# Technology Stack (Architecture & Stack)

Date: 26 June 2025

Team ID: LTVIP2025TMID34234

Project Name: SmartSDLC: AI-Enhanced SDLC Automation Platform

Maximum Marks: 2 Marks

## Table-1: Components & Technologies

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| --- | --- | --- | --- |
| 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

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| --- | --- | --- |
| 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 |