E-commerce Shoe App Documentation

Project Overview

The E-commerce Shoe App is a multi-screen application built using Flutter, designed to facilitate the online shopping experience for shoes. The app includes essential e-commerce functionalities such as user authentication, product listing, and cart management. The application is integrated with Firebase for backend services, including authentication and data storage.

Features

Core Features
1. **User Authentication**: Users can sign up, log in, and log out using Firebase Authentication.
2. **Product Listing**: Display a list of shoe products fetched from a Firebase Firestore database.
3. **Cart Management**: Users can add products to their cart and view the cart items.

State Management
- **Riverpod**: Advanced state management using Riverpod for managing app-wide states like authentication status, product list, and cart items.

Responsive Design
- The app provides a seamless experience across different screen sizes, ensuring usability on both mobile and tablet devices.

API Integration
- **Firebase Firestore**: Real-time data fetching and updating from Firebase Firestore for product listings and cart items.
- **Firebase Authentication**: Handling user authentication with Firebase.

Advanced UI/UX
- Polished user interface with custom animations and transitions.
- Thoughtful user interactions to enhance the shopping experience.

Getting Started

Prerequisites
- Flutter SDK
- Firebase Project setup with Firestore and Authentication

1. **Install dependencies**
   ```bash
   flutter pub get
   ```

2. **Set up Firebase**
   - Follow the Firebase setup instructions for Flutter and add your `google-services.json` (for Android) and `GoogleService-Info.plist` (for iOS) to the respective directories.

Running the App
```bash
flutter run
```

Project Structure

```
lib/
├── main.dart              # Entry point of the app
├── models/                # Data models
│   └── product_model.dart
├── providers/             # Riverpod providers
│   └── auth_provider.dart
│   └── cart_provider.dart
│   └── product_provider.dart
├── screens/               # Application screens
│   └── home_page.dart
│   └── login_page.dart
│   └── product_detail_page.dart
│   └── cart_page.dart
├── services/              # Firebase services
│   └── auth_service.dart
│   └── product_service.dart
│   └── cart_service.dart
└── widgets/               # Reusable widgets
    └── product_card.dart
    └── cart_item.dart
```

Design Decisions

- **Riverpod for State Management**: Chosen for its simplicity and power in handling app-wide state.

- **Firebase Integration**: Provides a robust backend service for authentication and real-time database needs.
- **Responsive Design**: Ensures the app is usable on various device sizes, providing a flexible and scalable UI.

Conclusion

This documentation provides a comprehensive guide to the E-commerce Shoe App. The app leverages Flutter's capabilities to deliver a polished, responsive e-commerce experience integrated with Firebase services for backend support. Clear project structure and state management using Riverpod ensure maintainability and scalability.

For any further questions or issues, please refer to the detailed code comments and the Flutter and Firebase documentation.