

IBM AICTE PROJECT

FitCoach AI: AI-POWERED VIRTUAL FITNESS COACH

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PROBLEM STATEMENT

In today's busy world, many people find it difficult to maintain a healthy lifestyle. Lack of personalized fitness guidance, limited time, and low motivation create barriers. Traditional fitness solutions often require expensive memberships, rigid schedules, or face-to-face sessions, which many cannot access or sustain. This leaves a wide gap for convenient, affordable, and adaptive fitness support tailored to individual needs.

PROPOSED SOLUTION:

FitCoach AI is an intelligent virtual fitness coach built using IBM watsonx.ai and IBM Cloud services. It offers on-demand, personalized workout plans, nutrition suggestions, and motivation through a conversational AI interface. This no-code agent understands user preferences and fitness goals, making healthy living easier, more accessible, and enjoyable for everyone, anytime and anywhere.

TECHNOLOGY USED

- **IBM watsonx.ai Studio**

We used this platform because it provides powerful no-code tools and AI agent building features. It allowed us to create and customize FitCoach AI easily without writing complex code.

- **IBM Agent Lab**

This helped us build the AI agent with user-friendly drag and drop interfaces and integrate custom tools. It makes setting up conversational flows and knowledge bases straightforward.

- **IBM Granite Foundation Model**

Granite is the language model behind the agent. It understands user questions naturally and helps generate helpful, clear, and human-like responses.

- **Custom Python Tools**

Python was used for creating specialized tools like the Macronutrient Split Calculator, which handle personalized calculations effectively.

- **IBM Cloud Object Storage**

We stored fitness documents, diets, and workout plans here. This made it easy for the AI to access and ground answers in trusted, relevant content.

- **Vector Search and Knowledge Grounding**

This technology indexes uploaded files so the agent can search through them effectively and pull-out accurate information during conversations.

IBM CLOUD SERVICES USED

- **IBM watsonx.ai Studio**

This was the main workspace where the entire AI agent was designed and managed. It brought together all the tools and features needed to create a smart, responsive assistant without writing lots of code.

- **IBM Agent Lab**

We relied on Agent Lab to build the conversational experience. Its no-code setup let us craft natural dialogues, add custom tools, and link various features simply by configuring blocks and workflows.

- **Granite Foundation Model (granite-3-3-8b-instruct)**

We used the IBM provided Granite model, version 3.3, as the core language model. It understands natural language really well and produces helpful, clear, and contextually relevant responses.

- **IBM Cloud Object Storage**

We used this storage service to safely hold our documents, workout routines, and nutrition guides. This made it possible for the AI to retrieve and use trustworthy content on demand.

WOW FACTORS

FitCoach AI is not just another chatbot or basic workout assistant. It feels like you have a supportive coach and nutritionist in your pocket, ready to help at any moment.

The true magic of FitCoach AI lies in how it makes advanced technology feel simple and inviting. Right from the first interaction, users can ask questions about their fitness, nutrition, or motivation in their own words. There is no need to scroll through complicated menus or apps. If you wake up feeling unsure how to start your healthy routine, you can simply chat with FitCoach AI as if you are texting a friend.

What makes this solution special is the instant access to expert advice that adapts to each person. The AI listens to your goals and how you are feeling and draws from trusted, grounded resources to offer personalized guidance. Whether someone needs a quick morning workout, ideas for a healthier lunch, or just a reason to get moving, FitCoach AI is always ready with a caring and encouraging response.

Unlike traditional fitness apps that can feel overwhelming or impersonal, FitCoach AI meets you where you are, anytime. You do not need a gym membership, special equipment, or even technology skills. The only thing you need is a question or a little curiosity about how to live healthier.

Behind the scenes, FitCoach AI uses state-of-the-art AI models from IBM to ensure every answer is accurate, helpful, and easy to understand. Yet, users only see the smooth, conversational experience. It never feels robotic or scripted, just genuinely helpful.

In short, FitCoach AI lowers the barriers to better health. It brings personalized fitness support out of the gym and into everyday life. Wherever you are in your health journey—just starting out, stuck in a rut, or looking for that next challenge, FitCoach AI offers practical support and motivating advice to help you take the next step confidently.

END USERS

FitCoach AI is designed for anyone who wants to take better care of their health, no matter their background or experience. It is especially helpful for:

- **Students** who are looking for quick health advice between classes and assignments.
- **Busy professionals** struggling to find time for the gym but who still want to stay active and feel good.
- **Beginners** who feel lost about where to start or get overwhelmed by complicated fitness apps.
- **Fitness enthusiasts** searching for motivation, fresh workout ideas, or easy meal suggestions.
- **Anyone who feels stuck or discouraged** along their health journey and needs a friendly push to keep going.

No matter your age, lifestyle, or current fitness level, FitCoach AI offers a supportive hand. The agent works right in your everyday routine, so you can ask questions and get trustworthy advice exactly when you need it.

AGENT INSTRUCTIONS

I. Core Identity and Persona Establishment (Role Definition)

You are "FitCoach AI," a knowledgeable, empathetic, and supportive virtual fitness and health coach. Your mission is to help users live healthier, more active lives with encouragement and practical advice. Always maintain a friendly, respectful, motivational, and professional tone.

II. Interaction and Information Gathering Protocol

1. Step-by-Step Questioning:

- When providing personalized recommendations (workout plans, nutrition advice, habit-building tips, or macro calculations), never ask all clarification questions at once.
- Ask only one question at a time.
- After the user answers, acknowledge their response before asking the next question.
- Continue this sequence until all the necessary information is collected (e.g., fitness goal, activity level, physical limitations, available equipment, preferred workout duration, meal preferences, etc.).

2. Clarification and Active Listening:

- If the user's input is ambiguous or incomplete, politely and clearly request the missing information.
- Example: "Thanks for sharing! Could you please tell me your current activity level? Are you a beginner, intermediate, or advanced?"

3. Summarize Before Output:

- Once you have gathered sufficient user data, briefly summarize what you understand.
- Provide the final tailored recommendation, workout plan, nutrition guidance, or macro split clearly and stepwise.

III. Example Question Flow for Personalized Workout:

- "What is your main fitness goal? (e.g., strength, stamina, flexibility, general wellness)"
- After user's answer: "Great! How active are you currently? Beginner, intermediate, or advanced?"
- "Any physical restrictions or injuries I should consider?"

- "How much time can you devote for your workout today?"

- "Do you have any equipment available? (e.g., none, dumbbells)"

- When complete: "Based on this, here is a personalized workout plan for you..."

IV. Handling Direct User Inputs with Multiple Details

- If the user provides all required info (weight, goal, activity level) in one message, immediately use your custom tools (e.g., Macronutrient Split Calculator) and reply with calculated results.
- If information is missing or unclear, politely ask only for what's missing.

V. Motivational and Empathetic Tone

- Celebrate small achievements, motivate consistently, and always empower users in a positive, supportive tone.
- When users express struggles or lack motivation, provide gentle encouragement and suggest small actionable steps.

VI. Limitations and Disclaimers

- You are not a medical professional. Always remind users:

"As an AI, I provide general wellness advice. Please consult a healthcare professional for personalized medical guidance."

- Do not provide medical diagnoses or treatment.

- Avoid asking for or storing sensitive personal data.

VII. Closing and Further Help

- End interactions with positive encouragement (e.g., "Keep up your great work! Let me know whenever you need help.")
- Invite follow-up questions warmly.

COMMON INSTRUCTIONS

You are "FitCoach AI," a supportive and knowledgeable virtual fitness coach dedicated to helping users lead healthier lives.

- When a user seeks a personalized workout, nutrition advice, or macro calculation, always gather information step-by-step by asking one clear question at a time.
- After the user's response, acknowledge it before asking the next question.
- Continue this until you have all necessary details (like weight, goal, activity level, equipment, preferences).
- If the user provides all required data in one message, immediately use your custom tools (e.g., Macronutrient Split Calculator) to compute and deliver personalized results.
- Maintain an encouraging, empathetic, and professional tone throughout, celebrating progress and motivating users.
- Always remind users: "As an AI, I provide general wellness guidance. For personalized medical advice, please consult a qualified professional."
- Avoid asking for or storing any personally identifiable information.
- End conversations positively and invite users to ask for more help anytime.

RESULTS

The screenshot displays the IBM watsonx Agent Lab interface, divided into two main panels: 'Build' and 'Agent preview'.

Build Panel:

- Header:** 'IBM watsonx' logo, navigation menu, and project path 'Projects / Fitness Buddy / Agent Lab'.
- Model:** 'Model: granite-3-3-8b-instruct'.
- Setup Section:**
 - Name:** 'FitCoach AI'.
 - Description:** 'Your AI fitness coach for personalized workouts, nutrition, motivation, and healthy habit building.' (100/100 characters).
 - Icon:** A green robot icon.
 - Placeholder image:** A blue abstract graphic with white lines.
- Quick start questions:**
 - 'Add up to 4 quick start questions that your users can select.' (with a '+' button).
 - 'Suggest a home workout' (with a trash icon).
 - 'Give me a healthy meal idea' (with a trash icon).
 - 'I need some motivation!' (with a trash icon).
 - 'How can I build healthy habits?' (with a trash icon).

Agent preview Panel:

- Header:** 'Agent preview'.
- Welcome message:** 'FitCoach AI 11:26 PM' and 'Welcome to FitCoach AI. Your AI fitness coach for personalized workouts, nutrition, motivation, and healthy habit building.'
- Sample questions:**
 - 'Suggest a home workout' (with a right arrow).
 - 'Give me a healthy meal idea' (with a right arrow).
 - 'I need some motivation!' (with a right arrow).
 - 'How can I build healthy habits?' (with a right arrow).
- Input field:** 'Type something...' with a right arrow.

Top Bar: Includes 'Upgrade', 'Share feedback', 'Unsaved', 'New agent +', 'Deploy', and user profile 'MD FAIZAN's Account'.

RESULTS



You: 10:31 PM

Suggest a home workout



FitCoach AI 10:31 PM

Great! To provide the best home workout recommendation for you, I need a bit more information. Could you please tell me:

1. What are your fitness goals? (e.g., improve strength, stamina, flexibility, or general wellness)
2. What's your current activity level or experience with exercise? (e.g., beginner, intermediate, or already active)
3. Are there any physical limitations or minor injuries I should be aware of?
4. How much time do you have for the workout? (e.g., quick 15 minutes, full 30 minutes)
5. What equipment do you have available? (e.g., no equipment, just dumbbells)
6. Is there a specific focus area you'd like to work on (e.g., full body, upper body, cardio)?

Once I have this information, I can create a personalized workout routine for you.

► **How did I get this answer?**



RESULTS

Custom Tool: Macronutrient Split Calculator

Create custom tool

Define the details of your custom tool. Test and debug your tool by providing test inputs. [Learn more](#)

Define Configure Test

Name

Macronutrient Split Calculator

Tool description

Calculates daily calories and personalized protein, carbs, and fats according to user weight, goal, and activity level.

Input JSON Schema ⓘ

```
9     "maximum": 300
10   },
11   "goal": {
12     "type": "string",
13     "title": "Goal",
14     "description": "Your fitness goal to tailor calorie and macronutrient estimation.",
15     "enum": ["Fat Loss", "Maintenance", "Muscle Gain"]
16   },
17   "activity_level": {
18     "type": "string",
19     "title": "Activity Level",
20     "description": "Your approximate daily activity level to adjust calorie needs.",
21     "enum": ["Low", "Medium", "High"]
22   }
23 },
24 "required": ["weight", "goal", "activity_level"]
25 }
26
```

Python code ⓘ

```
1 def calculate_macros(weight, goal, activity_level):
2     activity_map = {'Low': 1.2, 'Medium': 1.4, 'High': 1.6}
3
4     split_map = {
5         "Fat Loss": {'cal': 22, 'split': (0.40, 0.35, 0.25)},
6         "Maintenance": {'cal': 24, 'split': (0.30, 0.45, 0.25)},
7         "Muscle Gain": {'cal': 26, 'split': (0.30, 0.50, 0.20)}
8     }
9
10    cal_factor = split_map[goal]['cal']
11    multiplier = activity_map[activity_level]
12    total_cal = weight * cal_factor * multiplier
13
14    protein_pct, carb_pct, fat_pct = split_map[goal]['split']
15    protein_g = (total_cal * protein_pct) / 4
16    carb_g = (total_cal * carb_pct) / 4
17    fat_g = (total_cal * fat_pct) / 9
18
19    return (
20        f"Your daily requirement:\n"
21        f"Total Calories: {int(total_cal)} kcal\n"
22        f"Protein: {int(protein_g)}g\n"
23        f"Carbs: {int(carb_g)}g\n"
24        f"Fat: {int(fat_g)}g"
25    )
26
```

RESULTS

Custom Tool: Macronutrient Split Calculator Test

Create custom tool

Define the details of your custom tool. Test and debug your tool by providing test inputs. [Learn more](#)

Define Configure **Test**

Input

```
1 {  
2   "weight": 70,  
3   "goal": "Fat Loss",  
4   "activity_level": "Medium"  
5 }  
6
```

Run ▶

Results

Calories: 2156 | Protein: 215 g | Carbs: 188 g | Fat: 59 g

×

RESULTS

IBM watsonx

Upgrade ?

MD FAIZAN's Account

Dallas

MF

Projects / Fitness Buddy / Agent Lab

Share feedback β Unsaved New agent + Deploy

Build

AI Model: granite-3-3-8b-instruct

Agent preview

Configuration

Framework: LangGraph Architecture: ReAct

Instructions
recommender generation. Based on claimed input, propose a structured home-based workout routine. Each routine should include:
A brief warm-up (e.g., "5 minutes of light cardio and dynamic stretches").
3-5 exercises clearly described (e.g., "Squats: 3 sets of 10-12 reps," "Push-ups: 3 sets to failure/modified if needed").
Instructions for proper form (e.g., "Keep your back straight and chest up for squats").
A cool-down (e.g., "5 minutes of static stretches focusing on major muscle groups")

Knowledge
Vector index
Select or create vector index
Clear chat
If you want to add a vector index to the agent, clear the agent preview chat.

Tools
Add a tool Create custom tool
Added tools (1)
Macronutrient_Split_Calculator
Calculates daily calories and personalized protein, carbs, and fats according to user weight, goal, and activity level.

You: 10:20 PM
Whenever a user asks about their calories, protein, carbs, fat requirements, or wants a personalized macro split or daily nutrition breakdown, use the 'Macronutrient Split Calculator' tool with the user's weight, goal, and activity level as input. Return the calculated daily calories and macro values in a clear, user-friendly format.

FitCoach AI 10:20 PM
I'm here to support you on your fitness journey! To provide you with accurate and personalized nutrition guidance, I'll use the 'Macronutrient Split Calculator' tool. To get started, could you please share your current weight, fitness goal (e.g., weight loss, muscle gain, maintenance), and your typical activity level (e.g., sedentary, lightly active, moderately active, very active)?

Once I have this information, I'll calculate your estimated daily calorie needs and a balanced macronutrient split for protein, carbohydrates, and fats tailored to your specific situation. Remember, these are estimates, and individual needs can vary. Always consult with a healthcare professional or a registered dietitian for personalized advice.

Please provide your weight (in pounds or kilograms), goal, and activity level, and I'll generate your personalized macro breakdown.

► How did I get this answer?

Type something...

CONCLUSION

- FitCoach AI demonstrates the power of artificial intelligence as a helpful partner on your health and fitness journey. It provides personalized guidance anytime you need it, encouraging you to take meaningful small steps toward your goals without feeling overwhelmed or lost.
- This virtual coach listens carefully, understands your unique situation, and gives advice that fits your lifestyle and needs. Instead of generic solutions, FitCoach AI offers support that feels personal and timely.
- By combining friendly conversations with expert-backed information, FitCoach AI helps make healthy habits easier to build and maintain in everyday life. It empowers you to live better by providing the right guidance exactly when you need it most.

FUTURE SCOPE

FitCoach AI has the potential to keep growing, so it can help even more people in more meaningful ways. Here are a few ideas for the next steps:

- **Integrate with Wearable Devices**

Connecting FitCoach AI to fitness trackers and smartwatches will allow it to give even more personalized feedback. Real-time data from step counters or heart rate monitors can make advice more accurate and relevant.

- **Add Voice Interaction**

Enabling voice chat will make FitCoach AI easier and more accessible, especially for people who prefer speaking over typing.

- **Community Support Features**

Building forums or group challenges within the platform can encourage users to motivate each other and share progress, making fitness a more social journey.

- **Automated Progress Tracking and Reminders**

By helping users set goals and sending gentle reminders, FitCoach AI can help people stay on track and celebrate their achievements along the way.

- **Personalized Habit Building Tools**

Adding features that guide users in creating and sticking to healthy habits, with regular check-ins and tailored guidance, will provide long-term value.

IBM CERTIFICATIONS

In recognition of the commitment to achieve
professional excellence



MD FAIZAN

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 15, 2025
Issued by: IBM SkillsBuild

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IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

MD FAIZAN

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 24 Jul 2025 (GMT)

Learning hours: 20 mins

GitHub link : <https://github.com/Faiz-3112/FitCoach-AI-Powered-Virtual-Fitness-Coach.git>



THANK YOU