
CAPSTONE PROJECT

FITNESS BUDDY

Presented By:
Tanmay Gupta – SRM KTR

OUTLINE

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PROBLEM STATEMENT

- Maintaining a healthy lifestyle has become increasingly difficult in today's fast-paced and demanding world. Many people face challenges such as lack of time, personalized guidance, and the motivation needed to stay consistent with their fitness and wellness goals. Traditional solutions—like gym memberships, in-person coaching, or structured programs—are often too expensive, inflexible, or overwhelming for someone trying to balance work, family, and personal well-being.
- What's missing is a simple, supportive, and intelligent companion that people can turn to anytime—without needing to schedule an appointment or commit to a subscription.
- **Fitness Buddy** was created to fill that gap. It's designed to be a friendly, always-available virtual coach that understands individual needs and offers:
 - Easy-to-follow home workout suggestions
 - Encouraging motivational tips to stay on track
 - Quick and healthy meal ideas
 - Support in building consistent habits over time
- The goal is to make health and fitness feel more accessible, personalized, and manageable—no matter who you are or how busy your life gets.

PROPOSED SOLUTION

To help individuals better manage their health and fitness goals in a busy world, this project introduces **Fitness Buddy**—a conversational, virtual wellness coach designed to offer personalized support anytime it's needed.

The assistant has been carefully developed and deployed using IBM Cloud, specifically through watsonx.ai Studio. With this setup, Fitness Buddy can understand user input and respond in a natural, conversational way, offering practical advice and encouragement that feels personal and relatable.

- **Key Components of the Solution:**
 - **AI-Powered Conversational Agent:** Developed using watsonx.ai, the assistant can understand natural language input and provide tailored responses.
 - **Secure API Integration:** Uses IBM Cloud's API key and IAM token authentication to ensure secure and authorized access to AI services.
 - **Personalized Experience:** Recommends home workouts, meal ideas, and motivational advice based on user preferences and goals.
 - **Deployed in IBM Cloud:** The agent is hosted in a scalable, cloud-based environment with high availability and ease of access.
 - **User-Centric Design:** Simple, intuitive interaction that can be integrated into a web or mobile interface for a friendly and responsive experience.

SYSTEM APPROACH

- The development of **Fitness Buddy** follows a modular and cloud-native system approach, ensuring that it is scalable, secure, and easy to maintain. Below is a breakdown of how the system is designed to function, from user interaction to AI response generation.
- **1. User Interaction Layer**
 - Users interact with the system through a simple text interface—this could be a web app, mobile app, or chat platform. The user types in natural questions like:
- **2. Request Handling and API Gateway**
 - These inputs are sent to a backend that acts as a bridge between the user and the AI agent. The backend routes the request to the IBM watsonx.ai API using a secure API key generated via IBM Cloud Identity & Access Management (IAM).
- **3. AI Agent Powered by IBM Granite Models**
 - At the core of the solution is the **Fitness Buddy AI Agent**, created using **IBM watsonx.ai Studio**, which utilizes:
 - **Granite Foundation Models** (e.g., Granite-13b-chat or similar)
 - Custom system prompts and instructions to guide the AI's behavior
 - Conversational responses tailored to fitness and lifestyle needs

SYSTEM APPROACH

- **4. Response Generation and Personalization**
 - The Granite model interprets the user's query, generates a thoughtful response (like a workout routine, motivational advice, or meal idea), and sends it back through the API.
- **5. Response Delivery**
 - The system returns the AI-generated response to the user in a friendly format, maintaining a seamless experience.
- **6. Security and Access Control**
 - Authentication is handled via IBM Cloud IAM using an API key.
 - All components run in IBM Cloud Lite, staying within free-tier limits while still offering full functionality.

ALGORITHM & DEPLOYMENT

ALGORITHM

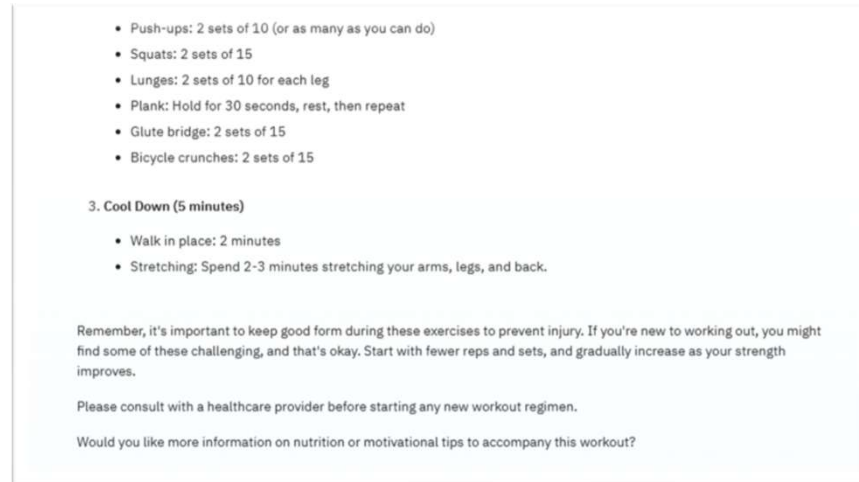
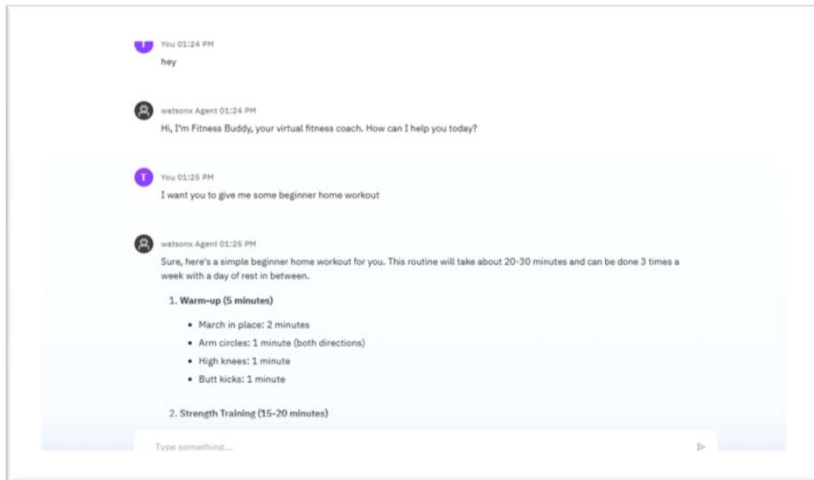
- User sends a message like “Suggest a workout.”
- The message is sent to the Fitness Buddy AI Agent on IBM watsonx.ai.
- The AI (powered by Granite) understands the request and generates a reply.
- The reply is returned and shown to the user in a chat format.
- User can ask more questions or end the session.

DEPLOYMENT

- IBM Cloud Account: Created using the Lite (free) plan.
- watsonx.ai Studio: Set up an agent named “Fitness Buddy” using Granite model.
- API Key: Generated securely via IBM Cloud IAM.
- Tested & Hosted: Tested on watsonx.ai, uploaded project to GitHub.

RESULT

- The **Fitness Buddy AI Agent** was successfully developed and deployed using IBM Cloud and watsonx.ai. It provides real-time fitness advice, meal suggestions, and motivational tips through a simple chat interface. The AI responds accurately based on user input, making health guidance accessible, personalized, and available 24/7. Testing confirmed that the system works smoothly, with fast responses and relevant suggestions, fulfilling the goal of creating a smart, friendly fitness assistant.



RESULT

You 01:26 PM

I am 22 year old college student who is mostly in college from 8 to 5 give me the workout plan diet accordingly

watsonx Agent 01:26 PM

Given your age, lifestyle, and busy schedule, here's a tailored workout plan and diet suggestion for you:

Workout Plan (3 times a week)

1. Warm-up (5 minutes)

- Jumping jacks: 2 minutes
- Shoulder circles: 1 minute (both directions)
- Leg swings (front to back and side to side): 1 minute each leg
- Dynamic stretches: 1 minute

2. Strength Training (20 minutes)

- Wall push-ups: 2 sets of 12
- Bodyweight squats: 2 sets of 15
- Lunges: 2 sets of 10 for each leg
- Plank: Hold for 45 seconds, rest, then repeat
- Glute bridges: 2 sets of 15
- Bicycle crunches: 2 sets of 20

Type something... >>

3. Cardio (15 minutes)

- High knees: 3 minutes
- Jump rope (or imaginary jump rope): 3 minutes (take breaks as needed)
- Burpees: 2 sets of 10

4. Cool Down (5 minutes)

- Walk in place: 2 minutes
- Stretching: Spend 2-3 minutes stretching your arms, legs, and back.

Diet Suggestion

As a college student with a busy schedule, it's crucial to have convenient, nutritious meals. Here are some simple meal ideas:

1. Breakfast:

- Greek yogurt with mixed berries and a sprinkle of granola.
- Whole grain toast with avocado and a poached egg.

2. Lunch:

- Quinoa salad with mixed veggies, chickpeas, and a lemon-olive oil dressing.
- Whole grain wrap with lean protein (turkey or chicken), lots of veggies, and hummus.

3. Dinner:

Type something... >>

- Greek yogurt with mixed berries and a sprinkle of granola.
- Stir-fried tofu

You 01:28 PM

how i encourage myself for consistency and also eating healthy

watsonx Agent 01:28 PM

Maintaining consistency in your fitness journey and healthy eating can be challenging, but here are some strategies to help you stay motivated:

1. Set Clear Goals: Having specific, measurable, achievable, relevant, and time-bound (SMART) goals can keep you focused and motivated.

2. Track Your Progress: Keep a journal or use a fitness app to track your workouts and meals. Seeing your progress can be a great motivator.

3. Find a Workout Buddy: Exercising with a friend can make workouts more enjoyable and help you stay consistent.

4. Mix It Up: Variety is key to prevent boredom. Try different workouts, recipes, or fitness classes to keep things interesting.

5. Reward Yourself: Set milestones and reward yourself when you reach them. The rewards don't have to be food-related; they could be a new workout outfit, a book, or a movie night.

Type something... >>

RESULT

6. **Practice Mindfulness:** Be present and enjoy the process. Instead of focusing solely on the end result, appreciate the benefits you're gaining along the way, like increased energy and better sleep.
7. **Plan Ahead:** Prepare your meals and workouts in advance. This can help you avoid making unhealthy choices when you're short on time or energy.
8. **Stay Positive:** Celebrate small victories and don't beat yourself up over slip-ups. Remember, consistency is about getting back on track after a setback, not being perfect all the time.
9. **Seek Support:** Share your fitness journey with friends and family. Their encouragement can be a powerful motivator.
10. **Educate Yourself:** Learn about the benefits of exercise and healthy eating. Knowledge can be a strong motivator.

Remember, it's okay to have off days. What's important is that you get back on track the next day. You're doing great by seeking ways to improve your consistency!

1

You 01:30 PM

provide me some healthy lifestyle suggestions and basic nutrition guidance for 50 year old man who is going to work daily from 9 to 6



watsonx Agent 01:30 PM

Absolutely, here are some healthy lifestyle suggestions and basic nutrition guidance tailored for a 50-year-old man with a daily work schedule from 9 to 6:

Type something...



Healthy Suggestions

1. **Regular Exercise:** Aim for at least 150 minutes of moderate-intensity aerobic activity or 75 minutes of vigorous-intensity aerobic activity per week, along with muscle-strengthening activities on 2 or more days a week. Given your schedule, you might want to consider a morning workout routine or a lunchtime walk/run.
2. **Adequate Sleep:** Ensure you're getting 7-9 hours of quality sleep each night. Good sleep is crucial for overall health, including weight management and muscle repair.
3. **Stay Hydrated:** Drink plenty of water throughout the day. Hydration supports many bodily functions, including digestion and nutrient absorption.
4. **Manage Stress:** Incorporate stress-reducing activities into your routine, such as meditation, deep breathing exercises, or yoga. High stress levels can negatively impact your health and fitness progress.
5. **Limit Alcohol:** If you drink, do so in moderation. For healthy adults, that means up to one drink a day for women and up to two drinks a day for men.

Basic Nutrition Guidance:

1. **Balanced Diet:** Focus on a balanced diet rich in fruits, vegetables, lean proteins, whole grains, and healthy fats. Include foods from all food groups to ensure you're getting a wide range of nutrients.
2. **Portion Control:** As you age, your metabolism naturally slows down, so be mindful of portion sizes to maintain a healthy weight.
3. **Regular Meals:** Try to eat at regular intervals to keep your metabolism active and avoid overeating.

Type something...



CONCLUSION

- The Fitness Buddy AI Agent demonstrates how intelligent virtual assistants can make health and wellness guidance more accessible, personal, and consistent. By combining IBM Cloud's powerful watsonx.ai and Granite models, we created a smart, friendly coach that helps users build healthier habits without expensive subscriptions or rigid schedules. This project proves that with the right tools, anyone can develop helpful AI solutions that solve real-life problems in a simple, conversational way.

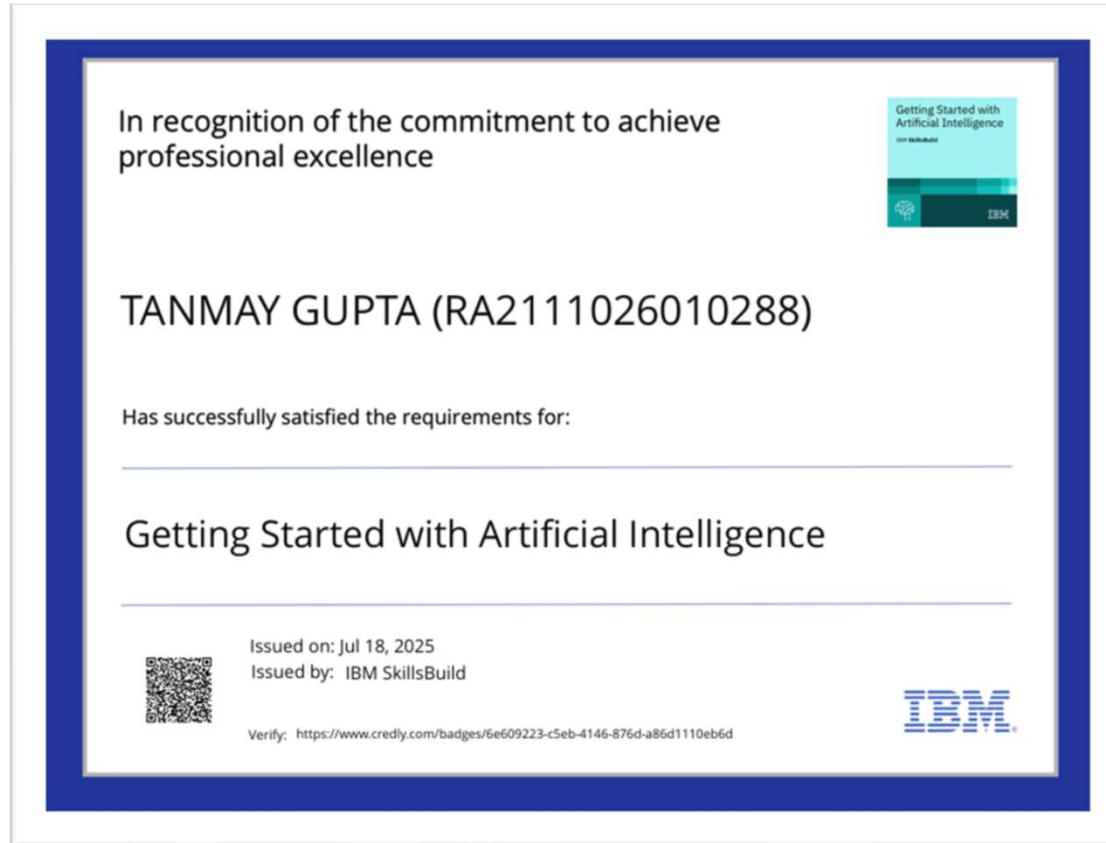
FUTURE SCOPE

- While Fitness Buddy already offers valuable features, there are several ways to enhance it further:
- **Voice Integration:** Add support for voice commands using speech-to-text APIs, making the experience more interactive and accessible.
- **User Profiles & Tracking:** Allow users to create profiles, set goals, and track their progress over time with personalized recommendations.
- **Workout Videos & Media:** Integrate video or image support for workouts and meals, making suggestions more visual and engaging.
- **Daily Reminders:** Implement push notifications or email reminders for workouts, hydration, and meal plans to boost consistency.
- **Multilingual Support:** Expand language capabilities so users from different regions can use the assistant comfortably.
- **Mobile App Version:** Build a companion mobile app to provide 24/7 access on the go.
- **AI Feedback Loop:** Use feedback from user ratings to help the assistant improve and provide even better recommendations over time.

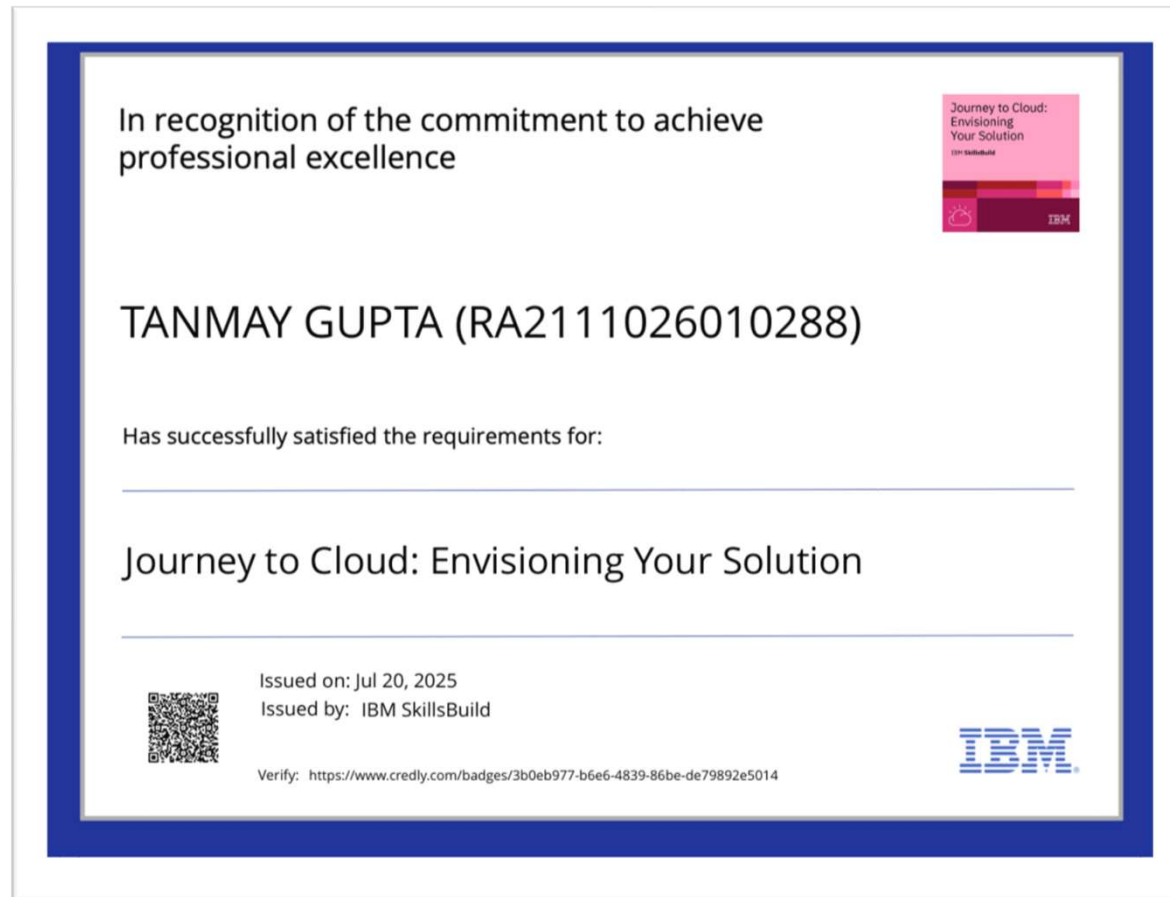
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- IBM Cloud Documentation – For understanding and using IBM Cloud services effectively.
- watsonx.ai Studio – Used to build and test the AI agent.
- IBM Granite Model Overview – For powering the conversational intelligence in the assistant.
- IBM IAM & API Key Setup Guide – Helped set up secure access to watsonx services.

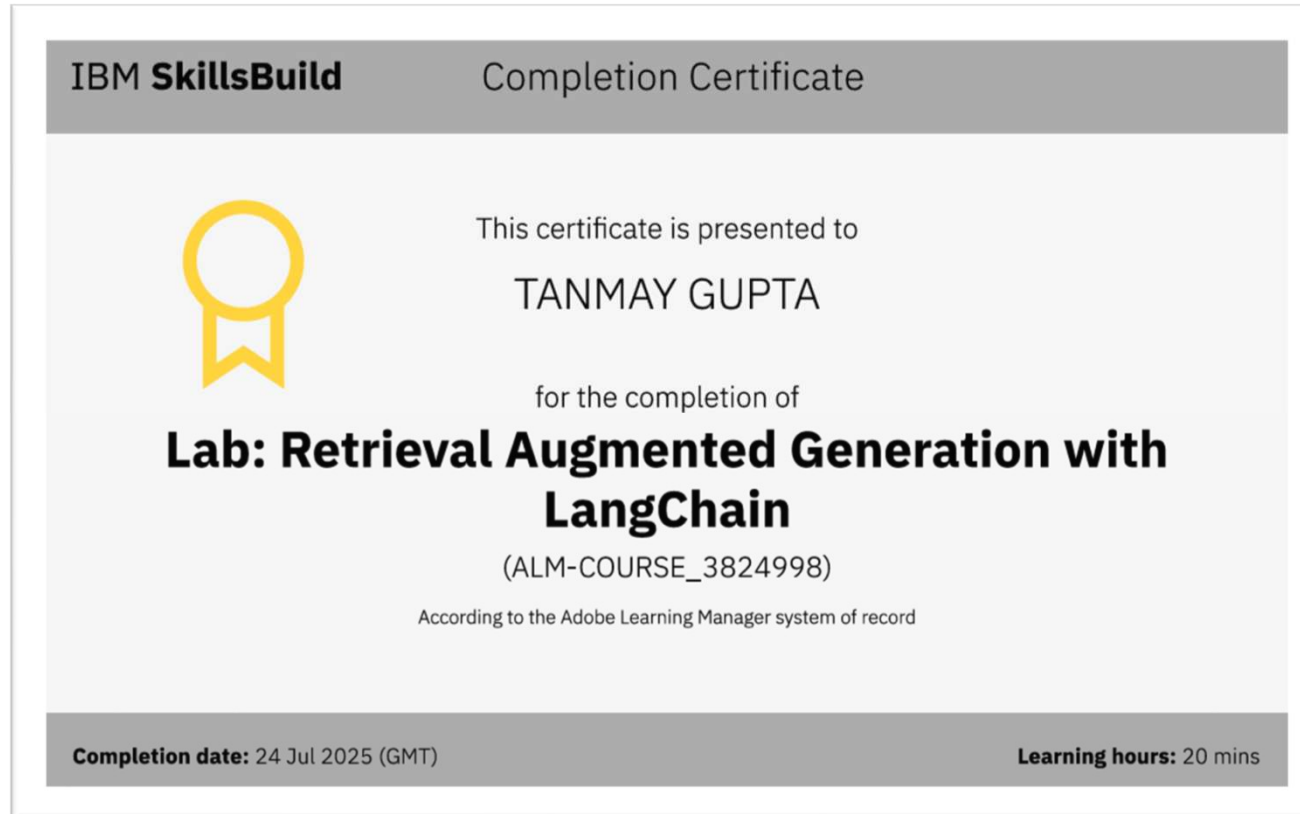
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