

Ideation Phase

Brainstorm & Idea Prioritization Template

Date	16 June 2025
Team ID	LTVIP2025TMID29152
Project Name	SmartSDLC – AI-Enhanced Software Development Lifecycle
Maximum Marks	4 Marks

Team Members & Roles :

Name	Role
Vanaja Pulapa	Frontend Developer (Streamlit), Project Integration
Lakshmidurga Sathi	Backend Developer (FastAPI), IBM Watsonx AI Integration
Sonti Naga Tulasi	PDF Upload & SDLC Phase Classification Module
Yalla Manasa Siri	Testing, Bug Fixer, and Code Summarization Modules

Step-1: Team Gathering, Collaboration and Select the Problem Statement :

Problem Statement:

Manual SDLC processes such as code writing, test creation, debugging, and document classification are repetitive and time-consuming. Students and developers face difficulty performing these tasks efficiently and accurately without automation.

Motivation:

SmartSDLC aims to automate major SDLC stages using IBM Watsonx, reducing time and effort while increasing productivity. It provides features like code generation, test case generation, bug fixing, summarization, and PDF classification through a simple and unified AI interface.

Step-2: Brainstorm, Idea Listing and Grouping :

Initial Ideas:

- Convert natural language tasks into working code using AI
- Generate test cases automatically
- Auto-detect and fix bugs from uploaded code
- Summarize complex codebases
- Upload and classify PDF content into SDLC phases
- Design an intuitive user interface with Streamlit
- Build a backend using FastAPI to connect frontend and AI
- Add secure login, sign-up, and password reset with OTP

Grouped into Modules:

1. **PDF Classifier Module** – Upload PDFs and classify SDLC content
2. **Code Generator Module** – Convert task input to code
3. **Test Case Generator Module** – Auto-generate tests
4. **Bug Fixer Module** – Detect and fix bugs using AI
5. **Summarizer Module** – Generate summaries of source code
6. **Authentication Module** – Secure sign-up/login and password reset
7. **Frontend UI Module** – Built with Streamlit
8. **Backend API Module** – FastAPI for processing and model integration

Step-3: Idea Prioritization :

Module	Priority	Reason
Code Generator	High	Core AI functionality for smart development
PDF Classifier	High	Helps understand requirements from uploaded files
Test Case Generator	High	Saves time and improves code quality
Bug Fixer	Medium	Important but model-dependent
Summarizer	Medium	Useful for understanding large codebases
Authentication Module	High	Ensures secure access
Frontend UI (Streamlit)	High	Essential for a user-friendly interface
Backend API (FastAPI)	High	Required to handle all feature logic and AI calls