POLITECNICO
MILANO 1863

094214 - Software Engineering (for Automation)

Requirement Analysis and Specification Document

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1 Introduction

1.1 Purpose

Planning a vacation for a large group can be overwhelming, with numerous suggestions to consider, expenses to track, and logistics to coordinate. As we have encountered this problem several times ourselves, we want to find a solution that gathers a lot of necessary and useful functionalities, creating an efficient platform for all participants of the vacation.

1.2 Scope

The project will implement a travel planning platform in the form of a website to gather all the functionalities that can be necessary and useful to plan a vacation. This is done by creating a database-driven website with multiple pages that makes the process easy, clear, and comfortable for all participants in the trip. Our vision is to include functionalities such as

- **Overview:** A clear overview of the trip details, participants and tasks that needs to be done.
- **Itinerary:** This will include a calendar with an overview of the different activities with the ability to add suggestions to allow input from all participants.
- **Budget and payment settlement:** An overview of the expenses of the trip with diagrams and a payment settlement that shows how much different people are in debt/have paid through the trip.
- **Responsibilities:** Checklist of different responsibilities and things to be done.
- **External input:** APIs will be connected so that you can get information about happenings and weather during the vacation.

2 Overall description

2.1 Scenarios

The following scenarios will follow one group of friends going on a vacation.

- The members want inspiration for fun activities they can do during the trip. Therefore they check the weather and list of events happening in their destination provided on the website. By filling in the destination, the website contacts external APIs that display information on the frontend.
- All members of the group add suggestions for activities and restaurants they want to visit during the trip. This is saved as a new event in the backend. When they agree on an activity, they add it to their itinerary, and the state of the event will be updated in the backend.
- They have a lot of bookings to make for both hotels and activities. Therefore, they assign responsibilities for each task to a participant, so everyone does their part, and all tasks will be done. To keep track, they fill in and use the checklist on the platform, organizing the tasks based on their status. All tasks are saved in the database and are fetched by the system when loading the responsibilities page.
- The group of friends has just finished dinner. They use the platform to divide and settle the bill among themselves. They add the expense, which is saved in the database. This updates the diagram showing the expenses made by each participant. When they want to settle the expenses, they click on a button on the platform, which calculates the amount each participant has to pay and to whom.

2.2 Domain model

The application domain is illustrated in Figure 1. Users interact with the system to manage trips. The system gets weather forecast and recommendations for activities to do during trips through external APIs.

2.3 User characteristics

The intended users are all groups of people that want an easy and efficient way to coordinate and plan a trip, having all the necessary functionalities in one place.

2.4 Product functions

Trip Planning Dashboard

- The system shall allow users to manage trips with a shared itinerary.
- The system shall display the destination, travel dates, itinerary, to-do-list and economy of a trip.

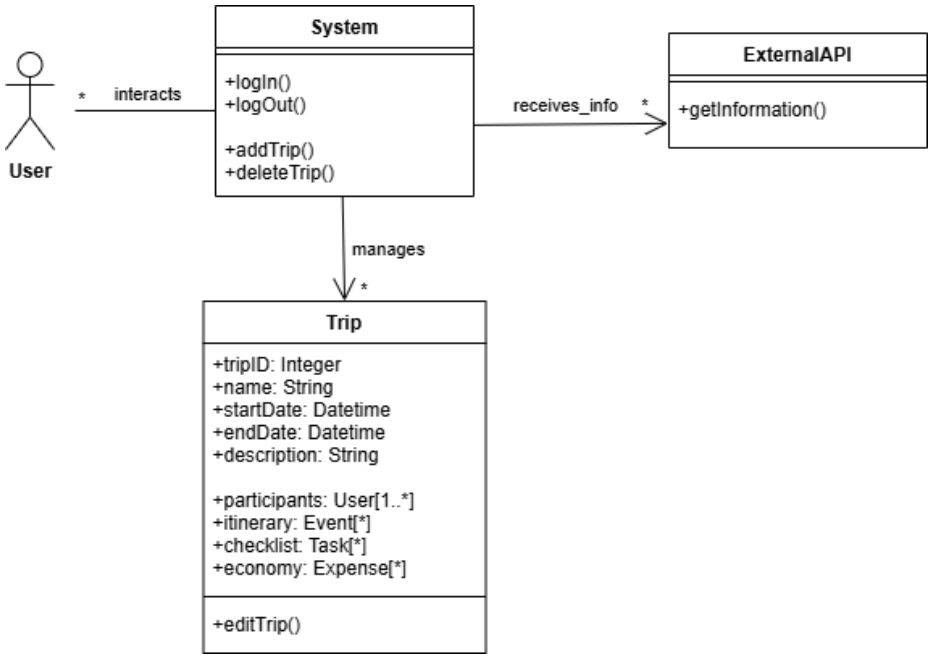

Figure 1: Class diagram describing the domain elements and corresponding relationships

Group Collaboration

- The system shall allow users to invite other members to a trip.
- The system shall allow users to assign responsibilities for events of a trip.

Suggestion System

- The system shall allow members of a trip to recommend activities, restaurants, and attractions.
- The system shall make it easy to add and delete events and edit the calendar.
- The system shall fetch data from external APIs to display information that can be useful for planning an itinerary.

Expense Tracking

- The system shall allow members of a trip to log expenses and who paid.
- The system shall automatically calculate balances and debts based on the logged expenses.
- The system shall display the economy in a clear way, preferably using diagrams.

2.5 Nonfunctional aspects

Intuitive Design: The system shall present a clean and user-friendly interface.

Authentication & Permissions: The system should ensure role-based access control.

Scalability: The system should support both small and large travel groups and itineraries.

2.6 Assumptions, dependencies and constraints

For our prototype, we make the following assumptions:

- All participants act rationally and cooperate as intended. They do not delete or add unnecessary expenses, tasks, or events, or add strangers as participants.
- Participants enter information with correct spelling and formatting. This is related to the destination for further use in contact with the OpenAI API to get information about the weather and happenings.
- The system depends on the external APIs working and not undergoing major changes.
- All participants are included in the expense settlement process and all expenses are divided equally among them all.
- All user accounts does already exist in our database. We have not implemented the possibility to make a new user, as this is only a prototype.
- No vacations at an earlier date than today will be made.
- No more than 5 activities can be added each day in the itinerary.