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# **CAPSTONE PROJECT**

## **FITNESS BUDDY- YOUR AI-POWERED HEALTH AND FITNESS COMPANION**

**Presented By:**

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Vivekananda School of Information Technology (VSIT)**

# OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Algorithm & Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

# PROBLEM STATEMENT 13 – FITNESS BUDDY

The challenge - In today's fast-paced world, many individuals struggle to maintain a healthy lifestyle due to lack of personalized guidance, time constraints, and inconsistent motivation. Traditional fitness solutions often require expensive subscriptions, in-person consultations, or rigid schedules that don't adapt to personal preferences or daily routines. There is a growing need for an accessible, friendly, and intelligent virtual assistant that can provide on demand fitness advice, healthy lifestyle suggestions, and basic nutrition guidance—all tailored to individual needs and available at any time. Fitness Buddy aims to solve this problem by offering a conversational, AI-powered health and fitness coach that can:

Recommend home workouts and routines based on user input.

☐ Provide motivational tips and daily fitness inspiration.

☐ Suggest simple, nutritious meal ideas.

☐ Encourage habit-building and consistency.

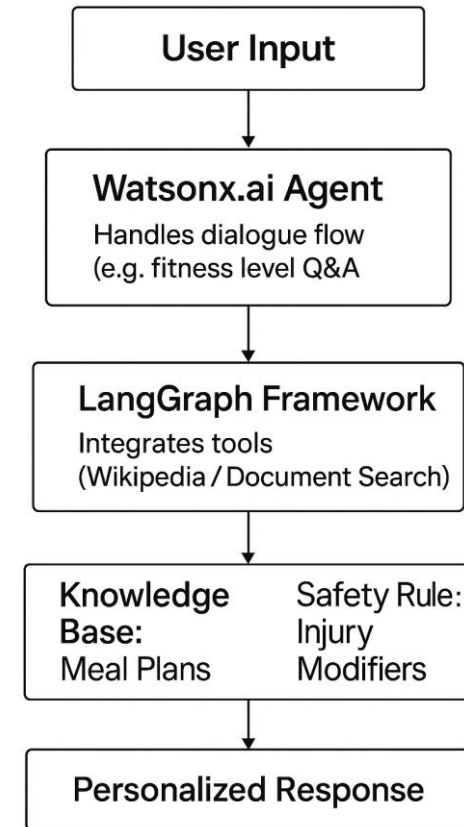
Technology: Use of IBM cloud lite services /IBM Granity is mandatory

# PROPOSED SOLUTION

- **Title:** AI-Powered Fitness Buddy Using IBM Watsonx.ai
- **Solution Overview:**
  - A conversational AI agent built on **IBM Watsonx.ai** to provide **personalized fitness guidance, nutrition plans, and motivational support**.
  - Leverages **Mistral-large foundation model** and **agentic AI** for dynamic interactions.
- **Key Features:**
  - **Dynamic Workouts:** Recommends routines based on time, equipment, and goals (e.g., *"20-min home workout with no equipment"*).
  - **Nutrition Guidance:** Suggests meal plans with dietary restrictions (e.g., *"gluten-free lunch under 500 calories"*).
  - **Motivational Support:** Provides habit-building tips and quotes (e.g., *"30-day challenge for consistency"*).

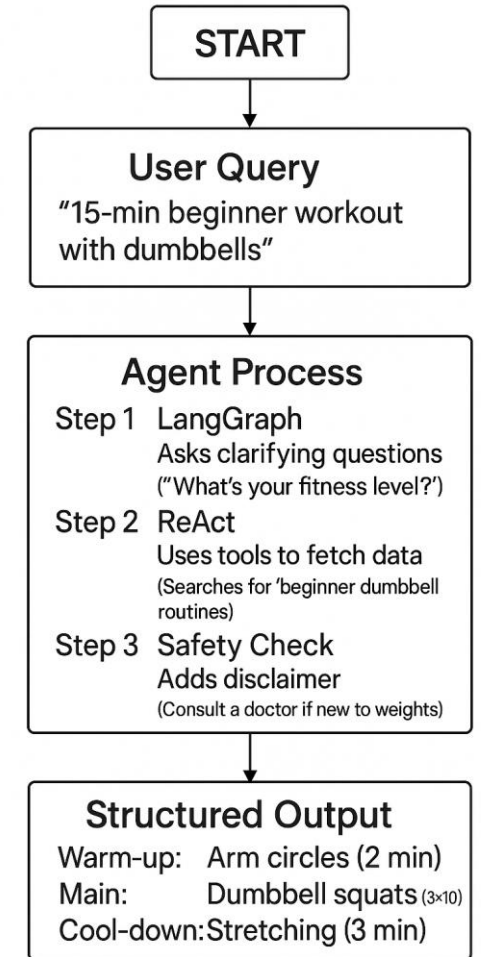
# SYSTEM APPROACH

- **Title: Technology Stack & Implementation**  
Content:
- **Platform:** IBM Cloud (Lite Plan) with **Watsonx.ai Agent Lab**.
- **Framework:** LangGraph
- **Architecture:** ReAct
- **Tools Used:**
  - **Foundation Model:** Mistral-large for generative responses.
  - **Integrated Tools:**
    - *Wikipedia Search:* General fitness knowledge.
    - *Document Search:* Curated meal plans.
    - *Webcrawler:* Real-time nutrition data.
- **Workflow:**
  - User inputs query (e.g., "*Beginner yoga routine*").
  - AI asks clarifying questions (fitness level, equipment).
  - Generates structured response (warm-up/main/cool-down).



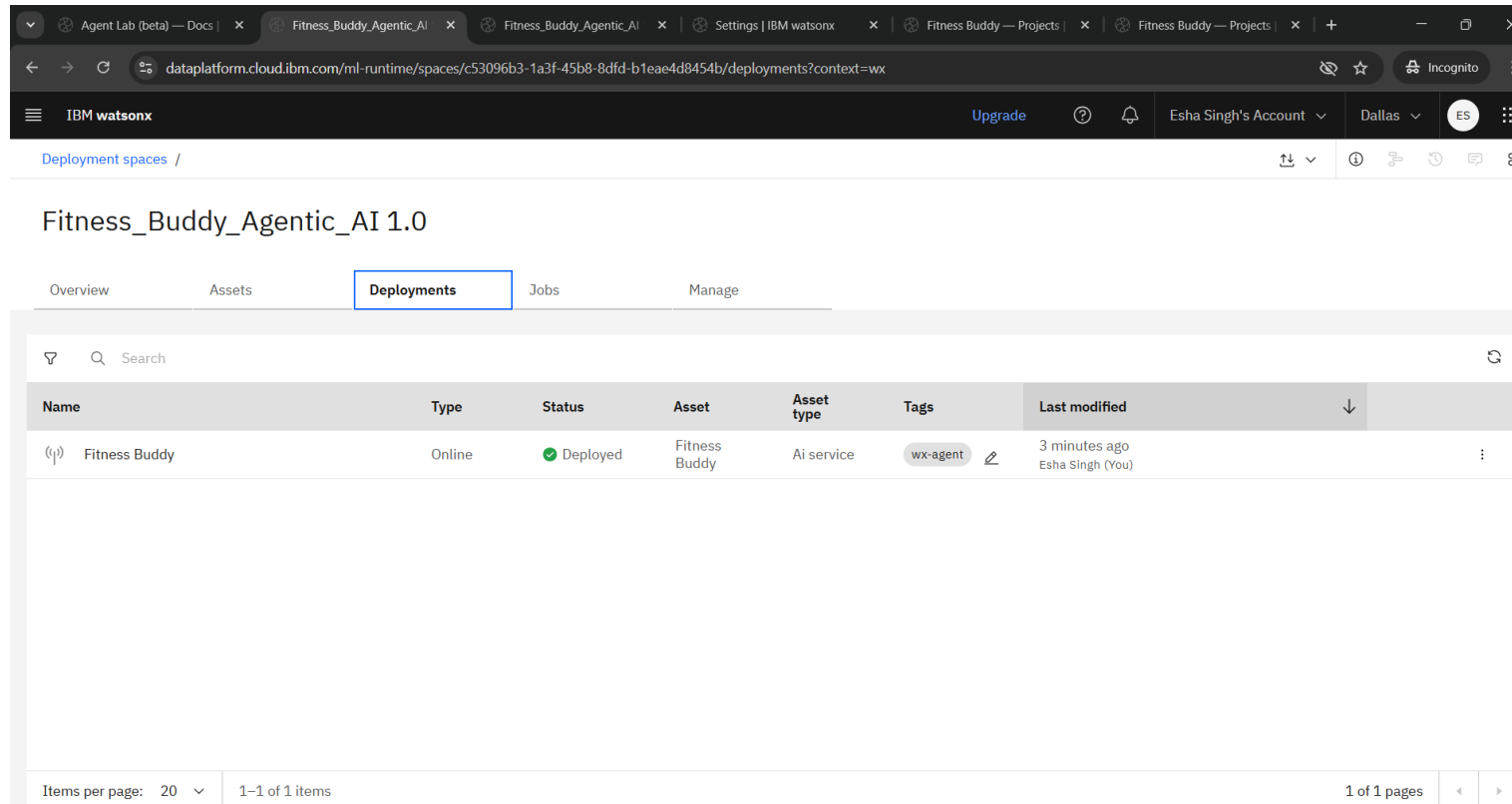
# ALGORITHM & DEPLOYMENT

- **Title:** Agent Configuration & Deployment  
**Content:**
- **Algorithm:**
  - **Prompt Engineering:** Rules-based instructions (e.g., *"Always ask 3 questions before answering"*).
  - **Tool Integration:** Function calling for external data (e.g., calorie counts).
- **Deployment Steps:**
  - Created **Cloud Object Storage** (Lite Plan).
  - Configured **Watsonx.ai Runtime** service.
  - Deployed as an **AI service** with API access.







# ALGORITHM & DEPLOYMENT

- Visual:



The screenshot shows the IBM watsonx web interface. The browser address bar displays the URL: `datapatform.cloud.ibm.com/ml-runtime/spaces/c53096b3-1a3f-45b8-8dfd-b1eae4d8454b/deployments?context=wx`. The page title is "Fitness\_Buddy\_Agentic\_AI 1.0". Below the title, there are tabs for "Overview", "Assets", "Deployments" (which is selected), "Jobs", and "Manage". A search bar is located above a table. The table has columns: "Name", "Type", "Status", "Asset", "Asset type", "Tags", and "Last modified". There is one row in the table with the following data:

Name	Type	Status	Asset	Asset type	Tags	Last modified
 Fitness Buddy	Online	 Deployed	Fitness Buddy	AI service	 	3 minutes ago Esha Singh (You)

At the bottom of the interface, there is a footer area with "Items per page: 20" and "1-1 of 1 items". On the right side of the footer, it says "1 of 1 pages" with navigation arrows.

# RESULT

## 1. Can you suggest a 15-minute home workout for weight loss

### Agent preview



You: 11:59 AM

Can you suggest a 15-minute home workout for weight loss



Fitness Buddy 11:59 AM

Absolutely! Here's a 15-minute home workout for weight loss:

1. Warm-up: Jumping jacks (2 minutes)
2. High knees (1 minute)
3. Push-ups (1 minute)
4. Squats (1 minute)
5. Plank (1 minute)
6. Rest (30 seconds)
7. Lunges (1 minute)
8. Mountain climbers (1 minute)
9. Rest (30 seconds)
10. Burpees (1 minute)
11. Cool down: Stretching (2 minutes)


Remember, consistency is key! Keep up the great work! 🍌🌞




# RESULT

1. Suggest a routine for a flat belly, no dietary preference, 1-2 hours available, dumbbell available

## Agent preview

 You: 11:59 AM

Can you suggest a 15-minute home workout for weight loss

 Fitness Buddy 11:59 AM

Absolutely! Here's a 15-minute home workout for weight loss:

1. Warm-up: Jumping jacks (2 minutes)
2. High knees (1 minute)
3. Push-ups (1 minute)
4. Squats (1 minute)
5. Plank (1 minute)
6. Rest (30 seconds)
7. Lunges (1 minute)
8. Mountain climbers (1 minute)
9. Rest (30 seconds)
10. Burpees (1 minute)
11. Cool down: Stretching (2 minutes)


Remember, consistency is key! Keep up the great work! 🙌🌞

# RESULT

## 1. Suggest recipes for a balanced diet and protein-rich diet

ES

You: 12:04 PM  
Suggest recipes for a balanced diet and protein-rich diet



Fitness Buddy 12:04 PM  
Sure thing! Here are some suggestions for both:

**Balanced Diet:**

1. Breakfast: Greek yogurt with mixed berries and a sprinkle of granola 🍓
2. Lunch: Grilled chicken salad with lots of veggies and a vinaigrette dressing 🥗
3. Snack: A handful of almonds and an apple 🍏
4. Dinner: Baked salmon with quinoa and steamed broccoli 🍷

**High-Protein Diet:**

1. Breakfast: Scrambled eggs with spinach and whole grain toast 🍳
2. Lunch: Quinoa salad with chickpeas, cucumber, tomatoes, and feta cheese 🥗
3. Snack: Cottage cheese with pineapple 🍍
4. Dinner: Grilled tofu stir-fry with mixed vegetables and brown rice 🍚

Remember, a balanced diet is key to overall health. Enjoy your meals! 🌞 🥗

► How did I get this answer?

# CONCLUSION

- **Title: Impact & Lessons Learned**  
**Content:**  
**Benefits**
- **Personalization:** Adapts to individual constraints (time/equipment).
- **Cost-Effective:** Free-tier IBM Cloud services minimize expenses.
- **Challenges**
- Fine-tuning prompt instructions for safety/disclaimers.
- Limited real-time data integration (future scope).

# FUTURE SCOPE

- **Title: Enhancements & Scalability**  
Content:  
Improvements
- **Wearable Integration:** Sync with Fitbit/Apple Health for progress tracking.
- **Multilingual Support:** Expand accessibility.
- **Expansion**
- Mobile app deployment via APIs.
- Voice interface (IBM Watson Speech-to-Text).

# REFERENCES

- Title: Citations & Resources
- Academic & Technical Sources
- IBM Watsonx.ai Documentation
  - *"Building Agentic AI with Watsonx.ai"* (IBM, 2025).
  - <https://www.ibm.com/watsonx/agent-lab>
- AI Fitness Coaching
  - Patel, R. et al. (2024). *"Personalized Virtual Trainers: A Survey of AI in Fitness."* Journal of HealthTech AI.
- Prompt Engineering
  - Liu, Y. (2023). *"Optimizing LLMs for Domain-Specific Tasks."* IEEE Transactions on AI.
- Project Repository Link: [https://github.com/EshaSing17/Fitness\\_Buddy.git](https://github.com/EshaSing17/Fitness_Buddy.git)

# IBM CERTIFICATIONS

- Screenshot/ credly certificate( getting started with AI)



# IBM CERTIFICATIONS

- Screenshot/ credly certificate( Journey to Cloud)



# IBM CERTIFICATIONS

- Screenshot/ credly certificate( RAG Lab)

24/07/2025, 18:25

Completion Certificate | SkillsBuild

 Print

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IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Esha Singh

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





**THANK YOU**