Hackathon Project Phases Template for the **Auto Sage App** project.

Hackathon Project Phases Template

Project Title:

Auto Sage App Using Gemini Flash

Team Name:

Auto Sage

Team Members:

- O.Lalasa Yadav
- S.Sahasra
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- P.Spandhana

Phase - 1:Brainstorming & Ideation

Objective:

Developan 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 Auto Sage App.

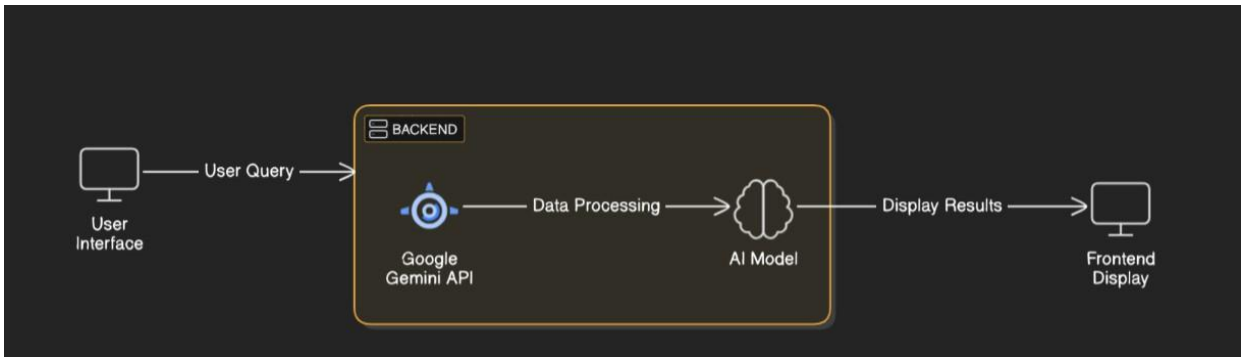
KeyPoints:

1. **Technical Requirements:**
    - Programming Language : **Python**
    - Backend : **Google Gemini Flash API**
    - Frontend : **Streamlit Web Framework**
    - Database : **Not require dinitially (API-basedqueries)**
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 one missions 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**.
    - AImodel fetches and processes the data.
    - The frontend displays **vehicle details , reviews , and comparisons**.
2. **User Flow:**
    - Step1 : User enter saquery (e.g.,"Best motor cycles under ₹1lakh").
    - Step2:The backend **calls the Gemini Flash API** toretrieve vehicle data.
    - Step3:The appprocesses 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:

Breakdown 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	mohammad	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 (Day1)

- (🔴 **High Priority)** Setup the **environment** & install dependencies.
- (🔴 **High Priority)** Integrate **Google Gemini API**.
- (🟡 **Medium Priority)** Build a **basic UI with input fields**.

Sprint 2–Core Features & Debugging (Day2)

- (🔴 **High Priority)** Implement **search & comparis on functionalities**

- (🔴 **High Priority)** Debug API issues & handle **errors in queries**.

Sprint 3–Testing , Enhancements & Submission (Day2)

- (🟡 **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 Auto Sage 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 & PerformanceTesting

Objective:

Ensure that the Auto Sage Appworks as expected.

Test CaseID	Category	TestScenario	ExpectedOutcome	Status	Tester
TC-001	Functional Testing	Query "Best budget cars under ₹10 lakh"	Relevant budget cars should be displayed.	✅ Passed	shanwaz
TC-002	Functional Testing	Query "Motorcycle maintenance tips for winter"	Seasonal tips should be provided.	✅ Passed	anwar

TC-003	Performance Testing	API response time under 500ms	API should return results quickly.	⚠ Needs Optimization	Tester3
TC-004	Bug Fixes & Improvements	Fixed in correct 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 broke non mobile	Tester2
TC-006	Deployment Testing	Host the app using Stream lit 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**