Project Design Phase
Proposed Solution Template

Name	25 June 2025
Team ID	LTVIP2025TMID38248
Project Name	SmartSDLC - AI-Enhanced Software Development Lifecycle
Maximum Marks	2 Marks

Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Software development teams face significant challenges including ambiguous requirements, inefficient manual code generation and debugging, laborious test case creation, difficulty understanding complex codebases, fragmented tooling, and a lack of immediate SDLC knowledge support. These lead to project delays, increased costs, and compromised software quality.
2.	Idea / Solution description	SmartSDLC is an AI-enhanced platform designed to streamline and optimize the entire Software Development Lifecycle. It offers a suite of integrated AI-powered tools: Intelligent Requirement Classification, AI Code Generator, Automated Bug Fixer, Smart Test Case Generator, Code Summarizer, and an Interactive AI Chatbot Assistant. The platform aims to automate repetitive tasks, provide intelligent assistance, and centralize key SDLC functionalities.
3.	Novelty / Uniqueness	SmartSDLC's uniqueness lies in its comprehensive integration of multiple generative AI capabilities across diverse SDLC phases within a single, user-friendly platform. Unlike standalone AI tools, SmartSDLC offers a cohesive, end-to-end solution for development teams, reducing context switching and promoting continuous quality. Its ability to process and act on unstructured data (like PDFs for requirements) combined with code-specific AI makes it a distinctive and powerful offering.
4.	Social Impact / Customer Satisfaction	SmartSDLC significantly improves the daily work lives of software professionals by reducing tedious manual tasks, accelerating problem-solving, and democratizing access to

		expert SDLC knowledge. This leads to reduced burnout, increased job satisfaction, and fosters a more innovative and productive development environment. For organizations, it means faster delivery of higher-quality software, leading to increased customer satisfaction and competitive advantage.
5.	Business Model (Revenue Model)	SmartSDLC could employ a SaaS (Software-as-a-Service) subscription model. This could include tiered pricing based on team size, number of active projects, or usage limits for AI generation (e.g., number of code generation requests, lines of code summarized). Premium features like advanced analytics, dedicated support, or custom model fine-tuning could be offered at higher tiers.
6.	Scalability of the Solution	The solution is highly scalable. The FastAPI backend can be deployed on cloud platforms (e.g., Kubernetes on GCP/AWS) to handle increased user loads. The AI model, ibm-granite/granite-3.3-2b-instruct, is hosted via Hugging Face and can scale its inference capabilities. Future enhancements could involve integrating with more powerful LLMs, supporting additional programming languages, and offering API integrations with existing CI/CD pipelines and project management tools, ensuring it can grow with organizational needs.