Project Design Phase-II

Technology Stack (Architecture & Stack)

📅 Date: 21 JUNE 2025

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📌 Project Name: HealthAI: Intelligent Healthcare Assistant Using IBM Granite

🧮 Maximum Marks: 4 Marks

Technical Architecture – HealthAI

HealthAI's technical architecture is designed to provide intelligent, personalized, and accessible healthcare assistance using IBM's AI capabilities. The architecture bridges the gap between healthcare user needs and AI-driven digital solutions by clearly defining modules, workflows, and technology integrations.

It follows principles of modular design, AI integration, secure backend logic, and interactive frontend experiences.

References – Adapted for HealthAI

1. C4 Model – Software Architecture Visualization
   Used as the base modeling approach to define different levels of HealthAI's architecture (context, container, component).
   🔗 https://c4model.com/

2. IBM Order Processing System (Pandemic Reference) Inspired HealthAI's backend design by using modular components and AI-powered services similar to order-processing use cases.

🔗 https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/

3. IBM Cloud Architecture Center

Provided best practices and patterns for integrating AI models and deploying cloud-based healthcare applications.
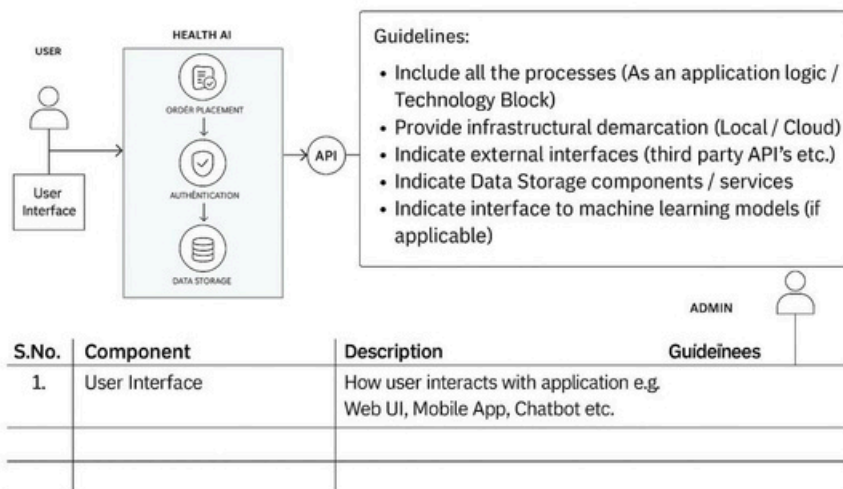
🔗 https://www.ibm.com/cloud/architecture

4. AWS Architecture Best Practices

Used as a comparative reference to validate HealthAI's scalability, resilience, and service-based integration approach.

🔗 https://aws.amazon.com/architecture

5. How to Draw Useful Technical Architecture Diagrams Guided the creation of simplified, functional diagrams for HealthAI's backend and AI data flow.

🔗 https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d

Health AI

Guidelines:

- Include all the processes (As an application logic / Technology Block)
- Provide infrastructural demarcation (Local / Cloud)
- Indicate external interfaces (third party API's etc.)
- Indicate Data Storage components / services
- Indicate interface to machine learning models (if applicable)

S.No.	Component	Description	Guidelinees
1.	User Interface	How user interacts with application e.g. Web UI, Mobile App, Chatbot etc.	

Health AI Technology Stack

- Application Logic-1: Patient intake and triage processing   Python / Java

    IBM Watson STT
- Application Logic-2: Voice transcription for patient interactions   IBM Watson STT

    IBM Watson Assistant
- Database   MySQL / MongoDB
- Cloud Database   IBM DB2 / IBM Cloudant
- File Storage: Medical imaging and document   IBM Block Storage / Local Filesystem
- External API-1 Real-time environmental health tracking   IBM Weather API

    Aadhaar API
- External API-2   Aadhaar API
- Machine Learning Model Medical image classification   Custom Object Recognition Model
- Infrastructure Scalable deployment for clinical environments   Cloud Foundry / Kubernetes / Local Server