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NSW-Explorer App Documentation

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40005 Advanced iOS Development -  
Assessment Task 3: Project 2

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# Introduction

Welcome to the documentation for the NSW-Explorer app! 🐨

NSW-Explorer is a SwiftUI-based iOS application designed to help users discover and explore New South Wales, Australia. The app leverages the Google Places API to generate personalized, AI-powered journeys based on user interests. It provides a seamless and interactive experience for trip planning, from generation to completion.

This document provides a comprehensive overview of the project, including its technical stack, features, setup instructions, and error handling mechanisms.

# Tech Stack

The NSW-Explorer app is built with a modern and robust tech stack, focusing on native iOS development.

|  |  |  |
| --- | --- | --- |
| Category | Technology/Library | Purpose |
| UI Framework | SwiftUI | For building a modern, declarative user interface across all Apple platforms. |
| Mapping | MapKit | For displaying interactive maps and annotations without third-party SDKs. |
| API Integration | URLSession | For making asynchronous network requests to the Google Places API. |
| Data Persistence | User Defaults (in TripStorageService) | For saving and managing user's generated and completed trips locally. |
| State Management | @StateObject, @Published | For managing the state of the application and ensuring the UI updates reactively. |
| Language | Swift | The primary programming language for the entire application. |
| IDE | Xcode | The integrated development environment for building the app. |

# Features

NSW-Explorer is packed with features to make trip planning and exploration intuitive and enjoyable.

Trip Generation

* Personalized Journeys: Users can select from a variety of interests (e.g., Beaches, Museums, Hiking) to generate a personalized trip.
* Smart Algorithm: The app uses a smart algorithm to select the top-rated places based on Google ratings and review counts.
* Route Optimization: Journeys are optimized by organizing stops based on proximity for efficient travel.
* Real-Time Data: The app fetches live data from the Google Places API, including ratings, reviews, and place information.

Interactive Map View

* Native MapKit Integration: Provides a seamless, native iOS map experience.
* Custom Annotations: Stops are displayed on the map with color-coded, category-specific icons for easy identification.
* Auto-Zoom: The map automatically adjusts to fit all stops within the view.
* Stop Previews: Users can tap on a stop to view an interactive card with details.

Trip Management

* Save for Later: Users can save generated trips to their "My Trips" section to view later.
* Trip Statistics: The app tracks user statistics, such as total trips completed and total distance traveled.
* Categorization: Trips are organized into "Saved" and "Completed" categories.
* Grid/List View: Users can toggle between a grid or list view for their saved trips.
* Search and Filter: Users can easily find trips by name and filter by category.

Active Journey Tracking

* Real-Time Progress: When a journey is started, users can track their progress in real-time.
* Check-In Functionality: Users can check in at each stop, add notes, a rating, and a photo to create a travel log.
* Journey Completion: Upon completing a journey, users are presented with a celebration view summarizing their trip.

# Setup

To get the NSW-Explorer app up and running on your local machine, follow these steps:

1. Download The zip file and unzip
2. Open in Xcode:
   * Open the NSW-Explorer.xcodeproj file in Xcode.
3. Build and Run:
   * Select a simulator or a physical device and click the "Run" button in Xcode. The app should build and launch.

# Error Handling

The NSW-Explorer app includes robust error handling to ensure a smooth user experience, especially when dealing with network requests.

* API Errors: The GooglePlacesService.swift file defines a PlacesError enum to handle various API-related errors, such as an invalid URL, an invalid response, or an API error status.
* Journey Generation Errors: The JourneyGeneratorService.swift file defines a JourneyGenerationError enum to handle cases where no places are found for the selected interests or if the interests are invalid.
* User Feedback: In GeneratorView.swift, if an error occurs during trip generation, an alert is presented to the user with a descriptive error message.

This approach ensures that the user is always informed of any issues and that the app can gracefully handle unexpected situations.