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

Hackathon Project Phases Template

Project Title:

AutoSage App Using Gemini Flash

Team Name:

(Provide your team's name)

Team Members:

- Member 1
- Member 2
- Member 3
- Member 4

Phase-1: Brainstorming & Ideation

Objective:

Develop an AI-powered vehicle expert tool using Gemini Flash to help users compare and analyze vehicle specifications, reviews, and eco-friendly options.

Key Points:

1. **Problem Statement:**
    - Many users struggle to find reliable, up-to-date information about two-wheelers and four-wheelers before making a purchase decision.
    - Users also need guidance on vehicle maintenance and eco-friendly vehicle choices.

2. **Proposed Solution:**
    - An AI-powered application using **Gemini Flash** to provide **real-time vehicle specifications, reviews, and comparisons.**
    - The app offers **maintenance tips** and **eco-friendly vehicle insights** based on user preferences.
3. **Target Users:**
    - **Vehicle buyers** looking for specifications and comparisons.
    - **Vehicle owners** needing seasonal maintenance tips.
    - **Eco-conscious consumers** searching for hybrid and electric vehicle options.
4. **Expected Outcome:**
    - A functional **AI-powered vehicle information app** that provides insights based on real-time data and user queries.

Phase-2: Requirement Analysis

Objective:

Define the technical and functional requirements for the AutoSage App.

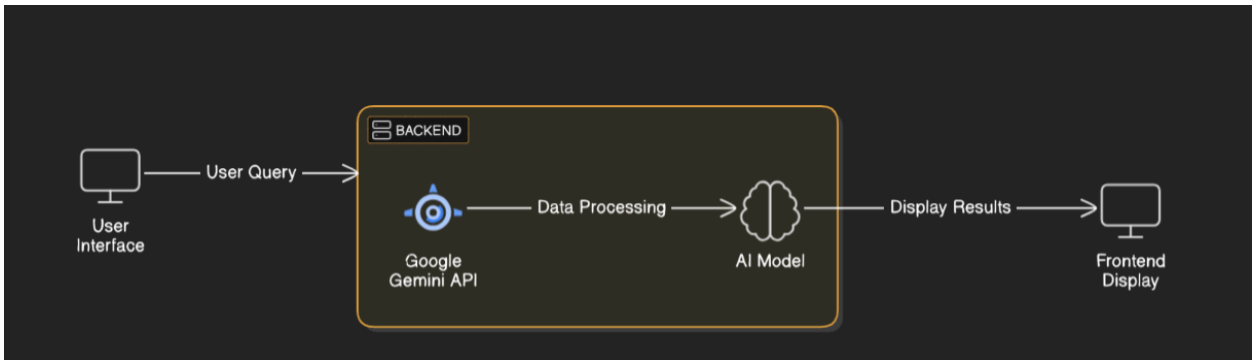
Key Points:

1. **Technical Requirements:**
    - Programming Language: **Python**
    - Backend: **Google Gemini Flash API**
    - Frontend: **Streamlit Web Framework**
    - Database: **Not required initially (API-based queries)**
2. **Functional Requirements:**
    - Ability to **fetch vehicle details** using Gemini Flash API.
    - Display **specifications, reviews, and comparisons** in an intuitive UI.
    - Provide **real-time vehicle maintenance tips** based on seasons.
    - Allow users to **search eco-friendly vehicles** based on emissions and incentives.
3. **Constraints & Challenges:**
    - Ensuring real-time updates from **Gemini API**.
    - Handling **API rate limits** and optimizing API calls.
    - Providing a **smooth UI experience** with Streamlit.

Phase-3: Project Design

Objective:

Develop the architecture and user flow of the application.



Key Points:

1. **System Architecture:**
    - User enters vehicle-related query via UI.
    - Query is processed using **Google Gemini API**.
    - AI model fetches and processes the data.
    - The frontend displays **vehicle details, reviews, and comparisons**.
2. **User Flow:**
    - Step 1: User enters a query (e.g., "Best motorcycles under ₹1 lakh").
    - Step 2: The backend **calls the Gemini Flash API** to retrieve vehicle data.
    - Step 3: The app processes the data and **displays results** in an easy-to-read format.
3. **UI/UX Considerations:**
    - **Minimalist, user-friendly interface** for seamless navigation.
    - **Filters for price, mileage, and features**.
    - **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	6 hours (Day 1)	End of Day 1	Shanawaz	Google API Key, Python, Streamlit setup	API connection established & working
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	anwar	API response, UI elements ready	Search functionality with filters
Sprint 2	Error Handling & Debugging	🔴 High	1.5 hours (Day 2)	Mid-Day 2	Member 1&4	API logs, UI inputs	Improved API stability
Sprint 3	Testing & UI Enhancements	🟡 Medium	1.5 hours (Day 2)	Mid-Day 2	Member 2& 3	API response, 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**.
(🟡 **Medium Priority)** Build a **basic UI with input fields**.

Sprint 2 – Core Features & Debugging (Day 2)

(🔴 **High Priority)** Implement **search & comparison functionalities**.
(🔴 **High Priority)** Debug API issues & handle **errors in queries**.

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 AutoSage App.

Key Points:

1. **Technology Stack Used:**
    - **Frontend:** Streamlit
    - **Backend:** Google Gemini Flash API
    - **Programming Language:** Python
2. **Development Process:**
    - Implement **API key authentication** and **Gemini API integration**.
    - Develop **vehicle comparison and maintenance tips 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 AutoSage App works as expected.

Test Case ID	Category	Test Scenario	Expected Outcome	Status	Tester
TC-001	Functional Testing	Query "Best budget cars under ₹10 lakh"	Relevant budget cars should be displayed.	✅ Passed	Tester 1
TC-002	Functional Testing	Query "Motorcycle maintenance tips for winter"	Seasonal tips should be provided.	✅ Passed	Tester 2

TC-003	Performance Testing	API response time under 500ms	API should return results quickly.	⚠ Needs Optimization	Tester 3
TC-004	Bug Fixes & Improvements	Fixed incorrect API responses.	Data accuracy should be improved.	✅ Fixed	Developer
TC-005	Final Validation	Ensure UI is responsive across devices.	UI should work on mobile & desktop.	❌ Failed - UI broken on mobile	Tester 2
TC-006	Deployment Testing	Host the app using 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**