Project Design Phase

Solution Architecture

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Team ID	LTVIP2025TMID59401
Project Name	**SmartSDLC – AI-Enhanced Software Development Lifecycle**
Maximum Marks	4 Marks

Solution Architecture

Solution architecture is the foundational process that aligns business needs with technological capabilities to develop an effective system. In this project, solution architecture plays a critical role in translating real-world problems into a functional AI-powered application using IBM services.

Goals of the Solution Architecture

- **Align Technology with Business Objectives:**
  Utilize IBM Watson/Watsonx and AI APIs to deliver smart, scalable, and automated responses to user prompts or business tasks.

- **Define System Structure and Behavior:**
  Document the modules, interactions, and data flow between frontend (Streamlit), backend (FastAPI), and cloud services (IBM Cloud ML APIs).

- **Establish Functional and Non-Functional Requirements:**
  Specify system features, input/output behaviors, security layers, and performance expectations.

- **Guide Development and Deployment:**
  Serve as a blueprint for developers and DevOps engineers during implementation, version control, and deployment.

Example - Solution Architecture Diagram:

Solution Architecture

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. its goals are to:

- Find the best ch solution to solve existing business problems.
- Describe tee structure, characteristics, behavior, and other aspsecects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.
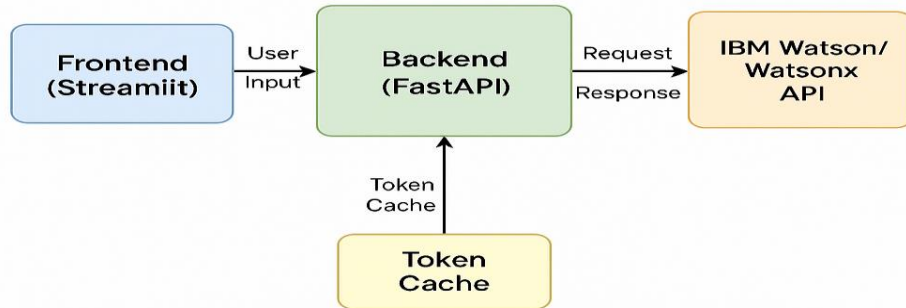

Figure 1: Architecture and data flow of the voice patient diary sample application