

## Fitness Coach ChatBot

This project is an **AI Chatbot** designed to act as a personal fitness coach. It leverages a modern AI stack to provide real-time advice on workouts, nutrition, and recovery.

The LLM Engine being implemented in this project is from ChatGroq and the framework is FastAPI to serve the model as a high-performance web API.

LangChain was used to manage the logic flow, prompt templates, and historical context.

MongoDB was used for persistent storage of user conversations, ensuring the coach "remembers" you across sessions.

This chatbot doesn't just store memory, memory is **reconstructed** every time a user sends a message. This gives the AI "Episodic Memory," allowing it to recall previous injuries, goals, or preferred workout styles.

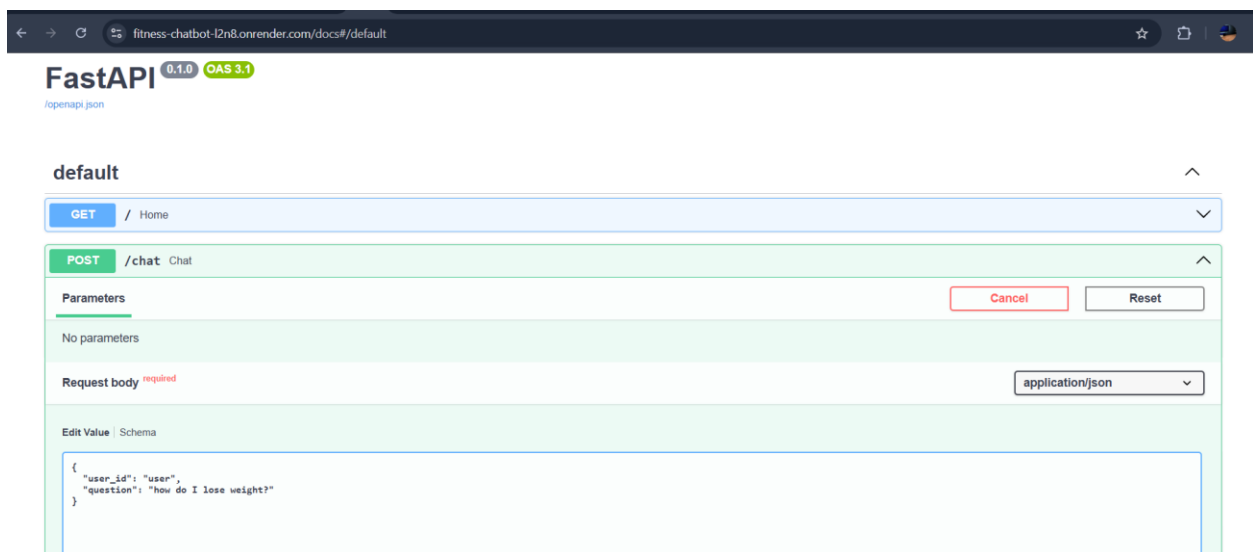
GitHub link

[https://github.com/Koonie19/Fitness\\_Chatbot](https://github.com/Koonie19/Fitness_Chatbot)

Below is the HOSTED API Link

[https://fitness-chatbot-l2n8.onrender.com/docs#/default/chat\\_chat\\_post](https://fitness-chatbot-l2n8.onrender.com/docs#/default/chat_chat_post)

And here is a sample test screenshot.



https://fitness-chatbot-12n8.onrender.com/chat

Server response

Code Details

200

Response body

```
{
  "response": "## Quick-Start Guide to Sustainable Weight Loss\n\n(Everything below is general fitness advice. If you have medical conditions, consult a healthcare professional first.)\n\n---\n\n1. Set a Realistic Goal\n\n| Goal | Typical Timeline | Why it Works |\n|-----|-----|-----|\n| **Target 5-10% body-weight** | 12-20 weeks | Visible changes without drastic restrictions |\n\n2. Create a Calorie Deficit (The Core Principle)\n\n| Method | How to Calculate | Example |\n|-----|-----|-----|\n| **Basal Metabolic Rate (BMR)** | Use the Mifflin-St Jeor formula: <br> - Men: 10 × wt kg + 6.25 × ht cm - 5 × age + 5 <br> - Women: 10 × wt kg + 6.25 × ht cm - 5 × age - 161 | 1,800 kcal/day |\n| **Total Daily Energy Expenditure (TDEE)** | BMR × Activity Factor (1.2-1.9) | 1,800 × 1.5 = 2,700 kcal/day |\n| **Deficit** | TDEE - 500 kcal (≈1 lb loss/wk) | 2,700 - 500 = 2,200 kcal/day |\n\n**Tip:** Use a food-tracking app (MyFitnessPal, Cronometer, Lose It!) to log everything.\n\n3. Macro Nutrient Balance\n\n| Macro | % of Total Calories | Why it Matters |\n|-----|-----|-----|\n| **Protein** | 25-30% | Preserves lean mass, boosts satiety |\n| **Fat** | 20-30% | Hormone health, nutrient absorption |\n| **Carbs** | 35-45% | Energy for workouts, brain function |\n\n**Protein Target:** 1.6-2.2 g kg⁻¹ body weight (e.g., 80 kg = 128-176 g). **Practical Sources:** Chicken, turkey, fish, Greek yogurt, tofu, lentils, eggs.\n\n4. Strength Training (Key to Keeping Muscle)\n\n| Frequency | Example Routine | Rationale |\n|-----|-----|-----|\n| **2-4 days/week** | Full-body or push/pull/legs split | Burns calories, builds muscle → higher resting metabolic rate |\n| **3-4 sets × 8-12 reps** | Focus on compound lifts (squats, deadlifts, bench press, rows) | Maximizes muscle engagement |\n| **Progressive Overload** | Add 2-5 lb (1-2 kg) or 1 rep every 1-2 weeks | Stimulates growth and strength |\n\n**Mini-Tip:** End each workout with a 5-minute HIIT burst (30 s sprint, 30 s walk) to boost calorie burn.\n\n5. Cardiovascular Work\n\n| Type | Frequency | Duration | Example |\n|-----|-----|-----|-----|\n| **Steady-State (Moderate)** | 2-3 days/week | 30-45 min | Brisk walking, cycling, elliptical |\n| **HIIT (High-Intensity Interval)** | 1-2 days/week | 15-20 min | 30 s sprint/30 s walk, repeat 8-10 times |\n\n**Why Mix Both?** Steady-state helps with fat oxidation. HIIT spikes post-exercise oxygen consumption (EPOC) for extra calorie burn.\n\n6. Lifestyle Tweaks\n\n| Habit | Impact | How to Implement |\n|-----|-----|-----|\n| **Sleep** | 7-9 h improves hunger hormones (leptin, ghrelin) | Set a bedtime, limit screens 1 h before bed |\n| **Stress** | Cortisol can stall weight loss | Meditation, deep breathing, short walks |\n| **Hydration** | 2-3 L/day aids metabolism, reduces “false” hunger | Keep a water bottle, sip before meals |\n\n7. Tracking Progress (Beyond the Scale)\n\n| Metric | Why it Matters | How to Measure |\n|-----|-----|-----|\n| **Body Fat %** | Indicates true fat loss vs. muscle | Skinfold calipers, DEXA (if available), or smart scales |\n| **Measurements** | Waist, hips, thighs | Tape measure every 4 weeks |\n| **Performance** | Strength gains, endurance | Record lift, time, or distance |\n\n8. Sample Daily Meal Plan (≈2,200 kcal)\n\n| Meal | Food | Portion | Calories | Protein (g) |\n|-----|-----|-----|-----|-----|\n| **Breakfast** | Oatmeal + whey + berries | 1 cup oats, 1 scoop whey, ½ cup berries | 350 | 25 |\n| **Snack** | Greek yogurt + almonds | 200 g yogurt, 15 g almonds | 250 | 15 |\n| **Lunch** | Grilled chicken salad | 150 g chicken, mixed greens, 1 tbsp olive oil | 400 | 35 |\n| **Snack** | Apple + peanut butter | 1 medium apple, 1 tbsp PB | 200 | 4 |\n| **Dinner** | Salmon + quinoa + veggie | 150 g salmon, ½ cup quinoa, 1 cup veggies | 350 | 35 |\n| **Evening Snack** | Cottage cheese + cinnamon | 200 g cottage cheese, cinnamon | 250 | 25 |\n\n**Total** | | | 2,200 | 130 |\n\n9. Common Pitfalls & How to Avoid Them\n\n| Pitfall | Why It Happens | Fix |\n|-----|-----|-----|\n| **Eating out too often** | Leads to overeating | Plan ahead, choose healthier options |\n| **Skipping meals** | Leads to overeating later | Eat small, balanced snacks |\n| **All-or-nothing mindset** | Hitting a cheat day can derail progress | Plan cheat meals, not cheat days |\n| **Tracking too much** | Easy to over-eat | Use an app or food diary |\n| **Too much cardio** | Can lead to muscle loss | Combine with strength training |\n\n10. Stay Consistent - Not Perfect!"
```