Hackathon Project Phases Template for the **SkillPilot App** project.

Hackathon Project Phases Template

Project Title:

SkillPilot: Personalized Learning Journey Recommender

Team Name:

AI SQUADS

Team Members:

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Phase-1: Brainstorming & Ideation

Objective:

Develop an AI-powered learning recommender that helps users discover the best educational paths based on their interests, skill levels, and career goals.

Key Points:

1. **Problem Statement:**
    - Many learners struggle to find relevant courses and structured learning paths.
    - Information overload makes it hard to choose the right resources.
    - Personalized guidance is often missing in online learning platforms.

2. **Proposed Solution:**

    - An AI-driven application that recommends **personalized courses**, **tutorials**, and **learning paths** based on user preferences.
    - It Uses **machine learning & NLP** to analyze user inputs and suggest the best resources.
    - Tracks progress and adapts recommendations over time for better learning outcomes.

3. **Target Users:**

    - **Students** and **professionals** looking to upskill.
    - **Beginners** exploring new subjects.
    - **Companies training employees** with personalized learning roadmaps.

4. **Expected Outcome:**

    - A working **AI-powered recommendation system** that provides users with **the best learning paths** tailored to their goals.

Phase-2: Requirement Analysis

Objective:

Define the technical and functional requirements for **SkillPilot**.

Key Points:

1. **Technical Requirements:**

    - Programming Language: **Python**
    - Backend: **FastAPI + AI Recommendation Model**
    - Frontend: **Streamlit**
    - Database: **SQLite or Firebase (User Preferences & Learning History)**
    - ML Models: **NLP-based Recommendation System (TF-IDF / BERT / Gemini API)**

2. **Functional Requirements:**

    - User **input-based course recommendations.**
    - Ability to **refine recommendations** based on past choices.
    - Display **detailed learning paths** with **progress tracking.**
    - Filter courses based on **time commitment, difficulty level, and subject area**.

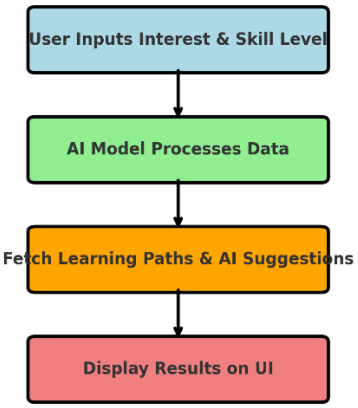
3. **Constraints & Challenges:**

    - Ensuring **real-time recommendations.**
    - Handling **large datasets** of **learning resources**.
    - **Balancing personalization** with accuracy.

Phase-3: Project Design

Objective:

Develop the architecture and user flow of the application.



Key Points:

1. **System Architecture:**
    - **User Query** – The user enters their **interest & skill level** in the app.
    - **AI Model Processes Data** – The AI analyzes the input and determines the best learning paths.
    - **Backend Fetches Relevant Courses** – The system queries the **AI API or database** to retrieve personalized course recommendations.
    - **Results Displayed on UI** – The recommended learning paths are shown, with an option for **AI-powered suggestions** if the user wants more choices.
2. **User Flow:**
    - Step 1: User enters their skill level & learning goals.
    - Step 2: The AI model processes the input and recommends relevant learning paths.
    - Step 3: Users can refine the suggestions based on filters.
    - Step 4: The system tracks progress and updates recommendations dynamically.
3. **UI/UX Considerations:**
    - **Simple & clean interface** with an intuitive learning dashboard.
    - **Filters** for difficulty level, course duration, and subject.
    - **Dark & light mode** for accessibility.

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	3 hours (Day 1)	Mid-Day 1	Member 1	Python, FastAPI, NLP Libraries	API connection established & working
Sprint 1	Basic UI development	? Medium	6 hours (Day 1)	End of Day 1	Member 2	Streamlit, UX Design	Basic UI with input fields
Sprint 2	AI model recommendation logic	? High	5 hours (Day 2)	Mid-Day 2	Member 1& 2	Preprocessed dataset, ML model	Search functionality with filters
Sprint 2	Backend Integration with frontend	? High	4 hours (Day 2)	Mid- Day 2	Member 1&3	API setup, UI components	Improved API stability
Sprint 3	Testing & UI Enhancements	? Medium	4 hours (Day 2)	End of Day 2	Member 2& 3	Final UI design, user feedback	Responsive UI, better user experience
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 & Integration (Day 1)

(? High Priority) Set up the **environment** & install dependencies.
(? High Priority) Integrate **AI API** for content suggestions.
(? Medium Priority) Build **a basic UI with login & skill selection fields.**

Sprint 2 – Core Features & Debugging (Day 2)

(? High Priority) Implement **learning path recommendations based on user interest & skill level.**
(? High Priority) Debug API issues & ensure **smooth data fetching.**

Sprint 3 – Testing, Enhancements & Submission (Day 2)

(? Medium Priority) Test **AI-generated recommendations**, refine **UI**, & **fix UI bugs.**
(? Low Priority) Final **demo preparation & deployment**.

Phase-5: Project Development

Objective:

Implement core features of the **SkillPilot** App.

Key Points:

1. **Technology Stack Used:**
    - **Frontend:** Streamlit
    - **Backend:** AI API for content suggestions
    - **Programming Language:** Python
2. **Development Process:**
    - Implement **user authentication** and AI API integration.
    - Develop **personalized learning recommendations** based on interest & skill level.
    - Optimize **AI-generated suggestions** for accuracy and relevance.
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3. **Challenges & Fixes:**
    - **Challenge:** AI recommendations not always relevant.
      ✅ **Fix:** Improve **filtering logic and fine-tune model parameters.**
    - **Challenge:** UI not responsive across devices.
      ✅ **Fix:** Adjust **Streamlit layout** and styling for better user experience.

Phase-6: Functional & Performance Testing

Objective:

Ensure that the AutoSage App works as expected.

Test Case ID	Category	Test Scenario	Expected Outcome	Status	Tester
TC-001	Functional Testing	Query: "Best Python courses for beginners"	Relevant Python courses should be displayed	✅ Passed	Tester 1

TC-002	Functional Testing	Query: "How to learn AI step by step?"	A structured learning path should be suggested	✅ Passed	Tester 2

TC-003	Performance Testing	API response time under 500ms	Results should be fetched quickly	⚠ Needs Optimization	Tester 3
TC-004	Bug Fixes & Improvements	Fixed incorrect course recommendations	Improved relevance of suggestions	✅ Fixed	Developer
TC-005	Final Validation	Check responsiveness on mobile & desktop	UI should work seamlessly.	☑ Passed	Tester 2
TC-006	Deployment Testing	Deploy on Streamlit Sharing	App should be accessible online.	🚀 Deployed	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**