# Fitness Assistant System Report

### Prerak Patidar

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### Abstract

**Fitness Assistant** is a full-stack health and wellness management platform built to generate personalized workout plans, diet macros, and daily nutrition guides. It includes AI-backed features for smart Q&A, tracks user data via TinyDB, and leverages a clean Vue-based frontend layout. This document summarizes the architecture, workflows, and user interface.

### 1 Architecture Overview

#### 1.1 1. Tech Stack

- Frontend: Vue 3, Pinia, Axios, Vite
- Backend: FastAPI with modular routers
- AI Services: Gemini (or OpenAI), called via 'ask<sub>g</sub>emini()'Database : TinyDB(JSON-basedembeddedNoSQLDB)

#### 1.2 2. Infrastructure Flow

- The Vue app calls FastAPI endpoints via Axios.
- FastAPI serves modular routes for '/diet', '/macros', '/ask', '/users', and '/notes'.
- User profiles are saved and retrieved using TinyDB ('db.json').
- Diet/macros are generated using prompt-engineered AI or rule-based functions.
- Each route sanitizes input and handles partial/fallback logic.

## 2 Frontend UI & Screenshots

#### Macros View

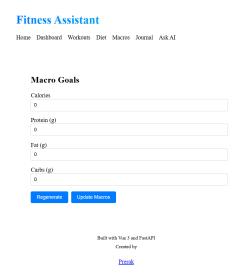


Figure 1: Macro Goals page. This view shows the user's calculated calorie and macro targets based on profile and fitness goal. Regeneration and updates are handled through FastAPI calls.

# Ask AI Page

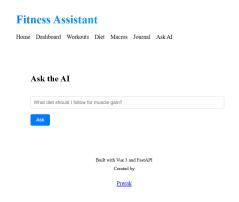


Figure 2: Ask AI page. Users can ask fitness or nutrition questions. The backend wraps the prompt and fetches answers from Gemini.

## Workout Dashboard

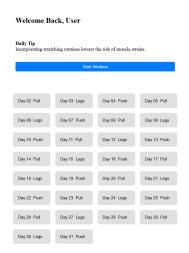


Figure 3: Workout scheduler showing Push-Pull-Legs split over 31 days. Each button loads a structured plan for that day.

#### Diet Plan Layout

localhost:5173/diet

7/6/25, 11:05 PM Fitness Assistant

Home Dashboard Workouts Diet Macros Journal Ask AI

#### Your Diet Plan

```
Of course. Here is a personalized 7-day Indian vegetarian diet plan designed for Prerak to support his fat loss goals.

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### **Important Initial Assessment**

**Name:** Prerak

**Age:** 19 years

**Generis* Male

**Weight:** 180 kg

**Height:** 78 cm *(This seems like a typo. A height of 78 cm at 180 kg is not medically possible. I will assume a height of **178 cm (5'10")** for these calculations, which is a common height for an Indian male. Please adjust if this is incorrect.)*

**Goal:** Fat Loss

Based on your profile (assuming 178 cm height), your estimated daily calorie needs (TDEE) for maintaining your current weight with a sedentary lifestyle are approximately **3,380 calories**.

For sustainable fat loss (around 0.8-1 kg per week), a calorie deficit is required. We will target a daily intake that is significantly lower but still provides ample nutrition to support your body's functions.

### **Personalized Diet Plan for Prerak**

**Target Nutrition Goals (Approximate):**

* **Calories:** 2300 - 2400 kcal/day

* **Protein:** 140 - 150 g (Essential for muscle preservation and satiety)

* **Carbohydrates:** 280 - 300 g (Focused on complex, high-fiber sources)

* **Fats:** 65 - 75 g (Focused on healthy, unsaturated fats)

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### **General Guidelines for Success**

1. **Hydration:** Drink **3-4 litres of water** daily. Start your
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Figure 4: A dynamic diet plan rendered from the AI-generated text. Uses profile age, weight, activity level and fitness goal.

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## Journal View



Figure 5: (Planned) Journal screen allows users to record daily progress, notes, and insights. To be stored in the 'notes' table of TinyDB.

# Application Layout & Architecture

7/6/25, 9:49 PM	Fitness Assistant
Hor	ne Dashboard Workouts Diet Macros Journal Ask AI
(	Get Started
P	ersonalized workouts and diets powered by AI
T	rack your progress and goals
S	tay consistent and motivated
	flow It Works reate a custom fitness plan, generate macros, and get smart recommendations.
	Your Journey
	Complete workouts and log your diet daily to achieve your goals.
	Name
	Age
	Weight (kg)
	Height (cm)
	Select Gender 🗸
	Select Activity Level
	Goals (comma-separated, e.g., Fat Loss,Muscle Gain)

Figure 6: Application structure showing flow between frontend views, API routers, services, and TinyDB.

# 3 Backend Functional Flow

# 1. Macro Calculator

- Endpoint: 'POST /api/macros'
- Uses profile data to calculate calories and macro goals.
- $\bullet \ \ {\rm `generate}_{macros()` handles logic and fall back defaults.}$

#### 2. Diet Generation

- Endpoint: 'POST /api/diet/'
- Profile may come from frontend or fallback to TinyDB.
- AI-based text generation via 'generate<sub>d</sub>iet()'.

#### 3. Ask AI

- Endpoint: 'POST /api/ask'
- Adds prompt wrapper and routes to Gemini API
- Fallback response is returned if LLM fails

# 4. Journal/Notes

• Endpoints: 'GET /api/notes/user<sub>i</sub>d', 'POST/api/notes/'Eachentryincludestimestamp, content, and u

### 4 Database Schema

TinyDB schema as structured in 'db.json':

- users: 'user<sub>i</sub>d', 'name', 'age', 'weight', 'height', 'gender', 'activity<sub>l</sub>evel', 'goals'diets: 'user<sub>i</sub>d', 'meals[]', 'timestamp'
- workouts: 'user<sub>i</sub>d', 'type', 'exercises[]', 'timestamp'notes: 'user<sub>i</sub>d', 'text', 'timestamp'

### 5 Conclusion

The Fitness Assistant project successfully combines full-stack modularity with AI integration. Its strengths lie in:

- User-personalized flows
- Dynamic AI-backed content
- Lightweight and easily extensible backend
- Clean and minimal frontend UI

Created with Vue 3, FastAPI and curiosity. Developed by Prerak Patidar.