



PUSL3190 Computing Individual Project

Project Proposal

Plex.lk

Supervisor: Mrs. Pavithra Subashini

Name: Ambagahapathirage L Perera

Plymouth Index Number: 10899650

Degree Program: BSc(Hons) Software Engineering

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Chapter 01 – Problem Statement

Sri Lanka is an island nation known for its breathtaking landscapes, rich history, and vibrant culture. From the golden beaches along its coastline to the misty mountain ranges inland, Sri Lanka offers a variety of experiences for travelers. The country is home to incredible wildlife, ancient temples, and historic ruins that tell the stories of a fascinating past. Iconic landmarks like the Sigiriya rock fortress, the temples of Anuradhapura, and the beaches of Mirissa make Sri Lanka an attractive destination for tourists.

However, despite the beauty and potential of the country, Sri Lanka's tourism industry has not yet reached the heights it could achieve. While the country sees a steady influx of tourists, one significant issue stands out. A 2019 study revealed that only 30% of international visitors return for a second trip. This low percentage indicates a gap in how the country is engaging with tourists. Sri Lanka may be drawing people in for a first-time visit, but it is not captivating them enough to encourage repeat visits. (Division, 2019)

There are several challenges contributing to this problem. First, there is a lack of effective communication and promotion of Sri Lanka's hidden gems. While popular tourist spots like Colombo, Kandy, and Galle receive much attention, many lesser-known but equally beautiful places are overlooked. Tourists often miss out on these experiences because they are not well promoted, or the information available is incomplete or outdated. As a result, many visitors feel they have already experienced all that Sri Lanka has to offer after a single trip.

Another issue is the difficulty tourists face in accessing necessary information. Planning a trip to Sri Lanka can be complicated, with limited resources for discovering new places, understanding local customs, or finding transport options. Language barriers, inconsistent availability of real-time information, and the lack of comprehensive digital tools make it hard for visitors to explore the country with ease. These hurdles can diminish the overall experience of tourists, making their stay less enjoyable than it could be.

Finally, the tourism sector in Sri Lanka has been slow to adopt modern technologies that could improve visitor engagement and satisfaction. Many countries use innovative methods, such as artificial intelligence, to personalize travel experiences, provide real-time support, and create seamless journeys for tourists. In comparison, Sri Lanka's tourism industry remains reliant on traditional methods, limiting its ability to meet the expectations of tech-savvy travelers who are accustomed to digital solutions in other destinations.

While Sri Lanka offers an extraordinary blend of natural beauty and cultural richness, there are significant gaps in how these are presented and experienced by tourists. Without addressing these challenges, Sri Lanka risks not only losing potential new visitors but also failing to increase the number of tourists who return for a second time. Addressing these issues is key to maximizing the country's potential as a leading global destination and ensuring repeat tourism.

Chapter 02 – Project Description

I'm planning to develop a unique and engaging website called *Plex.lk*. This website is aimed specifically at tourists who have already visited Sri Lanka at least once. My goal is to encourage these visitors to return to our beautiful country and explore even more of what it has to offer. I've realized that while Sri Lanka attracts many first-time visitors, a lot of them don't come back for a second trip. With *Plex.lk*, I hope to change that by creating a platform that combines tourism with a fun and rewarding experience through gamification.

Objective of the Project

The core objective of *Plex.lk* is to boost the number of tourists who return to Sri Lanka for another visit. By providing a fresh, engaging, and interactive way to explore the country, the website will motivate tourists to keep coming back. The idea is to make every trip to Sri Lanka feel like a new adventure, no matter how many times someone has visited before.

I've chosen to target returning tourists because these visitors often already have a general idea of Sri Lanka's popular spots, but they might not know about the many hidden gems scattered across the island. *Plex.lk* aims to fill that gap by introducing new places in a gamified way, rewarding travelers for exploring less-known locations and revisiting their favorite spots.

Key Features of *Plex.lk*

To make the tourism experience more engaging, *Plex.lk* will feature several interactive elements that enhance the user's journey while exploring Sri Lanka. Below are the main components of the website:

1. Gamification through "Plexes" and Difficulty Levels

The most distinctive feature of *Plex.lk* is its gamified approach to tourism. Each location featured on the website will be assigned a difficulty level, which determines how challenging it might be to visit or explore that location. This could depend on factors like accessibility, remoteness, or the physical effort required to reach it.

Along with the difficulty level, each location will also be assigned a specific number of points, which I'm calling "plexes." The idea is simple, the more difficult a location is to visit, the more plexes a tourist will earn by going there. For example, visiting a remote waterfall might be rated as "high difficulty" and offer a high number of plexes, whereas a popular beach with easy access might be considered "low difficulty" and offer fewer plexes.

Tourists can accumulate plexes over time as they visit different places, creating an element of competition and personal achievement. This gamified aspect of the website is designed to encourage repeat visits as tourists aim to collect as many plexes as possible by exploring both well-known and hidden locations.

2. Geo-Location-Based Flag Placement

To make the system both fun and authentic, I'm incorporating geo-location technology into the platform. Once a tourist visits a location, they'll need to log in to their account on *Plex.lk* and place a virtual flag at the site they've visited. The system will automatically verify their presence using geo-location, ensuring that only actual visits count.

By placing their flag, users will not only earn their plexes, but they'll also contribute to the "flag count" for that location. This flag count will be visible to other users, showing how many people have visited the spot. It adds a social element to the platform, creating a sense of community among travelers and inspiring others to visit highly flagged places.

3. Leaderboard for Travelers

To enhance the competitive spirit, *Plex.lk* will feature a leaderboard that ranks users based on the number of plexes they've collected. Travelers who explore more challenging and less-visited locations will rise higher on the leaderboard. This feature is intended to motivate tourists to visit a broader range of places in Sri Lanka, rather than sticking to the usual popular spots.

The leaderboard will also include categories such as "Top Explorers of the Month" or "All-Time Leaders," which will reward consistent and dedicated travelers. These rankings will give users a tangible sense of progress and recognition for their efforts in exploring the country.

4. Location Details and Knowledge Sharing

Each location listed on *Plex.lk* will have a dedicated page with detailed information, including photos, descriptions, and a map showing its precise location. To make it more valuable to the user, these pages will also show the difficulty level, allocated plexes, flag count, and additional insights like the best time to visit or special tips from other travelers.

I'm also including a "Book of Knowledge" section, which will provide historical, cultural, and practical information about the locations. This will help visitors gain a deeper understanding of the places they visit, making their experience more enriching. Users will also be able to contribute to this knowledge base by adding their own insights, tips, and stories about the places they've explored.

5. Popular and Most Viewed Locations

To add more dimensions to the user experience, *Plex.lk* will feature sections showing the most popular locations (based on visits and flag counts) and the most viewed places on the platform. This feature will give users an idea of what other travelers are interested in and can inspire them to visit trending spots or discover hidden gems that others are exploring.

6. Location Saving and Blog Posting

To make trip planning more convenient, users can save locations they want to visit later. This feature will allow tourists to bookmark their favorite places or interesting spots they come across while browsing the website. When they're ready for their next trip to Sri Lanka, they'll have a ready-made list of places to visit.

Plex.lk will allow users to write and share blog posts about their travel experiences. This feature will enable travelers to document their journeys, share tips, and inspire others to explore Sri Lanka. It will also help create a sense of community on the platform, as users read and interact with each other's travel stories.

Why This Solution?

I believe that *Plex.lk* offers a unique solution to the problem of low repeat tourism in Sri Lanka. By gamifying the experience, I'm giving travelers a fun and rewarding reason to return to the country. Rather than just visiting the same few tourist hotspots, *Plex.lk* will encourage people to explore more of Sri Lanka's hidden treasures.

The use of geo-location technology adds an element of authenticity to the platform, ensuring that only genuine visits are rewarded. The competitive nature of the leaderboard will push travelers to visit new and more challenging locations, while the educational aspect of the Book of Knowledge will deepen their understanding and appreciation of the places they explore.

Plex.lk is more than just a travel website. It's a platform designed to enhance the travel experience through gamification, reward exploration, and create a community of passionate travelers. By giving tourists an exciting reason to come back, I believe this project will contribute to the growth of Sri Lanka's tourism industry and help showcase the true beauty of our island nation.

Project Keywords

1. Play

The word *Play* is an essential part of my project's concept. I chose to name the website *Plex.lk* as a combination of *Play* and *Explore in Sri Lanka*. The idea behind this is to create a fun and engaging experience for tourists as they explore the various locations in Sri Lanka. I want visitors to not just see travel as sightseeing, but as something enjoyable, where they can play around with new challenges, collect points, and make their journey feel like an adventure. This playful element will help make their trips more exciting and memorable.

2. Explore

Explore is the heart of what *Plex.lk* is all about. The website encourages tourists to go beyond the typical tourist spots and really dive into Sri Lanka's hidden treasures. Through *Plex.lk*, I want visitors to explore the diverse landscapes and rich culture of Sri Lanka in a more interactive and meaningful way. Whether it's hiking a remote mountain or visiting a quiet beach, the idea is to push travelers to discover more about our beautiful country. The word *Explore* perfectly captures the spirit of adventure that I hope to inspire with this project.

3. Sri Lanka

This project is entirely focused on promoting the beauty and culture of *Sri Lanka*. As a proud Sri Lankan, I know that our country has so much to offer, and I want to help visitors truly experience its full potential. From our ancient temples to scenic landscapes and vibrant wildlife, Sri Lanka is a place like no other. By highlighting both popular destinations and lesser-known places, *Plex.lk* will show tourists why they should keep coming back to Sri Lanka for more. It's all about showcasing the best of what our island has to offer.

4. Tourism

Tourism is the main focus of my project. Sri Lanka's tourism industry is vital to our economy, and my project is all about enhancing this sector by encouraging repeat visitors. The platform is designed to attract tourists who have already visited Sri Lanka before, encouraging them to return and explore more. My aim is to increase the number of tourists visiting Sri Lanka multiple times, which will contribute to the growth of our tourism industry and create a lasting impact on how Sri Lanka is perceived as a travel destination.

5. Gamify

The word *Gamify* is central to the solution I'm developing for this project. I'm addressing the problem of low-return tourism by adding a gamified element to the experience. Through *Plex.lk*, tourists can earn points, known as *plexes*, by visiting different locations, each with its own difficulty level. This game-like structure makes traveling more fun and rewarding. The more challenging the destination, the more points they'll earn. This approach will encourage tourists to explore more of Sri Lanka in a way that feels exciting and competitive, rather than just a regular vacation.

Chapter 03 – Research Gap

In the planning of my project *Plex.lk*, I conducted extensive research to explore existing solutions in the tourism industry and identify gaps that my project could address. This literature review highlights key findings from my research and how they shaped the direction of my project.

Existing Literature and Data on Tourism in Sri Lanka

Tourism plays a critical role in Sri Lanka's economy, and there has been a significant amount of research and data collection regarding the state of the tourism industry. One particularly influential document I came across during my research was a detailed **airport survey conducted in 2019**, which provided crucial insights into the behavior and patterns of tourists visiting Sri Lanka. The survey revealed a key statistic that greatly influenced the formation of my project, **only 30% of tourists who visit Sri Lanka return for a second trip**. This statistic highlighted a critical gap in the country's tourism industry, suggesting that while Sri Lanka is a popular destination for first-time visitors, the country struggles to retain them for return visits. This finding set the foundation for my project's core objective—to increase the number of repeat tourists.

The 2019 airport survey also contained rich data regarding the demographics of visitors, the places they visited, and their overall satisfaction levels. However, the document did not delve into the reasons behind the low return rate. This lack of detailed information on why tourists aren't returning opened a space for further exploration, giving me the idea that a more engaging approach to tourism—one that gives tourists fresh reasons to return—could fill this gap.

In addition to the airport survey, I reviewed resources from the **Sri Lanka Tourism Development Authority (SLTDA)**. The SLTDA regularly publishes up-to-date reports on tourism trends, statistics, and strategic plans to boost tourism. These reports showed a clear effort by the government and tourism-related organizations to promote Sri Lanka internationally and diversify its tourism offerings. However, there appeared to be no specific focus on targeting **returning tourists**, an area where I believe *Plex.lk* could offer significant value. The SLTDA reports were highly valuable in identifying key trends and developments in Sri Lanka's tourism sector, helping me refine my project to ensure it aligns with broader industry goals while also addressing an unmet need in the market.

Conversations with Industry Experts

As part of my research, I also sought the perspectives of **local tourist guides** who interact directly with visitors. Their insights helped contextualize the data I had gathered. According to these guides, many tourists feel that after visiting the major attractions such as **Colombo**, **Kandy**, and **Sigiriya**, they have seen all there is to see. They highlighted a recurring sentiment among tourists that they had “checked off” Sri Lanka from their travel list after just one visit.

This suggested that the country's tourism offerings are not being marketed in a way that encourages deeper exploration or multiple trips.

The guides further pointed out that tourists often do not know about the lesser-known but equally beautiful locations across Sri Lanka. These places tend to be overlooked because they are either not well-promoted or are perceived as difficult to access. From these conversations, I realized that **promoting off-the-beaten-path locations** and offering tourists an engaging reason to return could help bridge the gap in return visits.

Gap in Gamified Tourism Experiences

Another significant gap I identified during my research was the lack of **gamification in tourism** solutions targeting Sri Lanka. While many travel apps and websites focus on providing information, booking services, or user-generated reviews, I found no existing platforms that use a **gamified approach** to encourage tourists to explore destinations. Gamification has proven successful in other industries, where it increases user engagement by introducing rewards, competition, and challenges. By applying this concept to tourism, I saw an opportunity to create something truly unique.

Although gamified travel apps exist in other countries, their focus is often on individual achievements or general tourist engagement without specifically targeting returning visitors. My project *Plex.lk* fills this gap by introducing a system where tourists earn points, or "plexes," for visiting different locations, with the difficulty level of each location determining the number of plexes earned. This approach not only encourages tourists to return but also motivates them to visit more challenging or less-known places in Sri Lanka, thus promoting a deeper exploration of the country.

Conclusion of the Literature Review

The literature and resources I reviewed during my research revealed that while there is a wealth of data on Sri Lanka's tourism sector, there is little focus on increasing return visits or utilizing gamification to engage tourists. The 2019 airport survey provided the key insight that a large majority of tourists do not return to Sri Lanka after their first visit, and the SLTDA's reports supported the need for strategies to enhance tourist engagement. Discussions with local guides reinforced the idea that many tourists are unaware of Sri Lanka's hidden gems, and existing digital solutions lack innovative, interactive approaches to encourage return visits. (Authority, 2019)

Through this review, it became clear that **there is a gap in the tourism industry that *Plex.lk* can fill**. By combining elements of **gamification** and **return tourist engagement**, *Plex.lk* aims to offer a fresh solution that motivates tourists to come back to Sri Lanka and discover more of its natural beauty and cultural richness. No existing project has approached the problem in this way, making *Plex.lk* an original and valuable contribution to Sri Lanka's tourism landscape.

Chapter 04 – Requirements Analysis

Before starting my project *Plex.lk*, there are several key requirements I need to focus on, both in terms of knowledge and technical understanding. One of the most important aspects of the project is the feature where users can place flags at different locations they visit. For this to work, I need to have a solid understanding of how to fetch and verify a user's location when they place a flag. This is a crucial part of the system since the user's location needs to be identified accurately in real time to ensure they have physically visited the place.

To implement this, I'll need to dive deeper into **location-based services (LBS)** and **geo-location APIs**. Learning how to use these tools will allow me to capture the user's geographic position and verify it when they interact with the system. This feature has to be reliable and accurate, especially since it forms the basis for assigning points (plexes) and updating the leaderboard. I will need to research the best methods to ensure precision, especially in remote or less-developed areas of Sri Lanka, where internet connectivity and GPS accuracy might vary.

Apart from technical requirements, I'll also need to ensure that **user data privacy** is maintained, especially when dealing with location information. This involves understanding data privacy regulations, particularly those related to collecting and storing personal data, and ensuring that the users feel secure while using the website.

In addition, I'll need to build a clear understanding of how **gamification techniques** work. I plan to create a system where users are rewarded with points for visiting locations, and this requires me to study different models of gamified experiences to see what works best. The point allocation system, difficulty levels for locations, and the leaderboard will all need to be designed carefully to keep users engaged while maintaining fairness.

Lastly, as this project will have a large visual element, especially for displaying location details, maps, and photos, I will need to ensure that the **UI/UX design** is intuitive and user-friendly. It's important that users can easily navigate the website, view locations, and track their progress, which means I'll need to spend time on front-end design using tools like **NextJS** and **Tailwind CSS**.

In summary, the key areas I need to focus on before starting the project include mastering location-based services, ensuring data privacy, understanding gamification mechanics, and designing an engaging user interface. These requirements will be essential for the success of *Plex.lk*.

Chapter 05 – Finance

This project is particularly budget-friendly because I will be using free open-source tools for most of the development. These tools provide powerful functionality without the need for expensive licenses or subscriptions. By leveraging open-source resources, I can focus on delivering key features while keeping costs low. Additionally, essential services like hosting and domain registration are affordable, allowing the project to stay cost-effective while ensuring flexibility and scalability for future growth.

1. Domain and Hosting

- **Domain Name (Plex.lk)**
 - **LK Domain Registry** – Rs.10000.00
- **Web Hosting**
 - **Azure**: Free (MLSA)

2. Development and Technology Costs

- **Geo-Location API**
 - **Google Maps API** (for location services and maps)
 - Free Tier: First Stage
 - After Free Tier: \$7
- **Frontend Development**
 - **Next.js**: Free (Open-source)
 - **Tailwind CSS**: Free (Open-source)
 - **ShadCN Components**: Free (Open-source)
- **Backend Development**
 - **Node.js**: Free (Open-source)

3. Design and UI/UX

- **Figma** (Web-based design tool): Free

4. Testing Tools

- **Postman** (for API testing): Free

Chapter 06 – External Organizations

- Sri Lanka Tourism Development Authority.
- Sri Lanka Tourism Promotion Bureau.
- Sri Lanka Institute of Tourism and Hotel Management.

Chapter 07 – Time Frame

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