Task 10.1D: Personalized Learning Experiences App – Final Enhancement Summary

Ⅰ. Introduction

This report summarizes the improvements made to the Personalized Learning Experiences App in Task 10.1. Based on the previous version, we have added new features including History, Sharing, and Purchasing, and improved the overall user experience by applying modern Android development practices. Furthermore, the app now integrates LLM (Large Language Model) capabilities to provide personalized quizzes.

Ⅱ. Application Features Overview

- **User System**

- Register: Users can create an account with username, email, password, phone number, and profile image. The image is saved to internal storage and the path is stored in the database.
- Login: Authenticates user credentials and navigates to the dashboard.
- Edit Profile: Users can change their profile photo from the profile page.

- **Interests Selection**

- After registration, users select up to 10 interests (e.g., AI, Android, Web Dev).
- These interests are stored in the database and used to generate personalized task topics.

- Dashboard

- Shows the user's avatar and welcome message.
- Displays recommended learning tasks based on interests.
- Tasks marked as ✓ Completed after answering.
- Users can click on tasks to answer or view history.

- **Task + Quiz**

- Questions are generated using a connected LLM API based on the task topic.
- Each task provides multiple-choice questions.
- Users get feedback after submitting, with correct/incorrect response messages.
- Results are stored in the local SQLite database.

- History

- Displays past answers for each task.
- Highlights correct and wrong answers with colors.
- Shows question timestamp and task title.

- **Profile Page**

- Shows username, email, avatar, and quiz statistics.
- Statistics include total questions answered, correct and incorrect answers.
- If no questions are answered, a notification appears.
- Supports sharing user info as a QR code generated.

- **Upgrade Account**

- Simulated purchase screen with Starter, Intermediate, and Advanced plans.
- Fake Google Pay dialog pops up for visual demonstration.
- No real payment integration is required.

Ⅲ. Modern Android Development Practices

This app follows several best practices in Android development:

- **MVC Architecture:** Logic is separated between UI (Activities/Adapters) and Data (DatabaseHelper, Models).
- **Reusability:** RecyclerView with custom adapters is used for dynamic content display.
- **Offline Storage:** Uses SQLite via DatabaseHelper for persistent local data.
- **User Experience:** Smooth navigation, clear layout, visual feedback, image loading with Glide.
- **Data Security:** User data is locally stored with validation checks on registration and login.
- **UI Design:** Flexbox layout for responsive interests selection, BottomSheet for QR sharing, and Dialog for simulated payment.

Ⅳ. Use of LLM for Personalized Learning

This app integrates a **Large Language Model (LLM)** to fetch quiz content based on user interests.

- The app sends the selected topic to an API server (e.g., Flask), which calls an LLM.
- The LLM generates customized questions and options.
- These questions are then presented to the user, making learning more personalized and adaptive.

Benefits:

- Provides diverse and real-time quiz content.
- Makes learning experience more engaging and dynamic.
- Reduces the need for static, hard-coded questions in the app.

Future Improvements:

- Add more question types (fill-in-the-blank, drag-and-drop).
- Use LLM for explaining wrong answers or summarizing learning progress.
- Let users ask their own questions and get instant responses from the LLM.

Ⅴ. Conclusion

This version of the Personalized Learning App successfully implements History, Sharing, and Purchasing features. It follows modern Android development practices and leverages LLMs to provide intelligent, tailored learning content. It offers a complete, smooth, and interactive experience for learners.