**Project Design Phase-II**

**Solution Requirements (Functional & Non-functional)**

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| Date | 27 June 2025 |
| Team ID | LTVIP2025TMID32013 |
| Project Name | SmartSDLC – AI-Enhanced Software Development Lifecycle |
| Maximum Marks | 4 Marks |

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

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| **FR No.** | **Functional Requirement (Epic)** | **Sub Requirement (Story / Sub-Task)** |
| FR-1 | AI Chatbot Assistance | Responds to developer queries during all SDLC phases.  Provides code suggestions, bug fixes, and documentation support. |
| FR-2 | Requirement Analysis | AI analyzes and refines user requirements.  Suggests missing use cases or ambiguous requirements. |
| FR-3 | Automated Design Support | Generates basic UML diagrams or architecture templates.  Recommends design patterns based on requirements. |
| FR-4 | Code Generation | Converts logic or pseudocode into real code snippets (e.g., Python, Java).  Follows best practices and coding standards. |
| FR-5 | Test Case Generation | Creates unit, integration, and system test cases automatically.  Suggests edge cases and test data. |
| FR-6 | Bug Detection | Analyzes code for possible bugs or performance issues using AI.  Recommends fixes and improvements. |

**Non-functional Requirements:**

Following are the non-functional requirements of the proposed solution

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| **FR No.** | **Non-Functional Requirement** | **Description** |
| NFR-1 | **Usability** | User-friendly dashboard with minimal learning curve for developers |
| NFR-2 | **Security** | Role-based access control, OAuth2 login, HTTPS, JWT authentication |
| NFR-3 | **Reliability** | Redundant architecture, backup services, fault-tolerant components |
| NFR-4 | **Performance** | Capable of handling 100+ concurrent users; AI services respond within 2s |
| NFR-5 | **Availability** | 99.9% uptime via cloud deployment with distributed services and load balancing |
| NFR-6 | **Scalability** | Microservices architecture and Kubernetes orchestration for horizontal scaling |