

Project Design Phase

Solution Architecture

Date	27 June 2025
Team ID	LTVIP2025TMID29152
Project Name	SmartSDLC – AI-Enhanced Software Development Lifecycle
Maximum Marks	4 Marks

Solution Architecture (SmartSDLC – AI-Powered SDLC Automation Tool)

The SmartSDLC solution architecture connects a user-friendly **Streamlit frontend** with a **FastAPI backend** that interacts with **IBM Watsonx** to perform various software development lifecycle tasks. Each feature like code generation, bug fixing, test generation, and summarization is modularly triggered based on user interaction. Results are stored locally or in a lightweight database for reference and download.

- **Frontend:** Streamlit-based UI for user interaction (input, download, upload)
- **Backend:** FastAPI that handles API requests, prompts, and service routing
- **LLM Service:** IBM Watsonx for all AI-driven SDLC tasks
- **Storage:** Local storage or DB used to save history and logs
- **Flow:** User → UI → Backend → AI Model → Response → Display + Save

Example - Solution Architecture Diagram:

