

# Hackathon Project Phases Template

**Project Title: NutriGen - AI-Powered Nutrition Planner**

**Team Name:**

TEAM DOT

**Team Members:**

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## Phase-1: Brainstorming & Ideation

**Objective:**

Develop an AI-powered web application using Google Gemini AI to help users analyze food nutrition, create personalized meal plans, and generate grocery lists based on dietary preferences.

**Key Points:**

- 1. Problem Statement:**
  - Many individuals struggle with making healthy food choices and creating balanced meal plans.
  - Users require an easy way to track macronutrients, micronutrients, and calories.
  - Meal planning should align with allergies, dietary restrictions, and personal preferences.
- 2. Proposed Solution:**
  - AI-powered web application leveraging **Google Gemini AI** to analyze food nutritional content.
  - Generate **personalized meal plans** based on user input (preferences, restrictions, activity levels).
- 3. Target Users:**
  - Health-conscious individuals.
  - Fitness enthusiasts and dietitians.
  - People with dietary restrictions (vegan, gluten-free, etc.).

#### 4. **Expected Outcome:**

- A functional web-based nutrition analysis and meal planning tool.
  - AI-generated meal plans that are **nutritionally balanced and user-friendly**.
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## Phase-2: Requirement Analysis

### Objective:

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

### Key Points:

#### 1. **Technical Requirements:**

- **Programming Language:** JavaScript (React.js for frontend, Node.js for backend)
- **Backend:** Google Gemini API for nutrition analysis
- **Frontend:** React.js + CSS
- **Database:** MySQL dataset for food nutrition data

#### 2. **Functional Requirements:**

- User inputs food items to analyze nutritional content.
- AI generates personalized meal plans based on user preferences
- The UI is intuitive, allowing users to filter based on dietary needs

#### 3. **Future Implementations:**

- The app provides grocery lists and recipe suggestions.
- .Allows users to save their favourite meals and display them in separate section.
- Display history of previously searched food items or meal plans.

#### 4. **Constraints & Challenges:**

- Ensuring **accurate** real-time nutrition data retrieval.
  - Handling **API rate limits** efficiently.
  - Creating an engaging and simple **user experience**.(minimalistic).
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## Phase-3: Project Design

### Objective:

Develop the system architecture and user flow.

### Key Points:

#### 1. **System Architecture:**

- User enters a food item or dietary preference.
- Query is processed using **Google Gemini AI API**.

- AI retrieves and processes nutrition data.
  - The frontend displays **nutrition breakdown, meal plan.**
2. **User Flow:**
- **Step 1:** User inputs a food item or preference.
  - **Step 2:** AI processes data and generates insights.
  - **Step 3:** User receives nutrition analysis, meal plan, and grocery list.
3. **UI/UX Considerations:**
- **Minimalist, user-friendly interface.**
  - **Filters** for dietary preferences (vegan, keto, gluten-free, etc.).
  - **Responsive design** for desktop users.

## 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	End of Day 1	Member 1	API Key, React, Node.js	Working API connection
Sprint 1	Frontend UI Development	Medium	2 hours	End of Day 1	Member 2	API response format finalized	Basic UI with input fields
Sprint 2	Nutrition Analysis & Meal Plan Generation	High	3 hours	Mid-Day 2	Member 1 & 2	API response, UI elements ready	AI-based meal planning
Sprint 2	Error Handling & Debugging	High	1.5 hours	Mid-Day 2	Member 1 & 4	API logs, UI inputs	Improved API stability
Sprint 3	Testing & UI Enhancements	Medium	1.5 hours	Mid-Day 2	Member 2 & 3	API response, UI layout completed	Responsive UI, better user experience
Sprint 3	Final Presentation & Deployment	Low	1 hour	End of Day 2	Entire Team	Working prototype	Demo-ready project

## Phase-5: Project Development

Objective:

Implement the core features of **NutriGen**.

Key Points:

- 1. **Technology Stack Used:**
  - **Frontend:** React.js + CSS
  - **Backend:** Node.js
  - **AI Integration:** Google Gemini API
  - **Database:** MySQL dataset for food details
- 2. **Development Process:**
  - Implement **API authentication and integration**.
  - Develop **meal planning & nutritional content of food item**.
  - Optimize search queries for **performance and accuracy**.
- 3. **Challenges & Fixes:**
  - **Challenge:** Slow API response times.
    - **Fix:** Implement caching for frequently queried results.
  - **Challenge:** Limited API calls per minute.
    - **Fix:** Optimize requests to fetch only necessary data.

Phase-6: Functional & Performance Testing

Objective:

Ensure that NutriGen functions as expected.

Test Case ID	Category	Test Scenario	Expected Outcome	Status	Tester
TC-001	Functional Testing	Query "Nutritional content in an apple"	Correct nutritional data displayed	✔ Passed	Tester 1
TC-002	Functional Testing	Generate "Meal plan for a keto diet"	Personalized meal plan generated	✔ Passed	Tester 2
TC-003	Performance Testing	API response time under 500ms	AI should return results quickly	⚠ Needs Optimization	Tester 3
TC-004	Bug Fixes & Improvements	Fixed incorrect API responses	Data accuracy improved	✔ Fixed	Developer
TC-005	Final Validation	Ensure UI works on Desktop	UI should be fully responsive	✖ Failed - UI broken on mobile	Tester 2
TC-	Deployment	Host the app on	App should be	☐ Deployed	DevOps

<b>Test Case ID</b>	<b>Category</b>	<b>Test Scenario</b>	<b>Expected Outcome</b>	<b>Status</b>	<b>Tester</b>
006	Testing	Vercel/Netlify	accessible online		

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## Final Submission

1. Project Report (following this template)
  2. Demo Video (3-5 Minutes)
  3. GitHub/Code Repository Link
  4. Presentation
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