COMP4521 Mobile Application Development

Final Report

FinTrack

Group 16

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Introduction

In this document, a cutting-edge financial management application—FinTrack will be presented. Designed to revolutionize how individuals organize, track, and optimize their financial activities. It is developed with the aim of empowering users to take control of their financial well-being, FinTrack should offer a comprehensive suite of features tailored to meet the diverse needs of the public. The project will be discussed in seven major aspects, **including key features and functionality, user interface and design, technology stack, testing and quality assurance, performance and optimization, and lastly further improvements and reflections.**

Technology stack

Considering FinTrack as an Android-only mobile application, the following stack are integrated into it:

Kotlin as base language with existing Java as supporting language.

For user interface development, xml-based layout language are generally used for designing UI components.

In relation to databases, Room is used due to the persistence and that it provides and abstraction layer over SQLite, which simplifies database operations, data caching, and data synchronization.

Firebase service provided by Google is used for FinTrack authentication, which is for email/password authentication

For version control, Git is applied for convenient code tracking and collaboration.

Application Functionality

FinTrack is a comprehensive financial management application designed to empower individuals in organizing, tracking, and optimizing their financial activities. Fintrack simplifies the complexities of personal finance, allowing users to gain a clear understanding of their income, expenses, investments, and budgets within a user-friendly interface, making it easy for users to navigate and make informed financial decisions. Here is the list of features and functions that are provided by FinTrack.

Logging

FinTrack provides a fast, convenient interface for user to drop their transaction data. It is located in the main menu; after clicking the logging button, a pop-up window will appear in the screen and ask for input. Error checking is provided here to ensure that user inputs are valid and non-empty before inserting the entry to the database. After inputting, another pop-up will ask you to confirm the input again and then the entry will be inserted into the database after confirmation.

Dashboard

It is one of the functions inside the summary. FinTrack provides a simple layout showing all the income, expense and net income daily, monthly, and yearly. User can change to monthly and yearly dashboard by choosing the corresponding one in the spinner located at the top right corner. The default is set to show daily every time user click into this page.

Reports

It is another function inside the summary. FinTrack provides graphs showing user's monthly and yearly income, expenses, and net income trends using a line graph. User can press the button at the top right corner to switch between monthly view and yearly view.

Secure Authentication

Fintrack prioritizes the users' security by authentication using Firebase with email and

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password, it provides a convenient and secure method for users to access your Android application, FinTrack. With Firebase Authentication, user credentials are stored securely in Firebase's authentication system.

When a user signs up for FinTrack, they provide their username, email address, and create a password. Firebase handles the authentication process by securely storing and encrypting this information. When the user tries to log in, Firebase verifies the email and password combination, ensuring the user's identity.

By leveraging Firebase Authentication, FinTrack can benefit from a robust and scalable authentication solution. Firebase handles the complexities of user management, data encryption, and security best practices, allowing you to focus on building the core functionality of FinTrack while ensuring a reliable and secure authentication experience for users.

Achievement and Rewards

The achievement and reward system in FinTrack allows users to set personalized saving goals and track their progress towards achieving them, while earning rewards and unlocking achievements along the way.

In FinTrack, users can create customized saving goals based on their unique financial objectives. As users make progress towards their saving goals, FinTrack rewards their accomplishments with achievements and milestones. These achievements serve as virtual badges, providing a sense of accomplishment and recognition for their financial discipline and progress. Each achievement represents a significant milestone reached, reinforcing positive financial habits and motivating users to continue their savings journey.

Expense & Budget Planning

Saving Goals

Reminders & Warnings

User interface and design

The user interface of FinTrack is designed to be intuitive, user-friendly, and visually appealing. It follows the principles of Material Design, a design language developed by Google that promotes a clean and modern look with a focus on simplicity and clarity.

Themes and General

FinTrack uses a toffee and purple theme to give a welcoming scent and feeling to both new and previous users. Material buttons and input text views are applied to give a smooth user interaction, alongside with a secure authentication interface to give suitable warnings and reminders to ensure a safe and secure account registration and login environment. Card views are mainly integrated for pop up dialogs, in a cream-colored theme, to give further actions or confirmations. Furthermore, simple notifications and Toast texts are utilized for catching users' attention in preferrable times.

Dashboard

The dashboard serves as the central hub of FinTrack, providing users with an overview of their financial information. It presents key metrics such as account balances, income, expenses. A spinner is also provided to look over the financial summary in a daily, monthly, and yearly format.

Navigation

FinTrack features a streamlined and intuitive navigation system. A central menu consisting of several material buttons allows users to access different sections of the application, such as transactions, budgets, goals, reports, achievements, and settings. Clear and recognizable, purple-colored

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buttons and a setting icon are used to represent each section, ensuring easy navigation throughout the FinTrack.

Transactions and Logging

The transactions and logging section provides users with a comprehensive view of their financial activities. Transactions are displayed in a clear and organized manner through pop-up windows, allowing users to easily track their income and expenses. Users can also categorize transactions by using the provided selections for better organization.

Budgeting and Goals

FinTrack offers robust budgeting and goal-setting features. Users can create budgets and track their progress against the set limits. The app provides visual representations, such as progress bars and scroll views, to help users monitor their spending habits and make informed financial decisions. The goals section allows users to set and track progress towards saving goals, with visual indicating progress bars showing the percentage achieved.

Financial Reports

FinTrack provides detailed reports and insights to help users gain valuable financial intelligence. Reports are visualized in a line graph format and are distinctive in showing income, expenses, and net income, in red, blue, and green respectively. These visual representations of financial data enable users to identify patterns, analyze their financial health, and make data-driven decisions. Reports can also be displayed in monthly or yearly periods.

Achievements and Rewards

In achievement page, an achievement board is shown to display current achievements, along with a "check reward" button to redeem virtual rewards in a card view if there are completed achievements. Vibrant colors are applied for a more appealing visuals when dealing with rewards, thus providing a more engaging experience for users.
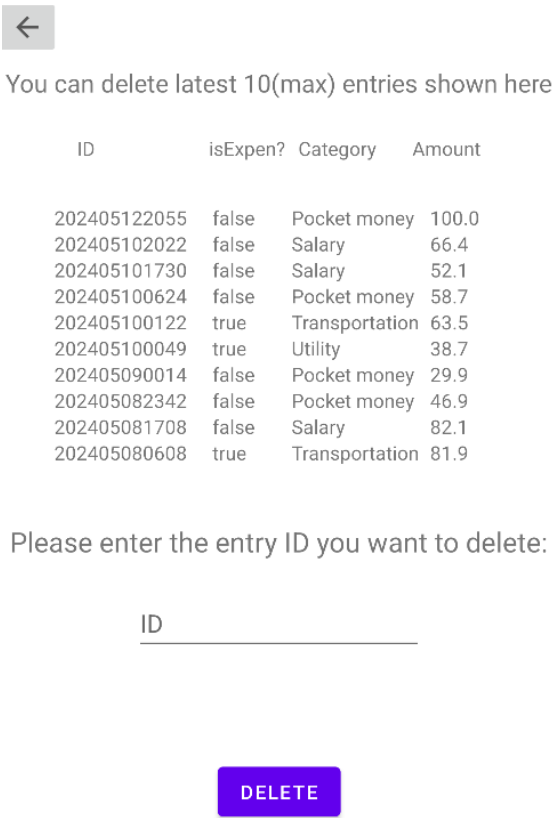
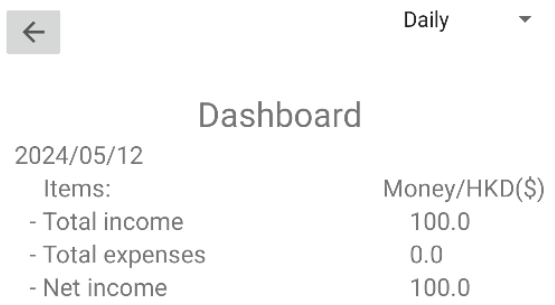## Testing and quality assurance

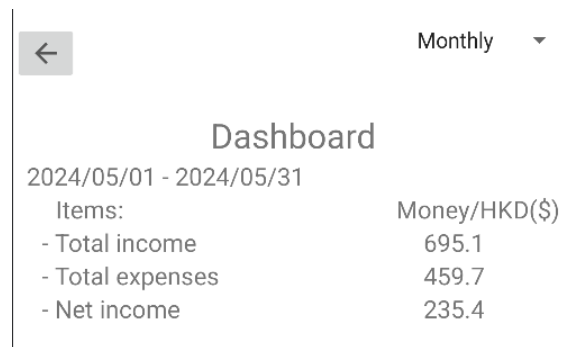Fig.1 Showing some data inside FinTrack
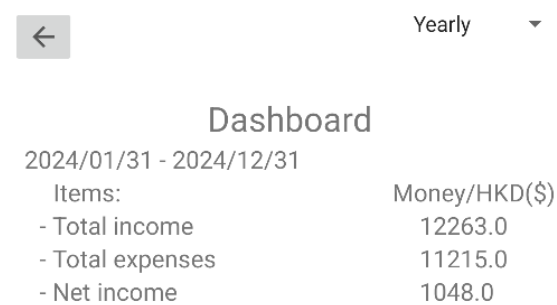
Fig.2 Showing Daily Dashboard

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Monthly   ▾

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Dashboard
2024/05/01 - 2024/05/31
    Items: Money/HKD($)
 - Total income   695.1
 - Total expenses   459.7
 - Net income   235.4

Fig. 3

Yearly   ▾

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Dashboard
2024/01/31 - 2024/12/31
    Items: Money/HKD($)
 - Total income   12263.0
 - Total expenses   11215.0
 - Net income   1048.0

Reflections and further improvements

After finishing the project, we did some testing on it and got some reflection. Our app is still not flexible enough.

1. If our app can designed to interact with our bank account, it can show more information about our financial status.

2. It is not that useful if I can only show the current daily, monthly, and yearly data. Our app should modified to be able to show more information. User can select the date or month they want to see and the system should be able to show the data.

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