

E-Commerce App Framework

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1. Introduction

Objective: Develop a fully functional e-commerce mobile application using Flutter with Dart. The project aims to showcase advanced mobile development skills and create a user-friendly and interactive app for online shopping.

Track Relevance: Utilize mobile technologies to address the needs of small businesses and users by creating an e-commerce platform. Showcase proficiency in frontend and backend mobile development.

Expected Outcomes: Deliver a polished mobile app that allows users to browse products, add items to a cart, and complete purchases with payment integration. The app will have a robust and intuitive user interface.

2. Project Proposal

Project Title: Simple E-Commerce Application

Team Members:

- Gaser Youssef – Software Engineer
- Arsany Morcos – Mobile App Developer
- Malak Amgad – AI Engineer
- Mohamed abdelrehem – Flutter Developer
- Mariam Elsaid – Flutter Developer

Problem Statement: Many small businesses struggle to reach online customers effectively, and users face challenges finding reliable small-scale e-commerce platforms.

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functionality, and payment processing. The app will cater to small businesses aiming for an online presence.

Scope and Limitations:

- Scope:
- User authentication
- Product listing and search functionality
- Shopping cart
- Payment integration
- Limitations:
- Limited to mobile platforms (Android/iOS)
- Initial version will not include advanced features like AI recommendations.

3. System Design and Architecture

Objective: Create a scalable and maintainable architecture.

Activities:

- Develop a system architecture diagram with backend and frontend interaction.
- Use Flutter for frontend and Firebase for backend services (authentication, database, and hosting).
- Prepare design documents, including class diagrams for key entities (e.g., Product, User, Order).

4. Phases of Development

Phase 1: Project Setup and Planning

- Set up the development environment using Flutter and Firebase.

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- Define goals, objectives, and deliverables.
- Create system architecture diagrams and finalize design documents.

Phase 2: Backend Development

- Configure Firebase for authentication and Firestore for data storage.
- Design and implement the database schema for products, orders, and users.
- Develop APIs for product listing and order processing.

Phase 3: Mobile Development

- Develop the app's UI, including product listing, cart, and checkout screens.
- Implement user authentication.
- Integrate backend APIs for data fetching and updates.
- Ensure responsiveness and cross-device compatibility.

Phase 4: Testing, Debugging, and Optimization

- Conduct unit and integration tests.
- Debug identified issues.
- Optimize the app for performance and usability.

Phase 5: Finalization and Deployment

- Finalize features and ensure stability.
- Deploy the app to the Google Play Store and Apple App Store.
- Prepare a project presentation and finalize documentation.

5. Final Presentation and Documentation

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Final Presentation:

- Demonstrate the app's functionality, focusing on user experience and core features.
- Share insights into challenges faced and solutions implemented during development.

Documentation:

- Submit all design documents, source code, and testing reports.
- Provide a user guide and deployment instructions.

6. Deliverables

- Functional Mobile Application: A fully functional e-commerce app deployed on Google Play and Apple App Store.
- Source Code: Complete and well-documented Flutter project.
- Design Documentation: System architecture diagrams and database schema.
- Testing Reports: Results from unit and integration tests.
- Project Presentation Materials: Slides and demo videos for the app presentation.
- Project Documentation: Setup instructions, API details, and user manual.

7. Assessment Criteria

- Code Quality (30%): Clean, maintainable, and well-documented code.
- Functionality (30%): Successful implementation of authentication, product browsing, and payment integration.
- UI/UX Design (20%): Aesthetic and user-friendly design.
- Presentation and Documentation (20%): Comprehensive and professional presentation and documentation.