**Project Design Phase**

**Solution Architecture**

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| Date | 15 February 2025 |
| Team ID | LTVIP2025TMID32102 |
| Project Name | SmartzSDLC – AI-Enhanced Software Development Lifecycle |
| Maximum Marks | 4 Marks |

**Solution Architecture:**

SmartSDLC uses a modular AI-based architecture that connects user inputs to automated software development tasks. Users interact through a simple Gradio interface in Google Colab, where they can upload requirement PDFs or enter code prompts. The system extracts and formats this input using tools like PyMuPDF, then sends it to the IBM Granite model hosted via Hugging Face. Based on the prompt, the model performs tasks like classifying requirements, generating code, fixing bugs, creating test cases, summarizing code, or answering questions. The output is cleaned and displayed in a structured format on the frontend. This architecture ensures automation, accuracy, and ease of use in various phases of the Software Development Lifecycle.

**Architecture Diagram:**

