Database Systems | Project Proposal

Title: Mentora

22P-9106 | Muhammad Rehan | Solo Project

Introduction:

Mentora is an innovative mobile application designed to revolutionize the way students engage in collaborative learning. By creating a platform where students can connect, share, and solve academic challenges together, **Mentora** aims to enhance the educational journey, making it more interactive, supportive, and effective.

Here's a refined list of features for **Mentora**:

1. **User Authentication**: Users can create accounts using their email addresses or social media accounts, ensuring a secure and personalized experience.

2. **Profile Customization**: Users can set up and customize their profiles, adding academic interests, courses, and a brief bio to facilitate relevant connections.

3. **Post Creation**: Students can post academic queries or topics they need help with, specifying the course and other relevant details to attract suitable peers.

4. **Interactive Feed**: A dynamic feed displays posts from other users, allowing students to browse, search, and filter based on courses, difficulty levels, and other criteria.

5. **Commenting and Collaboration**: Users can comment on posts, offering help, sharing resources, or asking for further clarification, fostering a collaborative learning environment.

6. **Private Messaging**: A secure messaging feature enables students to connect privately, facilitating in-depth discussions and study sessions.

7. **Notification System**: Users receive notifications for new comments on their posts, messages, or updates on followed discussions, ensuring they stay informed.

8. **Resource Sharing**: Within posts and messages, users can share study materials, links, and resources, enhancing the collaborative learning experience.

Tools and Technologies for Mentora

- **Language**: Kotlin, for its modern, concise syntax and seamless integration with Android development.
- **IDE**: Android Studio, providing a comprehensive toolkit for Kotlin development, including code editing, debugging, and testing tools.
- **Database**: Firebase Realtime Database, offering real-time data syncing and a flexible, scalable NoSQL database solution.
- **Authentication**: Firebase Authentication, supporting various authentication methods and providing a secure, reliable system for user management.
- **Backend**: Firebase Functions, allowing the creation of serverless functions to handle backend logic, such as notifications or data processing.
- **Version Control**: Git, with GitHub as the repository host, enabling code sharing, collaboration, and version tracking.
- **Design**: Figma or Adobe XD, for designing interactive UI/UX prototypes, ensuring a user-friendly and intuitive interface.
- **Project Management**: Jira or Trello, providing tools to track progress, manage tasks, and coordinate development efforts effectively.

Design and Architecture

- **Architecture**: Following the MVVM (Model-View-ViewModel) pattern to ensure a clean separation of concerns, facilitating maintainable and testable code.
- **User Interface**: A clean, responsive design focusing on usability and accessibility, ensuring students can navigate and use the app effectively.
- **Data Flow**: Leveraging Firebase's real-time capabilities for instant data updates across user sessions, enhancing interactivity and user engagement.
- **Security**: Implementing robust security measures, including secure authentication, data validation, and encryption where necessary, to protect user data and interactions.

> ***The outlined features, design, and technological frameworks for Mentora are subject to adjustments and improvements within the time-frame of our class course and may evolve based on class feedback and future development stages."***