Menu Generation Assistant

Flutter + Supabase App

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Outline

Application and User Stories

User Story Examples (1)

- **Image Upload**

  As a user, I want to upload a photo of my ingredients so that I can get a recipe suggestion.

- **Preferences**

  As a user, I want to tell the App that I am vegan, or that I am looking to lose fat.

User Story Examples (2)

- **Ingredient Edit**

  As a user, I want to adjust detected ingredients so that the recipe matches my pantry. (even AI can make mistakes)

- **Recipe Share**

  As a user, I want to share my generated recipe via link so that friends can view it.

Potential Applications

- **Smart Cooking Guide**
  Personalized step-by-step instructions based on ingredients

- **Quick Cooking Advisor**
  Instant recipe suggestions for meals under 15 minutes

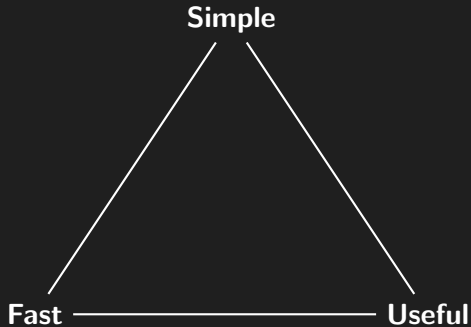- **Meal Planning & Tracking**
  Auto-generate weekly menus and calorie logs from photos

- **Minimalist Recipe Generator**
  Create tasty dishes using only 3–5 ingredients on hand

Reasoning

Front End

App Purpose

Image-to-Recipe Flutter App

- Turns a food image into a custom recipe using AI
- Full pipeline:
    Upload → Extract → Generate → Display
- Built using Flutter with multi-screen navigation
- Emphasis on intuitive UX and fast processing

User Flow

4-Stage Pipeline

- **Upload**: User selects a food image + *optional preferences*
- **Extract**: Ingredients extracted + *user adjustments*
- **Generate**: Recipe created using ingredients
- **Display**: Recipe shown in structured format

Page Structure

Modular Screen Architecture

- Each step implemented as a separate Flutter page
- Navigation via named routes
- Clear state transfer across stages
- Encourages scalability and decoupled logic

Back End

Cloud-Driven Actions by Supabase ⚡

- Handles image storage, user data, and AI inference
- Combines Supabase (database/storage/auth) with Google AI (vision + language)
- All processing offloaded to cloud for scalability

Supabase Services

- **Storage**: Uploaded food images stored securely
- **Database**: Stores user history, ingredients, recipes
- **Authentication**: Optional login support for personalization
- Fast RESTful API interface via Supabase SDK

Google AI APIs

- **Vision AI**: Extracts ingredient keywords from image
- **Gemini API**: Generates recipe html from ingredients/preferences
- 2-shot API calls for each user story
- Reliable and scalable with minimal backend setup

Security & Scalability

- Supabase Row-Level Security for user-specific data
- Image access is signed and time-limited
- Backend logic can scale with serverless functions
- Easy to add monitoring or logging via Supabase or Google Cloud