**Road Signs & Driving Q&A Flutter Offline App**

# **Project Documentation: Road Signs TZ**

## 📌 Overview

**Road Signs TZ** is a simple and educational mobile app developed using **Flutter**. The goal of the app is to help users in Tanzania (or learners of Tanzanian driving rules) to:

* Learn 200+ road signs and their meanings.
* Practice with Q&A related to driving.
* Mark and save favorite signs/questions.
* Toggle between light/dark themes.
* Use the app completely **offline**.
* View a motivational splash screen on startup.

## Features

### ✅ Splash Screen

* Displays app logo and a welcome message.
* Has a **Start Learning** button.
* Controlled by SplashScreen widget in splash/splash\_screen.dart.

### ✅ Home Page

* Two main options:
  + **Road Signs**
  + **Driving Q&A**
* Access to settings (theme, share, favorites, update, about).
* Located in main.dart under HomePage.

### ✅ Road Signs Tabbed Interface

* Tabs:
  + All Signs
  + Favorites
* Signs are loaded from a local JSON file.
* Each sign has:
  + Image
  + Description
  + Favorite toggle
* Implemented in tabs/road\_signs\_tabs\_screen.dart.

### ✅ Driving Q&A

* Similar tabbed layout (All Q&A, Favorites).
* Loaded from local JSON.
* Implemented in screens/qa\_screen.dart.

### ✅ Settings Menu (Modal Sheet)

* Theme switch (System / Light / Dark)
* Share app via Share Plus
* Navigate to:
  + Favorites
  + Check for updates
  + About screen

### ✅ Favorites

* Allows users to view saved favorite signs or Q&A.
* Favorites are stored locally via SharedPreferences.
* Managed by FavoritesService.

### ✅ Theme Support

* Light, Dark, and System mode.
* Managed via ThemeService.

### ✅ Persistent Data

* Theme and favorites are persisted using SharedPreferences.

## 📁 Folder Structure

lib/

│

├── main.dart

├── splash/

│ ├── splash\_screen.dart

│ └── splash\_wrapper.dart (optional)

│

├── tabs/

│ └── road\_signs\_tabs\_screen.dart

│

├── screens/

│ ├── qa\_screen.dart

│ ├── about\_screen.dart

│ └── favorites\_screen.dart

│

├── services/

│ ├── favorites\_service.dart

│ └── theme\_service.dart

│

├── models/

│ ├── road\_sign.dart

│ └── question.dart

│

├── data/

│ ├── road\_signs.json

│ └── questions.json

│

└── widgets/

├── road\_sign\_card.dart

└── question\_card.dart

## 📦 Dependencies

In pubspec.yaml:

dependencies:

flutter:

sdk: flutter

provider: ^6.1.0

shared\_preferences: ^2.2.2

share\_plus: ^7.2.1

## 🎨 Assets

In pubspec.yaml:

flutter:

assets:

- assets/images/

- assets/data/

Typical assets:

* assets/images/car\_logo.png
* assets/data/road\_signs.json
* assets/data/questions.json

## ⚙Android Configuration

### App Name:

Edit android/app/src/main/AndroidManifest.xml:

<application android:label="Road Signs TZ" ... >

### App Icon:

Use [flutter\_launcher\_icons](https://pub.dev/packages/flutter_launcher_icons) to generate icons:

flutter\_launcher\_icons:

android: true

ios: true

image\_path: "assets/images/icon.png"

Then run:

flutter pub run flutter\_launcher\_icons:main

## ⚙iOS Configuration

### App Name:

Edit ios/Runner/Info.plist:

<key>CFBundleDisplayName</key>

<string>Road Signs TZ</string>

### App Icon:

Same icon setup as above.

## Testing

Run on Android or iOS:

flutter run

You can also build the release APK:

flutter build apk --release

## Offline Capability

* No internet required.
* All signs and Q&A are locally stored JSON files.

## 💬 Future Improvements

* Add Swahili language support.
* Add progress tracking for learned signs/questions.
* Enable quiz/gamified mode for testing knowledge.
* Option to update data via a lightweight API (optional).
* Add search bar with highlighting.
* Add categories (e.g., Warning, Regulatory, etc.).

## ✅ Summary

* **Purpose**: Educational road signs app for Tanzania.
* **Tech stack**: Flutter + Provider + SharedPreferences.
* **UI**: Light/Dark themes, splash, tabs, cards.
* **Offline**: Completely functional without internet.
* **Maintainable**: Clean, modular structure.