Lebanese University – Faculty of Science Master 1 Project Report

Faculty of Sciences

My Expenses

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Abstract

This piece of paper is a discussion of a mobile application built to serve small startups that are seeking their way to the world of business with their modest potential and simple experience in a domain that nowadays play an important role in the lives of many, this application aims to help those small startups to manage their expenses and budgets, and boost their performance with some insights. Based on my personal experience in helping a friend to launch a startup, I found that there is a need to build such a platform that manages finances and make it more organized and feasible.

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General Introduction

Starting a new venture is an exciting journey, but it often comes with its fair share of financial challenges. One of the most critical aspects for any business is managing expenses efficiently. An expense tracker tailored specifically for startups can play a vital role in ensuring that financial resources are used wisely and effectively.

The project addresses this need by providing a comprehensive expense tracking solution designed with the unique requirements of startups in mind. This tool helps individuals monitor their spending, categorize expenses, and gain insights into their financial health. By automating the tracking process, startups can focus more on growth and innovation rather than getting bogged down by financial management issues.

With user-friendly features, real-time data analysis, and insightful capabilities, our expense tracker aims to simplify the financial management process. It empowers startup founders with the information they need to make informed decisions, stay on budget, and ultimately, drive their businesses towards success.

Chapter 1: Literature Review

The proliferation of mobile applications has revolutionized how businesses handle their financial processes. For startups, an effective expense management tool can make a difference. This section explores the current landscape of expense tracking applications, focusing on the technologies and methodologies relevant to developing an Android-based solution using Java.

1. Mobile Expense Tracking Solutions

Expense tracking applications have become indispensable for both individuals and businesses. The core functionality of these apps includes logging expenses, categorizing them, generating insights based on expenditure. Notable examples include Expensify, Mint, and QuickBooks. These applications typically offer multi-platform support, allowing users to sync data across devices. However, the challenge for startups is finding a solution that addresses their specific needs without the overhead of unnecessary features.

2. Mobile Application

Android Studio, as the official Integrated Development Environment (IDE) for Android development and Java's object-oriented features, combined allow developers to create feature-rich mobile applications with a user-interface that significantly enhances user engagement and satisfaction.

3. Real-time Data Synchronization

The ability to synchronize data in real-time is a critical feature for modern expense trackers. This ensures that users have access to up-to-date financial information, enabling better decision-making for their startups.

Those were the main components of developing an effective expense tracking application for startups. Leveraging Android Studio and Java provided a robust development environment, while focusing on user-friendly interface, UX, real-time synchronization, and integration ensures the creation of a valuable tool for future entrepreneurs. This project aims to deliver tailored insights that meet the unique financial management needs of startups.

Chapter 2: Proposed Solution Methodology - Software Realization

In developing the expense tracker app tailored for startups, we aimed to address the unique financial management challenges faced by small businesses. The following outlines our comprehensive approach to software realization, detailing each step in the development process and the methodologies employed to ensure the app's effectiveness, reliability, and user-friendliness.

1. Requirement Analysis

The initial phase involved a thorough analysis of user needs, focusing on common points related to expense management in startups. This included market research to understand the essential features and functionalities that would provide the most value.

2. System Design

Based on the requirements gathered, we crafted a detailed system design. This stage encompassed the creation of high-level and low-level design documents, outlining the architecture of the app. We adopted a modular approach to design, and ensured that each component of the app (e.g., user interface, data storage, analytics engine) could be developed, tested, and maintained independently.

3. Technology Stack Selection

In this phase the appropriate technology stack was crucial for achieving optimal performance and scalability. The app is built using Java in Android Studio, leveraging robust libraries and frameworks and SQLite for database management. This stack ensures a smooth development process and a seamless user experience.

4. Development and Implementation

We followed an agile development methodology, allowing us to iteratively build and refine the app based on continuous feedback. Key features implemented include:

- **Expense Categorization**: Users can log expenses under default categories like debt, marketing, products, and fees, with the option to add custom categories.
- **Budget Management**: To set and track budgets, providing alerts when nearing limits.
- **Insights**: Included cost-saving suggestions.
- **User Interface (UI) and User Experience (UX)**: A clean, intuitive UI designed for ease of use, with attention to accessibility and responsive design.

By adhering to this structured methodology, we aim to deliver a robust, efficient, and user-friendly expense tracking solution that empowers startups to manage their finances more effectively, thereby contributing to their overall business success.

Chapter 3: Results

First, we include the use case diagram for our expense tracker app. This diagram captures the functional requirements of the system by depicting the interactions between users and the app's use cases. It highlights the primary actions users can perform, such as logging expenses, viewing insights, and managing budgets and categories, providing a concise overview of the system's functionality from the user's perspective.

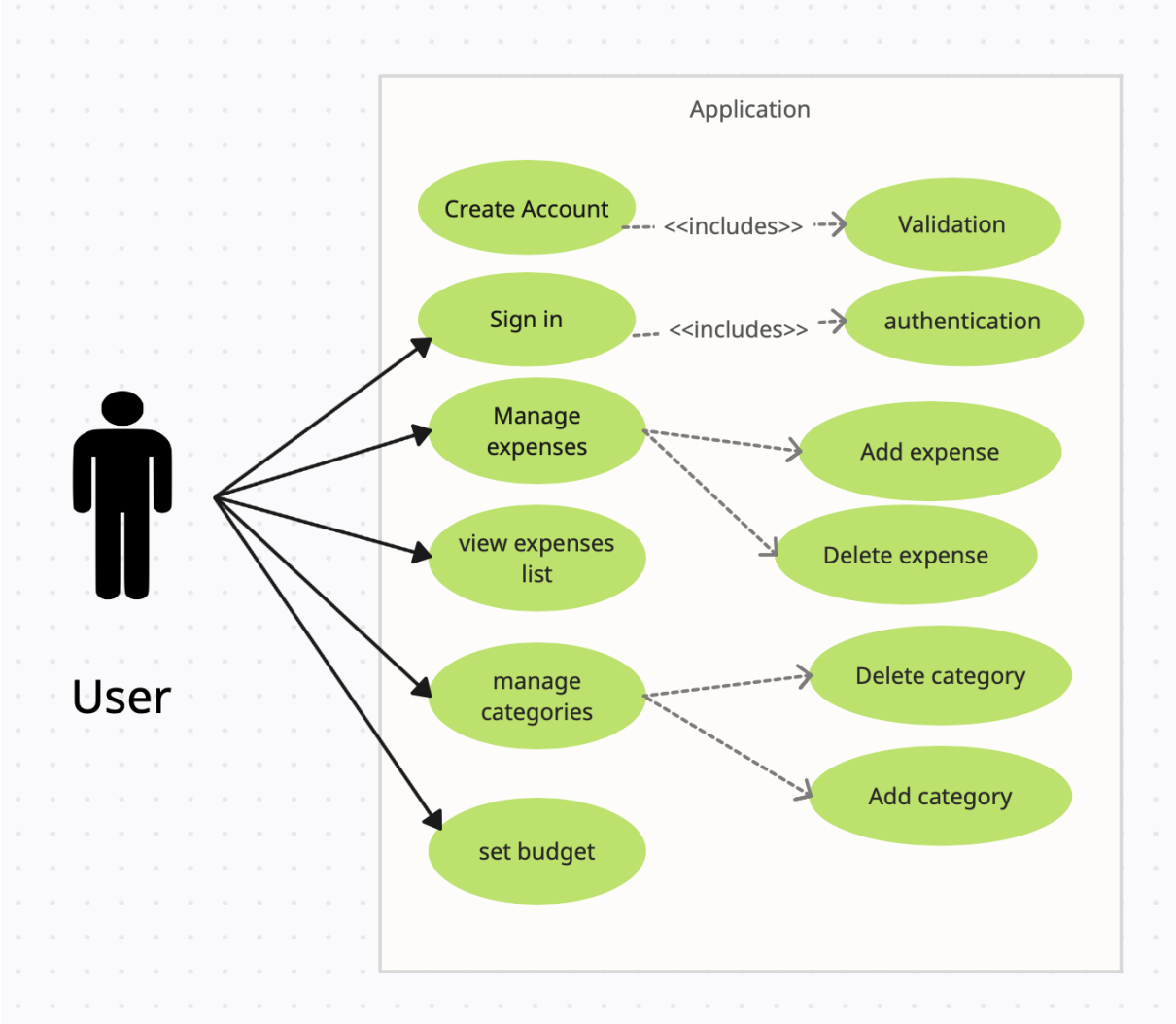


Figure 1: Use case diagram

Then, we present the class diagram for the expense tracker app. This diagram illustrates the static structure of the system by showcasing the different classes, their attributes, methods, and the relationships between them.

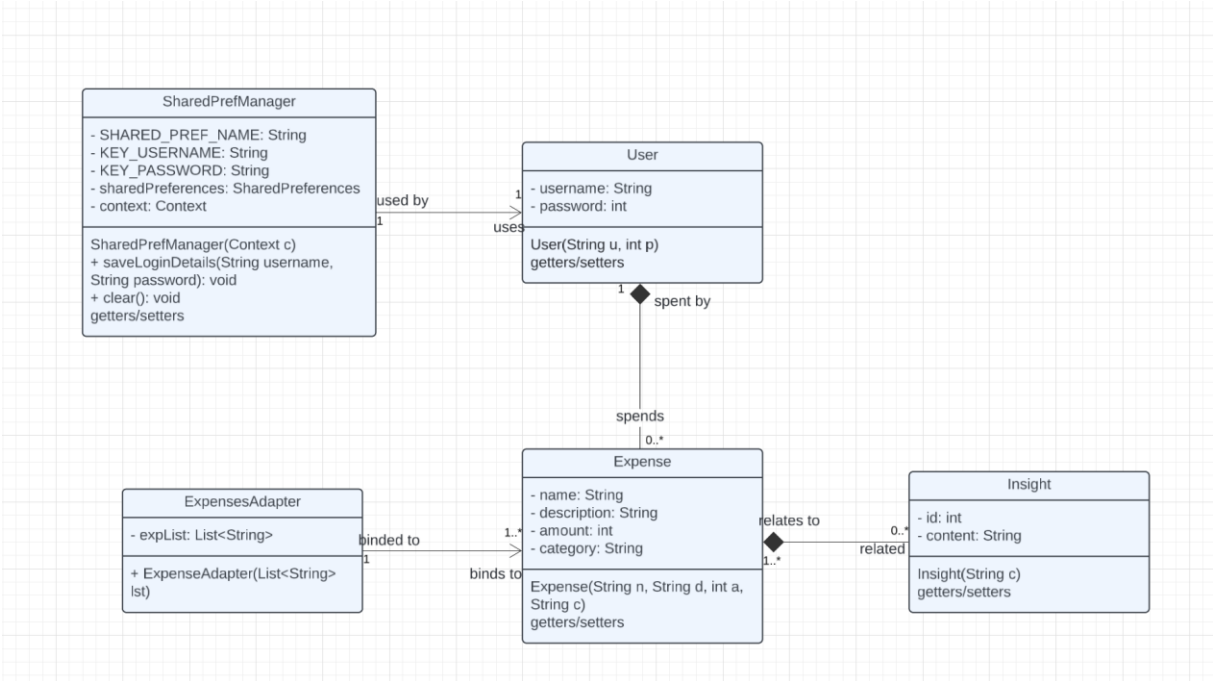


Figure 2: Class diagram

Database section

In order to effectively manage and analyze the expenses of startups, the expense tracking application relies on a robust and well-structured database. The database is designed to store, organize, and retrieve financial data efficiently, ensuring that users can access their expense records easily and accurately. Using SQLite for our database management system due to its lightweight nature, ease of integration with Android, and sufficient capabilities for handling the app's requirements.

To provide a clear understanding of the database design, we present the Entity-Relationship (ER) diagram below. The ER diagram visually represents the relationships between the different entities in our database, highlighting how data is interconnected and managed within the application.

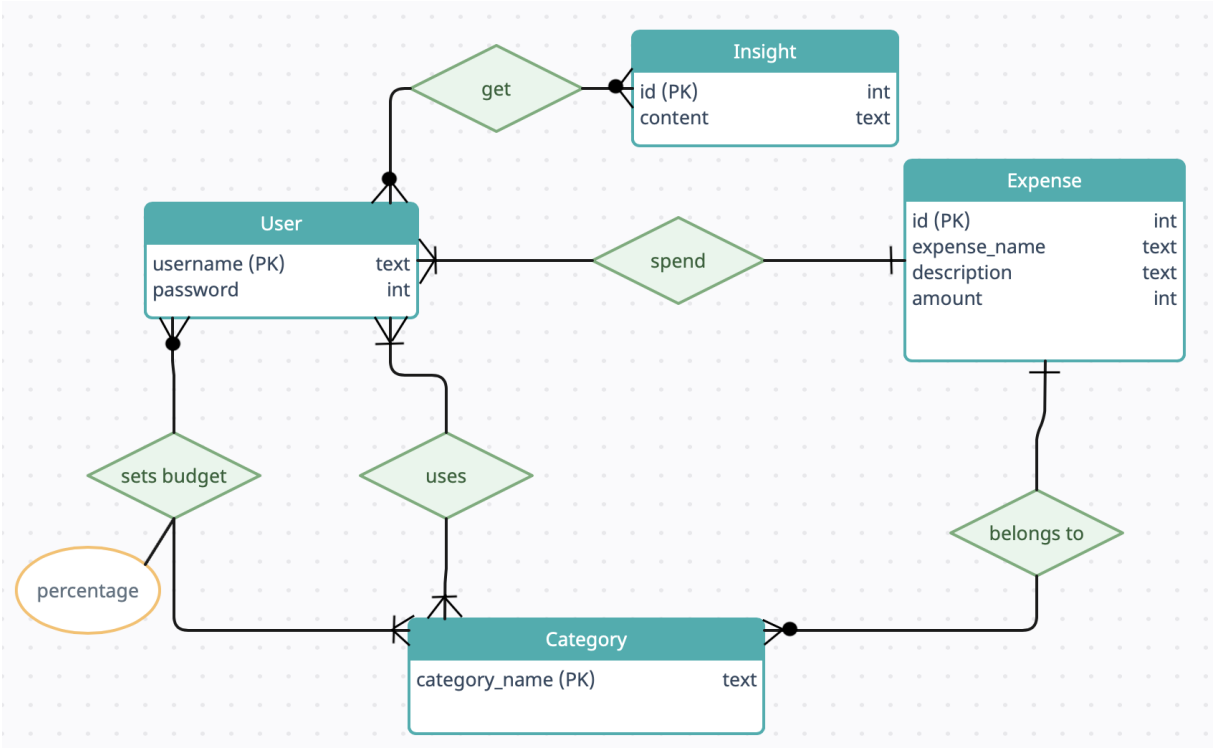
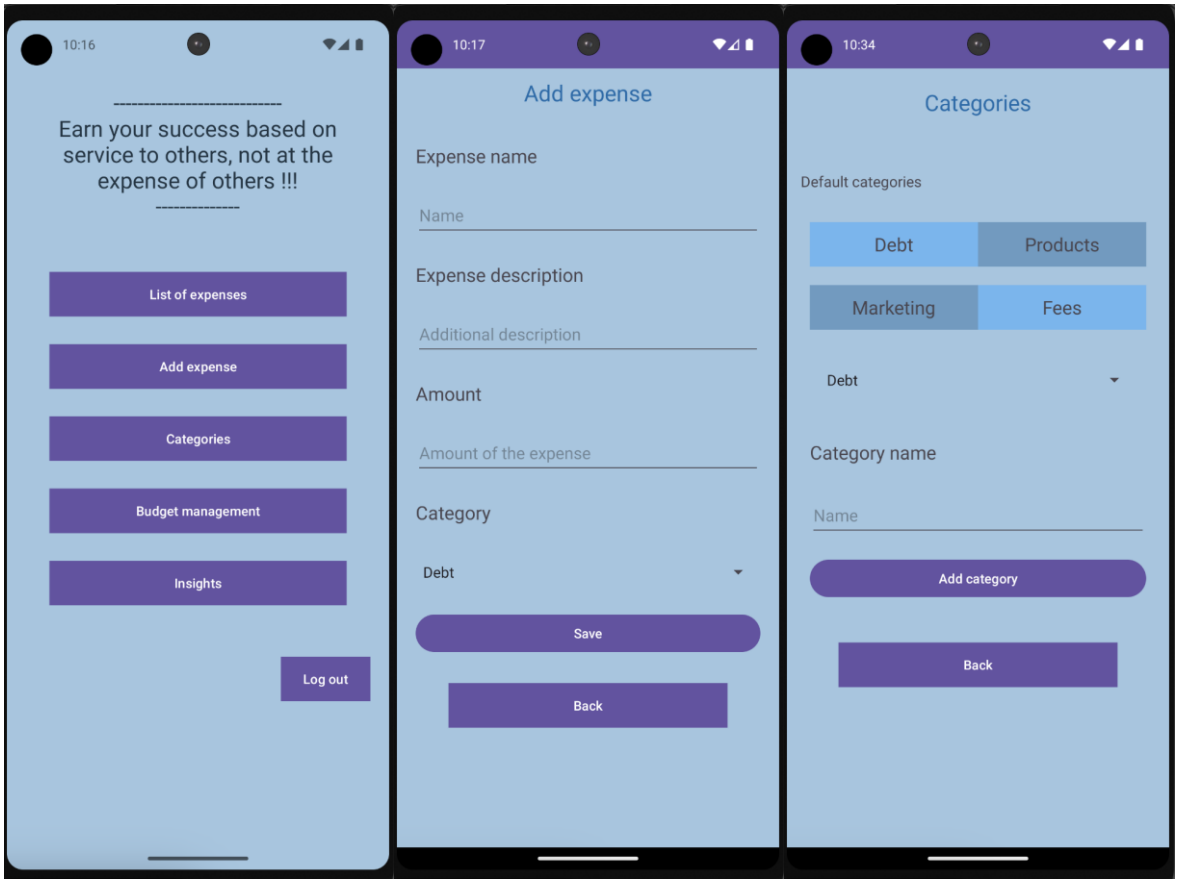


Figure 3: ER diagram

User interface

Finally in this part of the report, we showcase various user interface (UI) screenshots of the expense tracker app. These images provide a visual tour of the app, highlighting its design, layout, and key features. By including UI screenshots, we aim to give a tangible sense of the user experience and demonstrate the navigations of the interface.



Chapter 4:Conclusion and Perspective

In developing our expense tracker app, we set out to create a comprehensive financial management tool tailored specifically for startups. Our journey through the phases of requirement analysis, system design, development has resulted in an application that addresses the unique challenges faced by small businesses in managing their finances.

Our expense tracker app successfully integrates essential features such as expense categorization, budget management, and insights. These features empower users to have a clear view of their spending patterns, enabling them to make informed financial decisions. By prioritizing user feedback and iterative improvements, we have created an intuitive and user-friendly interface that simplifies the complexities of expense tracking.

Looking forward, we see significant potential for the evolution of our expense tracker app. The initial release lays a solid foundation, but we envision numerous enhancements and additional features that can further elevate its utility. Future updates will focus on incorporating advanced analytics, integrating with popular accounting software, and adding features such as automated expense categorization through machine learning.

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