



Project Analysis Report

TED UNIVERSITY

Senior Project

Project Name:

NextRoute

The URL of the project web page:

<https://m-aras.github.io/>

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1. Introduction

1.1 Description

Young tourists are seeking unique travel experiences tailored to their hobbies and interests. Existing systems fail to adequately address these personalized needs. The primary goal of the project is NextRoute, an AI-powered platform that aims to provide young tourists with travel plans customized to their interests. Additionally, the platform offers student-exclusive discounts and budget-friendly accommodation options.

2. Current System

Currently, there is no platform tailored specifically to the interests of young tourists. As a result, users are forced to search for activities, accommodations, and local events separately, leading to a significant waste of time.

3. Proposed System

3.1 Overview

NextRoute leverages artificial intelligence to deliver personalized travel plans. It simplifies a trip that users might spend weeks planning by offering tailored suggestions in one go using specific filters. Based on users' selected interests, it provides recommendations for activities, local events, and accommodations.

3.2 Functional Requirements

- Users can register and log in to the system.
- Users can update their profiles (e.g., interests, travel dates).
- Users can request a password reset.
- Users can create, edit, and delete travel plans.
- Users can add events or recommended locations to their travel plans.
- Users can filter recommendations by category (concerts, festivals, artistic activities, historical activities).
- Users can verify their student status to access special discounts.
- Student verification documents can be uploaded through the system.
- The system can display special prices for verified students.
- Users can view the details of events on selected dates (e.g., date, time, venue).
- Events can be added to favorites.
- The system can notify users if an event is canceled.
- Hotel and restaurant owners can list their services on the system.
- Business partners can add special campaigns and promotions.

- Business partners can view and respond to user feedback.
- Users can write reviews and give ratings for hotels, restaurants, and events.
- The system can list average ratings and reviews.
- Users can edit or delete their own reviews.
- Users can view their travel plans in calendar format.
- Users can view the start and end times of events.
- Users can add friends to their travel plans.
- Group members can edit the same travel plan.
- Group members can comment and message each other.
- The system can send notifications to users about upcoming events.
- Users can stay informed about newly added events.
- The system allows users to customize their notification settings.
- Users can search for services like events, hotels, or restaurants.
- Search results can be sorted by criteria such as price, distance, or popularity.
- Users can view their past searches.
- Users can review previously created travel plans.
- Users can share their past travel experiences.
- The system can list different types of events to users (concerts, festivals, artistic activities, historical activities).
- Users can make selections based on event types.
- Users can be directed to links for time and ticket information of selected events.
- Users can add events or locations they are interested in to favorites.
- Favorites can be organized by category.
- Users can edit or clear their favorite lists.

3.3 Nonfunctional Requirements

1. Performance
 - The system must respond to user queries in less than 1 second.
 - The platform must support up to 10,000 concurrent users.
 - Recommendations must load within a maximum of 3 seconds.
2. Reliability
 - The system must maintain 99.9% uptime annually.
 - The system must automatically recover from unexpected failures without critical data loss.
3. Security
 - User data must be protected in compliance with GDPR and other international data protection standards.
 - The system must encrypt all data (both in storage and during transmission) and allow access only to authorized users.
 - Two-factor authentication must be applied for user sessions.
4. Scalability

- The system must handle sudden increases in user traffic (e.g., during holiday seasons).
 - Adding new features and modules must not affect system performance.
5. Extensibility
- The system must allow for the easy addition of new features or modules.
 - AI algorithms must be updatable based on user behavior.
6. Maintenance and Support
- The system must require minimal maintenance.
 - Errors must be automatically detected and reported by the system.
 - Technical support must be available 24/7 to resolve user issues.
7. Data Management
- All user and event data must be backed up regularly.
 - The database must be optimized for storing and querying large amounts of data efficiently.
 - User data must be automatically archived or deleted after a specific period (e.g., 5 years).
8. Environmental Sustainability
- Servers must be optimized for energy efficiency.
 - Cloud services must use environmentally friendly data centers to reduce the carbon footprint.
9. Language Support
- The system must provide multilingual support, allowing users to use the platform in their preferred language.
 - All text and content must be designed to be easily localizable.
10. Fault Tolerance
- The system must tolerate user errors and provide clear error messages.
 - In cases of incorrect data input, the system must guide the user to enter the correct information.

3.4 Pseudo Requirements

1. **A modern and aesthetic user interface:** A user interface with modern design elements should be provided to enhance user experience.
2. **Social media integration for sharing plans with friends:** Travel plans should be easy to share on social media platforms.
3. **Dark mode support:** A dark mode option should be available for convenient use at night.

4. **Drag-and-drop editing:** Users should be able to easily organize events and locations in their travel plans using drag-and-drop functionality.
5. **Personalized theme options:** Users should be able to customize the interface colors and themes according to their preferences.

3.5 System Models

3.5.1 Scenarios

1. New User Registration:

- **Scenario:** The user is accessing the system for the first time and wants to create an account.
- **Steps:**
 1. The user clicks the "Sign Up" button.
 2. The user enters their personal information (name, email, password).
 3. If the user is a student, they upload their student verification document.
 4. The system sends a verification email.
 5. The user completes the verification process and logs into the system.

2. Creating a Travel Plan:

- **Scenario:** The user wants to create a travel plan for specific dates.
- **Steps:**
 1. The user clicks the "Create New Plan" option.
 2. The user selects their interests (e.g., music, history, nature) and travel dates.
 3. The system provides event and accommodation recommendations based on the user's preferences.
 4. The user selects recommendations, creates the plan, and saves it.

3. Student Verification and Discount Usage:

- **Scenario:** The user wants to verify their student status to access discounts.
- **Steps:**
 1. The user navigates to the "Student Verification" screen.
 2. The system requests the user to upload a student verification document.
 3. The user uploads the document, and the system starts the verification process.
 4. Once verification is complete, the system provides the user with special prices.

4. Adding Events to Favorites:

- **Scenario:** The user wants to add an event to their favorites for later review.

- **Steps:**
 1. The user views an event page.
 2. The user clicks the "Add to Favorites" button.
 3. The system adds the event to the user's favorites list.
 4. The user can view event details from their favorites list.

5. Searching by Event Type:

- **Scenario:** The user wants to search for a specific type of event (e.g., concert).
- **Steps:**
 1. The user navigates to the "Search Events" page.
 2. The user applies an event type filter (e.g., concert, festival, art).
 3. The system lists events matching the user's selection.
 4. The user selects an event from the list and views its details.

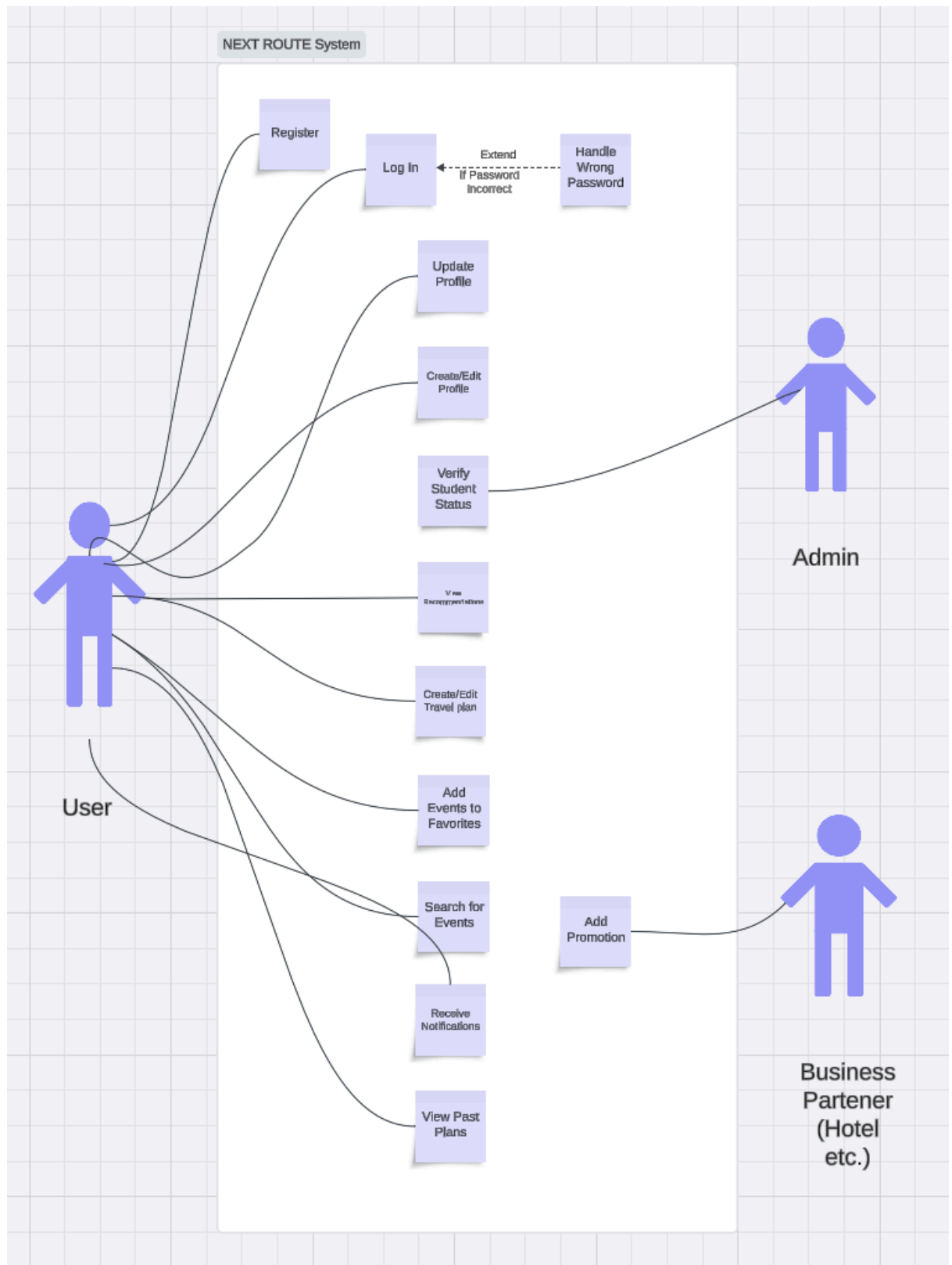
6. Receiving Notifications:

- **Scenario:** The user receives a notification about an upcoming event.
- **Steps:**
 1. The user has previously selected an event.
 2. The system sends a notification to the user one day before the event date.
 3. The user clicks the notification and views the event details.

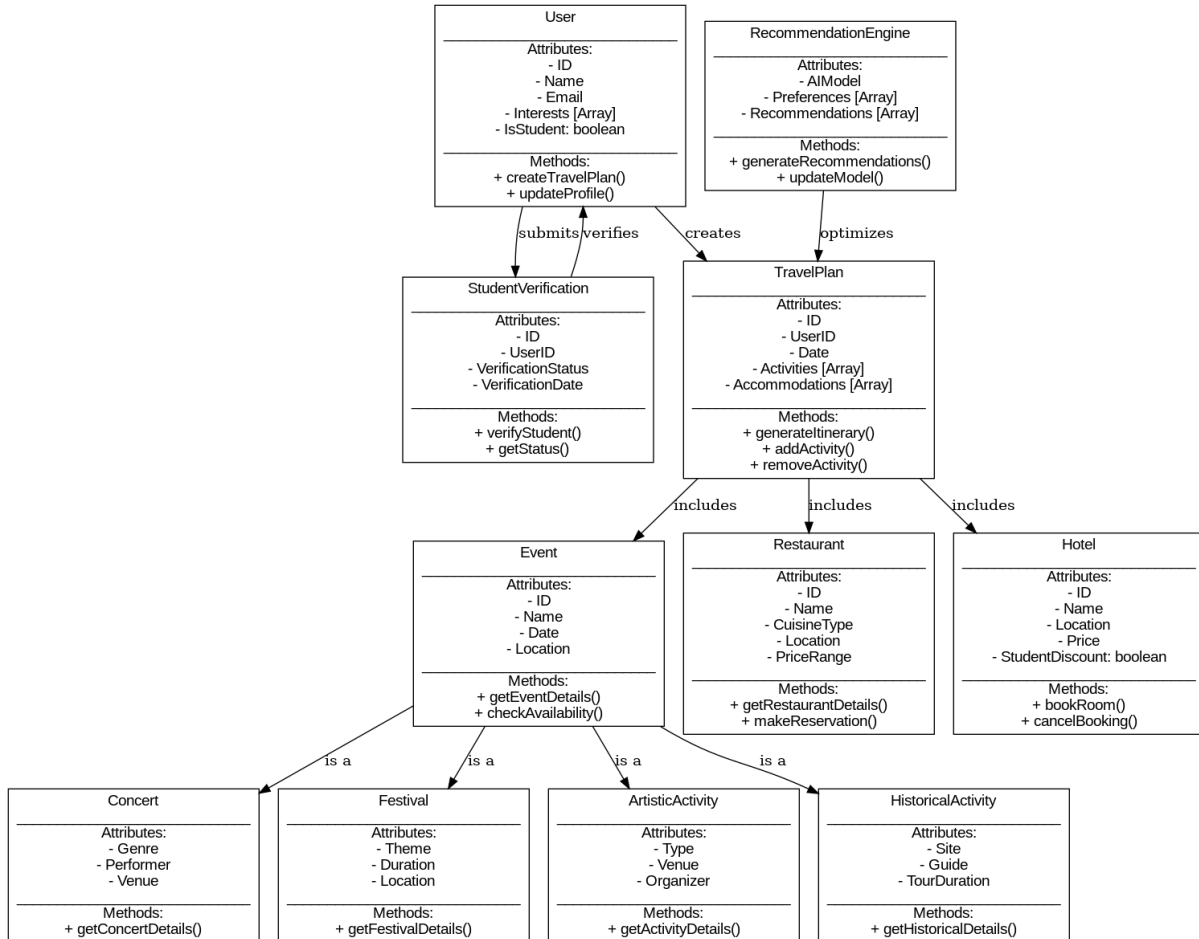
7. Viewing Past Travel Plans:

- **Scenario:** The user wants to review a previously created travel plan.
- **Steps:**
 1. The user navigates to the "My Past Plans" page.
 2. The system lists the user's past travel plans.
 3. The user selects a plan and views its details.
 4. The user can create a new plan based on the reviewed plan.

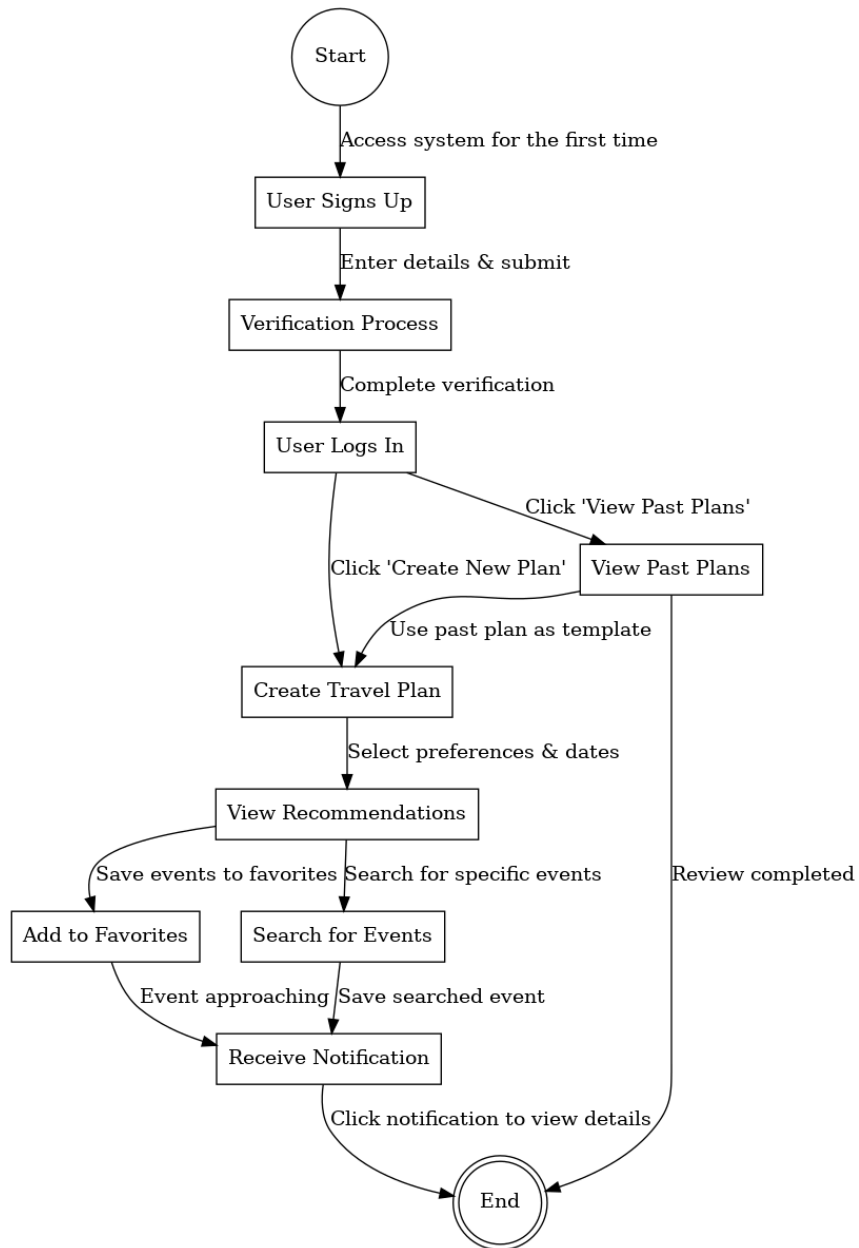
3.5.2 Use Case Model



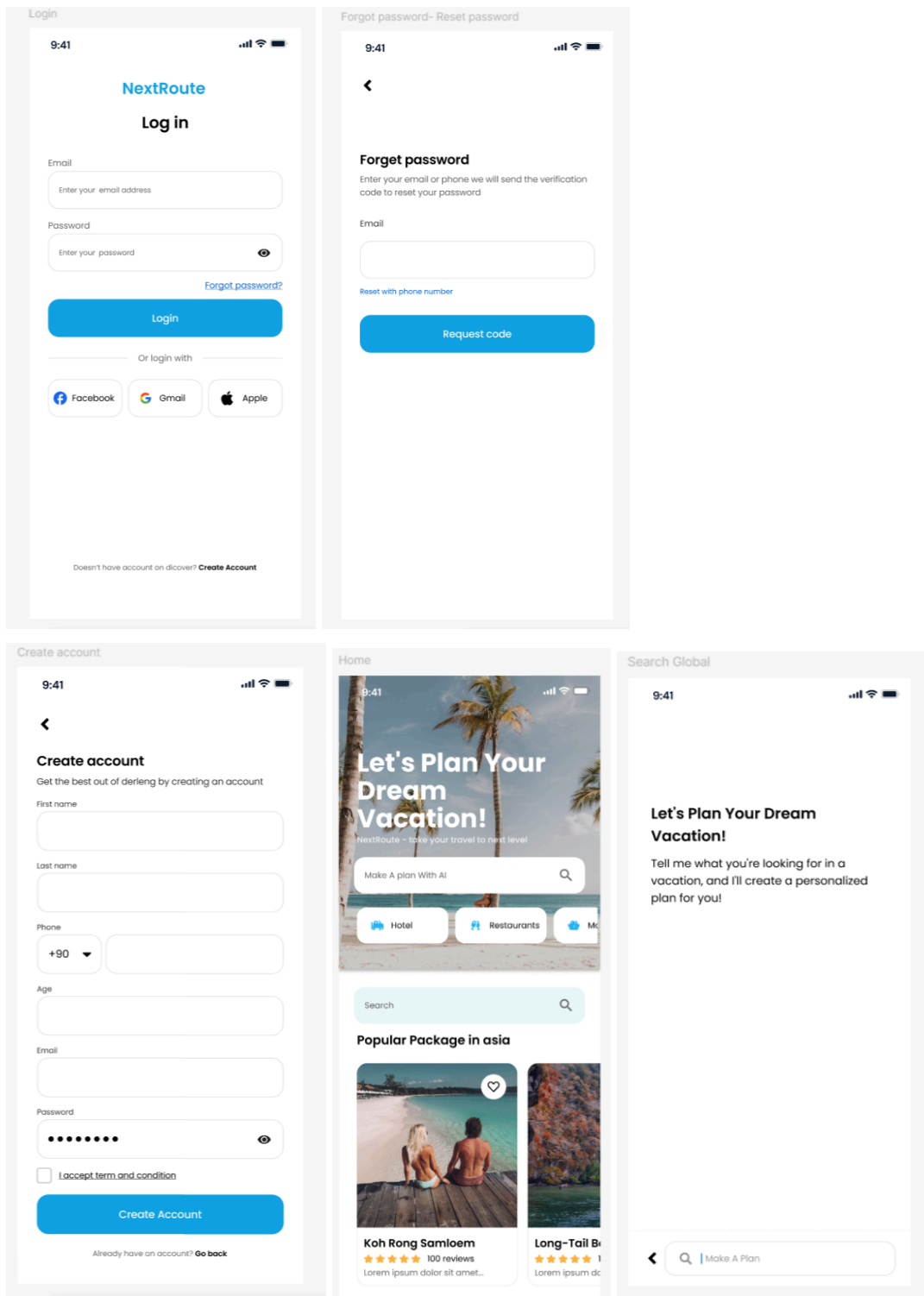
3.5.3 Object and Class Model



3.5.4 Dynamic Models



3.5.5 User Interface



Search Global

9:41



I'm looking for a beach vacation where I can relax and enjoy nature. I love seafood and trying new dishes. I want to stay for 7 days, and the budget should be medium-range, not luxury

Thank you for sharing your preferences! To create a more personalized vacation plan, I'll just ask a few more questions!

- Do you have a particular country or region in mind, or are you open to suggestions?

I'm open to suggestions!

Great! Based on your preferences, I'd recommend a stunning beach destination in Greece that offers both beautiful beaches and plenty of opportunities to enjoy nature. How does that sound?

- For your stay, would you prefer beachfront resorts, boutique hotels, or more eco-friendly accommodations?



🔍 Make A Plan

Tour List

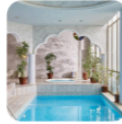
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Your Customized Beach Vacation Plan

Day 1: Arrival & Relaxation

Activity: Relax by the beach.



Grecotel Grand Hotel Egnatia

★★★★☆ 100 reviews

Greece Alexandroupolis

from \$60/person

2 day 1 night



Gialos Sea Food Taverna

★★★★☆ 100 reviews

Greece Alexandroupolis

\$15.00 - \$22.00

Day 2: Beach Morning & Alexandroupolis Concert

Activity: Evening concert at the Alexandroupolis Open Air Theatre.



Kagkeles Beach

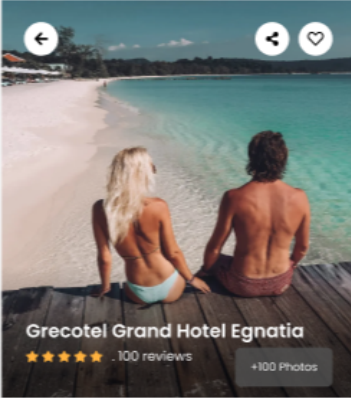
★★★★☆ 100 reviews

Greece Alexandroupolis



Ouzeri Alexis

Tour Detail



Grecotel Grand Hotel Egnatia

★★★★★

100 reviews

+100 Photos

About

Nestled amidst a verdant pine forest, beachfront Grecotel Grand Hotel Egnatia is yet within walking distance of the city centre. There are plenty of facilities, including a fitness room, stunning outdoor swimming pool and a refined restaurant...

What is included

Bus

Transportation

3 day 2 night

Duration

TAC200812695

Product code

Where will you stay

View the location on map

Lidl

Grecotel Astir Palace


Dedeagac

Λεξανόρουπολ

Show on map

Profile

9:41



My Profile

Favorites

>

Account Setting

Edit profile

>

Change language

>

Color mode

>

Derleng Legal

Terms and Condition

Privacy policy

Logout

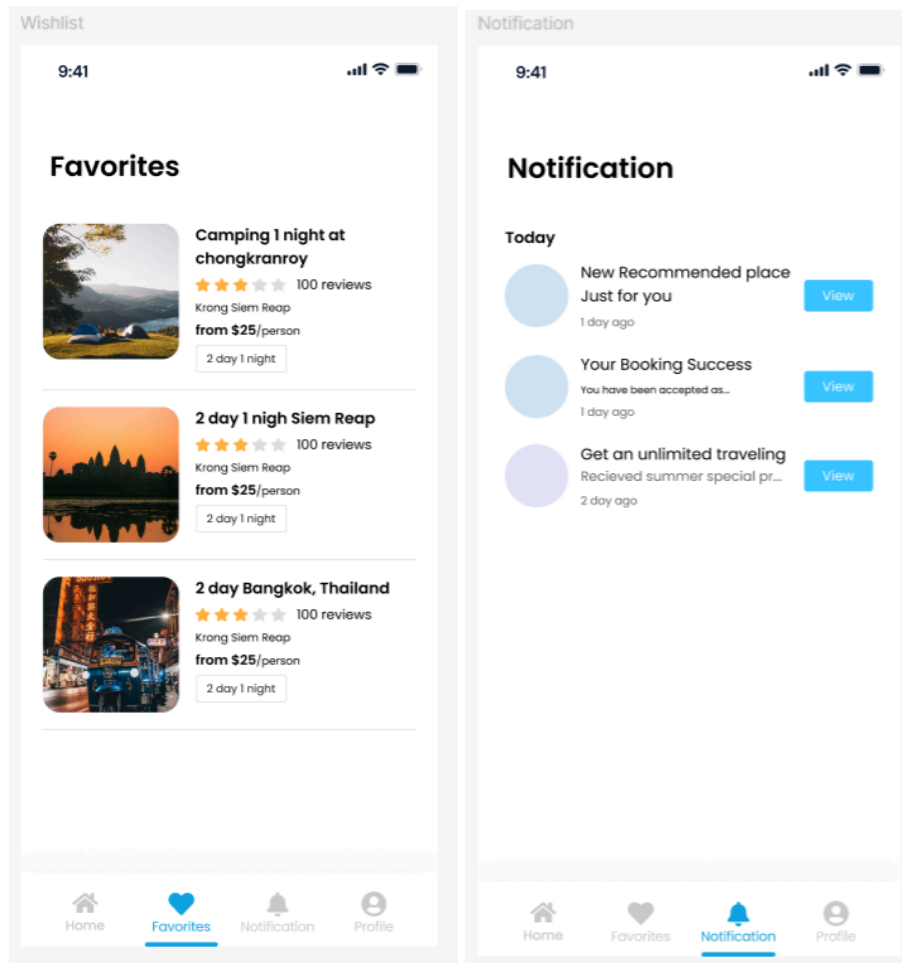
Version 3.0.0

Home

Favorites

Notification

Profile



For a more detailed and interactive view, you can explore the following link:
[https://www.figma.com/design/qExGBZUOGyN7Q5MJqMb1AU/Discover---Traveling-App-UI-\(Community\)?node-id=0-1&t=bukiENMqzm2GfL6y-1](https://www.figma.com/design/qExGBZUOGyN7Q5MJqMb1AU/Discover---Traveling-App-UI-(Community)?node-id=0-1&t=bukiENMqzm2GfL6y-1)

4. Glossary

1. **User:** Individuals using the system, such as travelers planning trips or users searching for events.
2. **Business Partner:** Hotel, restaurant, or other business owners advertising their services on the system.
3. **Travel Plan:** A program created by the user for a specific date, which may include events, accommodations, and places to visit.
4. **Recommendation:** Suggestions provided by the system based on the user's interests and preferred travel dates, such as events, hotels, or restaurants.
5. **Favorites:** A list where users save events or places of interest to review later.
6. **Notification:** Reminders or updates sent by the system, such as alerts about upcoming events.

7. **Event:** Activities that users can participate in, such as concerts, festivals, artistic activities, and historical tours.
8. **Student Verification:** A process where users provide proof of being a student to access special discounts on the platform.
9. **System:** The platform that allows users to create travel plans, access events, and discover services.
10. **Search:** The process where users query the system for specific types of events, hotels, or restaurants.
11. **Promotion:** Special discounts or campaigns offered to users by business partners.
12. **Past Plans:** Travel plans previously created and completed by users.
13. **Preferences:** Interests selected by users while creating a travel plan (e.g., music, history, nature).
14. **Student Discount:** Special prices offered to users who have completed the student verification process.
15. **AI (Artificial Intelligence):** Technology used to provide personalized recommendations based on the user's interests and past behavior.
16. **GDPR (General Data Protection Regulation):** An international data protection standard ensuring the security and privacy of user data.
17. **Multilingual Support:** A feature allowing users to access the platform in different languages.
18. **Event Filter:** A system feature that enables users to narrow down events based on type, date, or location.

5. References

- ACM Code of Ethics and Professional Conduct.
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