Project Breakdown: Personal Study Coach

1. Project Overview

Personal study coach is an AI-enabled educational platform that assists and improves students' ability to study properly hence improving grades, skills, discipline, knowledge, and a collaborative attitude with enhanced capabilities for study, including a scheduler, reminder, study buddy, exam prep buddy, explainer, and collaboration features

The Project will include the following:

- A user-friendly interface
- Frontend and Backend Integration for mobile and web apps
- -Payment and subscription gateways for secure payment transactions
- AI integration
- External API usage
- Coach features and notifications
- Platform support
- Full Hosting and Deployment

1b. Aim

This project aims to develop a mobile application that acts as a virtual tutor for students, enabling them to interact with AI, manage their study schedules, access high-quality resources, and collaborate with fellow students. The app will integrate AI-powered question generation, content recommendations, and communication features.

2. UI / UX Design

Tasks:

- UI/UX Design: Create mockups and wireframes for the user interface for the web and mobile apps (mobile, tablet, and admin dashboard)
- Client Review and Feedback: Present designs to the client for review and make revisions for both the mobile and web apps

Deliverables

- Wireframes and design mockups
- Finalized designs after revisions

3. Implementation Phase

3a. Frontend for both mobile and web Applications

1. Personal Schedule Organizer

Description: A feature to help students organize their study plans, allowing them to set study times and keep track of their assignments and exams.

Tasks:

- User can create a personalized study timetable.
- Visualize schedules (daily, weekly, monthly).
- Integrate reminders and notifications for upcoming tasks.
- Customize time slots for different subjects and activities.

2. Reminders & Notifications

Description: Customizable notifications to remind students of tasks, study sessions, or upcoming exams.

Tasks:

- Customizable notifications (based on individual preferences).
- Reminders for both scheduled study sessions and upcoming exams.

- A notification that reminds you of your promise/plans to study. Eg, if you set maths study for 5 hours, the notification reminds you that you are meant to study maths for 5 hours this week. This should encourage you to study. It also sends you WhatsApp messages often. Like a study partner who reminds you to study.

3. Snitching Mechanism

Description: Motivational notifications to show when other students are actively studying.

Tasks:

- Popup notifications of peer activity for motivational prompts. The Student gets popups with notifications that another student is studying, so the student can be geared up to study.

4. **AI for Content Recommendations (Videos, Text, Audio) Model, re-engineering models**

Description: AI-powered feature that suggests content (videos, articles, etc.) based on the student's needs.

Tasks:

- Train the model to recognize top educational resources (YouTube, Khan Academy) for secondary school students.
- These resources are categorized by subject or topic
- Trusted resources and materials
- Re-engineering the model to act like a 7-year-old tutor, always provide a list of animated videos, non-animated videos, and other resources for secondary school students to study, read, and understand better.

- The model will have access to YouTube and other learning tools like Khan Academy, notebook LLM, and many more learning tools.
- The model will be prompted with instructions already set to respond.
- The model is for learning and ensuring students learn more, study more, and study more efficiently.
- Integration with YouTube APIs for embedding of redirection to provide relevant educational videos
- Algorithm for curating content, podcasts, and other learning materials based on student questions or study preference
- Explanations should be clear, not complicated, and can be understood by anyone.
- Learning videos are very important
- Chat feature that allows students to chat efficiently with the model in simple and restricted conversations. The model can only chat about education and mental health and a bit of emotions. No illicit content is allowed.

5. Image Text Recognition (OCR) for Study Questions and Question Suggestions

Description: AI-powered feature that generates study questions for students based on the material they are reviewing. Allow students to take pictures of their notebooks or study materials, which are then converted into text for creating custom questions.

Tasks:

- Integrate an OCR (Optical Character Recognition) tool for text recognition from images.
- Convert captured text into an editable format within the app.
- AI can generate relevant study questions from the extracted text. (OCR integration, question generation).
- The questions generated from the notebook image can questions requiring answers. No multiple options.

- The student uploads the material and tells the model to generate questions from it and the model proceeds to set questions
- Students mark the scripts themselves after answering all the questions
- The students use their notebooks to mark their scripts and grade themselves.
- The model can also recommend questions aside from the provided notebook image. These questions can be based on previous questions asked, SSCE exams, or on the available resources on that subject.
- The model can also guide students in preparation for external exams like Cambridge, SSCE, GCE, WAEC, Cowbell competition, etc.
- This will not require an upload but will use previously stored and trained data in the LLM.

3b. Backend Development

Ensuring a robust backend for user authentication, data storage, and real-time chat services. Backend architecture will need to scale to support multiple users engaging in chat, schedule management, and AI-driven processes.

4. AI Model Customization and Re-engineering (New)

Tasks**:**

- **Model Customization:** Re-engineering AI models to behave like an educational tutor, with controlled responses tailored to student needs.

- **Prompt Engineering:** Developing structured prompts to guide AI responses in educational contexts.
- **Multimodal Integration:** Integrating models for text-to-speech, image-to-text, and specific access to YouTube, Khan Academy, and more.
- **Behavioral Testing:** Rigorous testing to ensure model reliability, appropriateness, and clear explanations.

5. Testing and QA

Testing will be a continuous process to ensure the app is secure, performant, usable, and bug-free. Each feature will undergo rigorous testing before moving to the next.
Timeline: 1 week for first testing
Timeline: 1 week for second testing

6. Deployment and Beta Launch

Once the app is developed, it will be deployed to app stores for beta testing, so we can gather real-world feedback.
Timeline: 4 days for deployment and beta phase

General Timeline Overview

Purchases: API purchases and cloud infrastructure will be purchased as we begin
APIs needed include model APIs from Hugging Face, Google, or OpenAI.
Thorough research on these will be carried out before deciding

Deliverables

- UI/IX Design
- Mobile App for phone size and tablet (IOS and Android)
- Web App (Both a downloadable web application on the desktop and accessible via a link on the browser)
- Admin Dashboard (Admin panel to manage all aspects of the application and get analytics details)

6. Next Phase

The next phase includes additional features like virtual study sessions, chats, and group virtual meetings, advanced AI-based recommendations, enhanced analytics, and any other required features.

Also, Regular updates and improvements based on user feedback will be planned for subsequent phases.