Technology Stack (Architecture & Stack)

Date: 26 June 2025

Team ID: LTVIP2025TMID20490

Project Name: SmartSDLC: AI-Enhanced SDLC Automation Platform

Maximum Marks: 2 Marks

Table-1: Components & Technologies

S.No	Component	Description	Technology
1	User Interface	Web-based interface for SDLC operations	Streamlit (Python)
2	Application Logic-1	Handles classification, generation, and summarization	Python
3	Application Logic-2	Interacts with AI model and manages prompt logic	IBM Watsonx AI
4	Database	Session-level storage for inputs and chat	Streamlit Session State
5	Cloud Database	Optional future cloud-based state/data persistence	Planned: IBM Cloudant
6	File Storage	Holds static files and .env credentials	Local Filesystem
7	External API-1	Granite 13B for generative responses	IBM Watsonx Model API
8	External API-2	Optional integration for documentation or repo search	Planned: GitHub API
9	Machine Learning Model	Generative LLM for all SDLC-related prompts	IBM Granite 13B Instruct v2
10	Infrastructure	Local development with future deployment options	Streamlit Cloud / IBM Cloud

Table-2: Application Characteristics

S.No	Characteristics	Description / Technology
1	Open-Source Frameworks	Streamlit, Python, PyMuPDF
2	Security Implementations	API handling via python-dotenv and .env file
3	Scalable Architecture	Modular and prompt-driven backend, expandable via microservices
4	Availability	Runs locally, deployable to Streamlit Cloud or IBM Cloud
5	Performance	Optimized prompts, caching, and lightweight frontend