Assignment: Personalized Diet & Workout Plan Chatbot

Objective

Build a **chatbot-based application** that generates a **personalized diet and workout plan** based on detailed user inputs. The system should be an **AI-driven conversational app**.

The focus of this assignment is to evaluate:

- System design thinking
- Input validation and personalization logic
- Responsible use of AI / LLMs
- Backend + frontend integration

Functional Requirements

1. User Inputs

The chatbot must collect and use the following inputs:

Personal Details

- Name
- Age
- Gender
- Height
- Weight

Goal & Planning

- Goal (fat loss / muscle gain / maintenance)
- Target weight

Health & Diet Constraints

- Medical conditions (if any)
- Food allergies
- Diet type (veg / non-veg / vegan / etc.)
- Disliked foods

Eating Habits

- Meals per day
- Cooking habits (home-cooked / mixed / outside food)

Lifestyle

- Wake time
- Sleep time
- Work hours
- Activity level (sedentary / moderate / active)

Workout Information

- Workout experience (beginner / intermediate / advanced)
- Available days per week
- Workout duration per session (minutes)

Output Requirements

1. Diet Plan

- Personalized meal plan for a week aligned with:
    - Diet type
    - Allergies
    - Disliked foods
    - Meals per day

2. Workout Plan

- Weekly workout split based on available days
- Workout type based on experience level
- Estimated duration per session
- Rest and recovery guidance

3. Conversational Explanation

- Human-readable explanation of:
    - Why this plan was generated
    - How it aligns with the user’s goal
- Ability to answer follow-up questions (e.g., food swaps, missed workouts)

Technical Expectations

Backend

- Use any backend framework
- Core personalization logic (diet selection, meal timing, workout structure)
- AI / LLM should only:
    - Explain plans
    - Generate meal/workout variety

Frontend (Bonus)

- Web UI using **React** or **HTML + CSS**
- Chat-style interface
- Display generated plan clearly

Validation & Safety Requirements

- Validate all inputs (age, timeline, health constraints, etc.)
- Prevent unsafe or unrealistic recommendations
- Add basic disclaimers for medical conditions
- Handle missing or invalid inputs gracefully

Submission Guidelines

- GitHub repository with clear README
- Instructions to run the project locally
- Mention any assumptions made
- (Optional) Screenshots or short demo video
- Recommend ways to optimize and extend the current implementation.

Bonus Points

- Persistent user memory (basic)
- Context-aware follow-up responses
- Caching or optimization for AI calls
- Clean, intuitive web UI

Important Note

This assignment is **not about building a medical-grade system**. The goal is to assess **engineering judgment, personalization logic, and safe AI integration**.

Focus on clarity, correctness, and thoughtful design over feature quantity.