Project Scope: Personalized Recipe Assistant

1. Project Title:

Personal Recipe Assistant Agent

2. Main Objective:

Develop a conversational Artificial Intelligence agent capable of assisting users in discovering and adapting culinary recipes based on available ingredients and dietary restrictions. The project will also explore, as a bonus, some basic preferences such as using an Airfryer to avoid fat consumption.

3. Essential Functionalities (MVP- Minimum Viable Product):

- **Interaction Interface:**
  - Text-based chat where the user interacts with the agent.
- **User Information Gathering:**
  - **Available Ingredients:** The user informs the ingredients they have and can also indicate the type of dish (snack, dinner, etc.).
  - **Dietary Restrictions:** The user specifies restrictions (e.g., gluten-free, lactose-free, vegetarian, vegan, nut allergy).
  - **Basic Preferences:** The user can indicate if they would like the recipe to be adapted for an airfryer use.
- **Agent Logic (Google Gemini SDK):**
  - **Natural Language Processing (NLP):** To understand user requests and provided information.
  - **Recipe Search and Creation:** Based on the ingredients and restrictions provided, the agent should be able to search, generate, and suggest suitable recipes based on the user's request.
  - **Creative Generation (Experimental):** Use Gemini to creatively generate variations of recipes with very simple ingredient combinations, respecting restrictions.
- **Simple Recipe Adaptation:**
  - **Basic Ingredient Substitution:** Suggest simple substitutions based on restrictions (e.g., if the recipe calls for milk and the user is lactose intolerant, suggest plant-based milk).
- **Recipe Presentation:**
  - **Display the selected recipe clearly:** list of ingredients (with substitutions, if any) and step-by-step instructions.

    - **Adaptation:** For cases of Airfryer adaptation (bonus functionality), display the original and the adapted recipe so the user can choose the one that is convenient for them.

4. Future Functionalities (Post-MVP):

- **Recipe Database Curation:**
    - Prioritize searching for recipes from specific websites.
- **Improved Ingredient Gathering:**
    - Allow the user to inform approximate quantities of the ingredients they have.
- **User Profile:**
    - Save user preferences and restrictions for future interactions.

5. Target User:

Individuals who cook at home and seek inspiration to use the ingredients they already have, wish to adapt recipes to their dietary needs, or simply want to discover new dishes. The project will initially focus on the developer's individual use.

6. Technologies:

- Programming Language: Python
- Development Environment: Google Colab
- AI SDK: Google Gemini SDK

7. User Inputs:

The input will be text in natural language (NLP).

Examples of inputs:

- *"I have chicken, broccoli, and rice. I want lunch for 2 people." (Should use generator)*
- *"I have potato and cauliflower. I want a vegetarian and gluten-free dinner." (Should use generator and restriction adapter)*
- *"I have salmon and potato. I want dinner and want to adapt it for Airfryer." (Should use generator and airfryer adapter)*

8. Agent Outputs:

The outputs will be text in natural language (NLP).