



Faculty of Computer Science and Information Technology

***TRIPOCKET: MALAYSIA-BASED PERSONALISED TRAVEL ITINERARY
GENERATOR***

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Bachelor of Software Engineering with Honours

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**TRIPOCKET: MALAYSIA-BASED PERSONALISED TRAVEL ITINERARY
GENERATOR**

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**TRIPOCKET: PENJANA ITINERARI PELANCONGAN BERASASKAN
MALAYSIA**

ABANG HAIZEEQ NAJWAN BIN ABANG ISKANDAR BOLHASSAN

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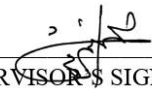
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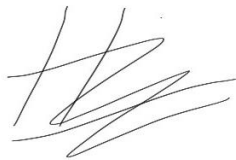
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ABSTRACT

Malaysia's tourism industry is a catalyst for economic growth, attracting millions of travellers from all around the globe annually. However, many face challenges in creating itineraries tailored to their preferences, time constraints, and budgets. TriPocket a Malaysia-based travel itinerary generator, addresses this issue by offering a web-based platform that utilises artificial intelligence to provide personalised travel plans. This platform analyses user inputs such as destinations, travel dates, interests, and constraints to generate comprehensive itineraries, recommending attractions, dining, accommodations, and eco-friendly travel options. It also includes itinerary-sharing features for collaborative planning with friends or family, enhancing engagement and interactivity. The development of TriPocket combines user-centric design principles with advanced technologies to ensure usability, efficiency, and scalability. Rigorous testing and user feedback were integral to meeting diverse traveller needs while aligning with Malaysia's tourism objectives. By promoting local businesses and sustainable practices, TriPocket contributes to the industry's growth and supports eco-conscious tourism. This report details the system's conceptualization, design, implementation, and evaluation, demonstrating its ability to revolutionize travel planning. Findings highlight how AI integration improves user satisfaction and efficiency, positioning TriPocket as a valuable tool to enhance Malaysia's tourism experience and reputation as a global destination.

ABSTRAK

Industri pelancongan Malaysia merupakan pemacu ekonomi yang penting, menarik jutaan pelancong setiap tahun. Namun, ramai yang menghadapi cabaran dalam merancang jadual perjalanan yang memenuhi keutamaan, kekangan masa, dan bajet mereka. TriPocket: Penjana Itinerari Pelancongan Berasaskan Malaysia bertujuan untuk mengatasi isu ini dengan menawarkan platform berasaskan web yang menggunakan kecerdasan buatan untuk menyediakan pelan perjalanan yang diperibadikan. Platform ini menganalisis input pengguna seperti destinasi, tarikh perjalanan, minat, dan kekangan untuk menjana itinerari yang komprehensif, termasuk cadangan untuk tarikan, tempat makan, penginapan, dan pilihan perjalanan mesra alam. Ia juga menampilkan ciri perkongsian itinerari untuk perancangan kolaboratif bersama rakan atau keluarga, meningkatkan keterlibatan dan interaktiviti. Pembangunan TriPocket menggabungkan prinsip reka bentuk berpusatkan pengguna dengan teknologi canggih untuk memastikan kebolegunaan, kecekapan, dan skalabiliti. Ujian menyeluruh dan maklum balas pengguna memainkan peranan penting dalam memenuhi keperluan pelancong yang pelbagai sambil selaras dengan objektif pelancongan Malaysia. Dengan mempromosikan perniagaan tempatan dan amalan lestari, TriPocket menyumbang kepada pertumbuhan industri dan menyokong pelancongan yang mesra alam. Laporan ini menghuraikan konsep, reka bentuk, pelaksanaan, dan penilaian sistem, menunjukkan kemampuannya untuk merevolusikan perancangan perjalanan. Dapatan kajian menonjolkan bagaimana integrasi AI meningkatkan kepuasan pengguna dan kecekapan, menjadikan TriPocket sebagai alat berharga untuk memperkukuh pengalaman pelancongan Malaysia dan reputasinya sebagai destinasi global.

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CHAPTER 1 : INTRODUCTION

1.1 Introduction

Planning is the key to the best travel experience, acting as the bridge between dreaming about a destination and an actual experience. However, this stage of travel is often intercepted with challenges, especially for first-time travellers who may feel overwhelmed by the amount of information available online. Traditionally, planning involves researching destinations, comparing accommodation options, selecting activities, and mapping out schedules. Each step typically requires so much time to look up various sources, such as travel blogs, review platforms, and guidebooks, which, while helpful, can also lead to information overload.

For many travellers, finding activities that align with their interests be it an adventure, sports, cultural festivals, historical explorations, or wellness retreats can be time-consuming. The abundance of online options often results in inefficient use of time, leaving travellers frustrated and uncertain about their choices. In such cases, a tailored solution that eases the process is both valuable and essential.

Recognising these challenges, TriPocket is a game-changing, web-based solution that utilizes the power of artificial intelligence (AI) to enhance the travel planning experience. Designed specifically for travellers exploring Malaysia, TriPocket aims to streamline every aspect of trip preparation by offering a highly personalised, intuitive, and efficient solution.

Unlike traditional itinerary planning tools, TriPocket integrates AI and machine learning to provide features such as:

1. **Personalised Itinerary Generation:** By analyzing user preferences, travel goals, and constraints, the platform creates itineraries that cater to unique tastes and schedules.
2. **User Profile Customization:** Travelers can input specific interests, such as culinary tours, eco-friendly travel, or family-oriented activities, ensuring a truly tailored experience.
3. **Interactive Map Integration:** Users can explore Malaysia's vibrant cities and picturesque landscapes through dynamic maps that highlight nearby attractions, dining spots, and hidden gems.

4. **Offline Accessibility:** Recognizing the connectivity challenges travellers might face, TriPocket ensures seamless access to itineraries and travel details without reliance on the internet.

By prioritizing user convenience and experience, TriPocket not only eliminates the uncertainty from travel planning but also fosters a deeper connection between travellers and their destinations. The platform empowers users to make accurate decisions, maximize their quality time in Malaysia, and uncover unique aspects of the country that align with their interests.

The tourism industry, though historically slower in adopting AI, stands to benefit significantly from its integration. There is a lot of potential for incremental benefit (Vinod, 2021). The ambitious AI-driven trip planner project aims to use machine learning and artificial intelligence to transform the travel planning process (Mote, A et al., 2024). A personalised travel itinerary generator system is an imaginative method for creating simple and efficient tour itineraries for travellers (Nithyasri Prabha. S et al., 2024).

TriPocket goes beyond being a mere travel planning tool it is a platform that eventually contributes to the growth of Malaysia's tourism sector. By highlighting the nation's cultural heritage, diverse ecosystems, and authentic local experiences, TriPocket attracts a broader spectrum of global travellers. Moreover, its focus on sustainable tourism practices ensures a positive impact on the environment and local communities. This dual focus on enhancing traveller convenience and promoting sustainable growth positions TriPocket as an essential innovation in the travel industry.

Ultimately, TriPocket's vision is to redefine how people explore Malaysia. By offering intelligent, user-friendly, and engaging solutions, the platform not only simplifies travel planning but also ensures an unforgettable experience for travellers, enriching both the traveller and the destination.

1.2 Problem Statement

Travel planning involves navigating large amounts of data on destinations and local attractions, which can be challenging to consolidate into an efficient, personalised itinerary. Existing trip planning solutions on the market, such as Google Trips, Sygic Travel, and TripIt, do not offer travellers a complete experience. These existing tools have limitations like rigid planning features, such as fixed schedules that don't allow reordering activities, pre-set templates that restrict customization, and inflexible time slots. They also offer limited customization options, such as generic recommendations that ignore user interests lack local insights, an inability to cater to group preferences, poor support for accessibility or dietary needs, and a lack of personalised suggestions (Mudhale et al., 2024). Additionally, these tools often overlook Malaysian-specific travel needs, such as local events, hidden cultural spots, and food-based tourism, leaving a gap in platforms catering to Malaysian attractions and tourism preferences.

From a software engineering perspective, there is a need for a system that can intelligently organize and present travel data in a dynamic, responsive, and user-centered way. For example, the system could use location-based recommendations to suggest nearby attractions, allow users to customize itineraries based on their interests, and provide real-time updates on weather or local events. Additionally, features like interactive maps and personalised activity suggestions could enhance the user experience, making travel planning easier and more engaging.

1.3 Project Scope

The scope of the TriPocket project is to develop an innovative, web-based platform designed to simplify travel planning for users visiting Malaysia. This platform will focus on providing a seamless, intuitive experience, ensuring accessibility and convenience for a diverse range of travellers. At its core, TriPocket will enable users to generate personalised travel itineraries based on their preferences, such as travel dates, budgets, preferred activities, and interests. The platform will be designed with user-friendliness as a top priority, ensuring that even first-time users can navigate it effortlessly to create detailed and optimized travel plans. TriPocket will offer a robust recommendation system powered by artificial intelligence to analyse user inputs to provide tailored suggestions. These recommendations will encompass key aspects of travel, including accommodations, attractions, dining options, and

transportation. By leveraging AI and machine learning technologies, the platform will adapt to user behaviours and preferences over time, continuously refining the quality and relevance of its recommendations. To enhance the travel experience, TriPocket will provide a suite of integrated features. These include dynamic itinerary customization, map integration, and local events. Additionally, the platform will highlight authentic, locally driven experiences and promote sustainable tourism practices by recommending eco-friendly activities and local businesses. Lastly, TriPocket aims to bridge the gap between the complexity of trip planning and the need for personalised, engaging travel experiences. The platform will not only cater to the individual needs of travellers but also contribute to the growth of Malaysia's tourism sector by fostering greater visibility and interaction for local enterprises.

1.4 Aims & Objective

1. To study and analyse existing travel itinerary systems, focusing on their features, user experience, and limitations to identify opportunities for improvement and innovation.
2. To design and implement a personalised travel itinerary generator for Malaysia that integrates AI to provide tailored recommendations and eco-friendly travel options.
3. To test and evaluate the usability, functionality, and performance of the system, ensuring it meets user expectations and aligns with project goals for convenience, engagement, and sustainability.

1.5 Methodology

The development of TriPocket, a Malaysia travel itinerary generator, will adopt to a prototyping methodology. This approach emphasizes iterative design, rapid development, and continuous user feedback suitable for a solo development project. The process includes six phases: requirement gathering, quick design, prototype development, user evaluation, refinement, and implementation.

1. **Requirement Gathering:**

User needs and expectations will be identified through surveys, interviews, and market research to define core functionalities.

2. **Quick Design:**

A high-level design will be created, including UI wireframes, backend components, and AI integration plans.

3. **Prototype Development:**

A basic prototype will be built, featuring a functional UI, initial AI models for itinerary suggestions, and integration with tourism APIs and cloud services.

4. **User Evaluation:**

The prototype will be tested by users to gather feedback on usability and functionality.

5. **Refinement:**

Based on feedback, the prototype will be improved through multiple iterations, refining the UI, AI models, and backend systems.

6. **Implementation:**

The final application will be developed, tested, and deployed. Post-launch, user feedback will be monitored, and updates will be made to ensure relevance and performance.

1.6 Significance of Project

The TriPocket project is significant for several reasons, particularly in how it enhances user experiences, supports local businesses, and integrates modern technologies. By offering a personalised platform that consolidates various services such as travel itineraries, local business recommendations, and event management, the project aims to simplify and streamline users' daily activities. This approach not only provides convenience but also helps users discover and engage with their local economy, especially within the Malaysian context, by promoting small businesses and tourism. Additionally, the data collected through the app offers valuable insights for businesses, allowing them to tailor their offerings and marketing strategies to better meet consumer needs. Finally, TriPocket holds promise in supporting sustainable choices by promoting eco-friendly travel and responsible consumer behaviour, aligning with global trends.

1.7 Expected Outcome

The TriPocket project aims to develop a fully functional, user-friendly platform that simplifies and enhances the travel planning process for individuals exploring Malaysia. By the end of the project, the platform will offer personalised travel itineraries based on user preferences, such as destinations, activities, budgets, and travel dates. Leveraging advanced AI algorithms, TriPocket will display recommendations to suit individual tastes and interests, offering a seamless experience that reduces the complexities often faced by the travellers during trip planning.

TriPocket will provide travellers with a one-stop solution to discover Malaysia's iconic landmarks, hidden attractions, and local events. Users will be able to explore a diverse range of experiences, from cultural and historical sites to outdoor adventures, culinary tours, and wellness retreats. The platform's AI-driven capabilities will allow users to generate customized itineraries quickly, with suggestions that align with their preferences. Additionally, users can modify their itineraries as needed, with the platform dynamically offering alternative activities, routes, or accommodations to suit their revised plans.

TriPocket will also integrate a budget estimation feature that analyses seasonal price trends and spending patterns, enabling users to plan trips within their financial means. In cases where users exceed their budgets, TriPocket will provide cost-effective alternatives, such as budget-friendly accommodations or free activities, to help them make informed decisions.

Beyond improving the travel experience for individuals, TriPocket aims to support and enhance Malaysia's local businesses and communities. The platform will highlight locally owned enterprises, including restaurants, boutique hotels, and guided tour services, providing them with increased visibility and direct exposure to potential customers. By promoting these businesses, TriPocket fosters growth and creates new opportunities for small and medium enterprises in the tourism sector. This emphasis on local engagement aligns with sustainable tourism practices, ensuring a positive impact on both the economy and the environment.

Ultimately, the project seeks to achieve multiple goals. For travellers, it will provide a practical, convenient, and enjoyable planning tool that enhances their overall experience in Malaysia. For local businesses, it will act as a platform to boost their visibility and attract a wider audience. On a broader scale, TriPocket will contribute to the local economy and the

tourism industry by encouraging personalised, meaningful travel experiences that celebrate Malaysia's cultural heritage, natural beauty, and vibrant communities.

1.8 Project Outline

Chapter 1: Introduction

This chapter introduces the project by discussing the importance of tourism in Malaysia and the challenges travellers face when planning trips. The project aims to address these issues by developing TriPocket, an AI-integrated platform that creates personalised travel itineraries while promoting local businesses and sustainable travel options.

- **Problem Statement:** Travelers struggle with planning and discovering tailored, eco-friendly itineraries.
- **Objectives:** To create a user-friendly platform that personalizes itineraries, promotes local attractions, and supports sustainable tourism.
- **Significance:** Helps travellers plan easily while boosting local businesses and eco-tourism in Malaysia.

Chapter 2: Literature Review

This chapter reviews related works, concepts, and technologies relevant to travel planning. It examines existing travel itinerary systems, highlighting their limitations and how AI and sustainability can improve the process.

Chapter 3: Methodology

This chapter describes how the project is developed, from research to implementation. It outlines the tools, technologies, and methods used to achieve the objectives.

Chapter 4: Results and Discussion

This chapter presents the developed system and evaluates its performance based on user feedback and tests. It discusses how effectively the platform meets the objectives.

Chapter 5: Testing

In this chapter, software testing will be conducted to test the functionality, and the non-functionality features in the system

Chapter 6: Conclusion and Recommendations

This chapter summarizes the project, its contributions, and future enhancements

CHAPTER 2 : LITERATURE REVIEW

2.1 Introduction

Travel planning plays an important role in making sure a seamless and unforgettable travel experience. However, for many travellers, creating a detailed and personalised itinerary is a time-consuming activity and challenging process, especially in a country like Malaysia which is full of different cultures and many other states. With the current technology trend, digital solutions are one of the best ways to solve existing problems. Nowadays, travellers, particularly those who travel in groups, rely on the Internet to research tourism, exchange information, and make judgments. Some features of current travel planning apps, like Tripomatic (tripomatic.com), allow travel groups to collaborate on their itineraries (Zhang et al., 2019).

Platforms such as Holihopper, Tripomatic.com, TripIt, and other itinerary planners aim to address these challenges by offering tools for trip planning. However, some trip planners do not integrate with complete travel services, which restricts the options available to users. When taken as a whole, these include issues with personalisation, flexibility, data accuracy, integration with other components of the current trip planning systems and also miss out on promoting local tourism (Nithyasri Prabha. S et al., 2024).

This chapter focuses on exploring and reviewing the existing travel itinerary planning systems, stressing the integration of current technology, and artificial intelligence (AI). A review of chosen existing travel planning systems is conducted to evaluate their strengths and limitations, providing intel into areas where enhancement and innovation are needed for the proposed system. The role of AI in enhancing personalization, user engagement, and efficiency in the system is analysed, as well as the importance of promoting eco-friendly travel practices and supporting local businesses.

Through this review, the gaps in existing solutions are thoroughly examined, and a strong foundation for the development of TriPocket is established, a Malaysia travel itinerary generator. The information gained from this chapter will inform the progress of the system, ensuring it meets the needs of local and international travellers while supporting sustainable tourism in Malaysia.

2.2 Review of Existing Systems

Chosen existing systems need to be carefully reviewed and analysed to identify their strengths, limitations, and gaps that can ease the development process of the proposed system, TriPocket. Three notable systems Holihopper, Tripomatic Travel, and TripIt serve as benchmarks for this evaluation. Holihopper is a system that provides pre-designed travel itineraries based on themes and user preferences. Tripomatic Travel allows users to manually plan and customize travel itineraries with offline maps and travel details. At the same time, for TripIt, it organizes travel bookings into a consolidated, easy-to-access itinerary.

2.2.1 Holihopper

HoliHopper is a travel itinerary platform that focuses on delivering pre-designed itineraries based on the traveller's destination and preferences. The platform aims to simplify the travel planning process by offering curated travel plans, often catering to specific themes such as adventure, relaxation, or cultural exploration. Its user-friendly interface allows travellers to select from a range of options that align with their interests, travel dates, and budget.

One of the key strengths of Holihopper is its ability to provide structured itineraries that minimize the need for extensive manual planning. This feature is particularly appealing for travellers who value convenience and are looking for ready-to-use travel solutions. The platform also includes a variety of destinations, offering flexibility in terms of trip duration and activity preferences. Other than that, Holihopper also focuses on the collaborative planning functionality that allows users to share the itineraries among their trip members making it easier to brainstorm and edit the itineraries with whatever the groups agreed upon.

However, Holihopper's reliance on pre-set itineraries can limit personalization for travellers seeking unique or unconventional experiences. The platform does not offer significant flexibility to modify or customize the provided plans, which may not cater to travellers with specific interests or unique requirements. Additionally, its focus tends to be on popular destinations and mainstream activities, with less emphasis on promoting local businesses, off-the-beaten-path attractions, or eco-friendly travel options.

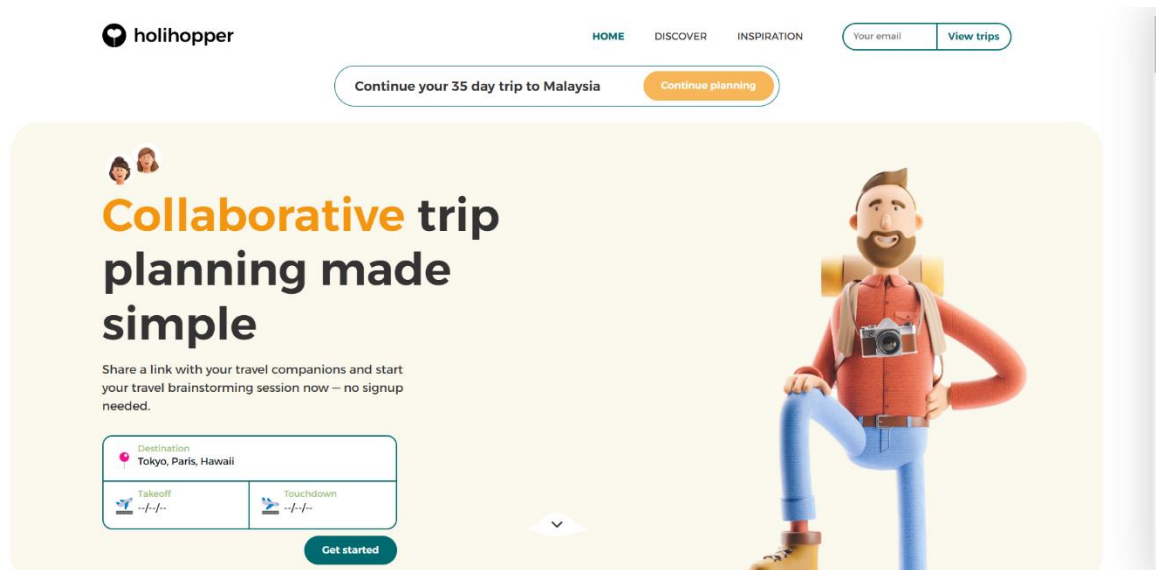


Figure 2.1: Holihopper homepage

Key Features:

1. **Pre-Designed Itineraries:** Holihopper offers a selection of travel plans tailored to specific themes, allowing users to quickly find a suitable itinerary for their trip.
2. **Collaborative Planning:** Users can share their itineraries with trip companions, allowing everyone involved to suggest changes and contribute to the plan.
3. **Trip Customization:** While it offers some flexibility for users to adjust itineraries, the customization options are limited compared to fully manual platforms.
4. **Limited Personalization:** The platform offers little room for deep personalization or the inclusion of off-the-beaten-path activities.
5. **Sustainability:** There is minimal emphasis on promoting eco-friendly or sustainable travel options.

User Process:

1. **Choosing Destination and Flights Date:** Users fill in the destination and the take-off date touchdown date

Collaborative trip planning made simple

Share a link with your travel companions and start your travel brainstorming session now – no signup needed.

Destination Tokyo, Paris, Hawaii	
Takeoff --/--	Touchdown --/--

Get started

Figure 2.2: Destination and dates form

Collaborative trip planning made simple

Share a link with your travel companions and start your travel brainstorming session now – no signup needed.

Destination Malaysia	
Takeoff 12/5/2024	Touchdown 12/9/2024

Get started

Figure 2.3: filled form

2. **Sign Up/Login:** Users register on the platform and select a travel destination.

Sign up to save your trip

E-mail

Save trip

Skip and sign up later.

Figure 2.4: Sign up form

3. **Planning An Activity:** Users can add specific activities (e.g., Kuala Lumpur City Tour, Batu Caves tour) to their itinerary.

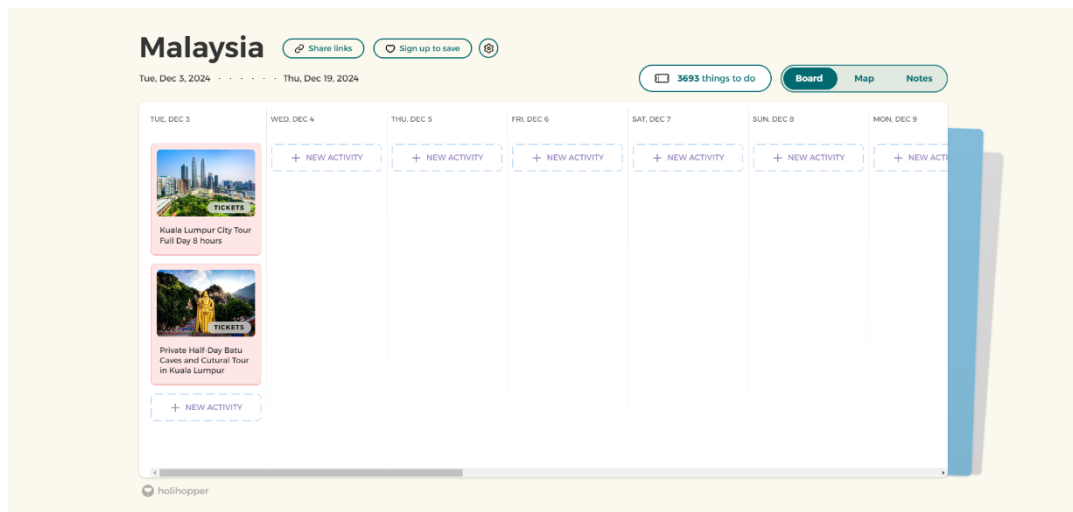


Figure 2.5: Itinerary Planning Interface in HoliHopper

4. **Sharing and Collaborative Planning:** Users can share their itineraries with friends via the platform, allowing for group collaboration and feedback.

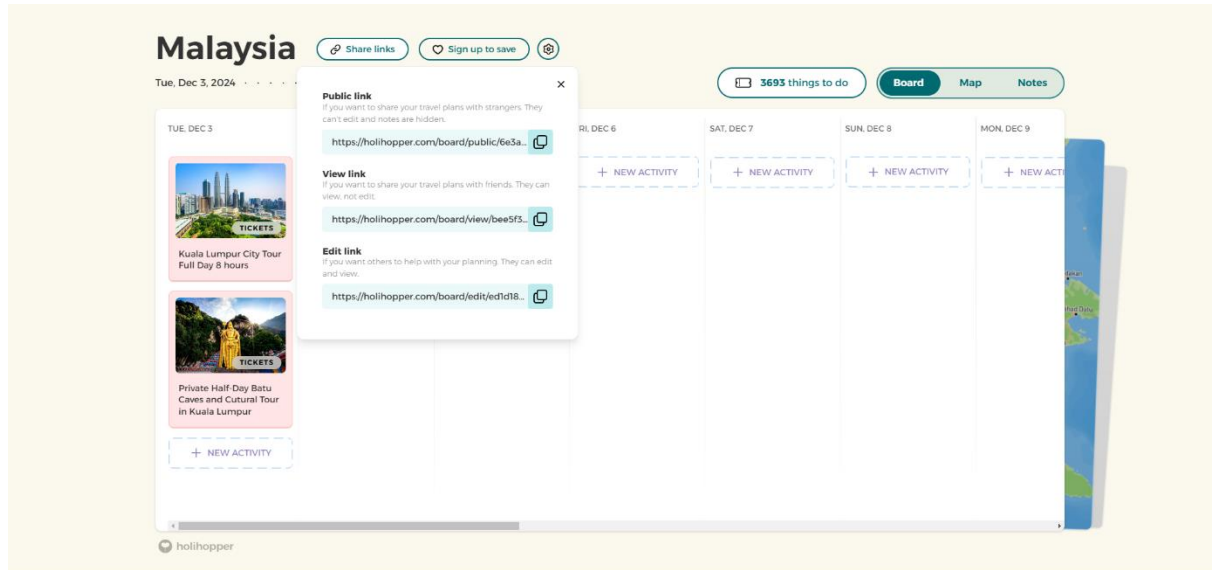


Figure 2.6: Sharing Option in HoliHopper

5. **Customizing:** The platform offers limited customization, with users able to modify certain activities or destinations.

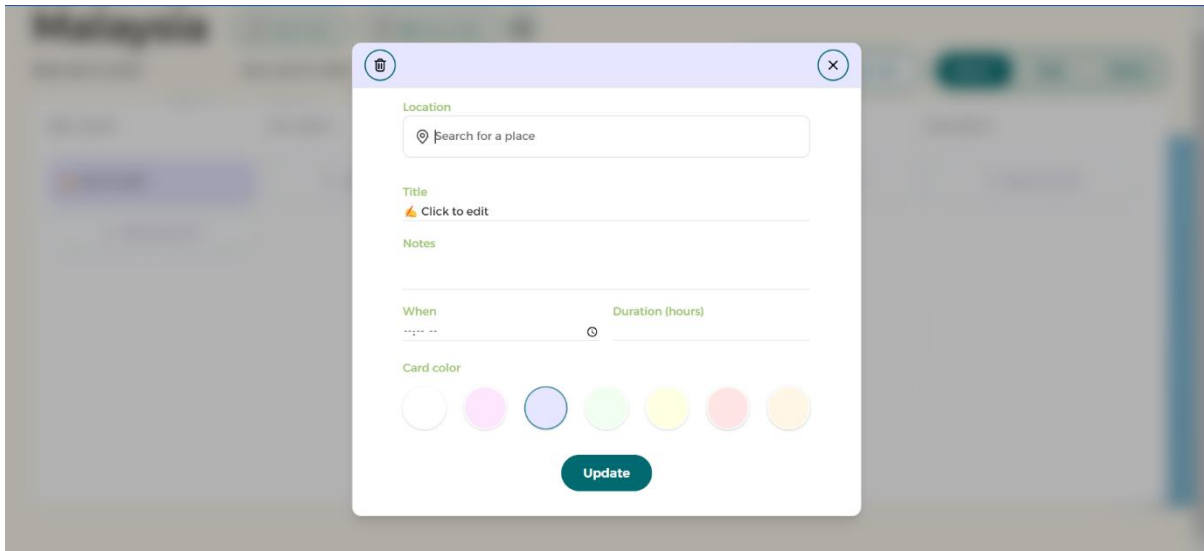


Figure 2.7: Customization Options

Strengths and Limitations:

- **Strengths:** Simple, user-friendly interface and collaboration features make it easy for groups to plan together.
- **Limitations:** Limited personalization options and a focus on mainstream destinations mean it's less suitable for travellers seeking unique or offbeat experiences. Also, the platform does not emphasize sustainability or local business promotion.

This review highlights Holihopper's strength in convenience but also underscores its limitations in personalization and adaptability. These gaps present opportunities for TriPocket to differentiate itself by offering a more dynamic and customizable approach to itinerary planning, focusing on local insights and sustainable travel practices.

2.2.2 Tripomatic Trip

Tripomatic Trip used to be known as Sygic Travel is a travel planning platform available in IOS and Android developed to help travellers from all around the world to plan detailed and customisable itineraries for their trips and allow users to book trips.

Sygic Travel was first introduced as an extension of Sygic's core offerings, blending advanced GPS capabilities with features aimed at helping users discover and navigate destinations. At its inception, the platform primarily catered to travellers looking for an all-in-one navigation and trip organization solution. It featured offline maps, detailed route planning, and a growing database of travel destinations. These functionalities laid the groundwork for what would become Tripomatic, a more expansive and travel-specific platform.

As the platform matured, its focus shifted from navigation to providing a comprehensive travel planning experience. This evolution was marked by the rebranding of Sygic Travel to Tripomatic. The change not only highlighted the platform's independence from Sygic's navigation products but also signaled its dedication to becoming a leader in the travel planning industry. Under its new identity, Tripomatic broadened its offerings, making the platform more appealing to travelers seeking tools for creating personalised itineraries, discovering new destinations, and collaborating with trip companions.

One of the key milestones in Tripomatic's development was the expansion of its database. The platform now boasts over 50 million points of interest, including iconic landmarks, museums, restaurants, beaches, and even bird observatories. This extensive database allows users to plan trips that suit their interests and preferences, whether they are looking for cultural experiences, natural wonders, or culinary adventures. To enhance the discovery process, Tripomatic also introduced curated travel guides, offering users insights into local history, cultural etiquette, and recommendations for must-see destinations.

In addition to its robust database, Tripomatic stands out for its focus on offline accessibility. Understanding the challenges faced by international travellers and those venturing into remote areas, the platform allows users to download maps and itineraries for offline use. This feature ensures that travellers can access their plans and navigate unfamiliar locations without relying on an internet connection, providing convenience and peace of mind.

Another significant development in Tripomatic's journey was the introduction of a subscription-based premium model. With this model, users can unlock advanced features such

as unlimited offline maps, walking navigation, and enhanced customization options. The subscription also supports the platform's ongoing innovation and expansion, ensuring that it remains competitive in the travel planning market.

Throughout its evolution, Tripomatic has remained committed to enhancing the user experience. The platform's user-friendly interface, powerful search filters, and ability to integrate bookings directly into itineraries make it an indispensable tool for modern travellers. Furthermore, the inclusion of collaborative planning features enables users to share and plan trips with friends or family, fostering a sense of connection and teamwork in travel planning.

The transition from Sygic Travel to Tripomatic represents more than just a rebranding; it is a testament to the platform's ability to adapt and innovate. By shifting its focus from navigation to comprehensive travel planning, Tripomatic has positioned itself as a trusted companion for travellers worldwide. Its evolution demonstrates a deep understanding of the needs of modern travellers, offering tools that simplify trip organization while enhancing the overall travel experience.

As Tripomatic continues to grow, it stands as an example of how a platform can evolve to meet the changing needs of its users. From its roots in GPS navigation to its current status as a leading travel planning platform, Tripomatic has redefined what it means to plan and enjoy a trip. Its journey reflects not only its own progress but also the increasing importance of technology in making travel accessible, enjoyable, and stress-free for all.

Tripomatic Trip allows users from all over the world to use their user-friendly trip planner to create a detailed daily itinerary for their vacation. To make the plans realistic, view predicted walking distances and travel durations. Tripomatic trip has so many strengths on the functionalities that will make the trip go as easy as possible. These are the following features and functionalities:

1. User Onboarding Process

Tripomatic offers a seamless registration process, allowing users to sign up with their email or via third-party platforms such as Google or Apple. Upon logging in, users are welcomed by an intuitive interface that simplifies the setup of their first trip, with tutorials and prompts guiding them through the process of itinerary creation.

2. Core Features

- **Interactive Maps:** Tripomatic offers unique maps that highlight top attractions, restaurants, and shops, allowing users to visualize their trips effectively (Tripomatic s.r.o, 2024).
- **Day-by-Day Itinerary Creation:** Users can build day-to-day plans, complete with estimated travel times and walking distances, ensuring practical itineraries (Tripomatic s.r.o, 2024).
- **Offline Access:** The app provides offline maps and guides, which are particularly useful in areas with limited connectivity. This feature is available with a premium subscription (Tripomatic s.r.o, 2024).
- **Collaboration Tools:** Friends can be invited to collaborate on trip planning, making it easier to organize group travels (Tripomatic s.r.o, 2024).

3. Step-by-Step Workflow

The screenshots are from the mobile application from iPhone 15 model.

1. Homepage

Upon clicking the application's icon, the user will be navigated directly to the homepage interface of the application.

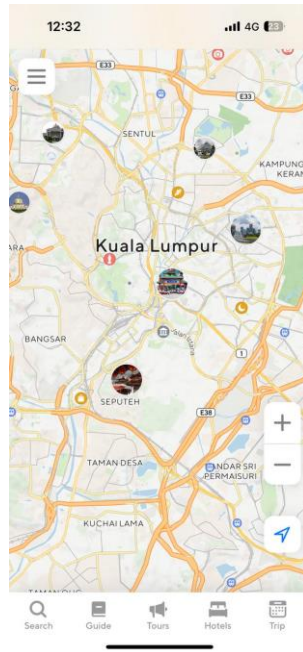


Figure 2.8: Tripomatic's Homepage

2. Log In

Users log into the app or website using their credentials or third-party accounts like Google.

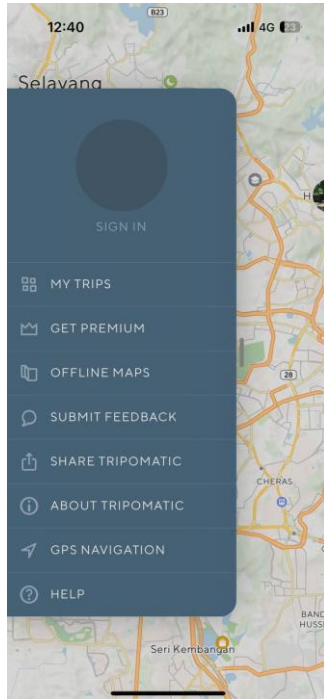


Figure 2.9: Tripomatic Login Options and Navigation Menu.

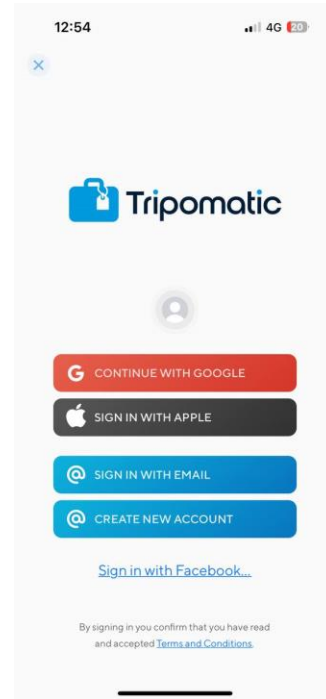


Figure 2.10: The login screen offering multiple sign-in options, including Google, Apple, Facebook, email, and account creation.

3. Destination Selection

Users search for their travel destination and start creating a trip upon clicking the plan new trip.

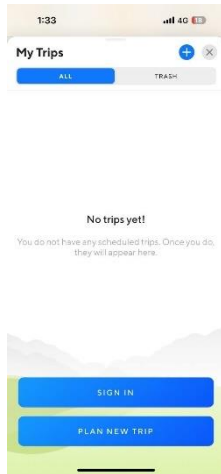


Figure 2.11: View and manage your trips effortlessly.



Figure 2.12: Search for your next travel destination.

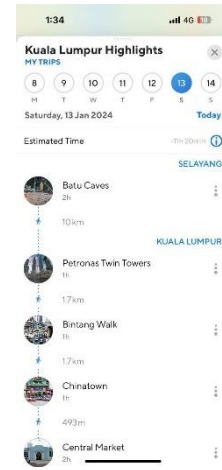


Figure 2.13: Kuala Lumpur trip highlights with estimated times

4. Add Activities and Accommodation

Users can add attractions, tours, and accommodations to their trip based on the template given.

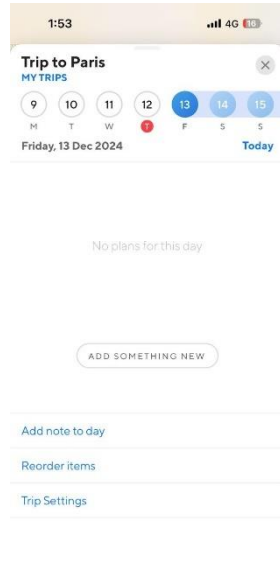


Figure 2.14: Choose Template

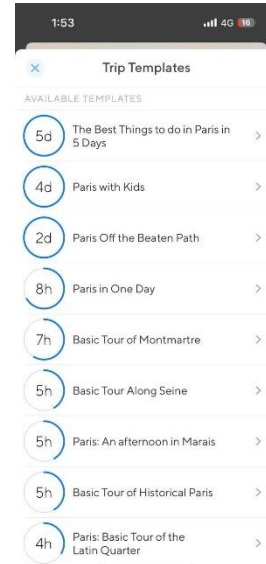


Figure 2.15: Adding Trip

5. Customize Itinerary

Users can rearrange the order of activities, adjust timings, and add custom events or notes to the itinerary.

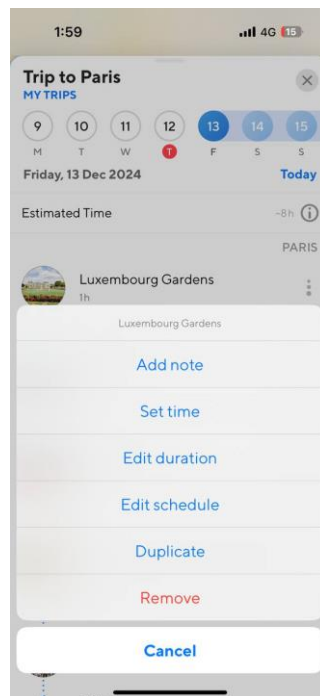


Figure 2.16: Options to edit

6. Offline Access (Premium)

Premium users can download offline maps and access their itineraries without an internet connection.

7. Sharing and Collaboration

Users can share their itineraries with friends or collaborators using a shareable link or export the plan as a PDF.

8. Strengths and Limitations

Strengths:

- Comprehensive database of attractions and activities.
- Offline maps and navigation for international travellers.

- Detailed travel guides for thousands of cities.
- Integration with booking platforms for activities and accommodations.
- Unique 360° video previews for destinations.

Limitations:

- Limited collaboration features compared to platforms like TripIt.
- No real-time updates on travel disruptions or delays.
- Lacks explicit promotion of sustainable travel or support for local businesses.

Summary and Implications for Tripomatic

Tripomatic simplifies travel planning with its detailed itineraries, offline capabilities, and extensive place database. Its ability to integrate accommodations, attractions, and tours into a single platform provides a streamlined experience for users. However, its limitations in collaboration and real-time updates leave room for improvement.

For TriPocket, features such as collaborative itinerary planning, sustainable travel options, and support for local businesses could provide a competitive edge. By addressing these gaps, TriPocket could offer a more versatile and inclusive platform for modern travellers.

2.2.3 TripIt

TripIt is a travel organization platform that simplifies trip management by consolidating travel details into a single itinerary. It is designed for travellers who want an efficient way to manage their trips without manually tracking multiple booking confirmations. The following sections detail its features and functionality.

1. User Onboarding Process

TripIt offers a straightforward registration process, with options to sign up via email or connect using third-party platforms such as Google. Upon logging in, users are greeted with an intuitive dashboard that guides them through the setup process.

2. Core Features

a) Automatic Itinerary Creation

The platform's standout feature is its ability to compile travel details automatically. Users forward their booking confirmations (e.g., flights, hotels, car rentals, and activities) to a designated email address (plans@tripit.com). The system parses the information and organizes it into a comprehensive itinerary with all details, including timings, locations, and reservation numbers.

b) Unified Travel Dashboard

The dashboard serves as a central hub, displaying all upcoming and past trips. It categorizes details by trip, allowing users to access information for specific journeys easily.

c) Calendar Integration

TripIt syncs with popular calendar apps like Google Calendar and Outlook. Once integrated, all travel plans automatically appear as events, helping users stay on top of their schedules.

d) Real-Time Updates (Premium Feature)

For users subscribed to TripIt Pro, the platform provides real-time updates on flight changes, delays, gate information, and cancellation alerts. This feature ensures travellers are informed and can adjust plans as necessary.

e) Sharing and Collaboration

TripIt supports collaborative planning, enabling users to share itineraries with others via email or link. This is especially useful for group travel, allowing all participants to stay informed.

f) Offline Access

All itineraries are accessible offline, ensuring that users can view their travel details without an internet connection, a crucial feature for international travellers.

g) TripIt for Teams

For corporate users, TripIt provides team-specific features where managers can track employees' travel schedules, enhancing travel coordination within organizations.

3. Step-by-Step Workflow

1. Log In:

Users log into the app or website using their credentials or through third-party platforms.

2. Forwarding Booking Emails:

Users forward confirmation emails to TripIt's designated email address. Alternatively, TripIt can scan a connected email account (with user permission) to fetch travel-related emails automatically.

3. Itinerary Compilation:

Once the system processes the bookings, users can view their trip details in a neatly organized timeline. This includes flight times, hotel check-in and check-out details, and activity schedules.

4. Customization:

Users can manually edit or add additional details to their itinerary, such as notes, custom events, or reservations that were not automatically captured.

5. Sharing and Alerts:

Users can share their itineraries with trip companions or receive alerts for changes, depending on their subscription level.

4. Strengths and Limitations

Strengths:

- Seamless organization of travel plans.
- Calendar synchronization for better time management.
- Offline access for international travellers.
- Proactive alerts and notifications for premium users.

Limitations:

- Lack of discovery features for attractions or activities.
- Minimal personalization for creating itineraries beyond reservations.
- Limited support for promoting local businesses or sustainable travel options.

TripIt is a travel organization platform that consolidates booking confirmations into unified itineraries, offering features like automatic itinerary creation, calendar integration, offline access, and sharing options. The platform simplifies trip management with a user-friendly interface and supports collaboration for group travel. While it excels in organization and logistical convenience, it lacks tools for discovering attractions, personalised itinerary planning, and sustainable travel promotion. These limitations highlight opportunities for TriPocket to innovate by providing a more comprehensive and adaptable travel planning solution.

2.3 Features Comparison with the Existing Systems

The features comparison between the chosen existing systems and the proposed system is a method that needs to be conducted for this chapter to analyse the strengths and weaknesses of existing systems relative to the proposed system. This analysis helps identify areas of improvement in current solutions, ensuring the proposed system addresses unmet needs or improves upon limitations. By comparing features such as usability, functionality, scalability, and user experience, this method provides a clear framework to highlight the advantages of the proposed system over its competitors.

Table 2.1: Features comparison between the existing systems and proposed system

Feature	Holihopper	Tripomatic Travel	TripIt	TriPocket (Proposed)
Pre-designed itineraries	Yes, based on themes (adventure, culture, etc.)	No, manual creation required	No, consolidates bookings into an itinerary	Yes, with AI-generated personalised options
Customization of itineraries	Limited, primarily theme-based plans	High, users can manually customize itineraries	Limited, users can add or edit details	High, AI-based suggestions and dynamic changes
Offline access	No	Yes, offline maps and itineraries	Yes, offline access to itineraries	Yes, offline access to itineraries and maps
Activity/attraction discovery	No, focuses on pre-designed itineraries	Yes, includes attractions and landmarks	No, focuses on bookings and logistics	Yes, recommends activities based on preferences
Interactive Maps Integration	Yes	Yes	Yes	Yes

Sustainability options	No	No	No	Yes, promotes eco-friendly travel options
Local business integration	No	No	No	Yes, supports local businesses and experiences
AI-powered personalization	No	No	No	Yes, uses AI to suggest tailored itineraries
Ease of use	Easy to use for groups but limited flexibility	Requires manual planning but offers flexibility	Very easy to use for organizing travel details	Intuitive interface with AI-based recommendations, Mobile friendly (interface)

The comparison table highlights the key features of Holihopper, Tripomatic Travel, TripIt, and TriPocket (proposed system). Holihopper offers pre-designed itineraries based on specific travel themes and supports collaborative trip planning, but it has limited customization options, lacks real-time updates, and does not emphasize sustainability or activity discovery. Tripomatic travel provides highly customizable itineraries, offline maps, and a vast destination database, making it ideal for detailed planning, but it requires significant manual input and does not offer real-time updates or integrate local businesses or sustainable options. TripIt excels at organizing travel logistics by automatically consolidating bookings and providing real-time flight updates (premium), but it focuses primarily on bookings and lacks personalised suggestions, activity discovery, and sustainability features. In contrast, TriPocket offers AI-driven personalised itineraries, real-time updates, local business integration, and promotes eco-friendly travel options, making it a more dynamic, flexible, and sustainable travel planning tool compared to the other systems. TriPocket addresses the limitations of the existing platforms by providing a comprehensive, user-centric solution that combines personalization, sustainability, and collaboration.

2.4 Review Of Tools and Technology

A review of tools and technology is a crucial part of developing one system. It examines the core functionalities, usability, effectiveness, and relevance to user needs.

1. Web Development Frameworks

- **Frontend Frameworks:**

- React.js, Angular, and Vue.js for building dynamic and responsive user interfaces.

- **Backend Frameworks:**

- Node.js and Django for handling server-side operations and API integration.

2. Database Management Systems (DBMS)

- **Relational Databases:** MySQL and PostgreSQL for managing structured data.
- **NoSQL Databases:** MongoDB for handling flexible and unstructured data like user preferences and itineraries.

3. Mapping and Location APIs

- **Google Maps API:** Provides mapping, navigation, and geolocation features.
- **Alternatives:** Mapbox and OpenStreetMap for customizable mapping solutions.

4. User Interface Design Tools

- **Figma, Adobe XD, and Sketch** for wireframing and prototyping intuitive user interfaces.

5. Cloud Computing Services

- **AWS, Microsoft Azure, and Google Cloud Platform** for scalable hosting, storage, and database management.

6. Content Management Systems (CMS)

- WordPress or custom-built CMS for managing and updating travel content efficiently.

7. Emerging Technologies in Travel Applications

- AI Tools: OpenAI APIs and TensorFlow for:
 - Personalised itinerary generation.
 - Smart travel recommendations.
 - Route optimization.
- Consideration: Ensure user data privacy and ethical AI use.

2.5 Summary

Chapter 2 reviews existing travel platforms and relevant technologies for developing TriPocket, a Malaysia travel itinerary generator. It highlights features like itinerary sharing from platforms like HoliHopper and identifies gaps such as limited local business promotion and eco-friendly options.

Key tools discussed include web frameworks (React.js, Node.js), databases (PostgreSQL MongoDB), APIs (Deepseek, Skyscanner, Booking.com), and cloud services for hosting. AI is also considered for personalizing itineraries and enhancing user experience.

The chapter provides a strong foundation for building a user-friendly, sustainable, and locally focused travel platform.

CHAPTER 3 : REQUIREMENTS ANALYSIS AND DESIGN

3.1 Introduction

This particular chapter will further explain the methodology that was chosen to execute this project which is the prototyping methodology. Integrating the fast-paced and straightforward method into the development process is the main focus of prototyping.

3.2 Prototyping Methodology

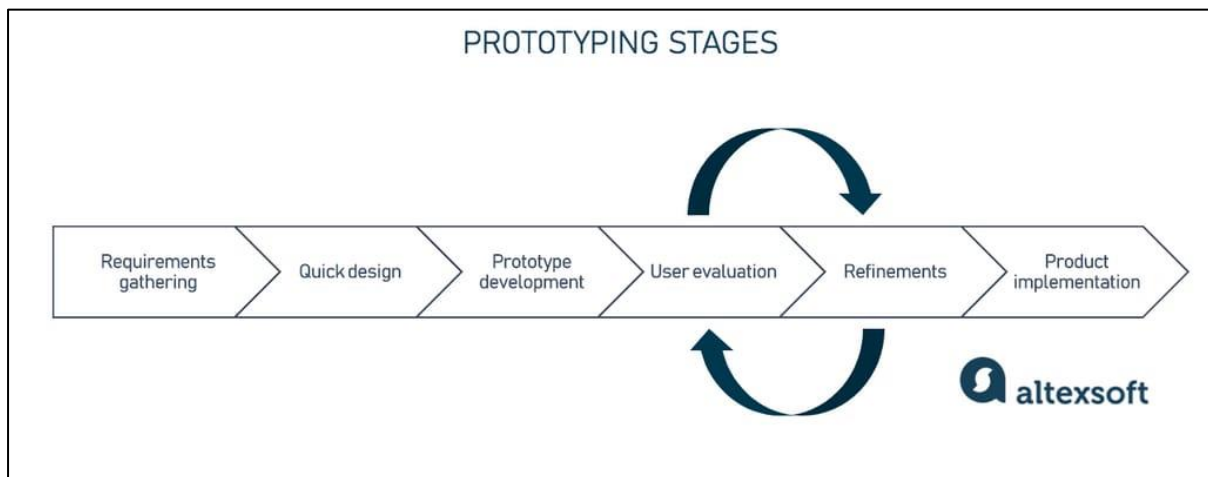


Figure 3.1: Prototyping Stages Diagram

Prototyping methodology has emerged as an effective approach in product development due to its ability to facilitate iterative design, enhance communication among stakeholders, and improve the overall quality of the final product. The iterative nature of prototyping allows designers to explore multiple design concepts and refine them based on user feedback, which is critical in addressing complex design challenges. For instance, Hansen and Deininger highlight how novice designers utilized partitioning strategies to navigate the prototyping process effectively, suggesting that structured approaches can enhance learning and adaptation during design iterations (Hansen & Deininger, 2021). The development of TriPocket can be effectively structured using a prototyping methodology that encompasses several distinct phases. These phases are crucial for ensuring that the final product meets user needs and

functions effectively within the context of travel planning. The following outlines the key phases involved in the prototyping process for TriPocket:

1. Problem Definition and Requirements Gathering

This initial phase focuses on understanding the problem space and identifying user requirements. It involves gathering data through user interviews, surveys, and market analysis to define the specific needs and expectations of users for a travel itinerary generator. According to Adli et al., this phase is essential for establishing clear project goals and ensuring that the design process is grounded in user needs (Adli et al., 2021). The insights gained during this phase will serve as the foundation for all subsequent design decisions.

2. Conceptual Design and Low-Fidelity Prototyping

In this phase, designers create initial low-fidelity prototypes, such as sketches, wireframes, or paper models, to explore various design concepts and functionalities. These prototypes are quick to produce and allow for early user feedback, which is critical for identifying potential issues and refining ideas. This phase is essential for organizing design decisions and fostering creativity while minimizing resource investment (Camere & Bordegoni, 2016). The iterative nature of this phase ensures that the design evolves in alignment with user needs.

3. High-Fidelity Prototyping and Iterative Refinement

Once the low-fidelity prototypes have been validated, designers move on to creating high-fidelity prototypes that more closely resemble the final product. These prototypes incorporate detailed design elements, interactions, and functionalities, allowing for more rigorous testing and evaluation. The use of agile methodologies can facilitate rapid development and testing of these prototypes, ensuring that user feedback is continuously integrated into the design (Nambisan et al., 2022). This phase is critical for refining the user experience and addressing any usability issues.

4. User Testing and Evaluation

After developing high-fidelity prototypes, the next phase involves extensive user testing to validate the design. This includes usability testing with real users, gathering feedback through surveys, interviews, and observational studies, and making necessary adjustments based on the findings. Emphasize the importance of user-centered design principles in this phase, highlighting the need for iterative testing and refinement to ensure the product meets user

expectations (Colquhoun et al., 2017). This phase ensures that the final product is both functional and user-friendly.

5. Final Design and Implementation

Once the prototypes have been thoroughly tested and refined, the final design of TriPocket is developed. This phase involves integrating all the feedback and improvements identified during the testing phase into a cohesive final product. The final design is then prepared for deployment, ensuring that it meets all user requirements and is ready for real-world use. This phase is crucial for delivering a polished and effective product that aligns with user needs and market demands.

6. Post-Launch Evaluation and Iteration

Even after deployment, the prototyping methodology emphasizes the importance of continuous improvement. This phase involves monitoring the product's performance in the real world, gathering user feedback, and making iterative updates to address any emerging issues or new requirements. This ensures that TriPocket remains relevant and effective over time.

In conclusion, the prototyping methodology for TriPocket follows a structured and iterative approach, beginning with problem definition and requirements gathering, progressing through conceptual and high-fidelity prototyping, and culminating in user testing, final design, and post-launch evaluation. This methodology not only enhances the quality of the final product but also ensures that it is aligned with user expectations and market demands, ultimately leading to a successful and user-centered travel planning tool.

3.3 Requirement Analysis

The requirements gathered from the questionnaire will be utilized to its fullest. The UML diagram produced such as the use case diagram, activity diagram, sequence diagram, and class diagram, was produced to ensure a better understanding and will organize the requirements better.

3.3.1 Requirement Elicitation from Questionnaire

A questionnaire by Google form is distributed to complete the requirement elicitation process. 31 total respondents completed the distributed survey. The questionnaire consists of five sections: The first section is to gather the basic information, the second section is for the travel preferences, the third section is for the features feedback, the fourth section is for the challenges with existing applications and the last one is for general feedback.

3.3.1.1 Section 1: Demographic Basic Information

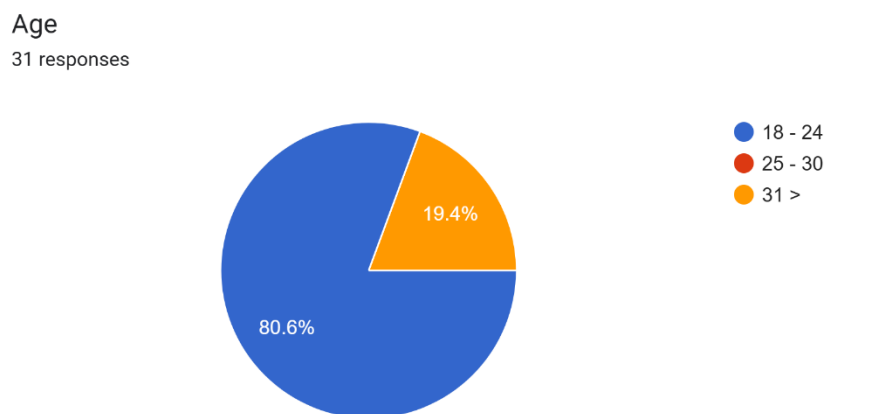


Figure 3.2: Age Group

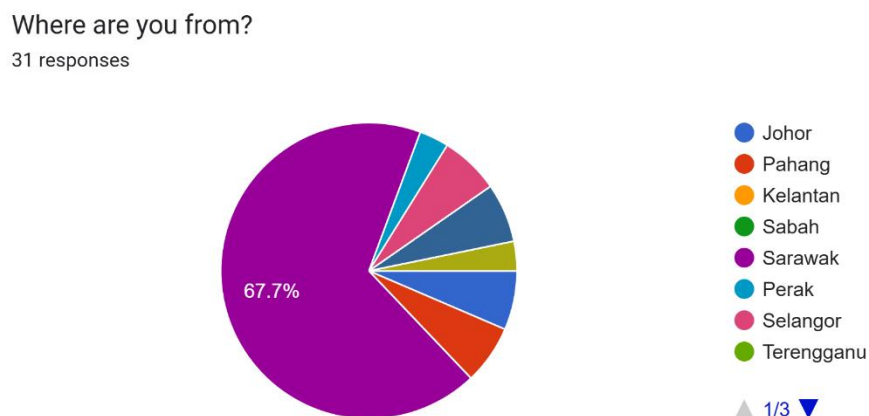


Figure 3.3: Users Origin

The demographic basic information section gathers basic information from respondents. Figure 1 shows that 19.4% of the 31 respondents are aged 31 and above and the

rest are in the range of 18-25. Whereas for Figure 2, the percentage of respondents from Sarawak is 67.7%, Pahang, Johor, Selangor, and Kedah are 6.5%, and 3.2% from Negeri Sembilan and Perak.

3.3.1.2 Section 2: Travel Preferences

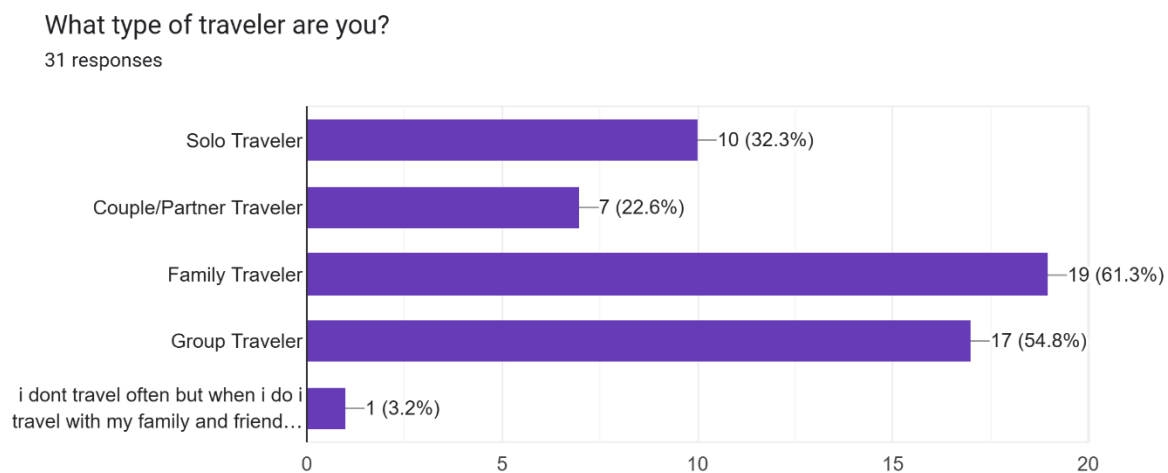


Figure 3.4: Types of travellers

The figure above shows the horizontal bar graph that represents the type of traveller based on the responses. Among the respondents, 32.3% identified as solo travellers, 22.6% as couple/partner travellers, 61.3% as family travellers, and 54.8% as group travellers. Additionally, 3.2% mentioned that they do not travel often but prefer traveling with family and friends when they do.

The data depicted from the graph shows that most respondents prefer to travel with family and friends. This information is useful to adjust travel services and recommendation accordingly.

How often do you travel? (Domestically or Internationally)

31 responses

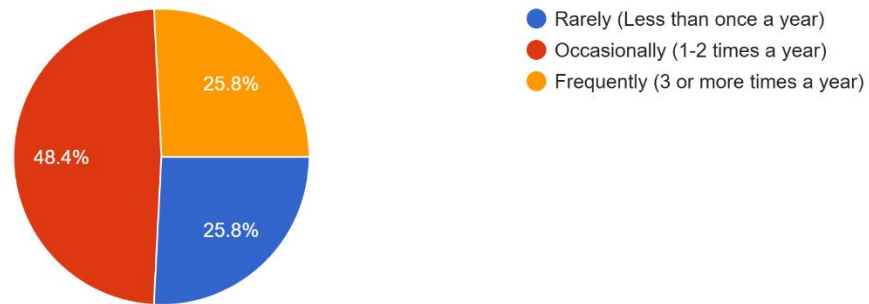


Figure 3.5: How often do you travel?

The pie chart in the figure above represents the respondent's frequency of traveling both domestically and internationally. The data shows that 48.4% of respondents travel occasionally, which is one or two times a year. Additionally, 25.8% of respondents travel often, which is more than three times per year, and 25.8% travel rarely, which is less than once a year.

From the data obtained, it can be concluded that most respondents travel occasionally. This intel can benefit TriPocket to offer the best for travellers.

What is the main purpose of your trip?

31 responses

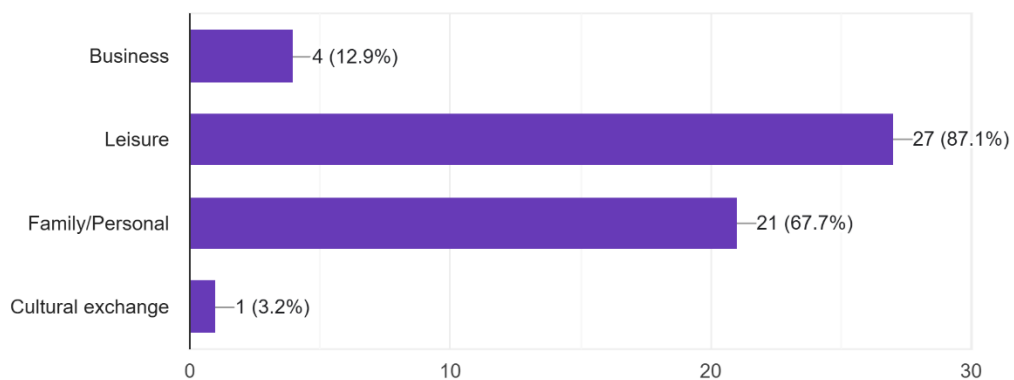


Figure 3.6: Trip Purpose

The chart presents the primary purposes of travel as reported by 31 participants. The majority (87.1%, or 27 respondents) travel for leisure, followed by family or personal reasons (67.7%, or 21 respondents). A smaller portion travels for business (12.9%, or 4 respondents), while cultural exchange is the least common reason, with only 3.2% (1 respondent).

These insights can significantly benefit TriPocket by allowing the platform to prioritize a tailored features to leisure and family-oriented travellers, such as personalised itineraries, recommendations for family-friendly or relaxation-focused destinations, and curated activity suggestions. Additionally, understanding the smaller segments (business and cultural exchange) allows TriPocket to integrate features like business trip planners or cultural experience packages, ensuring a comprehensive platform that appeals to diverse travel purposes.

What kind of destinations do you prefer?

31 responses

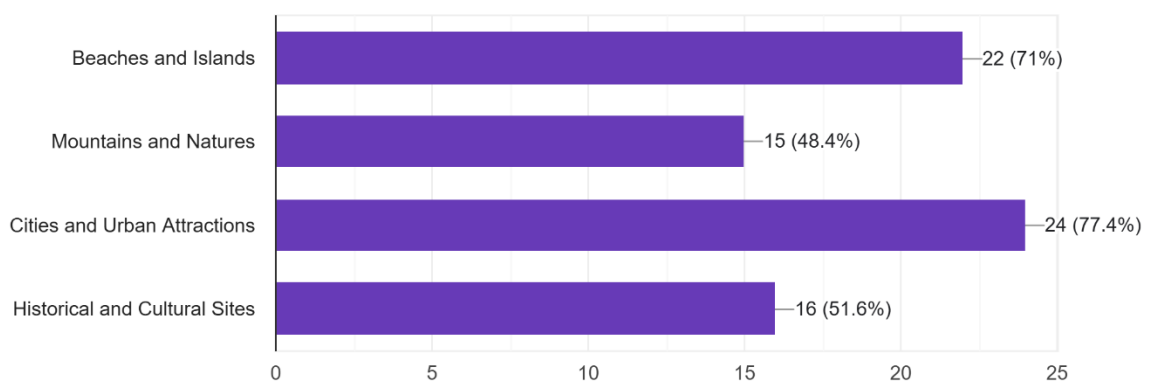


Figure 3.7: Preferred Destination

The graph from the figure above portrays the preferred destination by all 31 respondents, with the majority chooses cities and urban attractions (77.4%), followed by beaches and islands (71%). Historical and cultural sites were chosen by 51.6% of respondents, while mountains and nature were preferred by 48.4%. These results highlight the diverse travel preferences of the participants, with urban and coastal destinations being the most popular.

These insights can benefit TriPocket by allowing the platform to focus on curating itineraries and travel guides that cater to the most popular destination types. For instance, TriPocket can prioritize the detailed recommendations for urban attractions like Kuala Lumpur

and George Town, as well as coastal getaways such as Langkawi and the Perhentian Islands. Additionally, the platform can develop personalised experiences for niche audiences interested in historical and cultural sites or mountain and nature destinations, ensuring inclusivity and broader appeal. This data-driven approach enables TriPocket to optimize its services and enhance user satisfaction by aligning offerings with traveller preferences.

How do you usually plan your travel itineraries?

31 responses

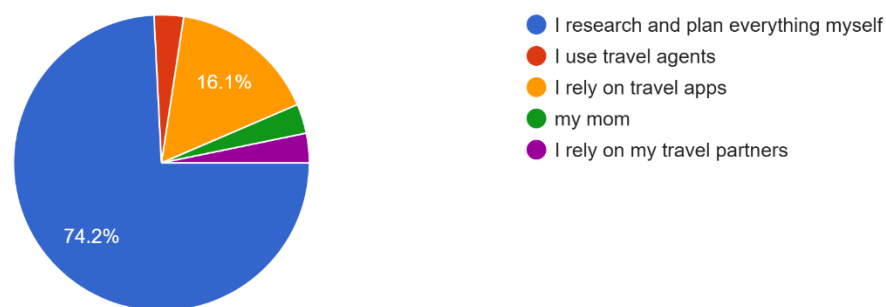


Figure 3.8: Distribution of respondents' usual methods for planning travel itineraries (n=31)

The data obtained from the pie chart in the figure 7 represents the distribution of respondents' usual methods for planning travel itineraries. The majority of the respondents based on the chart do research and planning themselves, which is 74.2%, 16.1% rely on the travel apps, 3.2% rely on travel agents, another 3.2% rely on their travel partners, and the last 3.2% rely on their mother.

This information is useful for the development of the TriPocket as they highlight the need for a user-friendly tool that caters to independent travellers who prefer to research and plan their itineraries on their own. The high percentage of old school planners suggests that the platform should provide comprehensive resources, such as detailed destination information, customizable itinerary templates, and efficient trip planning features.

3.3.1.3 Section 3: Features Feedback

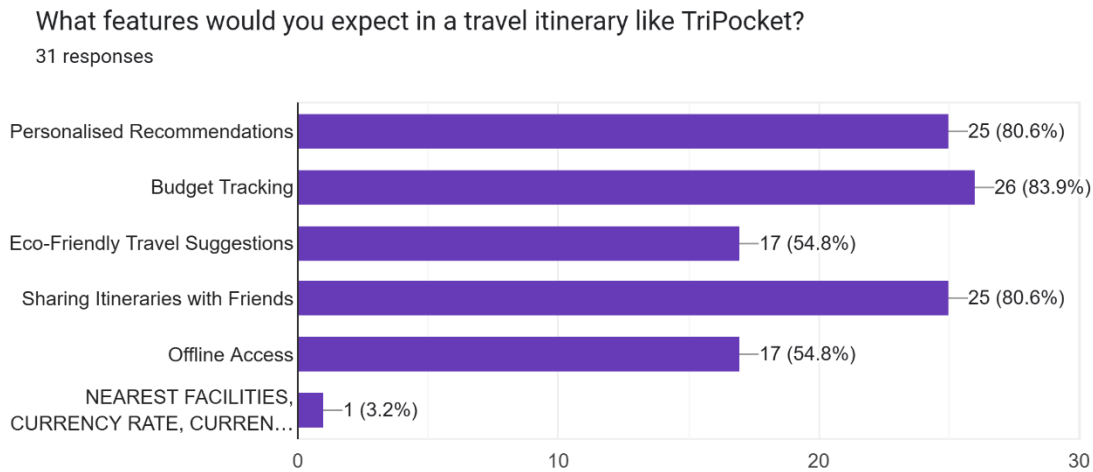


Figure 3.9: Expected Features

The bar chart highlights the features users expect in a travel itinerary platform like TriPocket, based on feedback from 31 respondents. The most desired feature is budget tracking (83.9%, or 26 respondents), followed closely by personalised recommendations (80.6%, or 25 respondents) and the ability to share itineraries with friends (80.6%, or 25 respondents). Offline access and eco-friendly travel suggestions are also valued, with 54.8% (17 respondents) selecting each. Lastly, facilities like nearest amenities, currency rates, and current weather updates were mentioned by one respondent (3.2%).

These findings can directly shape the development of TriPocket by prioritizing the integration of the top-requested features like budget tracking and personalised recommendations, ensuring a user-centric platform. Sharing itineraries aligns with fostering collaboration among travellers, while offline access improves usability in areas with limited internet connectivity. Incorporating eco-friendly travel options also positions TriPocket as a sustainable and forward-thinking tool, appealing to environmentally conscious users.

Would you use a feature to book local activities or services directly through the platform?
31 responses

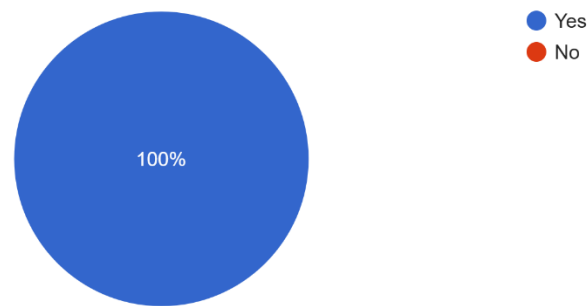


Figure 3.10: Book Local Activities feature

The pie chart from the figure represents that all 31 respondents would use a feature that allows them to book local activities or services directly through the platform.

3.3.1.4 Section 4: Challenges with Existing Applications

What issues you have faced with current travel apps?
31 responses

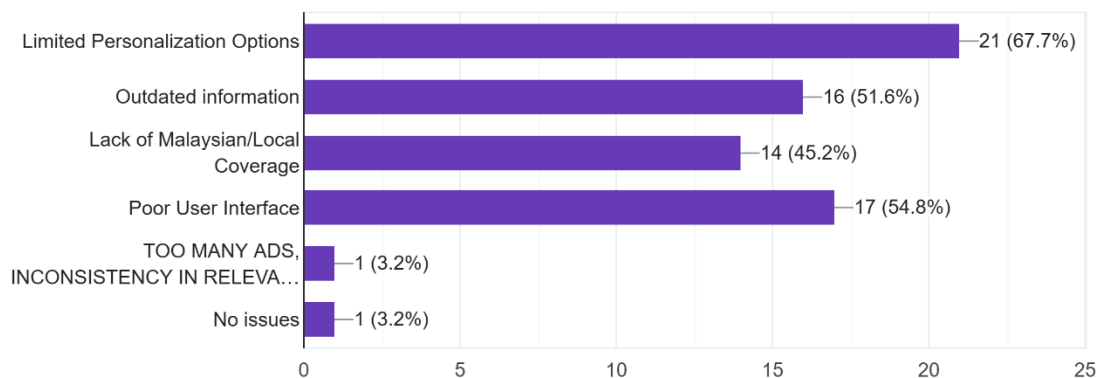


Figure 3.11: Issues Faced

The chart displays common issues faced by users when using current travel applications, based on responses from 31 participants. The most significant challenge is limited personalization options, reported by 67.7% (21 respondents). Other notable issues include outdated information (51.6%, or 16 respondents), poor user interface (54.8%, or 17 respondents), and lack of Malaysian/local coverage (45.2%, or 14 respondents). Minor concerns include too many ads/inconsistent relevance and no issues at 3.2% each (1 respondent).

These findings will widen the opportunity for TriPocket to address key gaps in existing platforms. By focusing on robust personalization features, ensuring up-to-date and accurate information, improving user interface design, and prioritizing comprehensive Malaysian/local travel coverage, TriPocket can position itself as a superior and user-friendly solution in the travel planning market.

3.3.1.5 Section 5: General Feedback

This section will show the general feedback from the respondent. The feedback from the respondents provides a useful information on how to develop TriPocket based on the needs of the future user.

Table 3.1: Summary of Respondents Feedback

Category	Feature
Weather Integration	Weather-based recommendations and current weather conditions to adapt travel plans.
Navigation & Location	Precise current location, navigation, nearby interesting places, and local destination info.
Personalization	Favourite places feature and saving itineraries.
Religious Needs	Local prayer times, qibla directions, nearest religious institutions, and halal restaurants.
Interactive Tools	Chatbot for travel queries and suggestions.
Convenience	Hotel booking, travel agent availability, and user-friendly interface.
Eco-Friendliness	Steps tracker and expenditure tracking/sharing features (like Splitwise).
Accessibility	Night mode for better usability in low-light conditions.

Based on Table 3.1 above, respondents expressed diverse opinions about the existing features and potential additions to the platform. Some emphasized the importance of integrating weather-based recommendations to adapt travel itineraries dynamically. Others suggested

including precise location tracking and nearby points of interest to provide users with relevant, location-specific information during their trips.

The importance of personalization was also evident in the feedback, with several respondents advocating for features that allow users to save their favourite places or itineraries for future reference. Religious considerations were another recurring theme, with suggestions to include local prayer times, qibla direction, and nearby halal dining options to cater to a broader audience.

Interactive tools, such as chatbots, were proposed to enhance user engagement and provide immediate assistance with travel queries. Many respondents also underscored the need for a user-friendly interface, night mode for better accessibility, and the inclusion of additional convenience features, such as hotel booking and expense-sharing tools.

The feedback collectively emphasizes a desire for a comprehensive, adaptable, and user-focused platform that not only facilitates travel planning but also enhances the overall travel experience.

3.4 Software Requirements

The software requirements for the Malaysia travel itinerary generator system, TriPocket, are divided into two categories, functional requirements and non-functional requirements. These requirements ensure that the system meets user expectations and provides an efficient user experience.

3.4.1 Functional Requirements

Functional requirements define the specific features and functionalities of the system. They include:

1. **User Registration and Authentication**

- Users must be able to register for an account using an email address and password.
- The system should provide options for third-party authentication (e.g., Google, Facebook).
- Authentication must be secure and support password recovery features.

2. Itinerary Generation

- Users must be able to input trip details such as destination, dates, budget, and preferences (e.g., eco-friendly travel, family-friendly activities).
- The system must generate a personalised itinerary based on user inputs.
- Users should be able to customize the generated itinerary by adding, removing, or editing activities.

3. Location and Activity Suggestions

- The system must recommend locations, activities, and accommodations based on user preferences and available data.
- Suggestions must include ratings, reviews, and estimated costs when available.

4. Sharing and Collaboration

- Users must be able to share their itineraries with trip friends through unique shareable links or direct invitations.
- Collaborators should have the ability to suggest edits to the itinerary.

5. Integration with Maps

- The system should integrate with mapping services (e.g., Google Maps) to provide directions for each activity in the itinerary.
- Users must be able to view the itinerary on a map interface.

6. Search and Filter

- Users must be able to search for activities, accommodations, and locations using keywords.
- Filters must allow users to narrow search results by category, price range, or proximity.

7. Feedback and Support

- The system must allow users to provide feedback on their experience and report issues.
- A help section or chatbot should be included for user assistance.

3.4.2 Non-Functional Requirements

Non-functional requirements define the quality attributes and constraints of the system. They include:

Table 3.2: Non-Functional Requirements Table

Non-Functional Requirements	Description
Performance	• The system must handle at least 100 concurrent users • Itinerary generation should not take more than 30 seconds under normal conditions.
Scalability	• The system must be scalable to support a growing number of users and data entries over time.
Usability	• The user interface must be intuitive and accessible to users of varying technical proficiency. • The system should follow responsive design principles to support mobile and desktop devices.
Security	• User data must be securely stored and encrypted. • The system must comply with relevant data protection regulations, such as GDPR.
Maintainability	• The system should be modular and designed for easy updates and maintenance. • Documentation must be provided for developers and administrators.
Availability & Reliability	• The system must have a minimum uptime of 99.5%. • Automated backups should occur daily to prevent data loss.

Compatibility	The system must be compatible with major web browsers (e.g., Chrome, Firefox, Safari) and operating systems.
---------------	--

3.4.3 Software Dependencies

The following software dependencies are required for the development and operation of the system:

1. **Operating System:** Linux (Ubuntu 20.04 or later) for the server environment.
2. **Development Software:** Visual Studio Code (IDE) for code development, Docker for containerization.
3. **Scripting Language:** Python (for backend development) and JavaScript (for frontend development).
4. **Database:** PostgreSQL for storing user data, itineraries, and other information.

These requirements form the foundation for the development of TriPocket and ensure that the system aligns with user needs and project objectives.

3.5 Hardware Requirements

The hardware requirements are a must-have to fully develop TriPocket effectively. The requirements include the specifications needed for the development of TriPocket.

Table 3.3: Hardware Requirements

Category	Component	Specification
1. Server Requirements	Processor	Minimum Quad-Core CPU (e.g., Intel Xeon E3 or equivalent)
	Memory	At least 16 GB RAM
	Storage	Minimum 500 GB SSD

	Network	High-speed internet with at least 1 Gbps bandwidth
2. Development Machines	Processor	Dual-Core CPU (e.g., Intel i5 or equivalent)
	Memory	8 GB RAM
	Storage	256 GB SSD
	Display	Full HD resolution monitor (1920x1080) or higher
3. Client Devices	Smartphones	Android 9.0 or iOS 13.0 and later versions
	Web Browsers	Support for modern browsers (Chrome, Firefox, Safari)

These hardware requirements ensure optimal performance, scalability, and usability of the TriPocket system.

3.6 Use Case Diagram

The figure below presents the use case diagram for the TriPocket system. Users can create account, select preferences, generate itineraries, view itineraries, edit itineraries, share itineraries, view maps, and rate/review locations. While for the actor admin they can manage use account and manage system data.

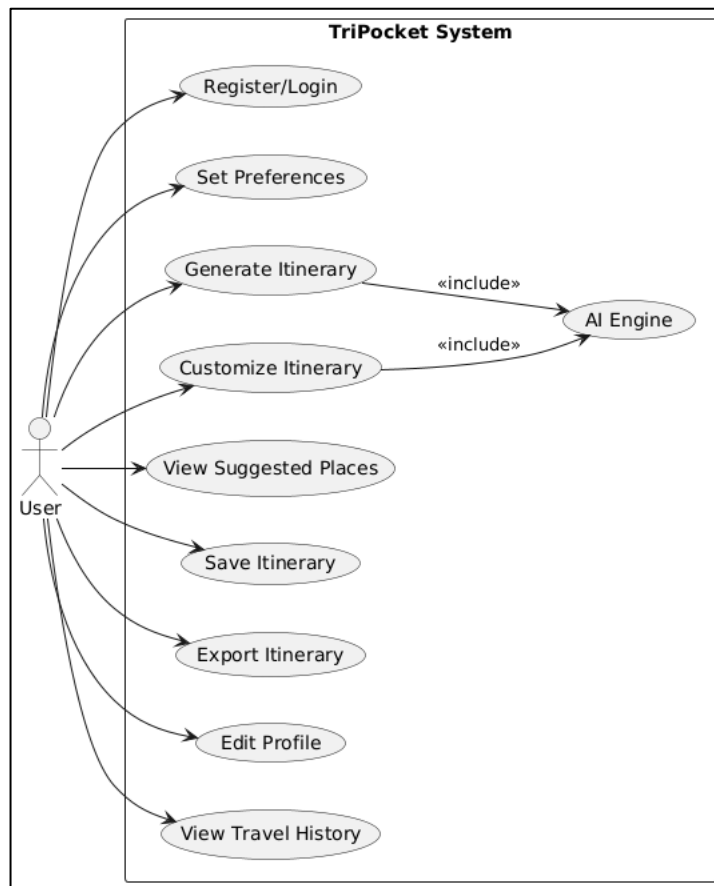


Figure 3.12: Use Case Diagram

3.6.1 Use Case: Register/Login

Table 3.4: Register/Login Use Case

Aspect	Details
Actor	User
Description	Users can register for a new account using their email address and password.
Purpose	To give users access to the system's features, store preferences, and manage itineraries.
Key Features	Input validation, secure password storage, and account creation confirmation (e.g., email verification).
Precondition	The user must have access to the registration page.
Main Flow	Access Registration Page: The user navigates to the registration page.

	2. Input Registration Details: User enters: - Email address. - Password (if using email-based registration). - Optional fields (e.g., name, phone number). 3. Input Validation: The system checks for: - Correct email format. - Password strength (e.g., minimum length, special characters). - Whether the email is already registered. 4. Account Creation: If validation succeeds, the system: - Encrypts and securely stores the password. - Saves the user profile in the database. 5. Completion: The system activates the user account and navigate to select preferences page.
Alternate Flows	1. Invalid Input: The system displays error messages if: - The email format is incorrect. - The password is weak. - Required fields are left empty. 2. Duplicate Email: If the email is already registered, the system prompts the user to log in or reset the password. 3. Email Verification Failure: If the user does not verify their email within a specific time, the account remains inactive until verification. 4. Social Media Authentication Failure: If the social media platform denies authentication, the system redirects the user to retry or choose another method.
Postcondition	The system securely stores the user details and confirms successful registration. If success: The user has an active account and can access the system's features.

	If failure: The system informs the user of errors and provides steps for resolution
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3.6.2 Use Case: Set Preferences

Table 3.5: Set Preferences Description

Aspect	Details
Actor	User
Description	Users define their travel preferences, including destinations, travel dates, budget, and types of activities.
Purpose	To personalize itinerary generation and ensure recommendations align with user interests.
Key Features	User-friendly input forms, options for selecting multiple preferences, and dynamic preference saving for later use.
Precondition	The user must be logged into their account.
Main Flow	1. Access preference interface: The user is navigated to the preferences on the homepage. 2. Select Travel Categories: The user selects preferred categories, such as: a. Interests: Nature, Culture, Shopping, Photography, History and Sports b. Budget range: Adjustable slider or predefined ranges. c. Travel mode: Public transport, self-drive, walking. 3. Set Additional Preferences: Optional settings include: a. Accommodation type (e.g., hotels, homestays). b. Dietary preferences (e.g., vegetarian, halal). c. Accessibility needs. 4. Review and Save Preferences: The user reviews their choices and clicks "Save Preferences." 5. System Confirmation: The system confirms that preferences have been saved. It dynamically updates future itinerary recommendations based on the saved preferences.
Alternate Flows	1. Incomplete Selection:

	If required fields are incomplete, the system prompts the user to complete the missing information before saving preferences. 2. Preference Reset: The user can reset preferences to the default state using a “Reset Preferences” option. 3. Technical Error: If preferences fail to save due to a system error, the user is notified with steps to retry or contact support.
Postcondition	The system saves the preferences for itinerary generation.

3.6.3 Use Case: Generate Itinerary

Table 3.6: Generate Itinerary Description

Aspect	Details
Actor	User
Description	The system generates a travel plan based on the user’s preferences, providing recommended destinations, schedules, and activities. The system uses AI and database queries to create the itinerary based on the provided information.
Purpose	To simplify travel planning and provide a structured itinerary tailored to user needs.
Key Features	AI-based suggestion engine, location database integration, and itinerary customization options.
Precondition	The user must have provided trip details and preferences.
Main Flow	Start Itinerary Generation The user navigates to the "Plan My Trip" section and selects the "Generate Itinerary" option. Input Trip Details The user provides: - Travel dates and duration. - Destination(s) within Malaysia. - Interests (e.g., adventure, culture, food). - Budget range. - Number of travellers and special needs (e.g., children, elderly). Process User Input

	The system validates the input for completeness and accuracy. Analyse Data The system uses AI to: - Match destinations, activities, and accommodations with user preferences. - Optimize travel routes to minimize time and cost. - Adjust recommendations based on weather, seasonal events, or real-time data. 4. Steps in Data Analysis: The system uses AI and database queries to: Preferences Matching: Attractions and activities are ranked based on their alignment with user-selected interests. Budget Filtering: Only options within the specified budget are included. Route Optimization: The system calculates the most efficient travel paths to minimize travel time and costs. Seasonal Adjustments: Recommendations are refined based on weather conditions or seasonal events. 5. Generate Draft Itinerary The system creates a preliminary daily schedule, including: - Suggested attractions and activities. - Travel and meal breaks. - Accommodation recommendations. 6. Display Draft to User The user views the draft itinerary, presented in an interactive interface. 7. User Customization The user can: - Add/remove or destinations. - Adjust the timing of activities. - Reorder or prioritize events. 8. Confirm Itinerary Once satisfied, the user confirms the itinerary. 9. Finalize Itinerary The system finalizes the schedule and provides: - Downloadable and shareable formats (e.g., PDF, link). - Navigation integration (e.g., Google Maps links). - Notifications or updates if changes occur (e.g., weather, closures).
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Postcondition	A suggested itinerary is displayed to the user.

3.6.4 Use Case: View Itinerary

Table 3.7: View Itinerary

Aspect	Details
Actor	User
Description	Users can view the generated or saved itineraries in detail, including activities, timings, and locations.
Purpose	To provide an easy-to-understand overview of the user's travel plans.
Key Features	Calendar view, expandable location details, and visual clarity for quick understanding.
Precondition	The user must have a generated or saved itinerary.
Main Flow	1. Access Itinerary The user logs in and navigates to the "My Trips" section. The user selects an itinerary to view. 2. Display Itinerary The system retrieves the selected itinerary and presents it in an organized format, including: a. Daily Schedule: Activities, timings, and locations. b. Transportation Details: Routes, modes, and estimated travel times. c. Accommodation Information: Check-in/out times, addresses, and contact details. d. Notes: User-added comments or reminders. 3. Interactive Features The user can: a. Expand or collapse day-specific details. b. View maps or directions for specific locations. c. Access links to activity websites or booking pages. 4. Export/Share Itinerary The user can: a. Download the itinerary as a PDF. b. Share it via a link or email with travel companions.

Alternate Flows	1. No Existing Itinerary: - If the user has no saved itineraries, the system displays a message: “No itineraries found. Start planning your trip now!” - Provides a direct link to the itinerary generation feature. 2. Update Required: - If the itinerary includes activities or locations with updated information (e.g., changes in availability), the system prompts the user to refresh the itinerary. 3. System Error: - If the system fails to load the itinerary, the user is notified and provided options to retry or contact support.
Postcondition	The itinerary details are presented clearly to the user.

3.6.5 Use Case: Customize Itinerary

Table 3.8: Customize Itinerary

Aspect	Details
Actor	User
Description	Enables users to modify their itinerary by adding or removing locations, updating activities, or changing schedules.
Purpose	To allow flexibility in travel planning and adapt plans to changing circumstances.
Key Features	Undo/redo options, and real-time updates to itinerary details.
Precondition	The user must have a generated or saved itinerary.
Main Flow	1. Access Itinerary - The user logs in and navigates to the "My Trips" section. - The user selects the itinerary they wish to edit. 2. Enter Edit Mode - The system displays the itinerary in an editable interface. - Editable elements are highlighted (e.g., activities, times, locations). 3. Modify Itinerary Details - The user can: - Add new activities, destinations, or accommodations. - Remove unwanted items.

	○ Reorder activities for a specific day. ○ Adjust the timing or duration of activities. 4. System Validation and Optimization • The system validates changes to ensure: ○ There are no time conflicts. ○ Travel routes remain logical and efficient. • The system recalculates and adjusts the schedule dynamically based on the edits. 5. Preview Updates • The user previews the revised itinerary, viewing the updated schedule and suggestions. 6. Save Changes • The user confirms the edits by clicking the "Save Itinerary" button. • The system saves the updated itinerary to the user's account.
Alternate Flows	1. Conflict Resolution: • If edits result in conflicts (e.g., overlapping times or excessive travel distances), the system notifies the user and suggests adjustments. 2. Undo/Redo Changes: • The user can undo or redo changes within the session before saving. 3. Abandon Edits: • If the user decides not to proceed with the changes, they can exit edit mode without saving or retaining the original itinerary. 4. Missing Data: • If the user adds incomplete information (e.g., an activity without a specified time), the system prompts them to fill in the missing details.
Postcondition	The updated itinerary is saved in the system.

3.6.6 Use Case: Share Itinerary

Table 3.9: Share Itinerary

Aspect	Details
Actor	User
Description	Allows users to share their itinerary with others via social media, email, or a downloadable format.
Purpose	To facilitate collaboration in group travel planning or sharing travel ideas with others.
Key Features	Shareable links, PDF export options, and compatibility with multiple platforms.
Precondition	The user must have a generated or saved itinerary.

Main Flow	1. Access Saved Itineraries: - The user logs into their account and navigates to the “My Trips” page. - The user selects the itinerary they want to share. 2. Initiate Sharing: - The user clicks the “Share Itinerary” button or similar option. - The system displays sharing methods, such as: - Generating a shareable link. - Sending via email. - Sharing through social media platforms 3. Configure Sharing Options: - The user selects the desired sharing method and configures settings, such as: Access Type: View-only or editable Recipients: Email addresses or social media account holders. 4. Send Itinerary: - The user confirms the sharing action. - The system sends the itinerary or generates a link and provides confirmation to the user. 5. Recipient Access: - Recipients access the shared itinerary via the chosen method.
Alternate Flows	1. Invalid Email or Contact Information: - If an email address or social media handle is invalid, the system notifies the user and allows corrections. 2. Sharing Permissions Conflict: - If the user tries to enable editing but lacks collaborative editing features, the system restricts the sharing to view-only mode and informs the user. 3. Sharing Cancellation: - If the user cancels the action before confirming, the itinerary remains unshared.
Postcondition	The system provides a link or sends invitations as requested.

3.6.7 Use Case: Edit Profile

Table 3.10: Edit Profile

Aspect	Details
Actor	User
Description	The system displays user’s profile when clicking the logo a dropdown profile display function.
Purpose	To provide a simple profile enhancement
Key Features	Edit profile picture, name, renew password, and set preferences.

Precondition	The user must be logged in to their registered account.
Main Flow	1. Access Edit Profile: • User clicks the logo → dropdown appears → selects "Edit Profile". • System loads current profile details. 2. Modify Profile Information: • User updates profile picture, name, password, or preferences. • System validates input (e.g., password strength). 3. Save Changes: • User clicks "Save". • System updates the database and shows confirmation.
Alternate Flows	1. Invalid Input: • If input is invalid (e.g., weak password), the system shows an error message. 2. Session Timeout: • If the session expired, the user is redirected to the login page. 3. Cancel Edit: • User exits the page without saving → changes are discarded.
Postcondition	The updated profile is saved in the system, and the new info is reflected in the user interface.

3.7 Sequence Diagram

The sequence diagram is presented in each of the figures shown below, providing a detailed visual representation of the interactions between components within the system.

3.7.1 User

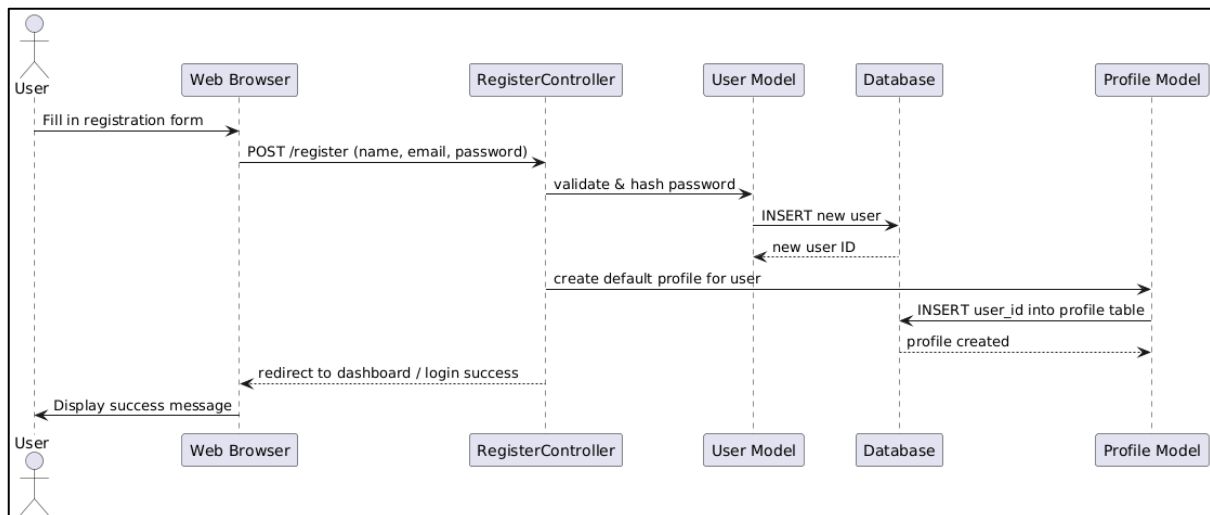


Figure 3.13: Sequence Diagram for User Registration

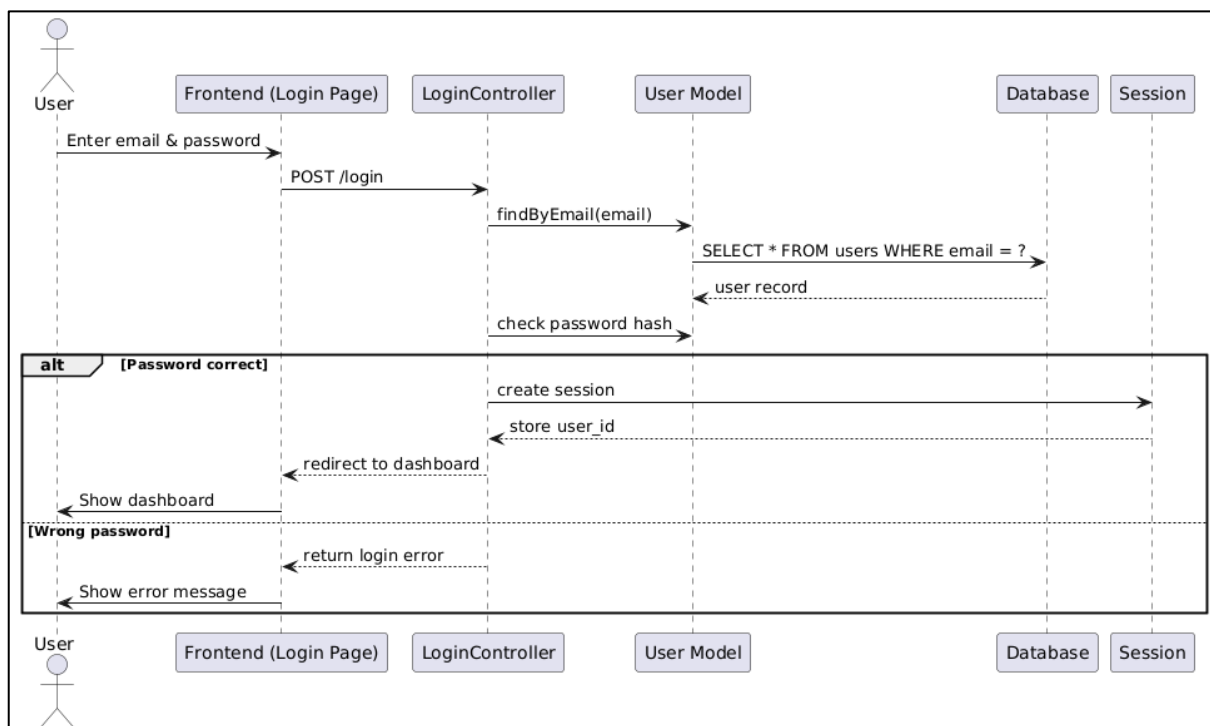


Figure 3.14: User Login Sequence Diagram

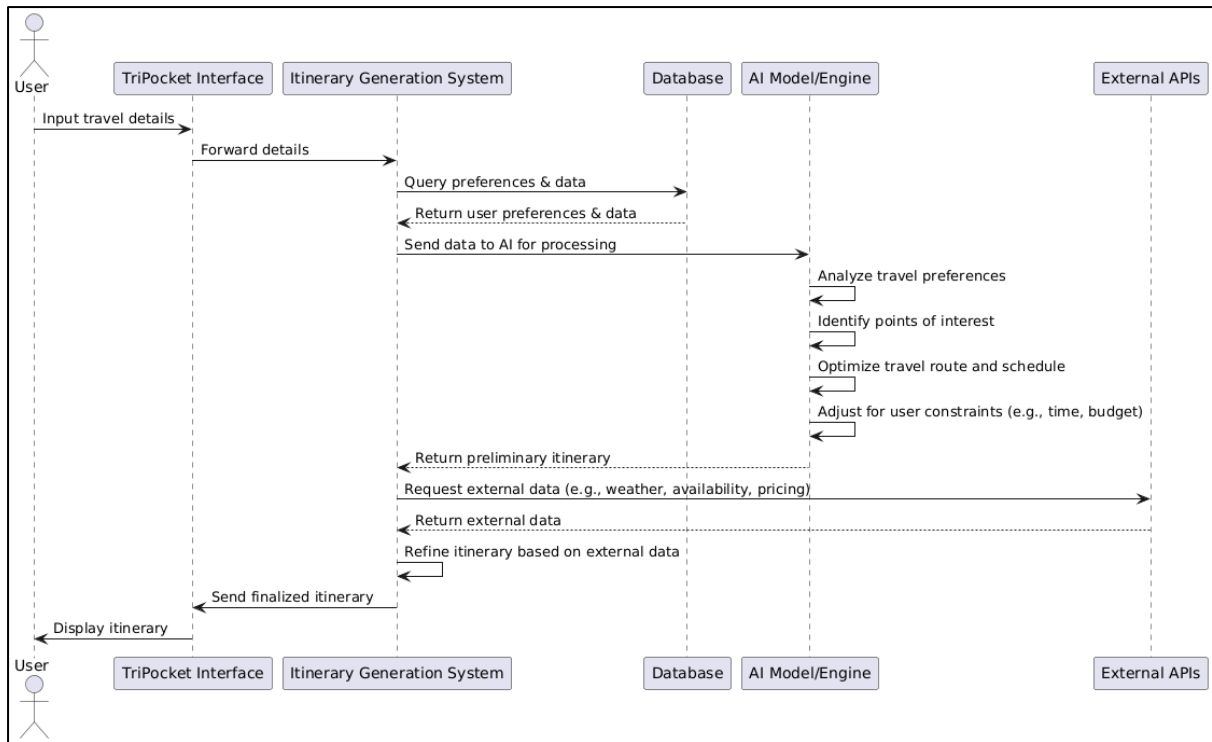


Figure 3.15: Sequence Diagram for Select Preferences, Generate and View Itinerary

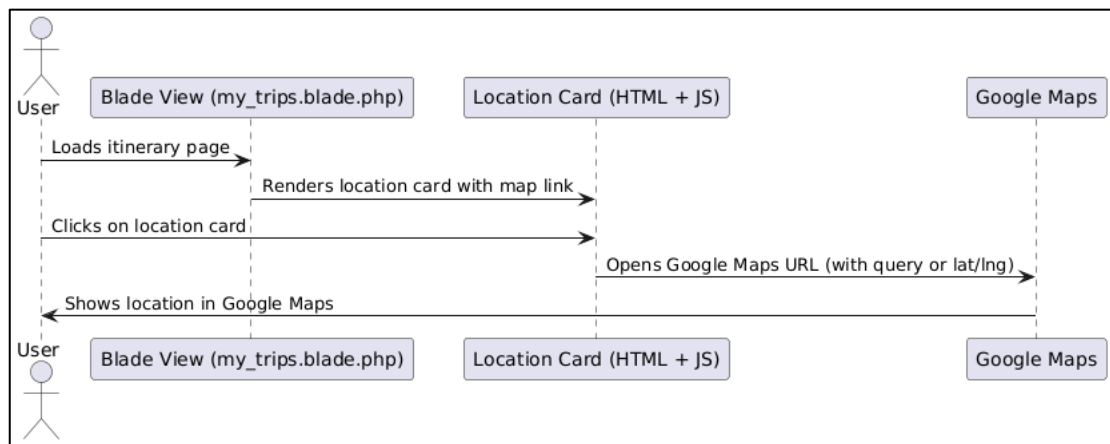


Figure 3.16: Sequence Diagram for Google Maps Dynamic Link to Activity Cards

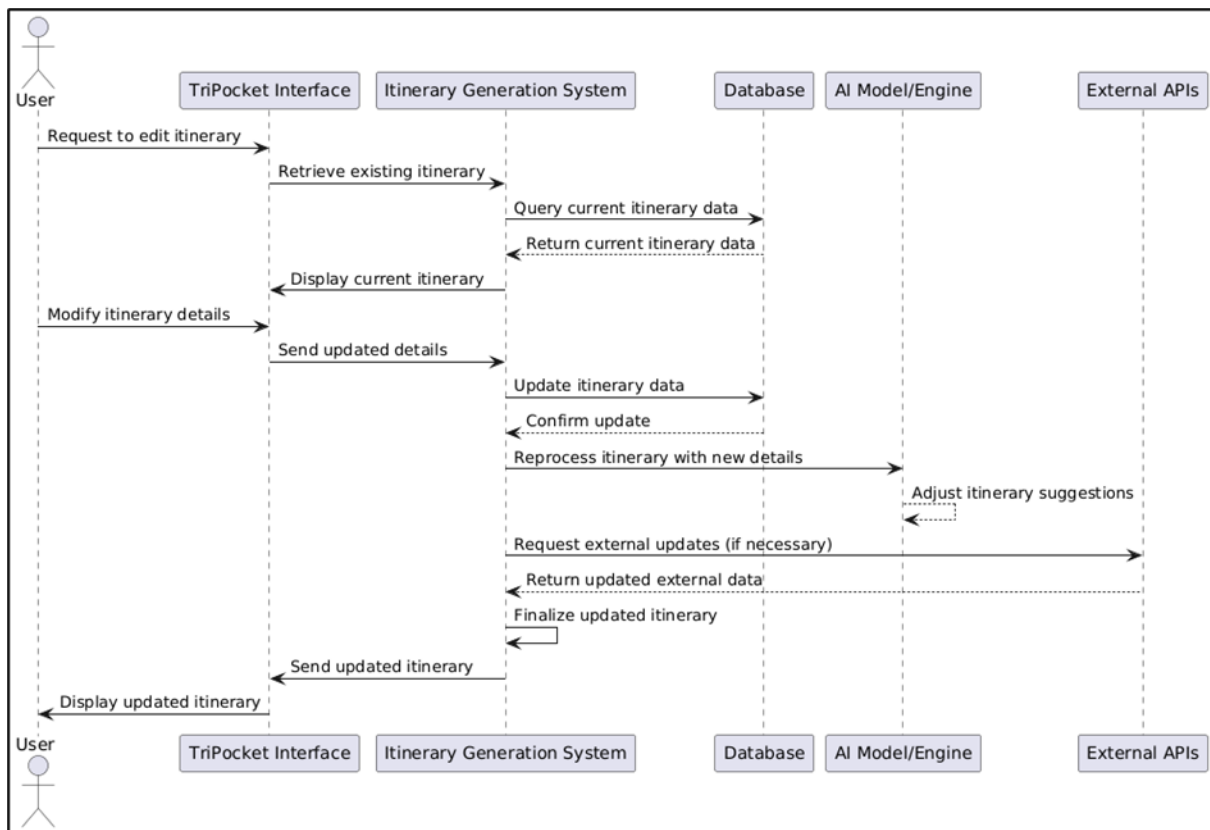


Figure 3.17: Sequence Diagram for Edit Itinerary

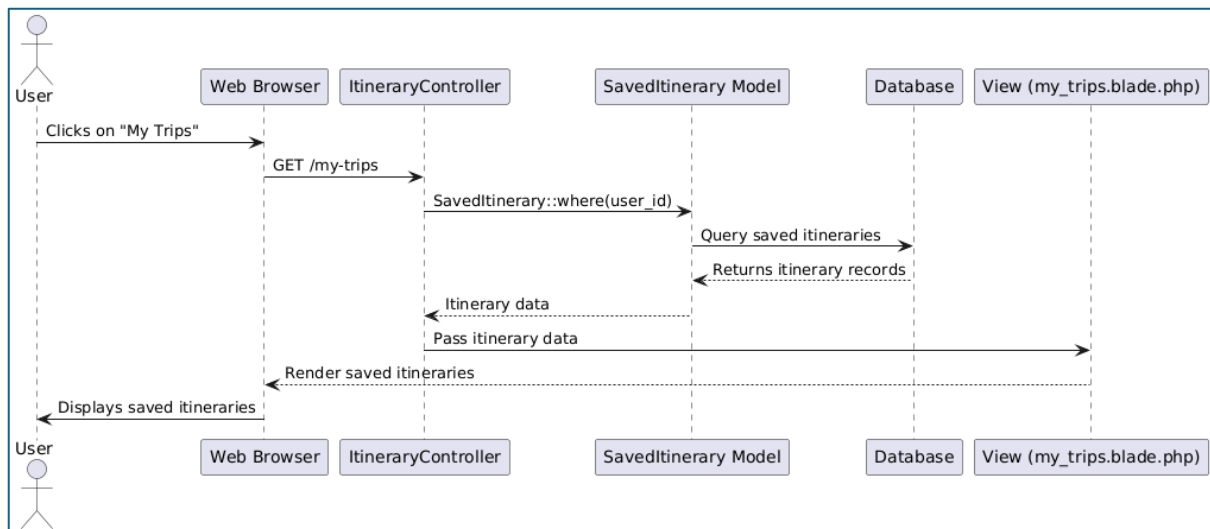


Figure 3.18: View Saved Itinerary

3.8 Class Diagram

The class diagram presented in the figure below illustrates the fundamental structure and organization of the system, outlining the core classes involved, their relationships, and how they interact to support the functionalities of the application.

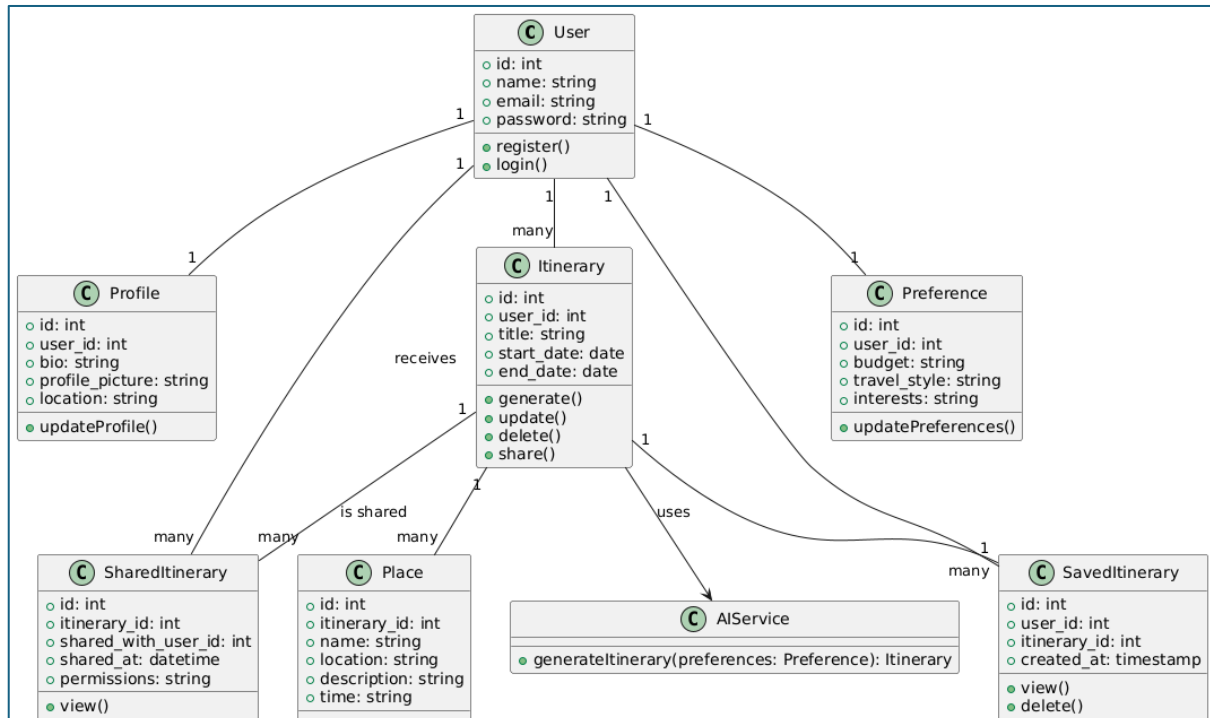


Figure 3.19: Class Diagram for TriPocket

3.9 Wireframe

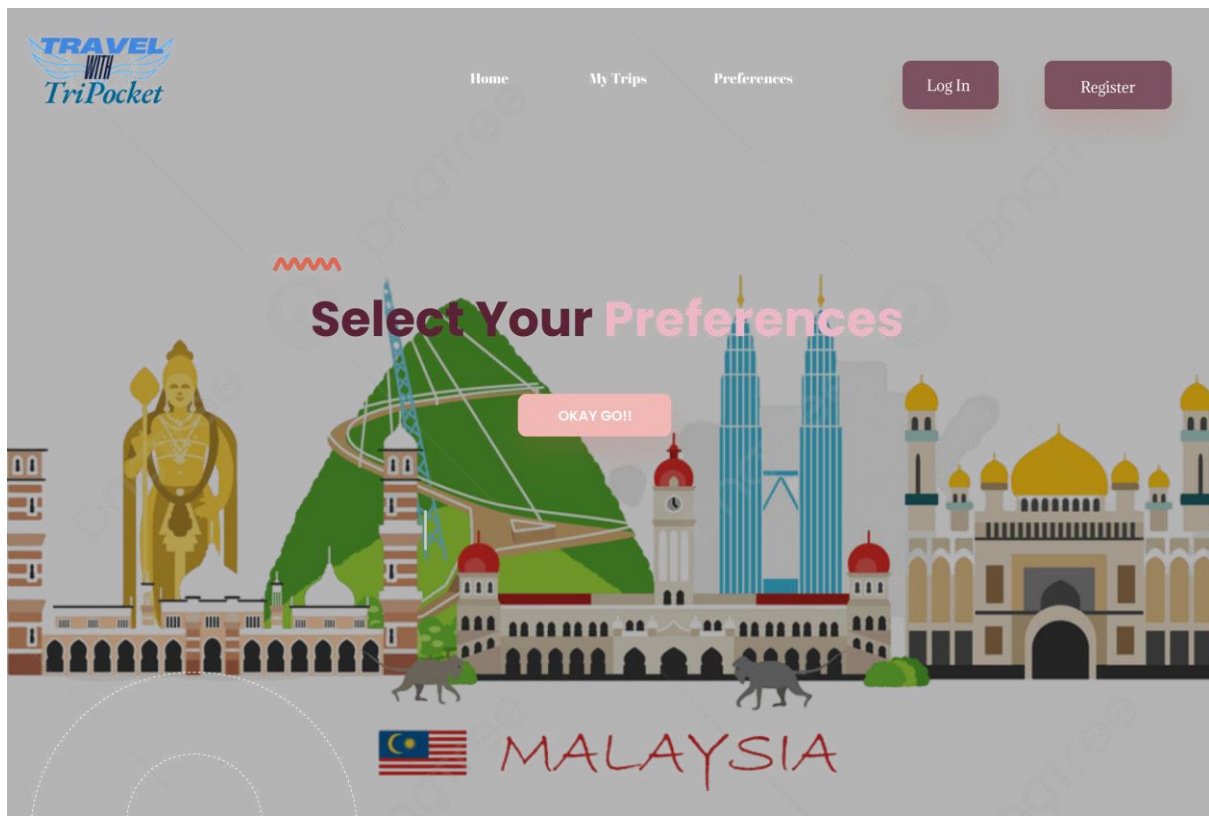


Figure 3.20: Landing Page

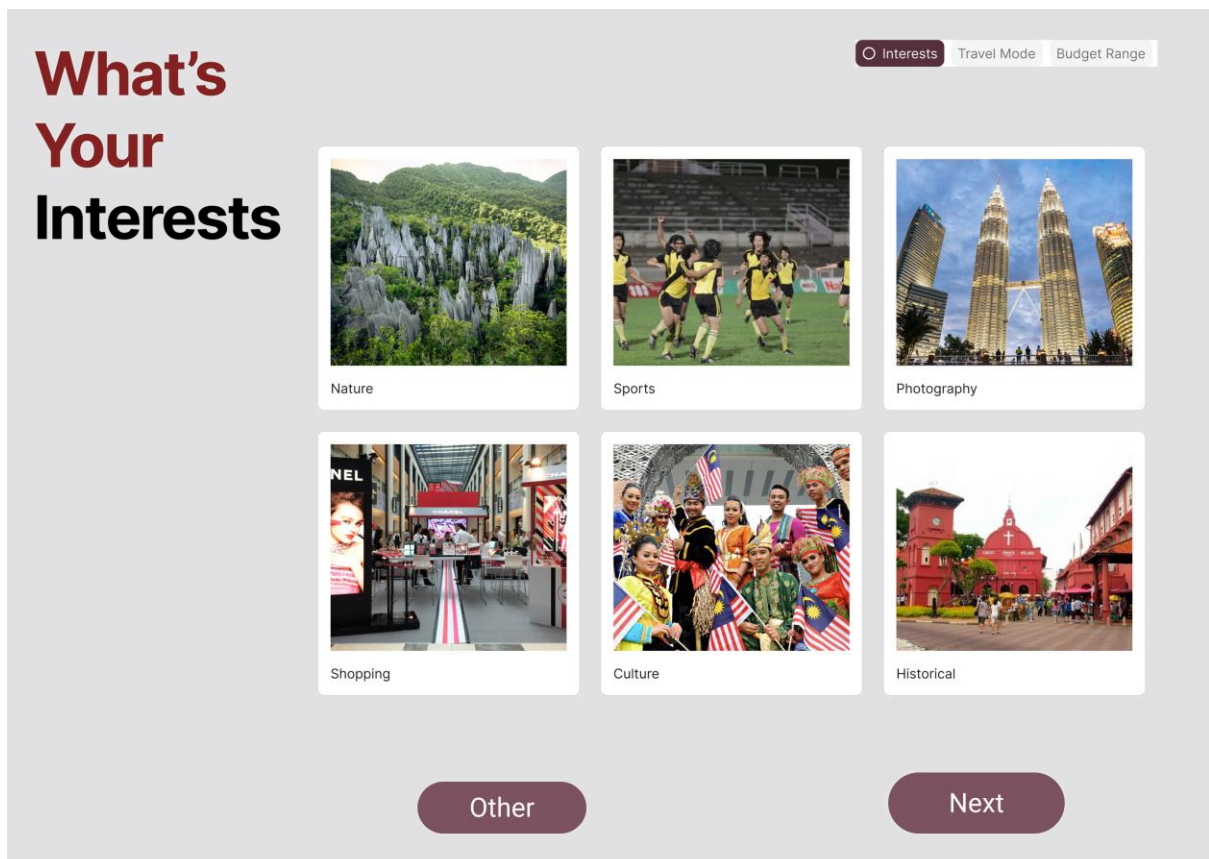


Figure 3.21: Select Preferences Page

Name

Value

Phone Number

Value

Email

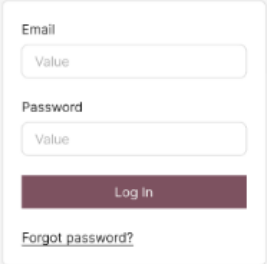
Value

Password

Value

Register

Figure 3.22: Register form page



Email

Password

Log In

[Forgot password?](#)

Figure 3.23: Log in form

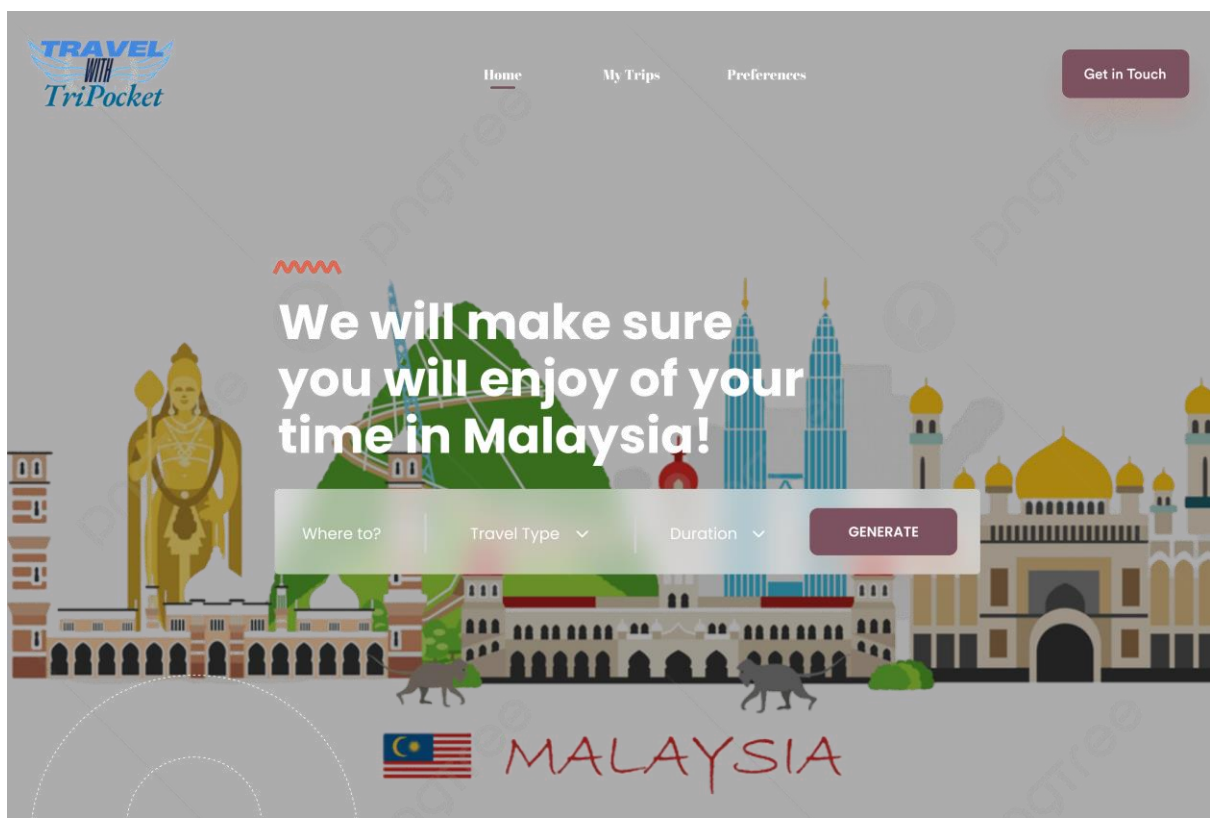


Figure 3.24: Homepage



[Home](#) [My Trips](#) [Preferences](#)

[Get in Touch](#)

×

Generate Your Trip Itinerary

Enter destination (country, region or city)
Malaysia

Enter destination (country, region or city)
Kuching, Sarawak

+ Add destination

Date Range
Start Date → End Date

Guests
2 adults

Activities preferences (optional)

☐ Culture

☐ Outdoors

☐ Relaxing

☐ Wildlife

☐ Romantic

☐ Religious

☐ Hiking

☐ Musical

☐ Shopping

☒ Business

☐ Museums

☐ Party

☐ Traditions

☐ Walks

☐ Fishing

☐ Cruise

☒ Guide

☒ Healthcare

☒ Accommodation

Generate Itinerary

Figure 3.25: Trip Information

63

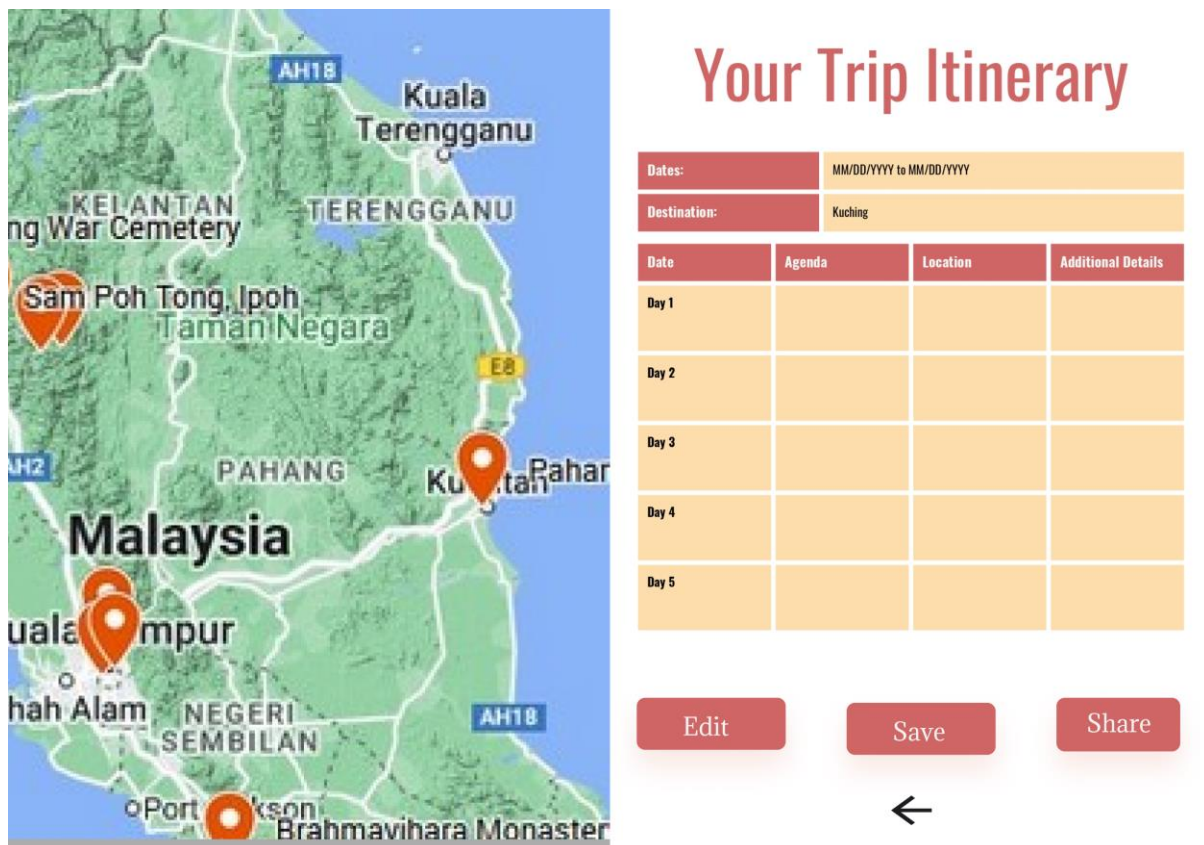


Figure 3.26: View Itinerary with interactive map page

3.10 Summary

To conclude, this chapter explains in detail information regarding the methodology selected for the project TriPocket which is the scrum methodology within an agile framework. Throughout this chapter, each phase of the methodology is carefully executed ensuring a convincing planning phase for the development of the TriPocket. The adoption of the Scrum methodology within the Agile framework provides a structured yet flexible approach, enabling iterative progress and adaptability to user feedback and evolving requirements. Key elements of the methodology, including roles, artifacts, and events, have been tailored for individual development, ensuring that each sprint contributes measurable and meaningful increments to the project's goals.

In addition to the methodology, this chapter thoroughly examines the requirements analysis process, which leverages user surveys to gain data into traveller preferences, feature

expectations, and common issues with existing travel planning solutions. These findings guide the creation of system requirements and design elements, ensuring that the platform aligns with user needs and offers a superior experience.

Furthermore, the detailed diagrams, including use case, sequence, and class diagrams, provide a clear visual representation of the system's functionalities and interactions, bridging the gap between conceptualization and implementation. The specified hardware and software requirements ensure the project's technical feasibility and optimal performance.

Overall, this chapter establishes a comprehensive foundation for the development of TriPocket, ensuring that the project is methodically planned and aligned with its vision to create an innovative, user-centric travel itinerary generator.

CHAPTER 4 : IMPLEMENTATION

4.1 Introduction

The implementation is a phase in Software Development Life Cycle that plays an important part for the success of the development of a software. This chapter describes the implementation of the functionality of the proposed system, TriPocket. The system will be developed accordingly based on the requirements gathered in chapter 3. The framework used for this project is Laravel and is installed. Another software that is being used is PostgreSQL for the database.

4.2 Installation and Configuration of System's Content

Certain software is needed to be installed throughout the implementation process. Laravel as the backend framework of the TriPocket is installed the other software that was installed is postgreSQL for the database server. These applications are crucial for the development to begin.

4.3 Laravel

Laravel is adopted for the development of this project since it is compatible for the development of TriPocket. Laravel is a web application framework that uses expressive, beautiful syntax. A web framework gives a structure and starting point for developing your application, allowing you to focus on building something awesome while we sweat the details (*Laravel - the PHP Framework for Web Artisans*, 2011).

The web application framework Laravel makes use of elegant, expressive syntax. A web framework provides a framework and a place to start when creating your application, so you can concentrate on creating something amazing while we worry about the specifics (*Laravel - the PHP Framework for Web Artisans*, 2011).

4.4 PostgreSQL

The decision to adopt PostgreSQL as the foundational database technology for this project was driven by its unique combination of enterprise-grade capabilities and open-source flexibility. As a mature object-relational database system with over three decades of active development, PostgreSQL delivers the reliability and feature completeness typically associated with commercial solutions, while maintaining the cost advantages of open-source software. Its architecture provides particular value for this initiative through comprehensive support for complex data operations, strict ACID compliance for mission-critical data integrity, and sophisticated optimization capabilities that ensure consistent performance under varying workloads.

PostgreSQL's extensible design allows for customization to the project's specific requirements, whether through specialized data types, procedural language support, or community-developed extensions. The system's proven track record in handling large-scale production environments across industries, coupled with its standards-compliant SQL implementation, reduces technical risk while ensuring interoperability. Furthermore, PostgreSQL's robust security model, including fine-grained access controls and encryption options, aligns with contemporary data protection requirements. This combination of technical merit, operational reliability, and economic efficiency makes PostgreSQL an optimal choice for supporting both current project needs and future scalability requirements.

4.5 User Interface Design

TriPocket delivers a comprehensive web-based itinerary generator designed to simplify travel planning for visitors exploring Malaysia. The platform focuses on an intuitive user interface that ensures a seamless experience from trip conception to execution. Users can effortlessly select travel preferences, personalize profiles, generate customized itineraries, and save or modify trips with ease. Advanced features include itinerary editing, real-time updates, and interactive maps for enhanced navigation. Additionally, TriPocket enables travellers to share their plans with companions, fostering collaborative trip planning. By combining functionality with a clean, user-friendly design, the platform minimizes complexity while maximizing efficiency, making travel organization accessible and enjoyable for globetrotters worldwide.

4.5.1 TriPocket Homepage

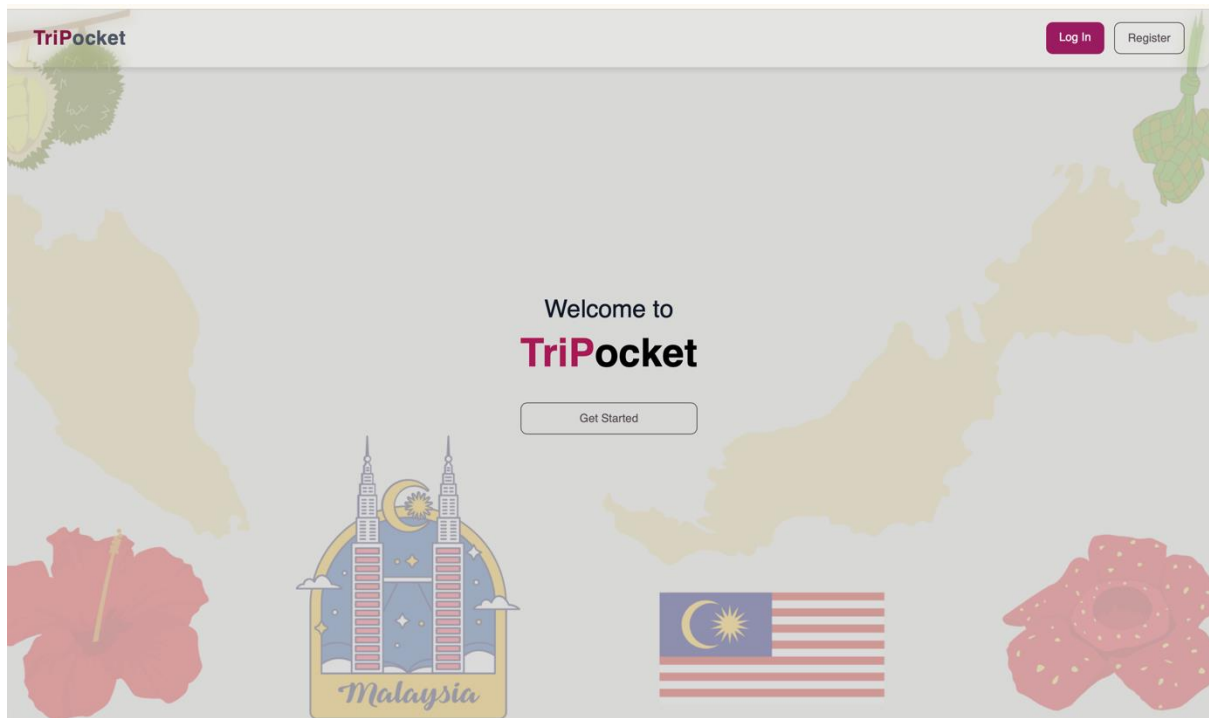


Figure 4.1: TriPocket Homepage.

This is the landing page of the TriPocket application. It acts as the first point of interaction between the user and the system. The purpose of the homepage is to introduce the application's purpose, highlight its main features (like personalised itinerary generation), and guide new users toward registration or login. It usually includes a navigation bar, brief descriptions, and a call-to-action button. From here, users can start their journey either by exploring or creating an account. The button Get started will navigate users to the login form page or if a user has yet to log out it will directly go to the main page.

4.5.2 Registration form

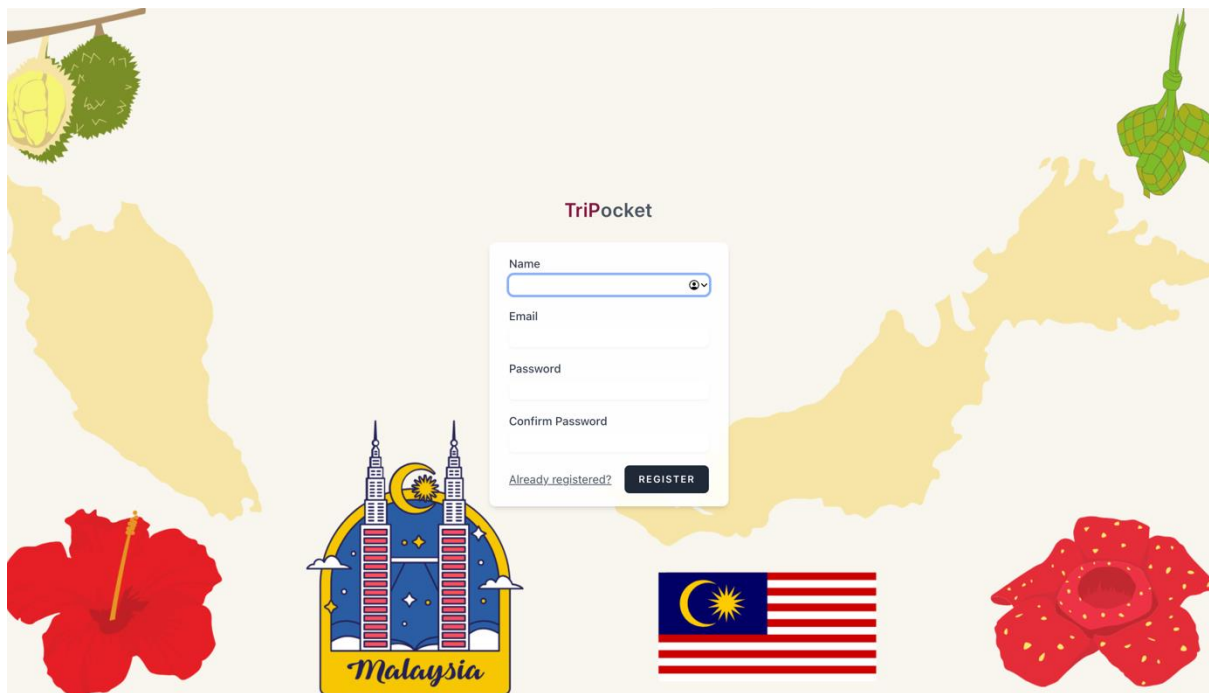
The image shows a registration form for 'TriPocket' centered on a light beige background. The background features a faint map of Malaysia, a durian fruit in the top left, a green ketupat (rice cake) in the top right, a red hibiscus flower in the bottom left, and a red bunga raya (carnation) in the bottom right. In the center, there is a white registration form with the following fields: 'Name' (with a dropdown arrow), 'Email', 'Password', and 'Confirm Password'. Below these fields is a link that says 'Already registered?' and a dark blue button labeled 'REGISTER'. At the bottom center of the form area, there is a graphic of the Petronas Towers with the word 'Malaysia' written below them, and to the right of that is the flag of Malaysia.

Figure 4.2: Registration Form.

The registration form is where new users can create an account to start using TriPocket. This form collects necessary user details such as name, email, and password. Once the user submits the form, the data is validated and stored securely in the database. Upon successful registration, the user is typically redirected to the login page or logged in automatically. This process allows the system to create a unique profile for each user to manage their itineraries, preferences, and other personalised data.

4.5.3 Login Form

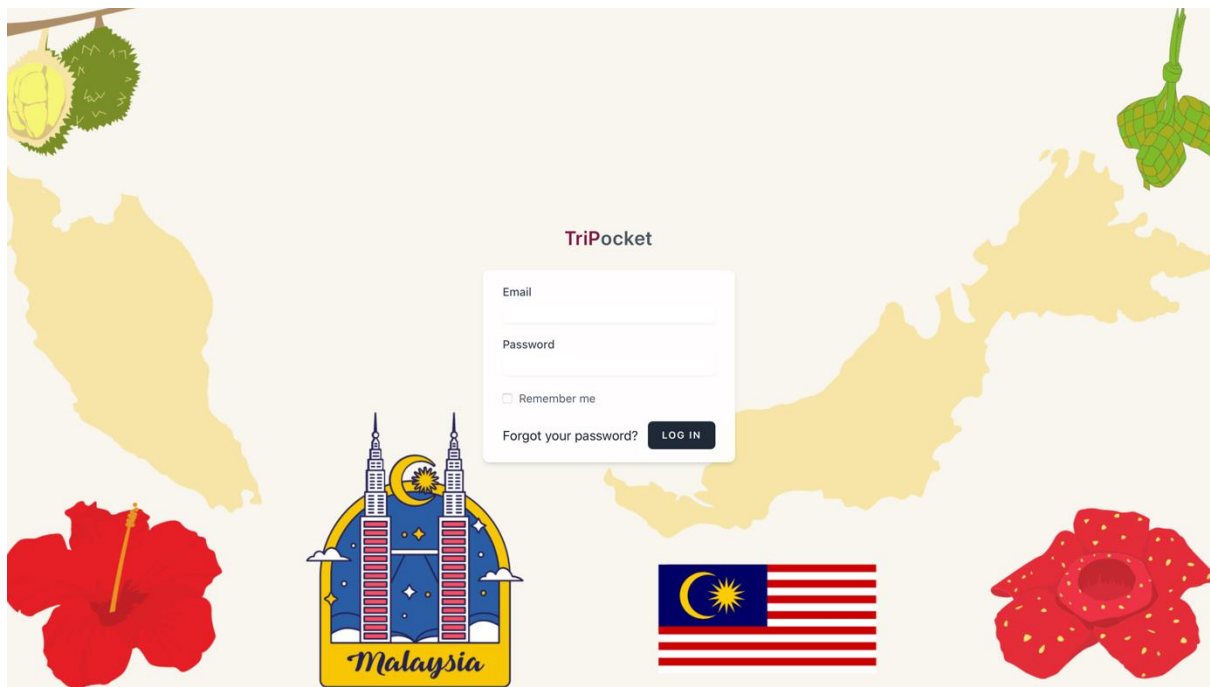


Figure 4.3: User Login Form.

This is the authentication interface where returning users can log in using their registered email and password. The login mechanism ensures that only authorized users gain access to their personal dashboards. When a user logs in successfully, they are redirected to the main page of the application. Behind the scenes, a session is initiated to track the user's interactions and retrieve their saved itineraries, preferences, and account settings from the database.

4.5.4 Main Page

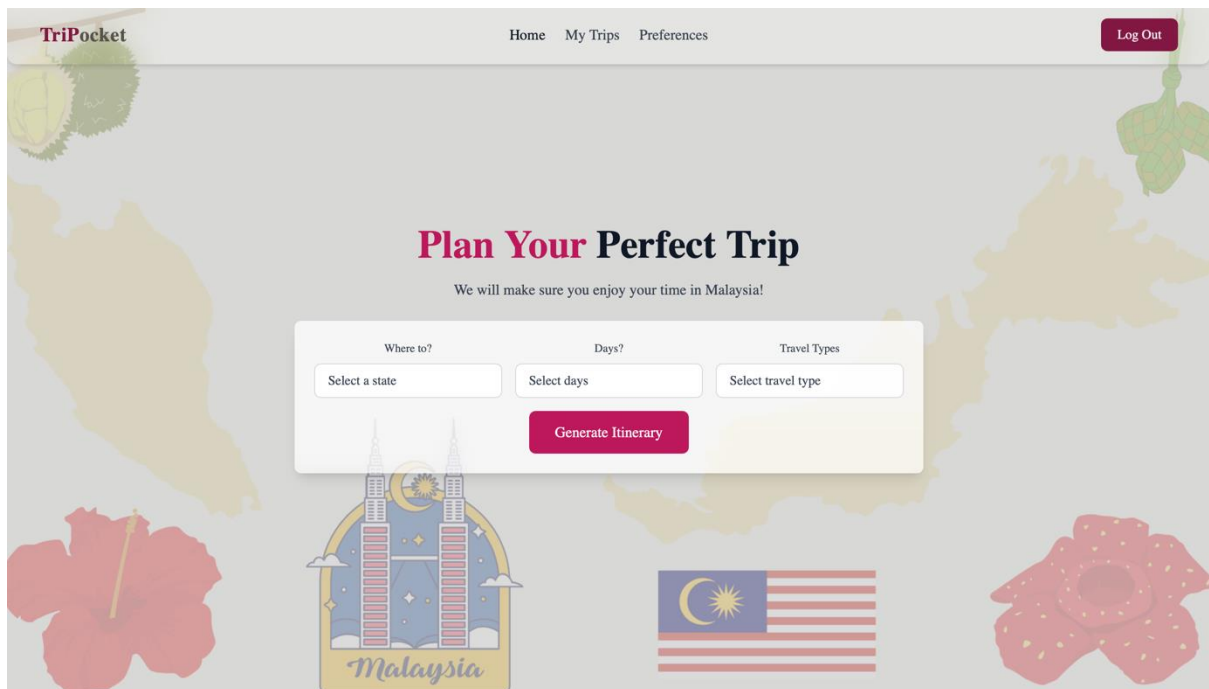


Figure 4.4: User Main Page.

Once logged in, users are brought to the main dashboard. While new user will be redirected to the preferences page since selecting preferences are crucial. This is the central hub of the application where users can initiate actions like generating new itineraries, viewing recent activity, or accessing key features. The design is focused on providing a seamless experience, showing the next logical step (like setting preferences or starting a trip). It's also where system-generated recommendations or AI suggestions might appear to assist the user in planning their travel.

4.5.5 Select Preferences Page

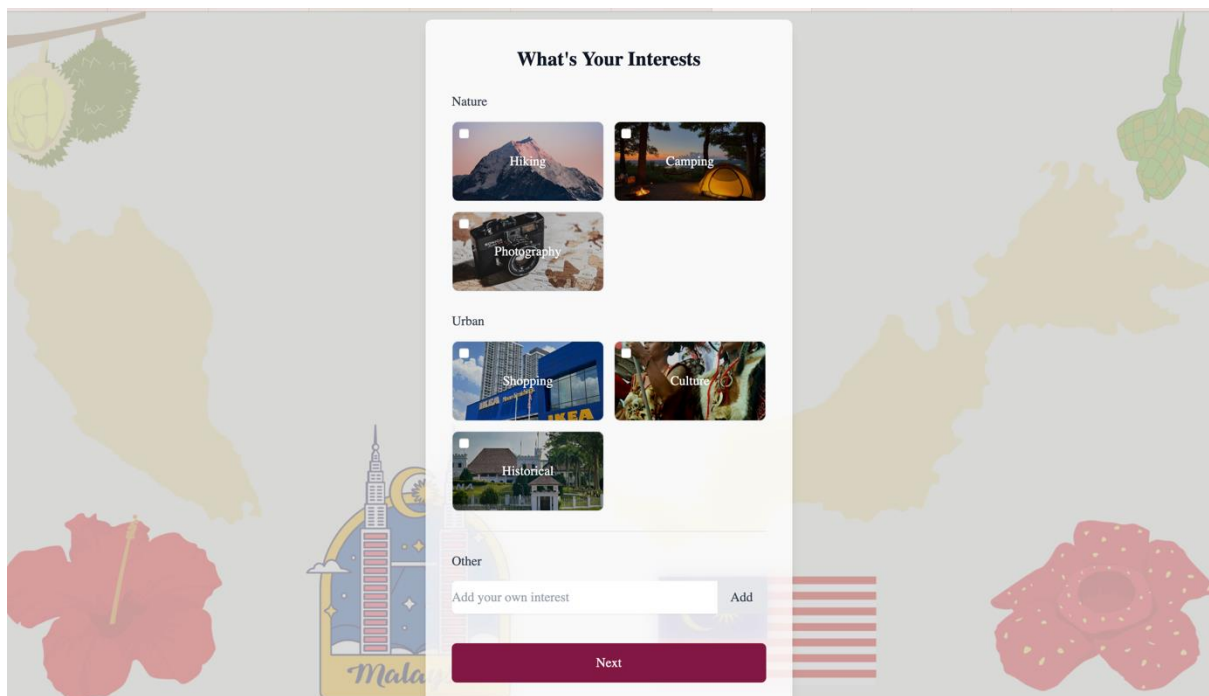


Figure 4.5: Preferences Select Page.

On this page, users can input specific travel preferences that will influence the AI-powered itinerary suggestions. Preferences may include categories like budget level, travel interests (e.g., culture, food, adventure), duration of stay, and desired destinations. Once submitted, the preferences are stored and used to generate a custom itinerary that suits the user's needs. This feature enhances personalisation, ensuring that the generated itinerary aligns with the user's preferences.

4.5.6 My Trips Page

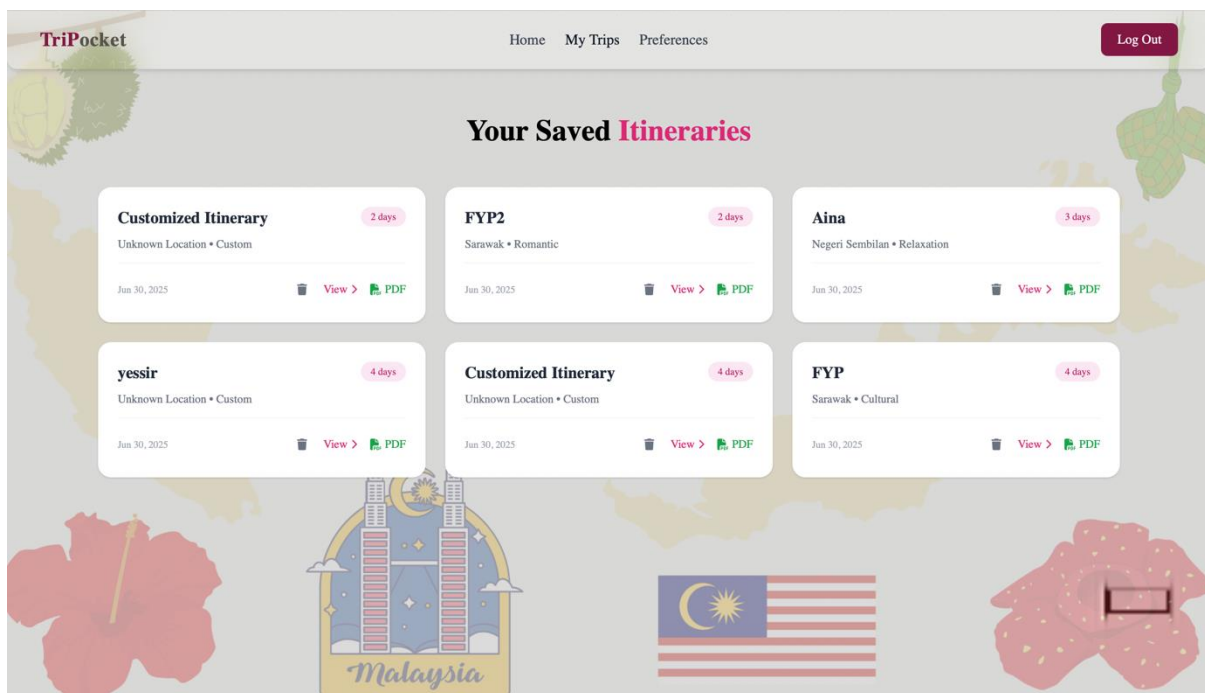


Figure 4.6: My Trips Page.

This section of the application lists all the itineraries the user has previously saved. Each itinerary is stored in the backend database under the user's profile and can be accessed anytime. For example, when a user clicks the "Save Itinerary" button after generating a plan, the system stores that data, and it will be displayed here. From this page, users can view, edit, or delete their itineraries. It provides a sense of continuity, allowing users to come back and revisit or modify past travel plans.

4.5.7 Profile Dropdown

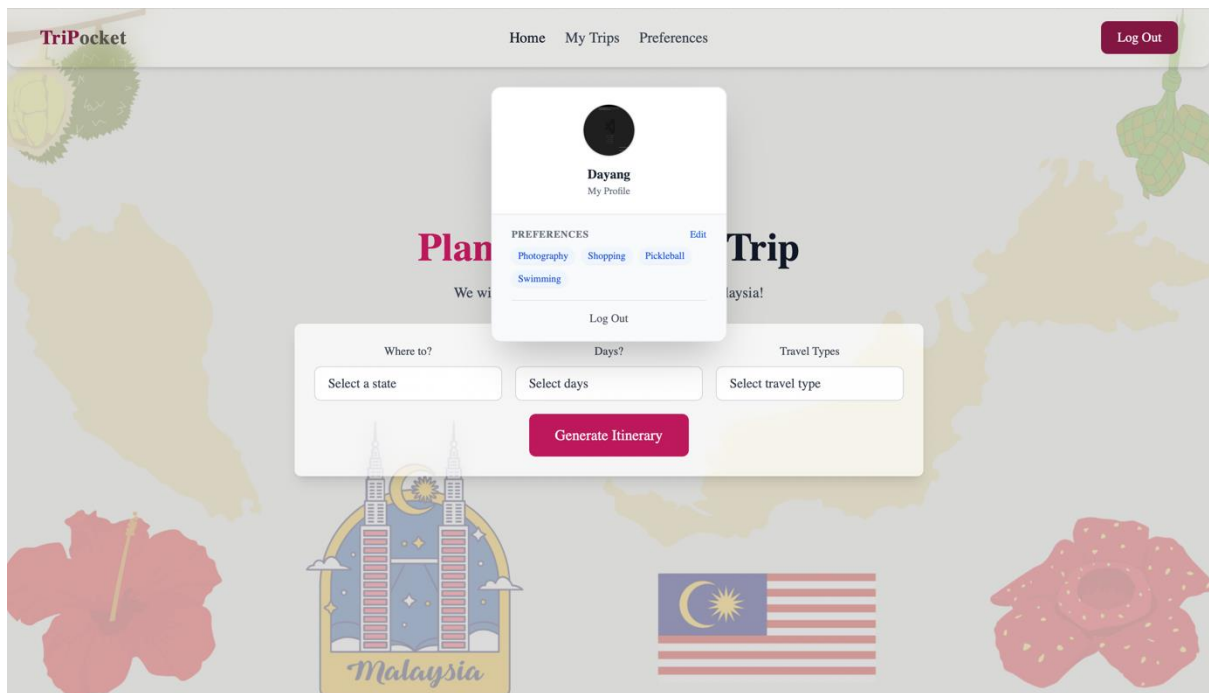


Figure 4.7: Profile Dropdown.

The profile dropdown is a compact menu typically located in the top-left corner of the user interface. It provides quick access to important user-related page such as “Edit Profile,”. This UI element improves usability by allowing users to navigate account functions without cluttering the main interface. It’s also a gateway to profile management.

4.5.8 Edit Profile

Edit Profile

[Change Photo](#)
Accepted: JPG/PNG • Max: 2MB

Name
Dayang

Email
dayangnuralisa@gmail.com

Phone

Change Password

New Password Confirm New Password

[Save Changes](#)

[Edit Preferences](#)

Figure 4.8: Edit Profile Page

This page allows users to update their personal information. Common editable fields include the user's name, email address, and possibly profile picture or contact info. Once the user submits the updated form, the information is validated and then updated in the database. This feature ensures that users can keep their profiles current, and it enhances the personalization of the app.

4.5.9 View Itinerary

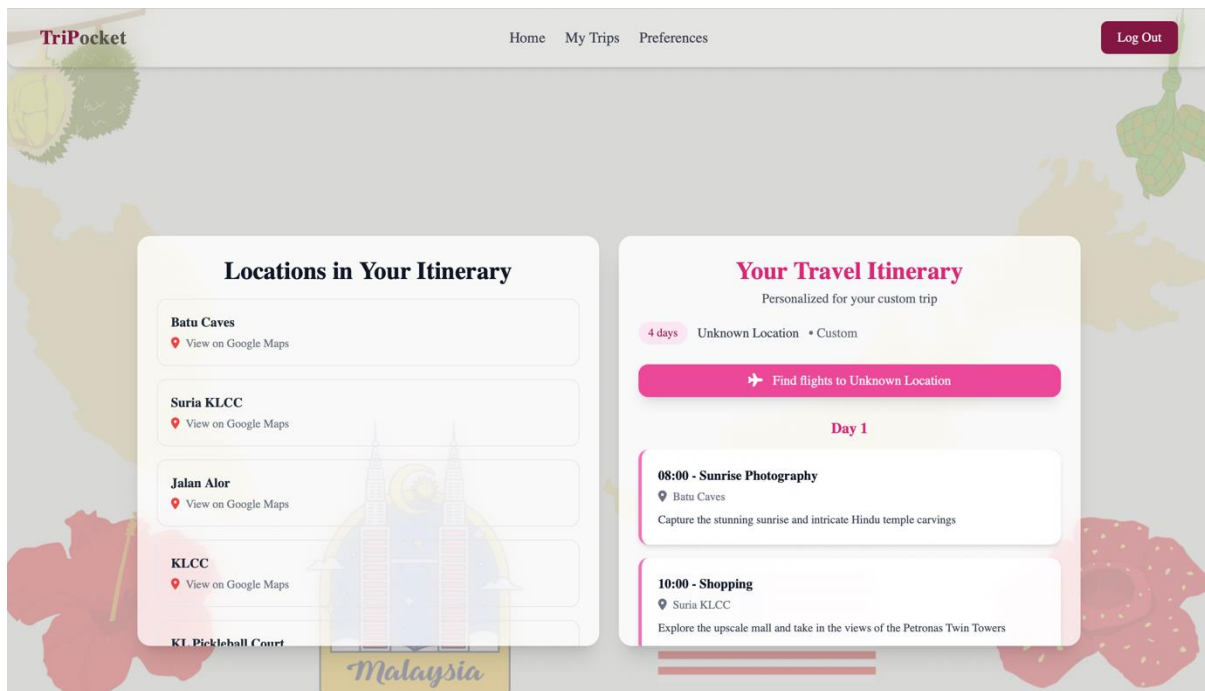


Figure 4.9: View Itinerary Page.

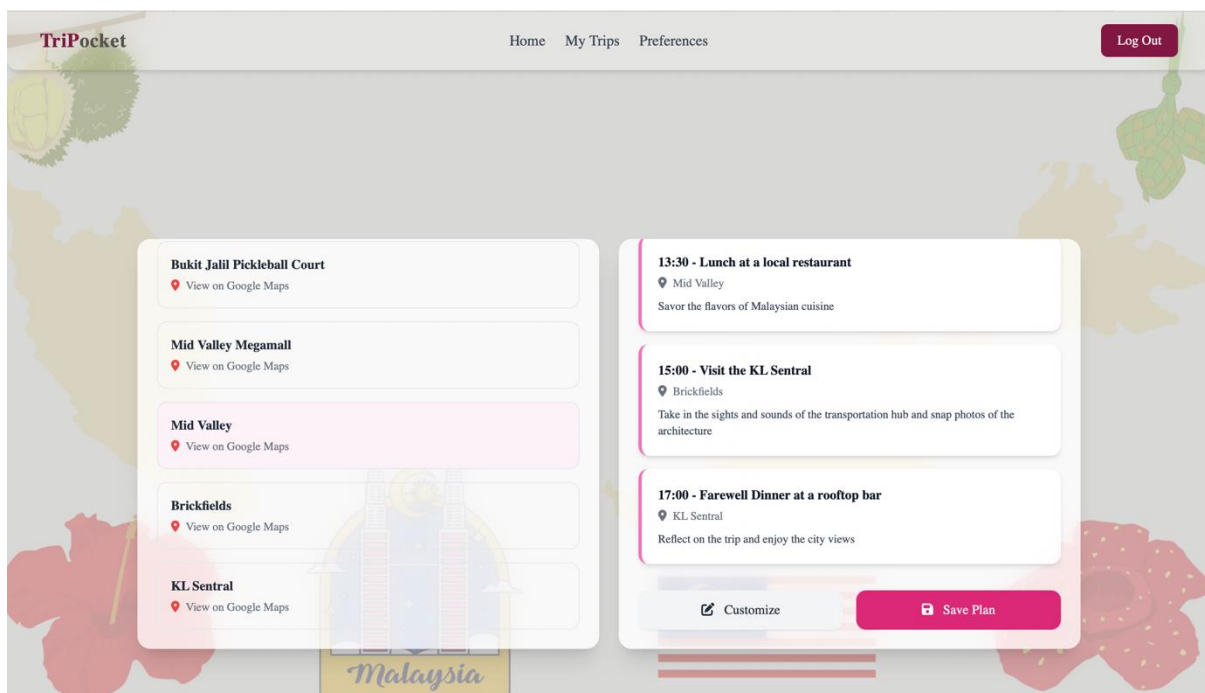


Figure 4.10: View Itinerary Page.

These figures represent the detailed view of a saved itinerary. When a user clicks on one of their saved trips from the “My Trips” page, they are brought here. This page displays the full travel plan in a structured format, with a day-by-day or time-block-based layout that

includes activity titles, descriptions, and possibly locations. This detailed view helps users clearly visualise and prepare for their trip. Users might also be able to export, print, or share their itinerary from this page.

4.5.10 Customize Itinerary

TriPocket Home My Trips Preferences Log Out

Customize Your Itinerary

Trip Title
Mok DiCustomKan

Day 1: Day 1

Time 08:00	Activity Name Sunrise Photography
Location Batu Caves	Details Capture the stunning sunrise and intricate Hindu temple carvings
Time 10:00	Activity Name Shopping

Figure 4.11: Customize Itinerary Page

Time: 12:30, Activity Name: Lunch at a street food stall, Location: Jalan Alor, Details: Try local flavors and dishes

Time: 14:30, Activity Name: Visit the Petronas Twin Towers, Location: KLCC, Details: Take a guided tour and snap photos of the iconic landmark

Time: 17:00, Activity Name: Explore the KL Forest Eco Park, Location: KLCC, Details: Discover the lush greenery and unique flora

+ Add Activity

Figure 4.12: Customize Itinerary Page

+ Add Activity

Day 2: Day 2

Time: 09:00, Activity Name: Pickleball Session, Location: KL Pickleball Court, Details: Meet fellow players and enjoy a fun game

Time: 11:30, Activity Name: Shopping, Location: Pavilion KL, Details: Browse through the various brands and local designer stores

Time: 13:30, Activity Name: Lunch at a rooftop restaurant

Figure 4.13: Customize Itinerary Page

Mid Valley

Savor the flavors of Malaysian cuisine

Time: 15:00

Location: Brickfields

Activity Name: Visit the KL Sentral

Details: Take in the sights and sounds of the transportation hub and snap photos of the architecture

Time: 17:00

Location: KL Sentral

Activity Name: Farewell Dinner at a rooftop bar

Details: Reflect on the trip and enjoy the city views

+ Add Activity

Save Custom Itinerary

Figure 4.14: Customize Itinerary Page

The Customize Itinerary page represents one of the most significant user-facing components within the TriPocket travel planning system. While the itinerary generation process leverages pre-defined user preferences to produce a preliminary schedule, this page serves as the space where the itinerary becomes truly personal. Its purpose is to empower users with the freedom to shape, refine, and reorganize their travel experiences without requiring technical expertise.

Once an itinerary is generated, users are directed to this page, where their full multi-day travel plan is rendered in a vertically structured, card-based layout. Each day is broken down into individual activity segments, with clearly indicated times, titles, and brief descriptions. This structured representation ensures clarity while providing a visual narrative of the journey ahead. Unlike the more automated generation process, this page shifts the control entirely to the user.

Users are able to manually interact with the itinerary by dragging and reordering activity cards within a given day, allowing for real-time reorganization of their schedule. This feature supports a more realistic planning process, as users may wish to adjust the flow of activities based on personal priorities, energy levels, or newly acquired knowledge about the destination. In addition to reordering, users can also edit the content of each activity card

modifying titles, changing timing, or updating descriptions to better reflect their actual intentions.

The customization process is not limited to editing existing entries. Users are also given the flexibility to add new activities at any point within their itinerary or remove unwanted ones entirely. This ensures that the final plan is not only tailored but also adaptable to unexpected changes or spontaneous decisions that are often part of real-world travel.

Upon completing their modifications, users may save the customized version of their itinerary to their account. This updated version overwrites the default generated schedule and becomes the user's official trip plan, accessible from their profile for future viewing, sharing, or exporting. The design of the Customize Itinerary page emphasizes user autonomy and encourages an exploratory, hands-on approach to planning allowing each itinerary to evolve from a system-generated draft into a reflection of the traveller's own goals, identity, and preferences.

In essence, the Customize Itinerary page bridges the gap between artificial intelligence and human intention. It allows TriPocket to maintain the efficiency and intelligence of automated planning while still honouring the need for human judgment, spontaneity, and personal expression in travel design.

4.5.11 Location View

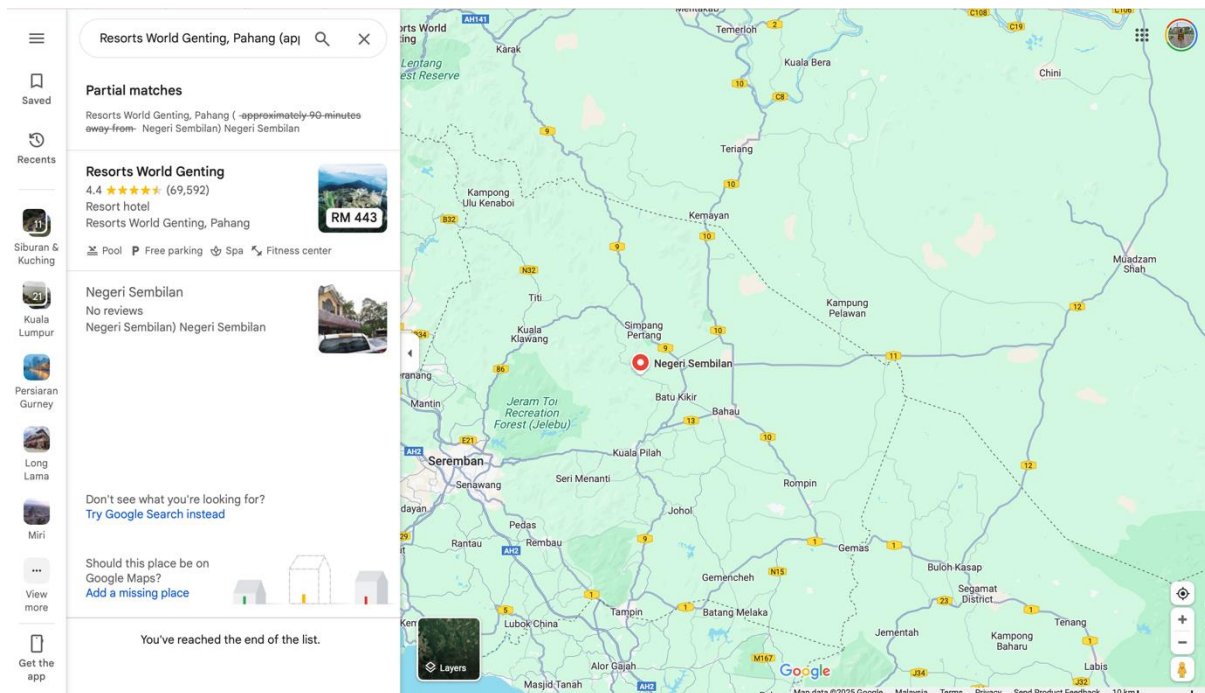


Figure 4.15: View Location via Google Maps

This functionality allows users to view the locations of the planned itinerary directly on Google Maps. It helps users understand the spatial layout of their trip, visualize routes, and plan movement between destinations. This integration adds significant value by merging AI-generated plans with real-world maps, allowing better decision-making and navigation for users. It enhances user trust and interaction with the app by showing real-time, interactive location data.

4.6 Summary

Chapter 4 presents the implementation phase of the TriPocket system, detailing the core user interfaces and functionalities developed throughout the project. It begins with the homepage, which introduces the application and provides navigation for new and existing users. The registration and login forms handle user authentication, ensuring secure access to personalised features.

Once logged in, users are directed to the main page, where they can begin creating their itineraries. The preferences selection page enables users to customize their travel plans based

on personal interests, which the system uses to generate tailored itineraries. These itineraries can be saved and later accessed through the "My Trips" page.

Additional features include a profile dropdown for quick navigation, an edit profile page for updating user details, and a detailed itinerary view for reviewing planned trips. The system also integrates Google Maps to provide a visual representation of selected travel locations. Overall, this chapter demonstrates how the system's components work together to deliver a seamless and personalised travel planning experience.

CHAPTER 5 : TESTING

5.1 Introduction

Testing in a software development lifecycle is a crucial part of the process to confirm that the software is safe to be used and launched. Software testing is the process of evaluating and verifying that a software product or application does what it's supposed to do. The benefits of good testing include preventing bugs and improving performance. This chapter documents the software testing and evaluation of the proposed project TriPocket. By applying a structured method and following the standard guidelines this chapter aims to ensure the proposed system's usability and functionality is safe to use.

Software testing not only validates the functionality of the system but also ensures reliability, security, and user satisfaction. A well-tested application minimizes risks, reduces development costs in the long run, and enhances the overall quality of the product. Different testing methodologies, such as unit testing, integration testing, and system testing, are employed to examine various aspects of the software at different stages of development. For TriPocket, a comprehensive testing approach is adopted to identify defects early, verify compliance with requirements, and deliver a robust and user-friendly application. Through systematic evaluation, this chapter demonstrates how the proposed system meets its intended objectives while adhering to industry best practices.

5.2 Functional Testing

Functional testing was conducted to ensure that all features of the TriPocket application perform according to the gathered requirements. This type of testing focuses on verifying that each function of the software operates in conformance with the expected output based on the given inputs.

The testing process involved validating the core modules, including itinerary generation, user registration, profile management, saved itineraries, integration with location-based services, customizable itineraries and also find flights button. Each function was tested individually and in combination with others to ensure seamless operation throughout the system.

Test cases were developed based on the functional requirements defined during the analysis phase. These test cases were executed manually, and the results were recorded to

identify any error or failures. The input data was selected to represent realistic user interactions, and both valid and invalid inputs were tested to assess the system's behaviour under different conditions.

Overall, the results of the functional testing indicated that the majority of the core functionalities of TriPocket are working as intended. Minor issues such as UI misalignment and response delay were identified and subsequently resolved. The successful completion of this phase confirms that the application meets its functional specifications and is ready for further testing phases, including user acceptance testing.

5.3 Unit Testing

Unit testing was conducted to verify the correctness of individual components within the TriPocket application. This form of testing focuses on validating isolated units of code, such as controllers, services, and functions, to ensure they behave as expected before being integrated into the full system.

Each major functional module including itinerary generation, user registration, profile management, and saved itinerary storage was broken down into smaller units. These were tested using valid and invalid inputs to assess their logical correctness and ability to handle edge cases. The Laravel framework's built-in PHPUnit testing capabilities were used to create and run the test cases.

The unit tests were conducted after development of each component, following a test-driven development (TDD) approach in some parts of the system. The following table summarizes the tested units, the number of test cases executed, and the outcomes:

5.3.1 Results Table for Unit Testing

Table 5.1: User Registration Unit Testing

Module Name: User Registration Test Case Description: Ensure registration handles all user input scenarios. Testing Objective: Validate correct account creation, input validation, and error handling. Remarks: Applies to new users.								
Test Case Id	Test Scenario	Test Steps	Test Data	Expected Result	Actual Result	Status	Severity	Notes
TC01	Valid Input	Enter Name, Unused/valid Email, Password	Name: Haizeeq Email: abehaizeeq@gmail.com, Pass: 123456	Account created, Users redirected to preferences page	Account created, Users redirected to preferences page	Pass	Medium	User must select preferences to continue
TC02	Existing Email	Try registering with same email again	Email: abehaizeeq@gmail.com	Display email already has been taken in red font	Display email already has been taken in red font	Pass	Medium	Email Uniqueness Checked
TC03	Missing Password	Leave password blank	All fields filled except password	Shows users must fill the password	Ask users to fill in password	Pass	Hard	Prevents account creation

Table 5.2: User Login Unit Testing

Module Name: User Login Test Case Description: Ensure login system validates credentials properly. Testing Objective: Authenticate users correctly and handle invalid logins. Remarks: Applies to registered users.								
Test Case Id	Test Scenario	Test Steps	Test Data	Expected Result	Actual Result	Status	Severity	Notes
TC04	Valid Login	Enter correct email and password	Email: abehaizeeq@gmail.com, Pass: 12345678	Redirect to main page	Redirect Successful	Pass	Medium	Session working
TC05	Wrong Password	Enter wrong password	Correct email and password	Show invalid credentials	Proper error message	Pass	Medium	Auth validation works
TC06	Empty Fields	Click login without input	Empty email and password	Show required fields	Validation message appears	Pass	Low	Form validation passes

Module Name: Select Preferences Test Case Description: Ensure users select their preferences before proceeding to generate itinerary Testing Objective: To verify that the system correctly captures selected preferences from all three sections: Urban, Nature, and Custom. Remarks: Applies to registered users.								
Test Case ID	Test Scenario	Test Steps	Test Data	Expected Result	Actual Result	Status	Severity Failure	Notes
TC07	Select Urban preferences	Select 'Shopping' and 'Food' from Urban section	Urban: Shopping, Food	Stored and passed to AI generator	Correct preferences processed	Pass	Medium	Urban tags applied to itinerary

TC08	Select Nature preferences	Choose 'Beach' and 'Hiking' from Nature section	Nature: Beach, Hiking	Itinerary reflects nature spots	Nature activities included	Pass	Medium	Correct filter application
TC09	Add custom preference	Type 'Photography' in custom input	Custom: Photography	Custom keyword included in AI generation request	Photography-related places suggested	Pass	High	AI accepted custom input
TC10	No preferences selected	Leave all sections empty and click generate	None	Fallback to popular/general itinerary	Generic itinerary shown	Pass	Low	Default flow works
TC11	Combination selection	Select 'Food', 'Beach', and custom 'Cycling'	Urban: Food, Nature: Beach, Custom: Cycling	AI returns mixed itinerary	Food, beach, and cycling activities included	Pass	High	Multi-category flow successful

Table 5.3: Itinerary Generation Unit Testing

Module Name: Itinerary Generation

Test Case Description: To ensure the AI-based itinerary generation returns relevant results.

Testing Objective: Validate accurate generation based on location, date, and user preferences.

Remarks: Applies to authenticated user

Test Case Id	Test Scenario	Test Steps	Test Data	Expected Result	Actual Result	Status	Severity	Notes
TC12	Valid Input	Select 'Sarawak', 1 day, Food	Kuching, 1 day, Nature, Food	Relevant 1-day itinerary	Shows relevant places & order	Pass	Medium	Accurate AI results
TC13	Zero Input	Not selecting any input and proceed to generate itinerary	No location, days and travel type	Error message shown	Error displayed fill in the input	Pass	Low	Answer Inputs

TC14	No Prefereneces	Select destination,days and travel types	Penang, 2 days, Business	Generic itinerary for 2 days and business without preferences	Returned expected default results	Pass	Low	Fallback logic triggered
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Table 5.4: Saved Itinerary Unit Testing

Module Name: Saved Itinerary Test Case Description: Ensure itinerary data is saved, retrieved, and deleted properly. Testing Objective: Test full CRUD operations for saved trips. Remarks: Logged-in users only.								
Test Case Id	Test Scenario	Test Steps	Test Data	Expected Result	Actual Result	Status	Severity	Notes
TC15	Save Itinerary	Generate then click save and name the itinerary	AI-generated itinerary	Saved to DB & confirmation	Saved successful	Pass	Medium	Saved with timestamp
TC16	View saved itinerary	Go to My Trips	User logged in	Display saved items	Shown in card layout	Pass	Low	Display working
TC17	Delete Itinerary	Click trash icon on a saved item	Trip ID = 5	Deleted from DB	Successfully deleted	Pass	Low	Confirm prompt works

5.4 System Testing

System testing was done to make sure the entire TriPocket application works properly when all the parts come together. This phase checked whether the system meets what it was supposed to do not just each feature on its own, but as a complete product.

During this phase, we tested the system from a user's point of view doing things like generating itineraries, selecting preferences, registering and logging in, saving trips, customizing plans, and accessing features both as a guest and as a logged-in user. The goal was to see how all the modules interact and whether everything works smoothly, especially between the front-end, the backend, and third-party services like location and flight APIs.

Some of the key things we tested included:

- Generating itineraries based on location, number of days, and user preferences.
- Making sure selected preferences actually affect the AI-generated results.
- Saving and reloading itineraries.
- User login and session handling.
- Displaying nearby places and finding flights using external APIs.
- How the app looks and behaves on different screen sizes.

We tested both typical and unexpected inputs to see how well the app handles different scenarios including errors, missing inputs, or slow internet/API issues.

Overall, the system testing showed that TriPocket works well as a whole. Most of the features worked as expected. A few small UI bugs and loading delays were found, especially when relying on real-time APIs, but they were fixed. After this phase, the system was stable enough to proceed to the next step: user acceptance testing.

5.4.1 Results Table for System Testi

Table 5.5: System Testing Results Table

Purpose: To ensure that all integrated components of the TriPocket application operate as expected in real-world situations. Methodology: Test entire workflows from login to itinerary generation, preference selection, saving trips, and managing user sessions.								
Test Case Id	Test Scenario	Test Steps	Test Data	Expected Result	Actual Result	Status	Severity	Notes
ST01	Guest itinerary generation flow	1. Open main page 2. Enter destination , days & travel types 3. Click generate	Destination: Kuching Days: 2 Travel Types: Food	Itinerary generated with relevant places	Itinerary displayed correctly	Pass	Medium	Role: Auth User
ST02	User registration and save itinerary flow	1. Register new account 2. Generate itinerary 3. Save itinerary	Name, Email, Valid inputs	Account created Itinerary saved to dashboard	Redirected to login Itinerary saved and accessible	Pass	High	User session & data persistence
ST03	User login and profile update flow	1. Login with existing account 2. Update profile info 3. Upload profile picture	Valid credentials + new profile info	Profile successfully updated	Changes reflected in profile	Pass	Low	Basic profile features verified
ST04	Itinerary customization and re-generation	1. Load saved itinerary 2. Modify preferences 3. Click re-generate	Existing trip + new preferences	New itinerary generated based on updated preferences	AI returned new trip correctly	Pass	High	Backend flow validated

5.5 Non-Functional Testing

Non-functional testing was conducted to evaluate how well the TriPocket system performs beyond basic functionality, focusing on aspects like usability, performance, compatibility, and security. Since the development followed a prototyping methodology, this testing was done iteratively at each stage to capture early feedback and improve the overall user experience.

The goal of this testing was to ensure the system not only works, but works well efficiently, securely, and in a way that's easy for users to understand and use.

5.5.1 Usability Testing

Usability testing was performed with selected users to observe how easily they could navigate the system, generate itineraries, and save preferences. Feedback was gathered to refine button placement, layout, and form interactions. Results showed that most users could use the core features without needing guidance, and improvements were made based on early feedback from each prototype cycle.

Table 5.6: Usability Testing Results Table

Module Name: Usability Testing

Test Case Description: To observe how users interact with the TriPocket interface and identify potential UX/UI issues.

Test Objectives:

- Ensure users can navigate and complete tasks with minimal guidance
- Identify areas where the user experience can be improved
- Collect direct feedback to enhance the prototype iteratively

Remarks: Feedback was gathered from registered users across different usage contexts including mobile and desktop. Issues like layout, visibility, and interaction design were observed and improvements were made accordingly.

Test Case Id	Test Scenario	Test Steps	Participant Role	Expected Result	Actual Result	Status	Severity
UT01	Itinerary generation on mobile	1. Log in on mobile 2. Select destination and preferences 3. Click generate	Registered User	User can easily view generated itinerary.	Itinerary displayed correctly	Pass	Medium
UT02	Register, login, and save itinerary	1. Register new account 2. Generate itinerary 3. Save itinerary	New User	User registers and saves itinerary successfully	Trip saved and user can to name it	Pass	Low
UT03	Enter custom preference	1. Go to preferences 2. Type custom interest 3. Generate itinerary	Student	User adds custom tag easily and sees related results	User didn't notice the input box at first	Pass	Low

UT04	Edit and re-generate itinerary	1. Load saved itinerary 2. Change preferences 3. Click regenerate	Frequent Traveler	Updated itinerary based on new preferences	Re-gen button was not visible enough	Pass	Medium
UT05	Use core features from desktop	1. Log in from desktop 2. Generate itinerary 3. Save and edit trips	Regular User	User easily completes full itinerary workflow	All features worked well, user praised simplicity	Pass	Low

5.6 Users Acceptance Testing

User Acceptance Testing (UAT) was the final testing phase conducted to ensure that the TriPocket application met the expectations and requirements of its end users. This phase involved real users interacting with the system in a near-final state to validate whether the features and overall user experience aligned with what was proposed during the analysis and design stages.

Since TriPocket followed a prototype-based development approach, users were involved early through feedback cycles, but this formal UAT focused on the complete feature set. Selected participants included university students, frequent travelers, and casual users, all of whom represented the app's intended audience. Each user was tasked with performing key operations such as registering, selecting preferences, generating itineraries, and saving trips.

The UAT process was supported by a structured Google Form, which allowed users to rate their experience, identify issues, and suggest improvements. The form included both closed and open-ended questions to gather quantitative and qualitative feedback.

Overall, the results of the UAT were positive. Users found the system intuitive, with clear navigation and useful features. Some feedback pointed out minor UI elements that could be improved for mobile views and suggested making certain buttons more prominent. These insights were noted and addressed in the final refinement stage.

The successful outcome of the UAT confirmed that TriPocket is ready for deployment and meets the functional and usability expectations of its users.

5.6.1 Users Acceptance Testing in Questionnaire

To support the User Acceptance Testing (UAT) process, a structured questionnaire was designed and distributed to selected users who interacted with the TriPocket application. The goal of the questionnaire was to gather feedback on system usability, feature feedback, usability, performance and overall satisfaction from the perspective of actual users.

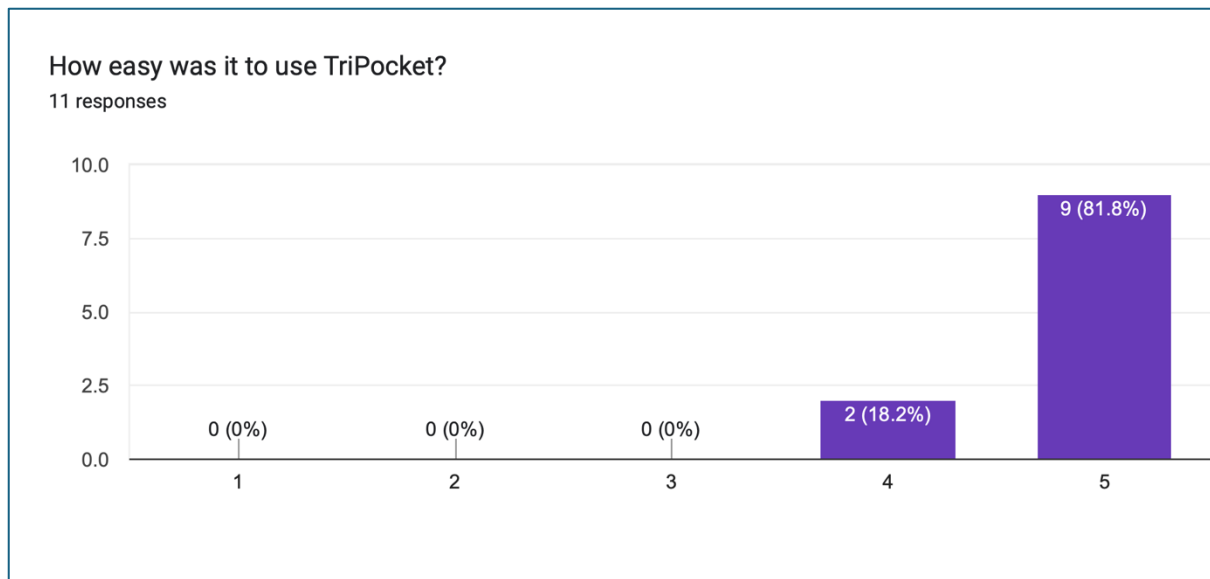


Figure 5.1: TriPocket Ease of Use

Most users rated the system as easy to use, indicating intuitive design and smooth navigation. This supports the goal of a user-friendly interface.

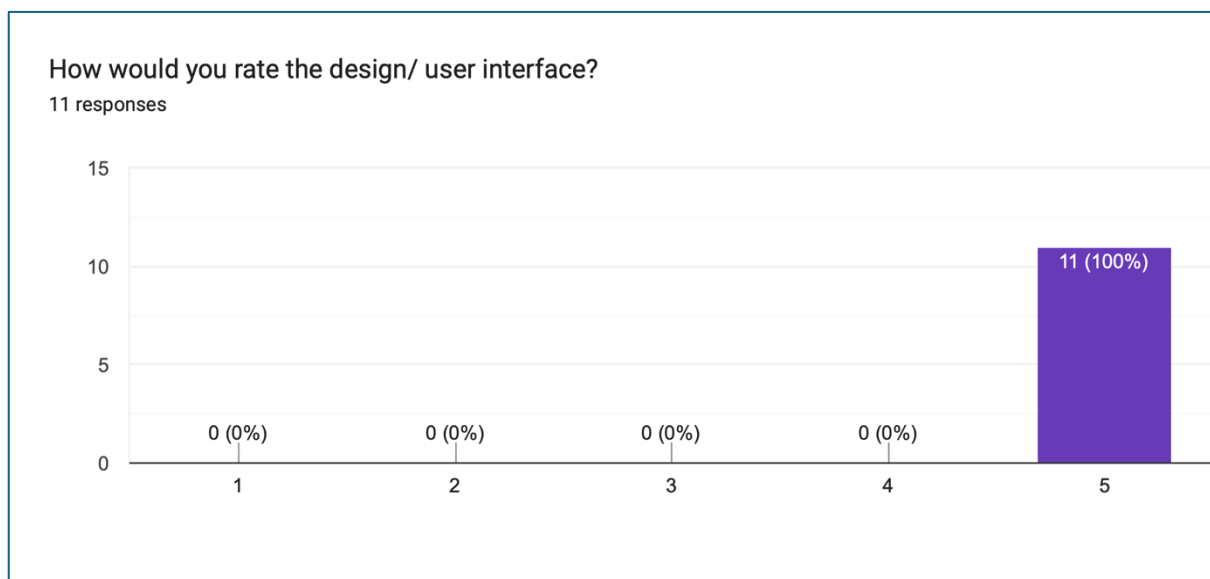


Figure 5.2: Design Rating 1-5 Scale

Users rated the visual and layout design positively on a 1-5 scale. While some minor issues on mobile view were identified, the overall design was considered attractive and professional.

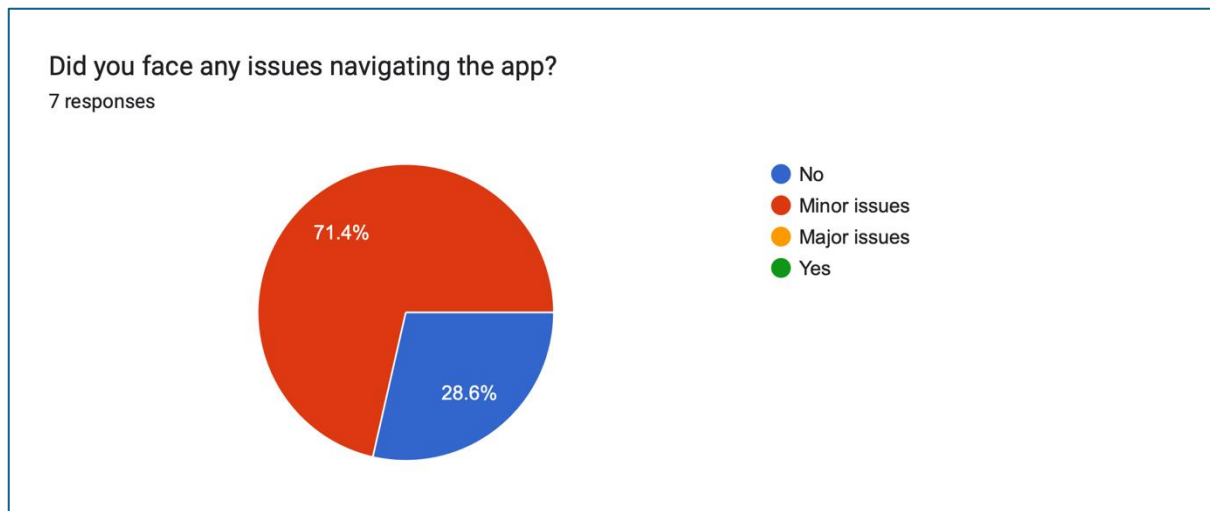


Figure 5.3: Issues Navigating TriPocket

A small number of users reported difficulty in locating certain features like the re-generate button. This feedback led to improved visibility of critical actions.

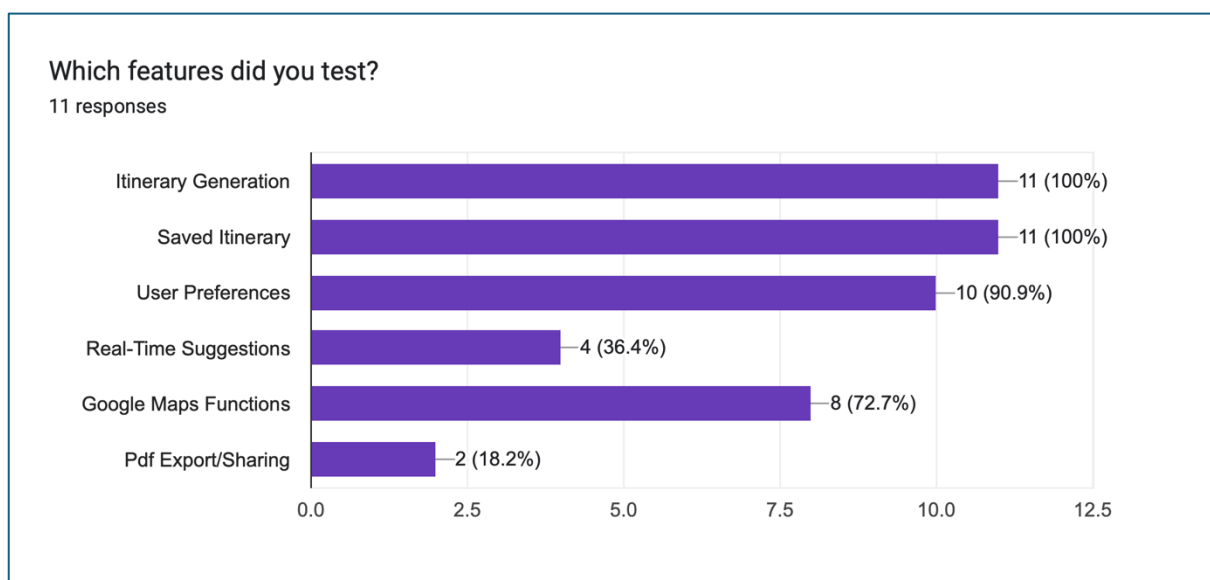


Figure 5.4: Features That Users Test

The most commonly used features included itinerary generation, saving trips, and selecting preferences. This confirms alignment with the app's primary objectives.

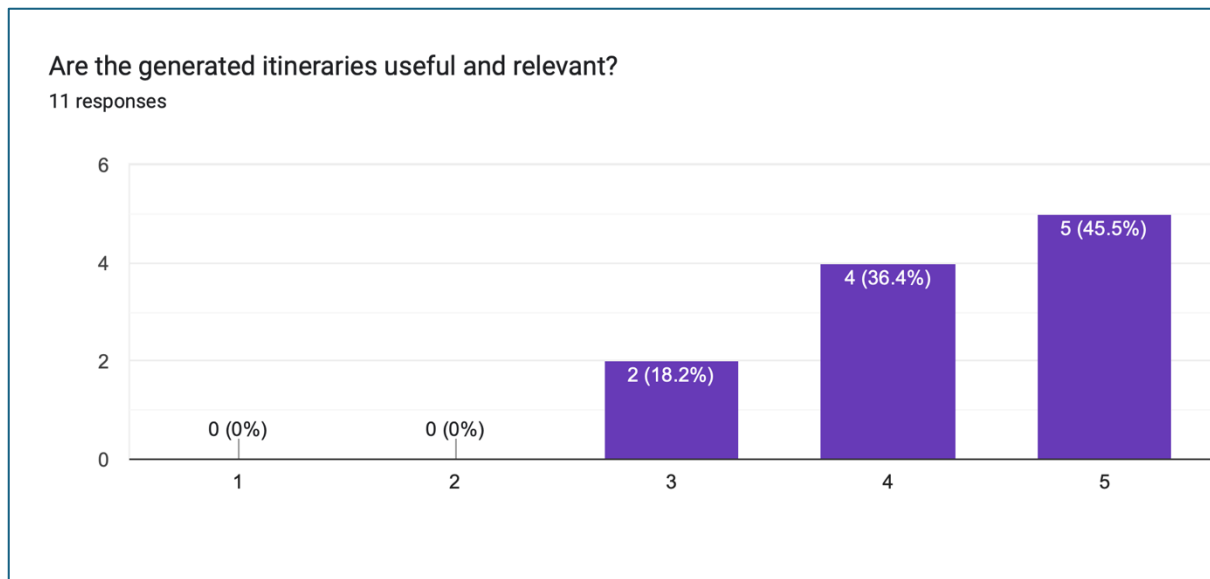


Figure 5.5: Usefulness of Generated Itineraries

The majority of users found the generated itineraries relevant and practical for travel planning, validating the AI integration's effectiveness.

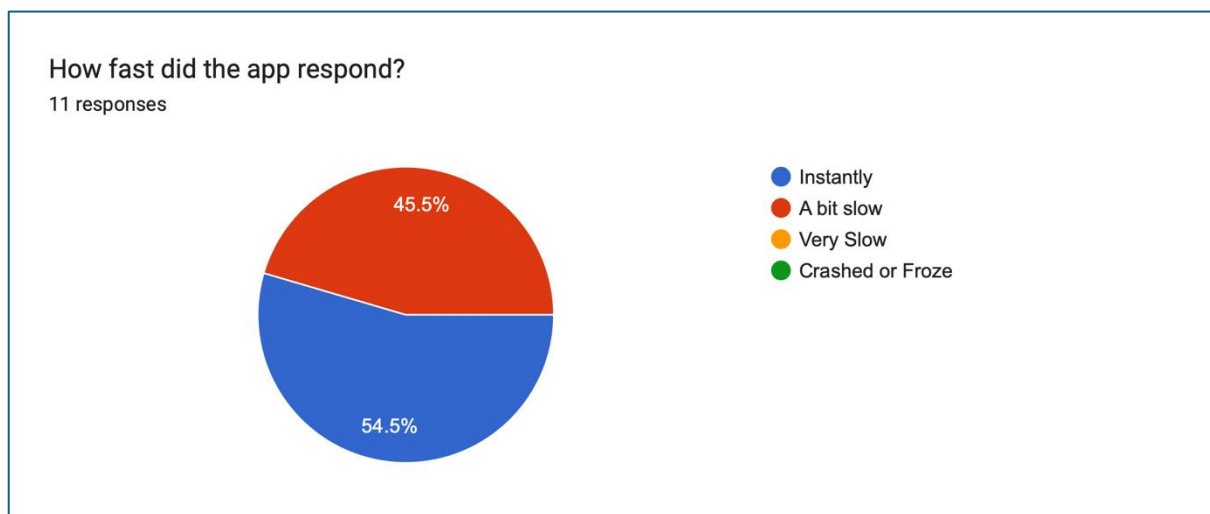


Figure 5.6: App Response

Most users were satisfied with the application's speed, although a few experienced slight delays due to real-time API responses. These were optimized in the final stage.

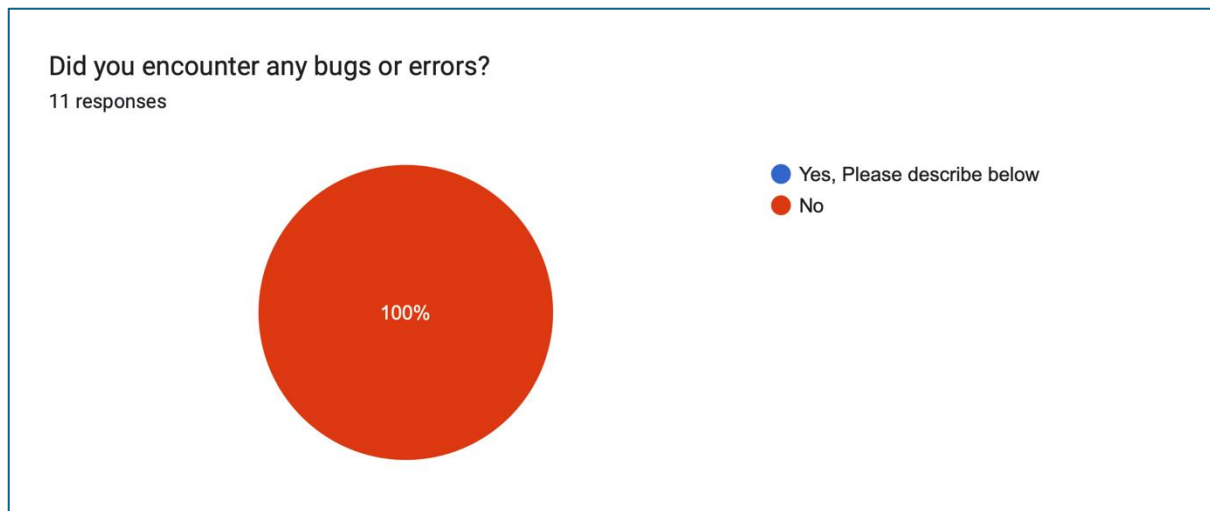


Figure 5.7: Bugs and Errors

Only minor bugs were reported, mostly UI-related. No critical issues were found, indicating good stability before deployment.

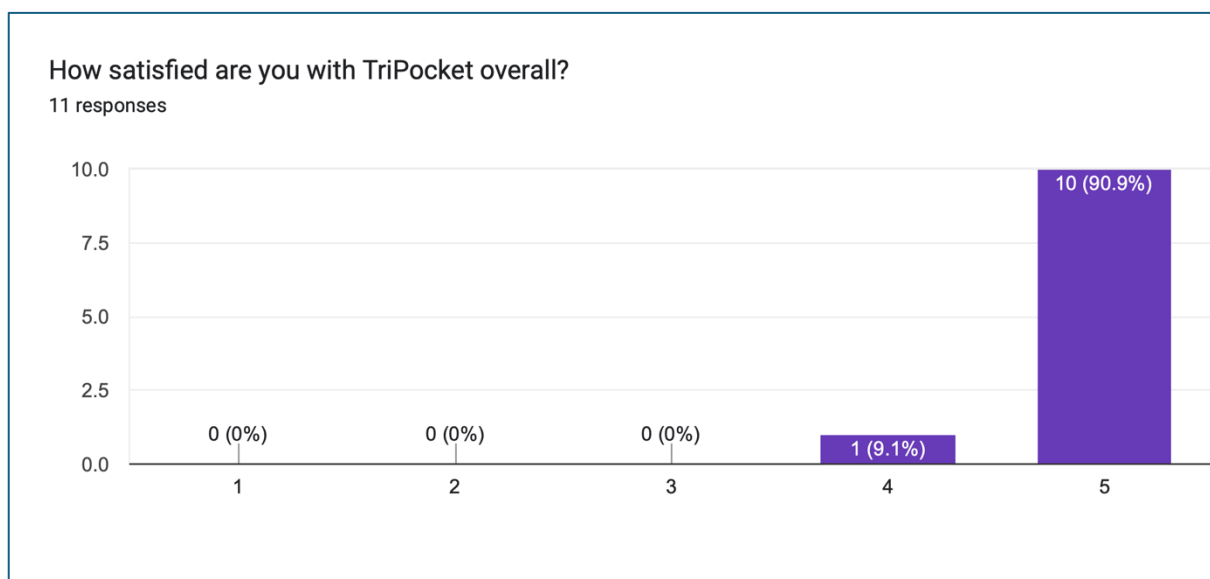


Figure 5.8: User Satisfaction

High satisfaction levels show that the application met or exceeded user expectations across major functionalities.

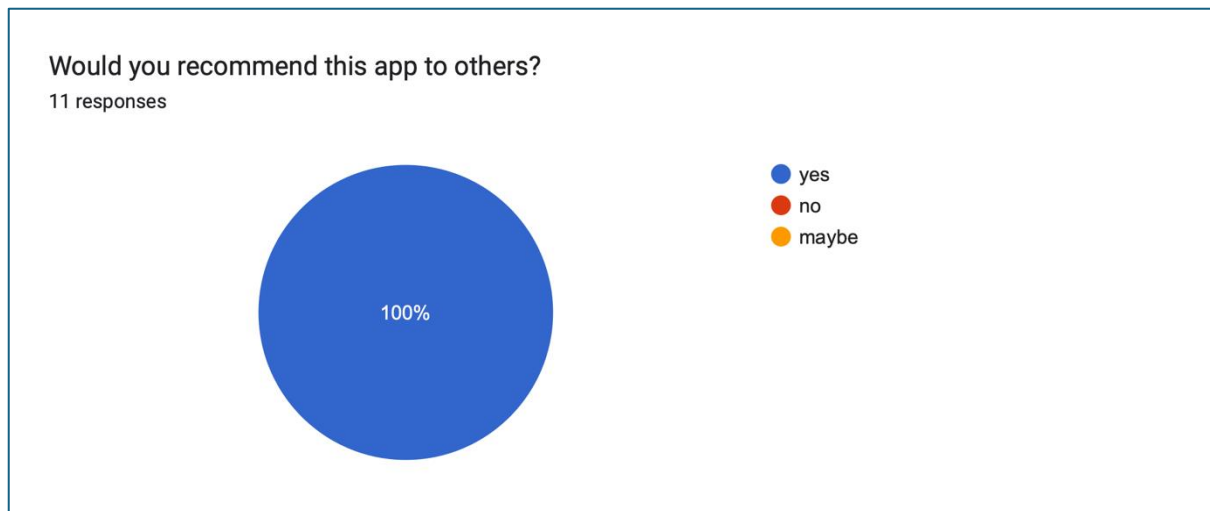


Figure 5.9: App Recommend

A large percentage of users indicated they would recommend TriPocket to others, demonstrating positive reception and trust in the app.

5.7 Test Cases Summary

Table 5.7: TriPocket Test Cases

Test Case ID	Feature Tested	Test Description	Expected Result	Actual Result	Status
TC01	User Registration/Login	User creates account and logs in with valid credentials	Redirected to dashboard, session is active	As expected	Pass
TC02	Itinerary Preferences Form	User selects preferences (e.g., budget, interest) and submits	Form accepted, redirects to itinerary generation	As expected	Pass
TC03	AI Itinerary Generation	System generates personalised	Itinerary cards with locations and	As expected	Pass

		itinerary from inputs	times are displayed		
TC04	Save Itinerary	User clicks save after generation	Itinerary stored in database and appears in dashboard	As expected	Pass
TC05	Export Itinerary (PDF/Link)	User exports itinerary	Download starts or shareable link is generated	As expected	Pass
TC06	Mobile Responsiveness	Open app on mobile browser	Layout adapts, all components usable	Minor layout spacing	Minor Fix
TC07	Invalid Form Submission	User submits form with missing fields	Error message shown, form not submitted	As expected	Pass
TC08	Session Security	Access dashboard without logging in	Redirected to login page	As expected	Pass
TC09	Browser Compatibility	Use Chrome, Firefox, Safari to test interface	UI behaves consistently across all browsers	As expected	Pass
TC10	Database Integrity	Save duplicate itinerary	Proper handling, no data conflict or corruption	As expected	Pass

5.8 Discussion Results

The testing process conducted throughout the development of TriPocket has provided comprehensive insight into the system's performance, reliability, and usability. Each testing phase contributed uniquely to validating the system from both technical and user-oriented perspectives.

Unit testing verified the logical correctness and stability of individual components, such as user registration, login, itinerary generation, and data management. Most units functioned as intended, and early detection of issues allowed for quick fixes, supporting the effectiveness of the development workflow.

System testing confirmed that the integrated components worked cohesively. Full workflows ranging from registration to itinerary customization were tested thoroughly. The application performed well under various scenarios, and all critical functionalities, such as preference selection, AI-based generation, and data persistence, behaved reliably. Minor issues involving loading delays and third-party API responses were identified and resolved.

Usability and non-functional testing provided essential feedback on how the system performed under real-world usage. Users found the interface simple and intuitive, with a generally smooth experience across desktop and mobile platforms. Feedback collected through iterative prototyping helped refine layout structures and button placements, improving overall user interaction.

Finally, User Acceptance Testing (UAT) demonstrated that the application aligns well with user expectations and project requirements. Most users were satisfied with the functionality, interface design, and output quality of the generated itineraries. The structured questionnaire responses confirmed that TriPocket is ready for real-world deployment, with only minimal refinements needed.

5.9 Summary

This chapter detailed the comprehensive testing efforts carried out on the TriPocket system, including unit, system, and user acceptance testing. Each test phase validated the stability, functionality, and usability of the system. Unit tests confirmed the accuracy of isolated components, while system tests ensured that the full workflow performed seamlessly. UAT results highlighted positive user feedback with only minimal UI improvements needed. Overall, the results affirm that TriPocket is reliable, user-friendly, and ready for release.

CHAPTER 6 : CONCLUSIONS AND FUTURE WORKS

6.1 Introduction

This chapter provides insights of the achievements and limitations found of TriPocket throughout the software lifecycle process of the proposed project evaluates the extent to which the stated objectives were achieved, and reflects on the challenges encountered during development. It also outlines the limitations and constraints faced throughout the process, including technical, data-related, and user experience factors. Other than that, this chapter also discusses the future work of enhancement of this proposed project TriPocket. The general goal is to maintain and improve TriPocket as days go by.

6.2 Objectives and Achievements

Table 6.1: Objectives and Achievements Table.

Objectives	Achievements
1. To study and analyse existing travel itinerary systems, focusing on their features, user experience, and limitations to identify opportunities for improvement and innovation.	Conducted comparative analysis and identified key UX and data flow gaps.
2. To design and implement a personalised travel itinerary generator for Malaysia	Built a working Laravel-based web app with AI integration and preference-based generation.
3. To test and evaluate usability, functionality, and performance of the system, ensuring it meets user expectations and aligns with project goals for convenience, engagement, and sustainability.	Collected real-user feedback, refined features, and ensured backend stability and scalability.

6.3 Limitations and Constraints

During the development of TriPocket, several limitations and constraints affected the project's scope and performance. One of the main challenges was the reliance on free or limited APIs, which often lacked comprehensive travel data for local Malaysian attractions. This resulted in some recommended places missing critical information such as images, opening hours, or user reviews. Attempts to overcome this using web scraping also introduced technical difficulties, especially with websites that use JavaScript to load content dynamically or impose rate limits that restrict data extraction.

Another constraint was the absence of real-time data integration. Although the system generates itinerary suggestions based on preferences, it currently does not account for live factors such as weather conditions, traffic congestion, or special events, which could significantly affect a user's travel experience. Additionally, while the system is web-responsive, its performance and layout on mobile devices could still be optimized for smoother interaction, especially for users planning trips on the go.

Lastly, the eco-friendly recommendation system was limited in scope, relying primarily on keyword-based assumptions rather than verified sustainability data. These constraints, while manageable, highlight important areas for refinement in future iterations of the project to improve the reliability, accuracy, and overall usability of TriPocket.

6.4 Future Works

Looking ahead, there are several ways TriPocket can be enhanced to deliver a more powerful and personalised travel planning experience. One key area is the integration of a more advanced AI model that continuously learns from user interactions, preferences, and feedback to generate even more accurate and context-aware itineraries. Improving data accuracy and richness through the use of more comprehensive, real-time APIs such as those for weather updates, local events, public transport, and traffic will allow the system to adapt dynamically to changing travel conditions.

Expanding TriPocket into a dedicated mobile application is also a vital next step to improve accessibility and on-the-go usability. A mobile-first experience will better serve travelers who rely heavily on smartphones during their journeys. Additionally, implementing

social features such as sharing itineraries, collaborating with friends, and exploring community-recommended trips can transform TriPocket into an interactive and engaging platform.

Other potential improvements include the development of a user review system for destinations, multi-language support to cater to a more diverse user base, and the incorporation of verified eco-tourism databases to enhance the credibility of sustainability-focused recommendations. These future enhancements will not only improve user satisfaction but also position TriPocket as a leading smart itinerary planner tailored for Malaysian tourism.

6.5 Conclusion

The development of TriPocket marks a significant step toward modernizing the way travelers plan their trips, particularly within the Malaysian tourism landscape. Through the integration of artificial intelligence, the system successfully delivers personalised travel itineraries based on user preferences, helping to bridge the gap between rigid, one-size-fits-all planners and the need for flexible, user-centric travel experiences. By leveraging Laravel as the core development framework and PostgreSQL as the database, the project maintained a stable, secure, and scalable architecture suitable for future expansion.

Throughout the project, key objectives were met, including the analysis of existing travel platforms, the design and implementation of a functional prototype tailored to Malaysian destinations, and the testing of the system to ensure its usability and reliability. The project not only showcased technical competency but also demonstrated the potential of AI-driven systems to enhance user engagement, convenience, and sustainable travel planning. Although certain limitations were encountered, the outcomes provide a strong foundation for further development, with TriPocket positioned to evolve into a smart, intuitive travel assistant that empowers users to explore with greater confidence and ease.

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Appendices

Appendix A

Sample Questionnaire

Link of the Survey Form: <https://forms.gle/2bP18d6u3Q55M4o76>

Section A:

TriPocket Your Personalized Travel Itinerary Generator

Welcome to TriPocket!
Your Personalized Travel Itinerary Companion for Exploring Malaysia

Hello! My name is Abang Haizeeq Najwan, and I am currently working on my **Final Year Project (FYP): TriPocket : Malaysia-Based Travel Itinerary Generator**.

TriPocket is designed to provide personalized travel itineraries tailored to your preferences, helping you discover the best destinations, activities, and local gems across Malaysia. Your valuable feedback will help me refine and improve this platform, making it more user-friendly and impactful.

This survey will take approximately **5 minutes** to complete. All responses will remain **confidential** and are used solely for academic and development purposes.

Thank you for supporting my FYP and contributing to the future of travel planning!

Age

☐ 18 - 24

☐ 25 - 30

☐ 31 >

Where are you from?

☐ Johor

☐ Pahang

☐ Kelantan

☐ Sabah

☐ Sarawak

☐ Perak

☐ Selangor

☐ Terengganu

☐ P. Pinang

☐ Kedah

☐ Perlis

☐ Melaka

☐ Negeri Sembilan

☐ WP Kuala Lumpur

☐ WP Labuan

☐ WP Putrajaya

☐ Brunei

☐ Singapura

☐ Thailand

☐ Indonesia

☐ Other: _____

Next

Clear form

Section B:

Travel Preferences

What type of traveler are you?

☐ Solo Traveler

☐ Couple/Partner Traveler

☐ Family Traveler

☐ Group Traveler

☐ Other:

How often do you travel? (Domestically or Internationally)

☐ Rarely (Less than once a year)

☐ Occasionally (1-2 times a year)

☐ Frequently (3 or more times a year)

What is the main purpose of your trip?

☐ Business

☐ Leisure

☐ Family/Personal

☐ Other:

What kind of destinations do you prefer?

☐ Beaches and Islands

☐ Mountains and Natures

☐ Cities and Urban Attractions

☐ Historical and Cultural Sites

☐ Other:

How do you usually plan your travel itineraries?

☐ I research and plan everything myself

☐ I use travel agents

☐ I rely on travel apps

☐ Other:

Back

Next

Clear form

Section C:

Challenges With Existing Applications

What issues you have faced with current travel apps?

☐ Limited Personalization Options

☐ Outdated Information

☐ Lack of Malaysian/Local Coverage

☐ Poor User Interface

☐ Other:

Back

Next

Clear form

Section D:

General Feedback

Any other features you would like to add in TriPocket

Your answer

Back

Submit

Clear form

108

Appendix B

User Acceptance Testing Questionnaire

Survey Link Form:

<https://docs.google.com/forms/d/e/1FAIpQLSe9qmcNgeTWhdkaUdcpa60K7Jg47rIGW3KNcVXro24n1AwVwA/viewform?usp=header>

Section 1 of 6

Final Year Project 2: TriPocket Usability & User Acceptance Testing (UAT) Feedback

Form description

After section 1 Continue to next section

Section 2 of 6

Section 1: Basic Information

Description (optional)

Age Range *

- ☐ 15-20
- ☐ 21-24
- ☐ 25-27

Section 2 of 6

Section 1: Basic Information

Description (optional)

Age Range *

- ☐ 15-20
- ☐ 21-24
- ☐ 25-27

Role *

- ☐ Student
- ☐ Traveller
- ☐ Software Tester
- ☐ Other...

After section 2 Continue to next section

Section 3 of 6

Usability Evaluation

Description (optional)

How easy was it to use TriPocket? *

12345

Very HardVery Easy

How would you rate the design/ user interface? *

12345

PoorExcellent

Did you face any issues navigating the app? *

No

Did you face any issues navigating the app? *

No

Minor issues

Major issues

Yes

If yes please describe

Long answer text

How satisfied are you with TriPocket overall? *

12345

Would you recommend this app to others? *

yes

no

maybe

Any suggestions for improvement? *

Long answer text