

# Hackathon Project Phases Template

**Project Title:** StudBud: Plan, Learn, Succeed with AI

**Team Name:** The Alchemies

## Team Members:

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## Phase-1: Brainstorming & Ideation

### Objective:

Develop an **AI Study Planner web application** using **Streamlit** and **Google's Gemini API** to help students create personalized study plans, analyze their progress, and access study resources efficiently.

### Key Points:

#### 1. Problem Statement:

- Students often struggle to create **effective study plans** due to a lack of time, resources, or guidance.
- Existing tools are either too generic or lack **personalization**, making it difficult for students to stay organized and motivated.
- Students also face challenges in **quickly accessing relevant information** from their study materials (e.g., PDFs, notes) when preparing for exams or assignments.

## 2. Proposed Solution:

- An AI-powered study planner that generates personalized study plans based on the user's topic, available hours, and deadlines.
- A PDF Chatbot feature that allows students to upload study materials (e.g., PDFs) and ask questions for quick clarification and insights.
- The app will use Google's Gemini API to provide intelligent, real-time responses and study plan recommendations.

## 3. Target Users:

- Students looking for a structured and personalized way to plan their studies.
- Learners who need quick access to information from their study materials (e.g., PDFs, notes).
- Educators who want to provide additional support to their students through AI-driven tools.

## 4. Expected Outcome:

- A **functional AI-powered study planner** that helps students create **customized study plans** and access relevant information from their study materials.
  - A **user-friendly interface** built with **Streamlit** for seamless interaction.
  - A **scalable solution** that can be adapted for various educational contexts and user needs.
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# Phase-2: Requirement Analysis

## Objective:

Define the technical and functional requirements for StudBud.

## Key Points:

### 1. Technical Requirements:

- **Programming Language:** Python
- **Frontend:** Streamlit
- **Backend:** LangChain, Gemini API

### 2. Functional Requirements:

- Generate **AI-powered study plans** based on user input.
- Implement a **chatbot for quick PDF-based study queries**.
- Provide **progress tracking & smart reminders**.
- Support **customizable study plans & AI recommendations**.

### 3. Constraints & Challenges:

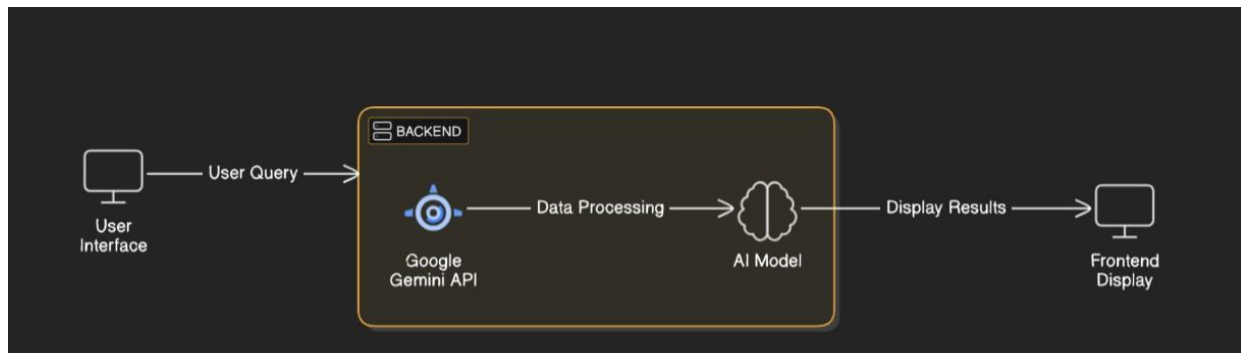
- Optimizing **API requests for real-time performance**.
- Ensuring **scalability & accessibility** for students worldwide.
- Building a **user-friendly & engaging interface**.

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## Phase-3: Project Design

### Objective:

Develop the **architecture and user flow** of the application.



### Key Points:

#### 1. System Architecture:

- User inputs subjects, deadlines, and available study hours.
- Gemini API processes input & generates a personalized study plan.
- LangChain chatbot allows interaction with uploaded PDFs.
- Streamlit UI displays **study plans, progress tracking, and reminders**.

#### 2. User Flow:

- **Step 1:** Enter subjects & study duration.
- **Step 2:** AI generates a study roadmap.
- **Step 3:** User uploads PDFs for AI-powered study assistance.
- **Step 4:** Get real-time progress insights & reminders.







#### 3. UI/UX Considerations:

- **Minimalist UI for easy navigation.**
  - **Dark & Light Mode for better user experience.**
  - **Progress bars & visual analytics for motivation.**
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## Phase-4: Project Planning (Agile Methodologies)

### Objective:

Break down development tasks for efficient completion.

Sprint	Task	Priority	Duration	Deadline	Assigned To	Dependencies	Expected Outcome
Sprint 1	Environment Setup & API Integration	 High	6 hours (Day 1)	End of Day 1	Member 1	API Key, Python, Streamlit setup	Working API connection
Sprint 1	Frontend UI Development	 Medium	2 hours (Day 1)	End of Day 1	Member 2	API response format finalized	Basic UI with input fields
Sprint 2	Vehicle Search & Comparison	 High	3 hours (Day 2)	Mid-Day 2	Member 1 & 2	AI models trained	Study plan output working
Sprint 2	Error Handling & Debugging	 High	3 hours (Day 2)	Mid-Day 2	Member 3	PDF processing integration	Working chatbot
Sprint 3	Testing & UI Enhancements	 Medium	2 hours (Day 2)	End of Day 2	Member 2 & 3	UI & API working	Stable release
Sprint 3	Final Presentation & Deployment	 Low	1 hour (Day 2)	End of Day 2	Entire Team	Working prototype	Demo-ready project

### Sprint Planning with Priorities

- **Sprint 1 – Setup & Environment (Yesterday)**
  -  **High Priority:** Set up Python, Streamlit, and LangChain environment.
  -  **High Priority:** Install dependencies (Streamlit, LangChain, OpenAI, API, etc.).
  -  **Medium Priority:** Create a basic UI with input fields for study preferences.
- **Sprint 2 – AI Integration & Core Features (Today)**
  -  **High Priority:** Integrate LangChain for AI-driven study planning.
  -  **High Priority:** Implement user inputs for subjects, time availability, and goals.
  -  **Medium Priority:** Add task prioritization and study session recommendations.
  -  **Low Priority:** Improve UI/UX in Streamlit for a better experience

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## Phase-5: Project Development

### Objective:

Implement core features of StudBud.

### Key Points:

#### 1. Technology Stack Used:

- **Frontend:** Streamlit
- **Backend:** LangChain, Gemini API
- **Database:** Firebase
- **Programming Language:** Python

#### 2. Development Process:

- Implement **API authentication & Gemini AI integration.**
- Develop **study plan generation & progress tracking logic.**
- Optimize **real-time study recommendations & chatbot responses.**

#### 3. Challenges & Fixes:

- **Challenge: Slow API responses.**
    - **Fix: Optimize API calls & caching.**
  - **Challenge: Managing large PDFs.**
    - **Fix: Implement efficient PDF parsing.**
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## Phase-6: Functional & Performance Testing

### Objective:

Ensure StudBud functions as expected with high performance.

Test Case ID	Category	Test Scenario	Expected Outcome	Status	Tester
TC-001	Functional Testing	AI Study Plan Generation	Personalized plans based on input	✓ Passed	Tester 1
TC-002	Functional Testing	PDF Chatbot Query	Accurate responses from study materials	✓ Passed	Tester 2
TC-003	Performance Testing	Response Time Optimization	API response under 500ms	⚠ Needs Optimization	Tester 3
TC-004	Bug Fixes & Improvements	Fixed incorrect AI suggestions	AI recommendations improve	✓ Fixed	Developer
TC-005	UI Testing	Responsive UI	Works on desktop & mobile	✓ Fixed	Tester 2 & DevOps

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## Final Submission

1. **Project Report Based on the templates**
2. **Demo Video (3-5 Minutes)**
3. **GitHub/Code Repository Link**
4. **Presentation**