**Shopping App Flutter**

**Dependencies Used:**

1. **Firebase Firestore:**
   * **Purpose:** Firestore is a NoSQL cloud database by Firebase. It's used to store and retrieve structured data, such as user information, orders, and product details.
   * **Implementation:**
     + Firestore is initialized in the **main.dart** file.
     + Functions in **AuthService** and **AppDataProvider** interact with Firestore collections to handle user authentication and fetch data.
2. **Provider:**
   * **Purpose:** Provider is a state management solution that allows sharing data between different parts of the application efficiently.
   * **Implementation:**
     + Used throughout the project with **ChangeNotifierProvider** to manage the state of various components such as authentication, app data, and notifications.

**Screens and Widgets:**

1. **Main Application Entry Point (main.dart):**
   * **Initialization:**
     + Initializes Firebase with **Firebase.initializeApp()**.
     + Sets up the main application widget (**MyApp**) wrapped with **MultiProvider** for state management.
   * **Root Widget:**
     + **MyApp** is the root widget using **MaterialApp** with a custom theme.
     + Launches **SplashScreen** initially.
2. **SplashScreen Widget:**
   * **Purpose:** Displays a loading screen while checking if the user is logged in.
   * **Implementation:**
     + Uses **FutureBuilder** to check the login status.
     + Navigates to **HomePage** if the user is logged in; otherwise, navigates to **LoginScreen**.
3. **LoginScreen Widget:**
   * **Purpose:** Allows users to log in.
   * **Implementation:**
     + Uses **AuthService** for email/password authentication.
     + Displays a form with text fields for email and password.
4. **HomePage Widget:**
   * **Purpose:** Main screen after login, displays user-specific content based on authentication status.
   * **Implementation:**
     + Uses **ChangeNotifierProvider** for **AuthService**, **AppDataProvider**, and **NotificationProvider**.
     + Integrates a bottom navigation bar for navigation.
5. **CartPage Widget:**
   * **Purpose:** Displays the user's shopping cart.
   * **Implementation:**
     + Uses **ChangeNotifierProvider** for **CartProvider** and **NotificationProvider**.
     + Utilizes **Consumer** to update UI on cart changes.
     + Implements a list of cart items, total, and a button to proceed to checkout.
6. **NotificationPage Widget:**
   * **Purpose:** Displays notifications.
   * **Implementation:**
     + Uses **ChangeNotifierProvider** for **NotificationProvider**.
     + Shows a list of notifications.
7. **AllCategoriesPage Widget:**
   * **Purpose:** Displays all categories and products.
   * **Implementation:**
     + Uses **ChangeNotifierProvider** for **AppDataProvider**.
     + Utilizes **Row**, **Column**, and **InkWell** for layout.
     + Clicking on "See All" category navigates to a page showing all categories in a column, alongside a list of products.
8. **OrderPage Widget:**
   * **Purpose:** Displays a list of orders.
   * **Implementation:**
     + Uses **FutureBuilder** to fetch and display order data.
     + Navigates to an **OrderDetailsPage** on item click.
9. **OrderDetailsPage Widget:**
   * **Purpose:** Displays details of a specific order.
   * **Implementation:**
     + Uses **ListView.builder** to show a list of items in the order.
     + Retrieves and displays data from Firestore.
10. **AuthService Class:**
    * **Purpose:** Handles user authentication using Firebase Auth.
    * **Implementation:**
      + Provides functions for sign-up, login, and logout.
      + Uses **SharedPreferences** to persist login state.
11. **AppDataProvider Class:**
    * **Purpose:** Manages and provides data for ads, products, and categories.
    * **Implementation:**
      + Uses **ChangeNotifier** for state management.
      + Fetches data from Firestore for ads, products, and categories.
12. **Profile Page:**
    * **Purpose**: Displays user information and provides access to essential options like viewing past orders and logging out.
    * **Implementation**:
      + Utilizes a CustomAppBar with notification and cart icons for enhanced user experience.
      + Features a header section with the user's profile picture, name, and email.
      + Offers interactive options, such as "View Past Orders" and "Logout."
      + Utilizes the BottomNavigationWidget for easy navigation within the app.
      + Reusable buildListItem widget for creating interactive list items.

**Widgets Used:**

* **CustomAppBar**: Customized app bar for improved functionality.
* **BottomNavigationWidget**: Simplifies navigation within the app.
* **buildListItem**: Reusable widget for creating interactive list items.

1. **Product Details Page:**
   * **Purpose:** Displays detailed information about a specific product, allowing users to view images, select color and size, and add the item to their cart.
   * **Implementation:**
     + Utilizes a PreferredSize app bar for a custom design with product details and a shopping cart icon.
     + Integrates a BottomNavigationWidget for smooth navigation within the app.
     + Implements a PageView with image indicators to showcase different product images.
     + Offers tabs for switching between "Product," "Details," and "Review" sections.
     + Allows users to select color and size with interactive buttons.
     + Asynchronous loading of data is simulated with a CircularProgressIndicator.
     + Provides options to share the product and add it to the cart.
     + Utilizes reusable widgets like **TabButton**, **ColorButton**, and **SizeButton** for a consistent UI.
     + Updates the cart count dynamically using Provider.

**Widgets Used:**

* **TabButton**: Button for switching between product detail tabs.
* **ColorButton**: Interactive button for selecting product color.
* **SizeButton**: Interactive button for selecting product size.

**Commonly Used Widgets:**

* **FutureBuilder:**
  + **Purpose:** Used for handling asynchronous operations, such as fetching data from Firestore.
  + **Implementation:** Used in **OrderPage** and **AllCategoriesPage** to asynchronously load data.
* **ChangeNotifierProvider:**
  + **Purpose:** Used for state management, allowing widgets to listen for changes.
  + **Implementation:** Used throughout the project with providers like **AuthService**, **AppDataProvider**, **NotificationProvider**, and **CartProvider**.
* **InkWell:**
  + **Purpose:** Used for making categories clickable.
  + **Implementation:** Utilized in the **AllCategoriesPage** to make categories interactive.
* **ListView.builder:**
  + **Purpose:** Used for efficiently displaying lists, such as orders and items.
  + **Implementation:** Used in **OrderDetailsPage** to dynamically build a list of order items.
* **Row and Column:**
  + **Purpose:** Used for organizing widgets in a horizontal or vertical arrangement.
  + **Implementation:** Used extensively in layout design, e.g., in **AllCategoriesPage** for arranging categories in rows and columns.
* **ElevatedButton and TextButton:**
  + **Purpose:** Used for interactive buttons.
  + **Implementation:** Found in various screens for buttons like "Sign Up," "Proceed to Checkout," etc.
* **Container:**
  + **Purpose:** Used for creating boxes with specific styling.
  + **Implementation:** Utilized for structuring various UI elements.
* **Scaffold and AppBar:**
  + **Purpose:** Used for building the overall structure of screens.
  + **Implementation:** Present in all screens to provide a basic structure, app bar, and bottom navigation.