when creating and publishing blog posts.	

Use Case ID	UC005	
Use Case	Event Sharing	
Priority	High	
Primary System Actor	Contributor	
Other participant Actors	-	
Description	This use case allows contributors to share upcoming events, such as festivals, conferences, or meetups, with other users of the application. Contributors can provide comprehensive details about the event, including the title, date, location, description, and any additional information. The system facilitates easy sharing of events, promoting community engagement and collaboration among users with shared interests or travel plans..	
Pre-conditions	The user has a registered account in the system. The user has access to the mobile application. The user has an active internet connection.	
Trigger	The contributor selects the "Event Sharing" option from the app's menu.	
Flow of Events	Actor Action	System Response
	1. Contributor accesses the "Event Sharing" section within the app. 2. Contributor enters details such as the event title, date, location, and description. 3. Optionally, the contributor adds images or links related to the event.	1. The system provides a clear and accessible interface within the app's navigation menu for Contributors to locate and access the "Event Sharing" section. 2. Upon selecting the option to create a new event, the system presents the Contributor with a form or input fields to enter details such as the event title, date, location, and description. The interface is designed to be user-friendly and intuitive, facilitating easy data entry. 3. In addition to text-based details, the system allows

	4. Contributor shares the event through the application.	the Contributor to optionally upload images or include links related to the event. The system provides functionality to upload images from the device's gallery or insert links from external sources. 4. After entering all necessary details and optionally adding images or links, the Contributor can initiate the sharing process. The system processes the event submission and shares it within the application, making it visible to other users who access the "Event Sharing" section.
Post-conditions	The event is successfully shared within the application, visible to other users interested in attending.	
Alternative Flows	If the event details provided by the contributor are incomplete or inaccurate, the system prompts the contributor to review and update the information before sharing the event.	
Assumptions	Contributors provide accurate and relevant information about the events they share, enhancing the overall user experience.	

Use Case ID	UC006	
Use Case	Currency Convert	
Priority	Medium	
Primary System Actor	Traveler (Local , Foreign)	
Other participant Actors	-	
Description	This use case facilitates currency conversion for travelers, enabling them to quickly and accurately convert between different currencies based on current exchange rates. Travelers can input the desired amount and select the source and target currencies, and the system provides the converted amount in real-time. By offering this functionality, the application enhances the convenience and efficiency of financial transactions for travelers across diverse destinations.	
Pre-conditions	The user has a registered account in the system. The user has access to the mobile application. The user has an active internet connection.	
Trigger	The traveler selects the "Currency Converter" option from the app's menu.	
Flow of Events	Actor Action	System Response
	1. Traveler accesses the "Currency Converter" section within the app. 2. Traveler enters the amount to convert and selects the source and target currencies. 3. The system retrieves the current exchange rate for the selected currencies. 4. The system calculates and displays the converted amount to the traveler.	1. The system provides a user-friendly interface within the app's navigation menu for Travelers to locate and access the "Currency Converter" section. 2. Upon accessing the "Currency Converter" section, the system presents the Traveler with input fields to enter the amount to convert and dropdown menus to select the source and target currencies. 3. After the Traveler enters the amount and selects the currencies, the system

		communicates with an external service or database to retrieve the current exchange rate for the selected currencies. 4. Using the retrieved exchange rate, the system calculates the converted amount and displays it to the Traveler. The converted amount is presented in a clear and easy-to-read format within the app's interface.
Post-conditions	The currency conversion is successfully completed, providing the traveler with the converted amount for reference.	
Alternative Flows	If the system encounters connectivity issues while retrieving exchange rates, it notifies the traveler and suggests trying again later.	
Assumptions	The exchange rates provided by the system are accurate and up-to-date, reflecting real-time market fluctuations.	

Use Case ID	UC007	
Use Case	Safety Instruction	
Priority	High	
Primary System Actor	Traveler (Local , Foreign)	
Other participant Actors	-	
Description	This use case provides comprehensive safety instructions and guidelines for travelers, ensuring their well-being and security during their journey. Travelers can access essential safety information covering various aspects such as health precautions, emergency procedures, local laws and customs, and travel advisories. The system delivers this information in a clear and accessible format, empowering travelers to make informed decisions and mitigate potential risks while exploring new destinations.	
Pre-conditions	The user has a registered account in the system. The user has access to the mobile application. The user has an active internet connection.	
Trigger	The traveler accesses the "Safety Instructions" section from the app's menu.	
Flow of Events	Actor Action	System Response
	1. Traveler navigates to the "Safety Instructions" section within the app. 2. Traveler browses through the provided safety guidelines and instructions. 3. The system presents information on health precautions, emergency contacts, local laws, and other relevant safety topics. 4. Traveler can refer to specific sections for detailed	1. The system provides a designated section within the app's navigation menu labeled as "Safety Instructions." Upon selecting this option, the Traveler is directed to the safety guidelines and instructions. 2. Upon accessing the "Safety Instructions" section, the system presents the Traveler with a user-friendly interface displaying various safety guidelines and instructions. The Traveler can scroll through the content to

	guidance on safety measures and protocols.	browse the provided information. 3. Within the "Safety Instructions" section, the system organizes and presents comprehensive information on various safety topics, including health precautions, emergency contacts, local laws, and other relevant safety guidelines. The information is presented in a structured and easily accessible format. 4. The system categorizes the safety instructions into specific sections, allowing the Traveler to refer to relevant topics for detailed guidance on safety measures and protocols. Each section may contain detailed information, tips, and recommendations to ensure the Traveler's safety during their journey.
Post-conditions	The traveler gains valuable insights and awareness regarding safety precautions and procedures for their travel destination.	
Alternative Flows	If the system detects significant safety advisories or updates, it sends notifications to travelers to ensure they are informed of any changes affecting their travel plans.	
Assumptions	The safety instructions provided by the system are regularly updated and reflect the latest information and recommendations from reliable sources such as government agencies or travel advisories.	

Use Case ID	UC008	
Use Case	Authentication	
Priority	High	
Primary System Actor	Traveler (Local , Foreign)	
Other participant Actors	-	
Description	This use case ensures secure access to the application's administrative features by authenticating administrators' identities. Administrators are required to provide valid credentials, typically a username and password, to gain access to administrative functionalities such as user management, content moderation, and system configuration. The authentication process verifies the administrator's identity and grants access only to authorized personnel, safeguarding sensitive information and system resources from unauthorized access or misuse.	
Pre-conditions	The user has a registered account in the system. The user has access to the mobile application. The user has an active internet connection.	
Trigger	TriggerThe administrator attempts to log in to the administrative panel of the application.	
Flow of Events	Actor Action	System Response
	1. Administrator enters the username and password in the designated fields. 2. The system validates the provided credentials against the stored authentication data.	1. The system provides designated fields within the login interface for the Administrator to input their username and password. 2. After the Administrator inputs their credentials, the system performs validation by comparing the entered username and password with the stored authentication data in the system's database. 3. If the provided credentials match the stored authentication data, the system grants access to the administrative dashboard.

		The Administrator is directed to the dashboard interface where they can access administrative functions and features. 4. If the provided credentials do not match the stored authentication data, the system displays an error message. The error message informs the Administrator that the login attempt was unsuccessful and prompts them to retry entering their credentials or reset their password if needed.
Post-conditions	The administrator gains access to the administrative functionalities of the application upon successful authentication.	
Alternative Flows	If the administrator forgets their password, they can request a password reset via email. The system sends a password reset link to the administrator's registered email address, allowing them to set a new password and regain access to their account.	
Assumptions	Administrators maintain the confidentiality of their login credentials and follow recommended security practices to prevent unauthorized access to their accounts.	

Use Case ID	UC009	
Use Case	Profile update	
Priority	Medium	
Primary System Actor	User	
Other participant Actors	-	
Description	This use case enables users to update their profile information within the application. Users can modify personal details such as name, contact information, profile picture, and login credentials to ensure their profile remains accurate and up-to-date. The system provides a user-friendly interface for making these changes, guiding users through the update process and ensuring data integrity. Additionally, the system may incorporate validation checks to verify the accuracy of the updated information before saving it to the user's profile.	
Pre-conditions	The user is logged into the application and has access to their profile settings.	
Trigger	The user accesses the profile settings section within the application.	
Flow of Events	Actor Action	System Response
	1. User navigates to the profile settings section within the app. 2. User selects the option to update profile information. 3. User makes desired changes to their profile details, such as name, contact information, and profile picture.	1. The system provides a dedicated section within the app's navigation menu labeled as "Profile Settings." Upon selecting this option, the User is directed to their profile settings page. 2. Within the profile settings page, the system presents the User with an option to update their profile information. This option may be presented as a button or menu item labeled as "Update Profile Information." 3. Upon selecting the option to update profile information, the system

	4. Optionally, the user may choose to update their login credentials, including username and password.	displays editable fields or forms where the User can make desired changes to their profile details. The User can input new information, modify existing details, or upload a new profile picture. 4. In addition to updating profile information, the system offers the User the option to update their login credentials, including username and password. This option may be presented as a separate section within the profile settings page labeled as "Update Login Credentials." 5. The system validates the updated information, ensuring it meets any specified criteria or constraints. 6. If the validation is successful, the system saves the updated profile information and reflects the changes accordingly.
Post-conditions	The user's profile information, including personal details and login credentials, is successfully updated within the application.	
Alternative Flows	If the user encounters any issues while updating their profile, such as validation errors or technical issues, the system provides appropriate error messages and guidance to resolve the issue.	
Assumptions	Users have access to their profile settings and sufficient permissions to update their profile information. The system	

	employs secure protocols to protect the confidentiality of users' login credentials during the update process.

Use Case ID	UC009	
Use Case	SOS Button	
Priority	High	
Primary System Actor	Traveler	
Other participant Actors	-	
Description	This use case provides travelers with a dedicated SOS button within the application, allowing them to quickly request assistance in emergency situations. When activated, the SOS button sends an immediate alert to designated emergency contacts or authorities, along with the traveler's location information obtained from the device's GPS or network connectivity. The system ensures swift response and assistance in critical situations, enhancing the safety and security of travelers during their journeys.	
Pre-conditions	T*+he traveler is logged into the application and has access to the SOS button feature.	
Trigger	The traveler activates the SOS button within the application.	
Flow of Events	Actor Action	System Response
	1. Traveler locates and activates the SOS button within the app.	1. The system generates an emergency alert, including the traveler's location data obtained from the device's GPS or network connectivity. 2. The system sends the SOS alert to designated emergency contacts or authorities, along with relevant details such as the traveler's name and contact information. 3. Emergency responders receive the SOS alert and take appropriate actions to assist the traveler based on the provided information.

Post-conditions	Emergency assistance is initiated and provided to the traveler in response to the SOS alert, ensuring their safety and well-being.	
Alternative Flows	If the device's GPS or network connectivity is unavailable at the time of activating the SOS button, the system prompts the traveler to provide their current location manually or through alternative means.	
Assumptions	Travelers have access to network connectivity or GPS services to provide accurate location information in emergency situations. The system maintains reliable communication channels with designated emergency contacts or authorities to facilitate timely assistance.	

Use Case ID	UC009	
Use Case	Place suggestion	
Priority	Medium	
Primary System Actor	Traveler	
Other participant Actors	-	
Description	This use case extends the functionality of budget planning by providing travelers with personalized suggestions for places to visit based on their budget constraints and preferences. The system analyzes the traveler's budget plan, destination preferences, interests, and available attractions to recommend suitable places within their budget range. Travelers can explore these suggestions to enhance their travel itinerary and make the most of their trip within their financial limits. The system also provides additional information about each suggested place, including descriptions, photos, reviews, and estimated expenses, to help travelers make informed decisions.	
Pre-conditions	Traveler must have completed setting up their budget plan within the application.	
Trigger	The traveler accesses the place suggestion feature within the budget planning section of the application.	
Flow of Events	Actor Action	System Response
	1. Traveler navigates to the budget planning section within the app. 2. Traveler selects the option to view place suggestions based on their budget. 3. Traveler can explore each suggestion in detail and select preferred places to	1. The system analyzes the traveler's budget plan and preferences to generate personalized place suggestions. 2. The system presents a list of recommended places to visit, along with relevant details such as descriptions, photos, reviews, and estimated expenses.

	add to their travel itinerary.	
Post-conditions	The traveler receives personalized place suggestions aligned with their budget and preferences, enhancing their travel planning experience and itinerary customization.	
Alternative Flows	If the system encounters difficulties in generating place suggestions based on the traveler's inputs or preferences, it notifies the traveler and offers alternative options or recommendations.	
Assumptions	The system utilizes accurate data and algorithms to generate relevant and personalized place suggestions based on the traveler's inputs and preferences. Travelers have access to detailed information about each suggested place to make informed decisions and plan their itinerary effectively.	

5. System Features

5.1Personalized Itinerary Creation (High Priority)

5.1.1 Description and Priority

This feature allows users to create customized trip plans based on their preferences, interests, and travel style. It is a High priority feature as it directly addresses the core user need of trip planning.

Benefit (High): Enhances user experience and satisfaction.

Penalty (High): Users will struggle to plan trips efficiently without it.

Cost (Medium): Requires development effort but leverages existing functionalities.

Risk (Medium): Complexity in managing user preferences requires careful design.

5.1.2 Stimulus/Response Sequences

Sequence 1

- Stimulus: User selects "Create Itinerary" option.
- Response: System displays a form for trip details.

Sequence 2

- Stimulus: User provides details and preferences (destination, duration, travel style, budget).
- Response: System processes the information and retrieves relevant data.

Sequence 3

- Stimulus: System retrieves data (attractions, activities, accommodations).
- Response: System suggests options based on user input using search and filter functionalities.

Sequence 4

- Stimulus: User adds/removes suggestions, adjusts schedule, and sets preferences.
- Response: System updates the itinerary based on user actions.

5.1.3 Functional Requirements

REQ-1: System shall capture user trip details including destination, dates, travel style, and budget.

REQ-2: System shall recommend attractions, activities, and accommodations based on user preferences, location, and travel dates (using search and filter functionalities).

REQ-3: System shall allow users to add, remove, or adjust recommendations within the itinerary.

REQ-4: System shall display estimated costs for each segment of the itinerary (flights, accommodation, activities).

REQ-5: System shall allow users to save itineraries for future reference or share them electronically.

REQ-6: System shall handle invalid user input (e.g., incorrect dates) gracefully and provide informative error messages.

5.2 Offline Access (Medium Priority)

5.2.1 Description and Priority

This feature allows users to access saved itineraries, maps, and essential information even without an internet connection. It has a Medium priority as internet access might not always be available during travel.

Benefit (Medium): Improves usability in situations with limited internet connectivity.

Penalty (Medium): Inconvenience if users cannot access full app functionalities offline.

Cost (Medium): Requires additional development for data storage and offline functionality.

Risk (Low): Relatively low technical risk as existing data can be cached for offline use.

5.2.2 Stimulus/Response Sequences

Sequence 1

- Stimulus: User saves an itinerary or marks locations/information for offline access.
- Response: System prompts user for confirmation and initiates data storage process.

Sequence 2

- Stimulus: System stores relevant data locally on the user's device.
- Response: System provides confirmation or notification upon successful storage.

Sequence 3

- Stimulus: User loses internet connection while traveling.
- Response: System continues to function with available offline data.

Sequence 4

- Stimulus: User opens the app and selects a saved itinerary or saved location.
- Response: System displays the itinerary or location information even without an internet connection.

5.2.3 Functional Requirements

REQ-7: System shall allow users to mark itineraries, maps, and specific information for offline access.

REQ-8: System shall store a designated amount of data locally on the user's device for offline use.

REQ-9: System shall display saved itineraries, maps, and information accurately even in offline mode.

REQ-10: System shall inform users about limitations (e.g., lack of real-time updates) while operating offline.

6 Other Nonfunctional Requirements

6.1 Performance Requirements

- The app should load search results and recommendations quickly (within 3 seconds) to maintain user engagement.
- Itinerary creation and updates should be responsive (less than 5 seconds delay) for a smooth user experience.
- Offline access to saved data should be instantaneous.

6.2 Safety Requirements

- The app should not collect or store any user data beyond what is necessary for trip planning.
- User privacy settings should allow control over data sharing and location tracking.
- Emergency contact information and safety warnings should be readily accessible.

6.3 Security Requirements

- User accounts should require strong passwords and implement two-factor authentication for added security.
- Implement secure data encryption practices to protect user information.
- Regularly update the app to address security vulnerabilities.

6.4 Software Quality Attributes

- Usability: The app interface should be intuitive and user-friendly for travelers of all technical backgrounds.
- Availability: The app should be accessible and functional with minimal downtime.
- Reliability: The app should perform consistently and avoid crashes or errors during use.

7 References

Here's the revised reference list without the URL and date placeholders:

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