**Project Design Phase**

**Solution Architecture**

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| Date | 30 June 2025 |
| Team ID | LTVIP2025TMID31783 |
| Project Name | smartSDLC-AI-enhanced software develpoment life cycle |
| Maximum Marks | 4 Marks |

# Solution Architecture Description

SmartSDLC aims to bridge the gap between the challenges in the Software Development Lifecycle (SDLC) and the technological solution that automates and optimizes these processes. By leveraging AI, NLP, and Watsonx, SmartSDLC automates tasks like requirement analysis, code generation, bug fixing, test case creation, code summarization, and provides real-time chatbot support. The solution architecture is designed to handle complex workflows across multiple SDLC phases, improving accuracy, speed, and team collaboration.

# Goals of the Solution Architecture

1. Find the best tech solution to solve existing business problems: Automating manual and repetitive tasks within the SDLC will reduce errors, improve speed, and enhance collaboration. SmartSDLC offers an integrated AI solution to cover the entire lifecycle from requirement gathering to deployment.

2. Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders: The system is designed to be cloud-based with an easy-to-use interface, enabling seamless integration with existing development tools. It uses advanced NLP to convert unstructured data into actionable tasks and AI to assist in various SDLC activities.

3. Define features, development phases, and solution requirements: Key features include:  
- Automated requirement analysis and user story creation.  
- AI-driven code generation and bug fixing.  
- Test case generation and automated testing.  
- Code summarization and documentation.  
- Chatbot support for real-time assistance.

4. Provide specifications according to which the solution is defined, managed, and delivered: The solution is cloud-hosted, using scalable architectures that allow for seamless expansion. Each phase of the SDLC is automated and continuously enhanced using AI models to improve accuracy and reliability.