

Smart Routing App using Expo and React Native

Final Project Report

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May 15, 2025

Abstract

This report presents the development of a smart routing mobile application using Expo and React Native. The app enables users to view optimal routes between two locations using OpenStreetMap and provides map-based interaction. Technologies used include MapLibre for rendering maps and Mapbox/OpenRouteService for routing.

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1 Team Members

number	Name
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Table 1: Team Members

2 Introduction

In this project, we built a cross-platform mobile application for routing between a source and destination using open data. The aim was to provide a simple navigation app without relying on proprietary maps like Google Maps.

3 Objectives

- Use open-source map data (OpenStreetMap).
- Implement routing logic using external APIs.
- Integrate a map interface for selecting source/destination.
- Use Expo and React Native for rapid development.

4 System Overview

5 Architecture

- **Frontend:** React Native with Expo.
- **Maps:** @maplibre/maplibre-react-native
- **Routing API:** Mapbox or OpenRouteService
- **Platform:** Android/iOS (via Expo)

6 Dependencies

- expo-notification
- expo-router
- maplibre

- fetch
- react-navigation

7 Implementation

8 Map Integration

MapLibre was used to display the OpenStreetMap tiles. Custom markers were added for source and destination points.

9 Routing

Routing is done by sending HTTP requests to an API. The response includes coordinates of the route polyline, which is rendered on the map.

10 Screenshots

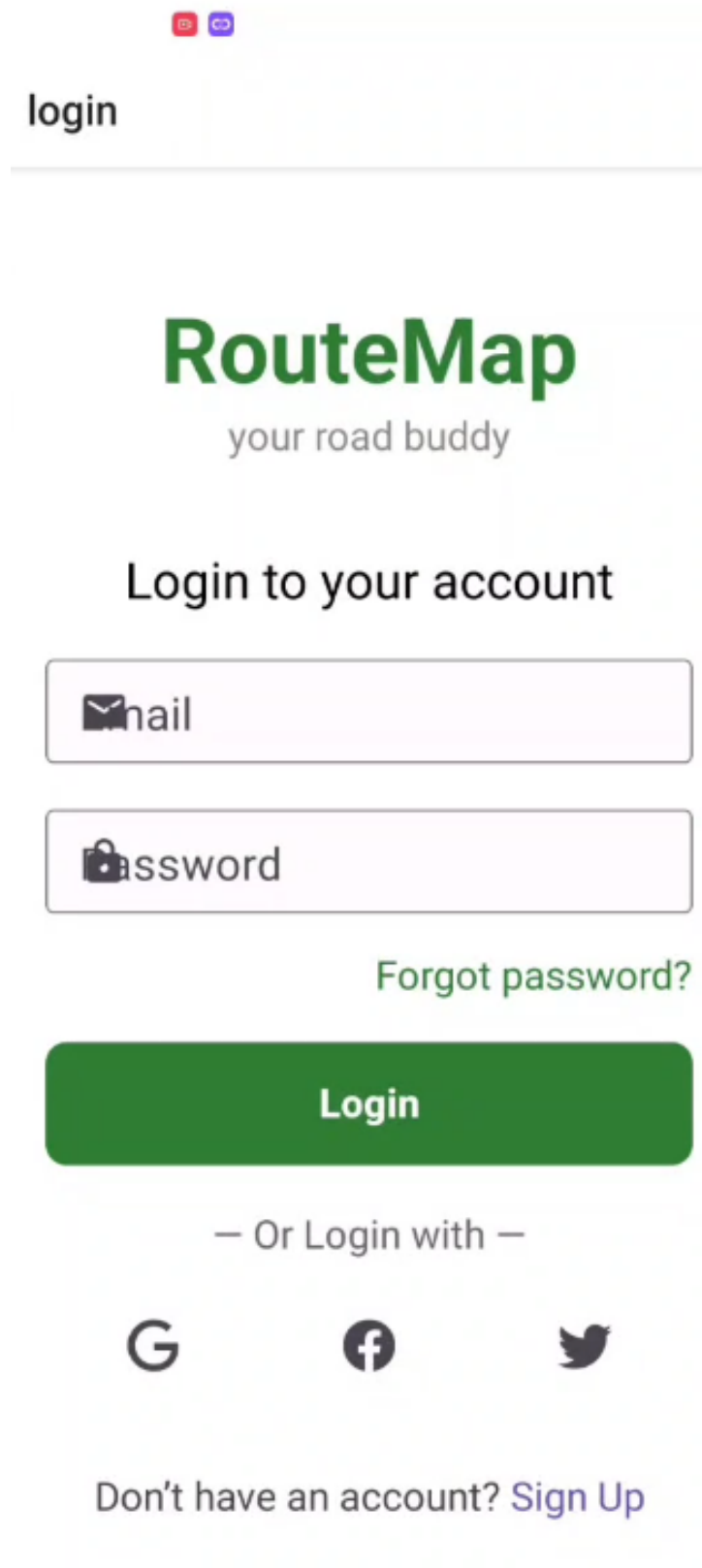


Figure 1: Login Screen

signup

Create an Account

Figure 2: Signup Screen

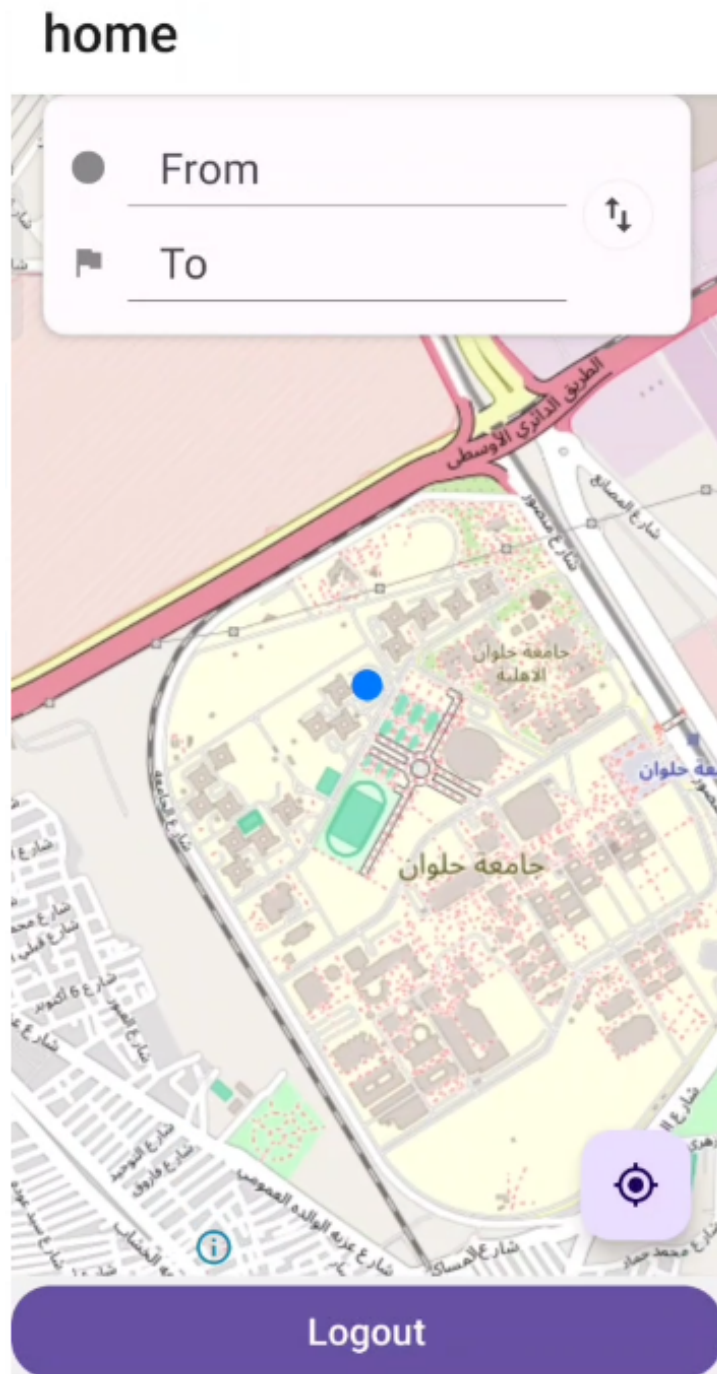


Figure 3: Home Page

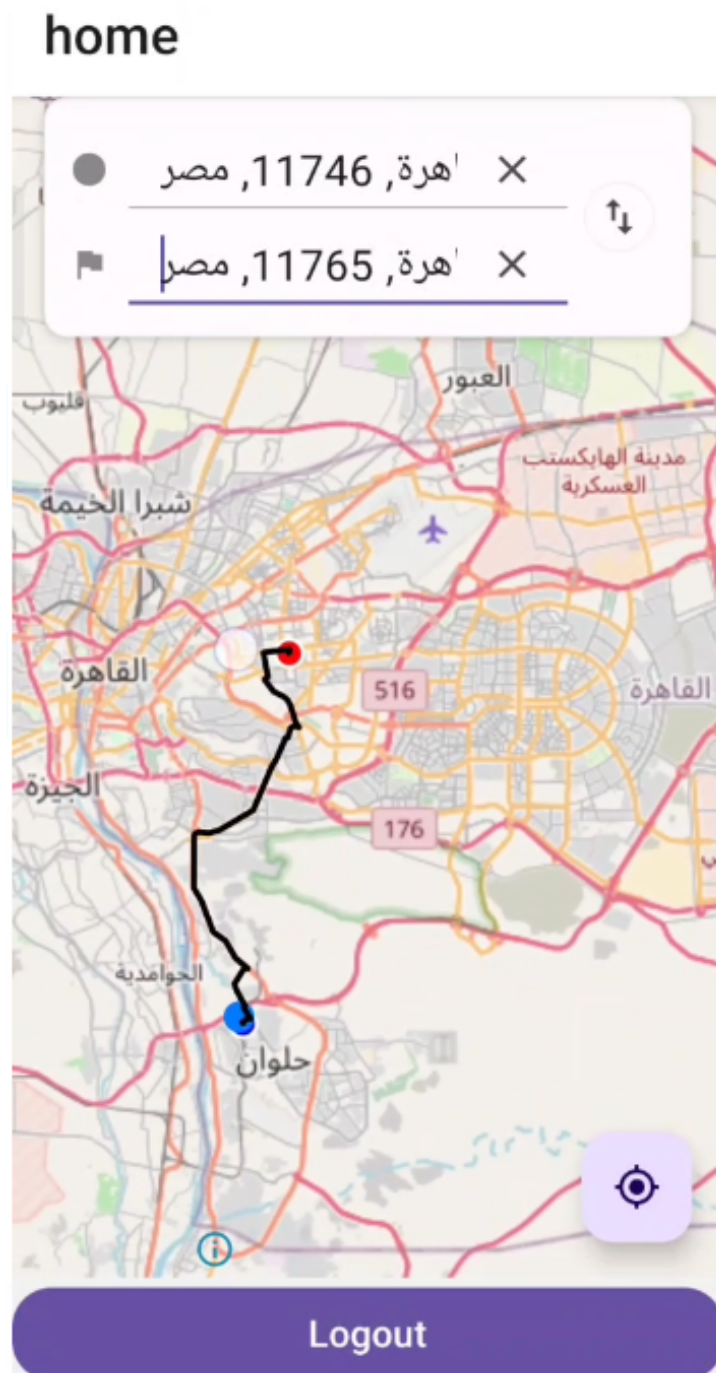


Figure 4: Routing Between Two Points

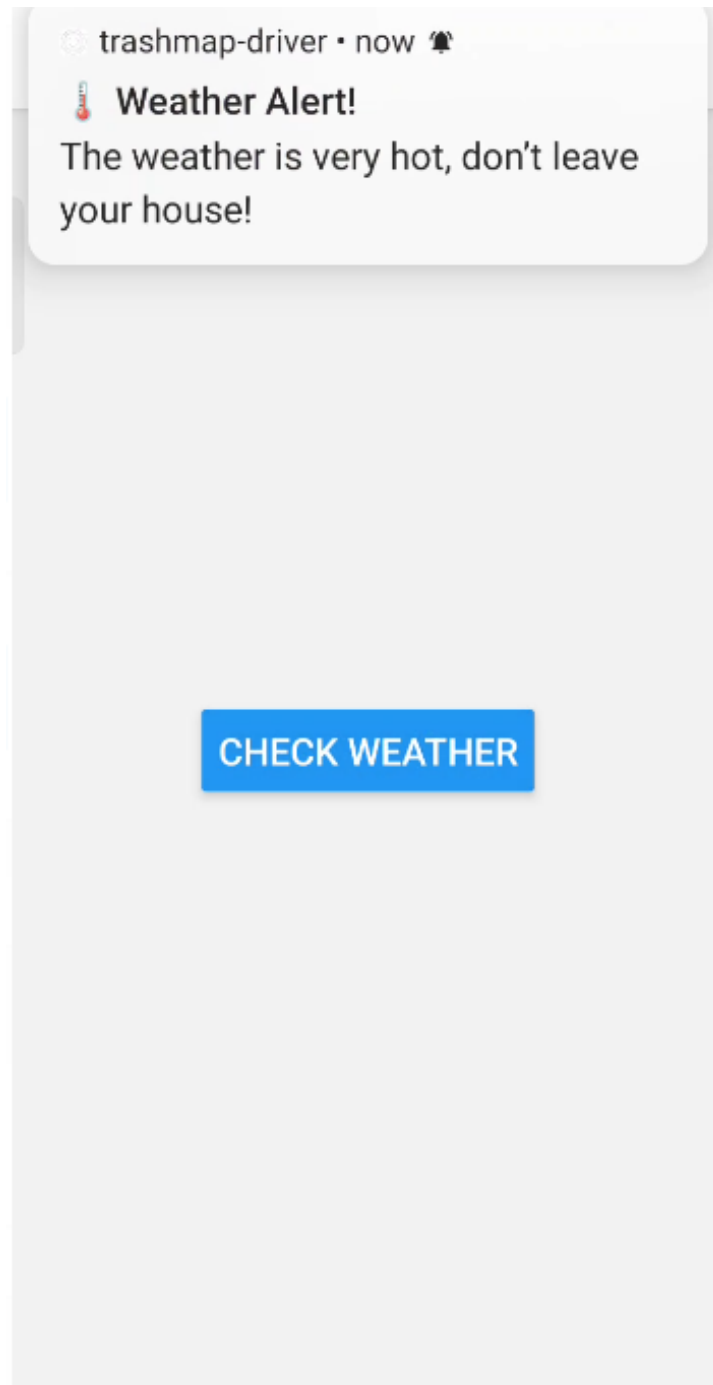


Figure 5: Weather Notification Feature

11 Conclusion

This project demonstrates the ability to integrate open-source tools for a real-world navigation application. Future improvements include offline routing, multi-stop directions, and better UI.

12 References

1. OpenStreetMap Documentation
2. OpenRouteService API
3. MapLibre
4. Expo Docs: <https://docs.expo.dev/>