Hackathon Project Phases Template for the Advancing NutriGen project.

Hackathon Project Phases Template

Project Title:

Advancing Nutrition Science through GeminiAI

Team Name:

Team Vanaras

Team Members:

- Kowluru Sai
- Kota Rohith
- Sreeram Sai Amarnath
- Adla Surya

Phase-1: Brainstorming & Ideation

Objective:

Develop an AI-powered nutrition expert tool using GeminiAI to provide detailed nutritional information and personalized meal plans.

Key Points:

1. **Problem Statement:**
    - Many individuals struggle with creating healthy and satisfying meal plans that align with their dietary needs and preferences.
    - Lack of reliable, comprehensive nutritional information about food items leads to poor dietary choices.

2. **Proposed Solution:**

    - An AI-powered web application using **GeminiAI** to provide instant nutritional information about food items, including macronutrients (protein, fat, carbohydrates), micronutrients (vitamins, minerals), and calorie content.
    - Personalized meal plans based on user input regarding dietary restrictions, allergies, health conditions, and activity levels.
3. **Target Users:**

    - Health-conscious individuals seeking accurate nutritional data.
    - Fitness enthusiasts need tailored meal plans.
    - Individuals with dietary restrictions and health conditions.
4. **Expected Outcome:**

    - A functional AI-powered nutrition app providing real-time nutritional insights and personalized meal plans.

Phase-2: Requirement Analysis

Objective:

Define the technical and functional requirements for the NutriGen App.

Key Points:

1. **Technical Requirements:**

    - Programming Language: **Python**
    - Backend: **Google Gemini Flash API, Flask(Python)**
    - Frontend: **Html, CSS, JavaScript**
    - Database: **MySQL**
2. **Functional Requirements:**

    - Ability to **fetch nutritional details** using Gemini Flash API.
    - Provide **personalized** meal plans based on user **preferences** and **health** data.
    - Display **macronutrients**, **micronutrients**, and **calorie** content in an intuitive UI.
    - Generate **grocery** lists and **recipe** suggestions.
3. **Constraints & Challenges:**

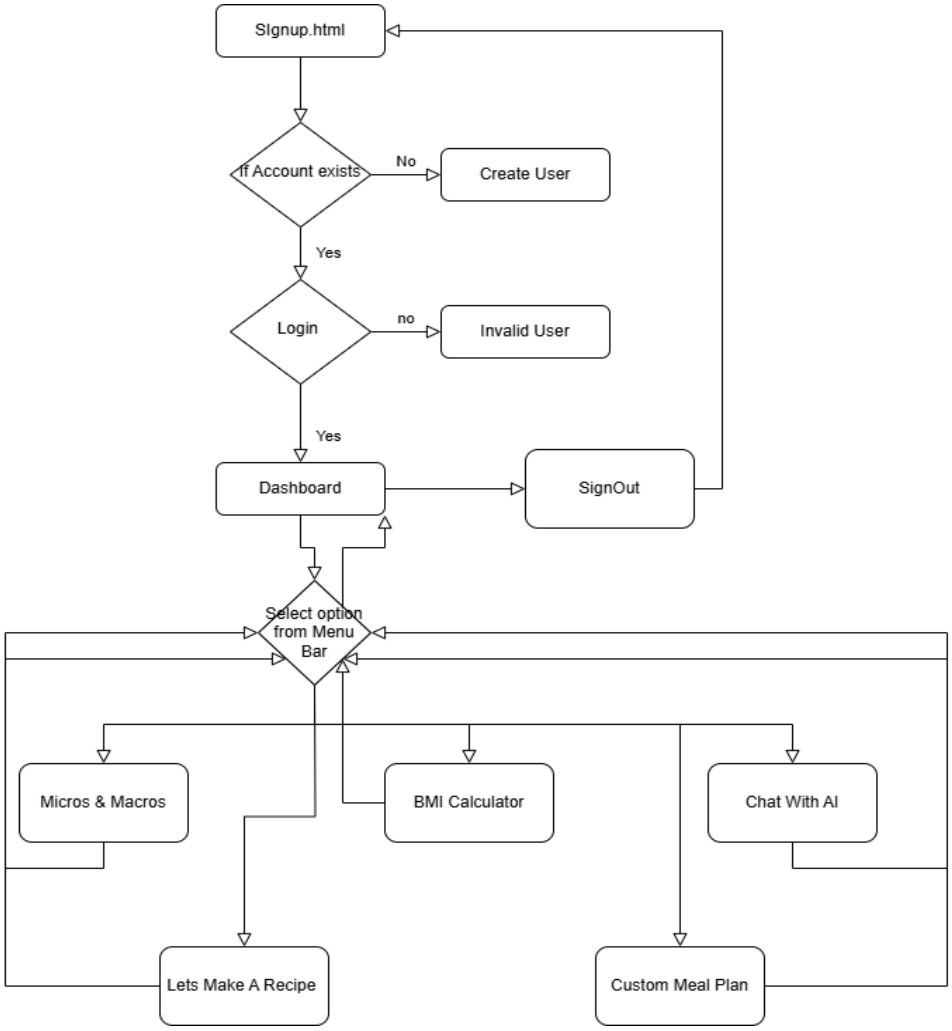
    - Ensuring real-time updates from the **Gemini API**.
    - Handling **API rate limits** and optimizing API calls.

- Providing a **smooth UI experience** with Html, Bootstrap, and CSS.

Phase-3: Project Design

Objective:

Develop the architecture and user flow of the application.



Key Points:

1. **System Architecture:**

   - User inputs dietary preferences and health data via UI.
   - Query is processed using **Google Gemini API**.

- AI model fetches and processes the data.
- The frontend displays nutritional details and meal plan suggestions.

2. **User Flow:**
    - Step 1: User enters dietary details (e.g., "High protein meal plan").
    - Step 2: The Backend calls GeminiAI API to retrieve data.
    - Step 3: Data is processed, and meal plans with nutritional information are displayed.
3. **UI/UX Considerations:**
    - **Minimalist, user-friendly interface** for seamless navigation.
    - **Filters for dietary preferences, allergies, and health goals.**
    - **Dark & light mode** for better user experience.

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	4 hours (Day 1)	End of Day 1	K.Sai	Google API Key, Python, flask setup	API connection established & working
Sprint 1	Backend Development	🔴 High	4 hours (Day 1)	End of Day 1	K.Rohith	API response format finalized	Integrating flask with API
Sprint 2	Frontend Development	🟡 Medium	3 hours (Day 2)	Mid-Day 2	A.Surya	UI Development	Creating dashboard
Sprint 2	Error Handling & Debugging	🔴 High	1.5 hours (Day 2)	Mid-Day 2	S.Amarnath	API logs, UI inputs	Improved Website Responses
Sprint 3	Testing & UI Enhancements	🟡 Medium	1.5 hours (Day 2)	Mid-Day 2	A.Surya & S.Amarnath	API responses,UI layout completed	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 **Google Gemini API**.

Sprint 2 – Core Features & Debugging (Day 2)

(🟡 Medium Priority) Creating dashboard

(🔴 High Priority) Debug API issues & handle **errors in Website(providing sign up and login functionality)**.

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

(🟡 Medium Priority) Test API responses, refine UI, & fix UI bugs.

(🟢 Low Priority) Final **demo preparation & deployment**.

Phase-5: Project Development

Objective:

Implement core features of the NutriGen App.

Key Points:

1. **Technology Stack Used:**
    - **Frontend:** Html, CSS, JavaScript.
    - **Backend:** Google Gemini Flash API, Flask(Python)
    - **Programming Language:** Python
2. **Development Process:**
    - Implement **API key authentication** and **Gemini API integration**.
    - Develop **meal plan generation and grocery list logic.**
    - Optimize **search queries for performance and relevance**.
3. **Challenges & Fixes:**
    - **Challenge:** Delayed API response times.
      Fix: Implement **caching** to store frequently queried results.
    - **Challenge:** Limited API calls per minute.
      Fix: Optimize queries to fetch **only necessary data**.

Phase-6: Functional & Performance Testing

Objective:

Ensure that the NutriGen App works as expected.