Project Design Phase-II

Data Flow Diagram & User Stories

Date	25 Aug 2025
Team ID	NM2025TMID11404
Project Name	SmartSDLC – AI-Enhanced Software Development Lifecycle
Maximum Marks	4 Marks

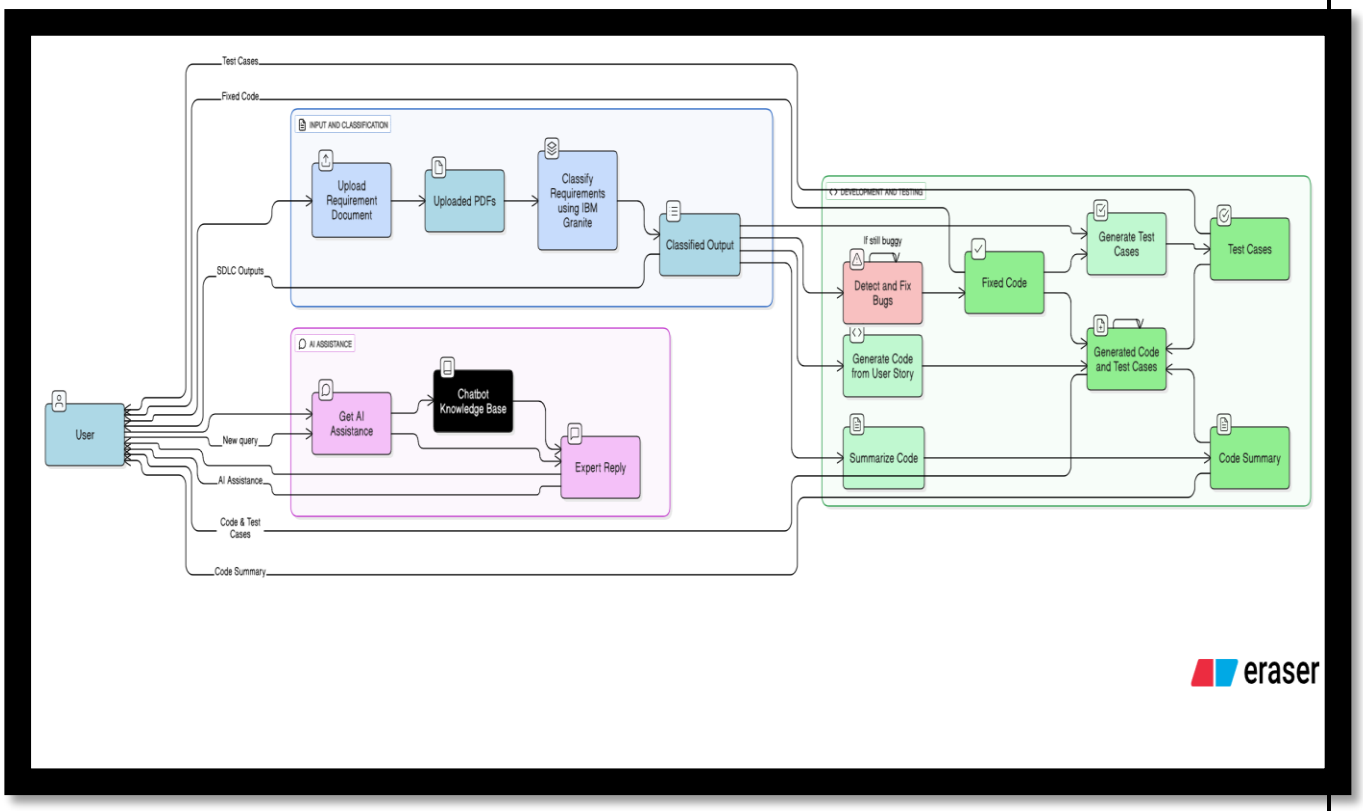
Data Flow Diagram (DFD)

The SmartSDLC platform streamlines software development phases by automating requirement classification, code generation, bug fixing, testing, code summarization, and AI assistance. The DFD illustrates the interactions between users and each AI service.

DFD Elements:

- **External Entities**:
  - Developer / Analyst (User)
- **Processes**:
  - P1: Upload Requirement Document
  - P2: Classify Requirements using IBM Granite
  - P3: Generate Code from User Story
  - P4: Detect & Fix Bugs
  - P5: Generate Test Cases
  - P6: Summarize Code
  - P7: Get AI Assistance
- **Data Stores**:
  - D1: Uploaded PDFs
  - D2: Classified Output
  - D3: Generated Code & Test Cases
  - D4: Chatbot Knowledge Base
- **Data Flows**:
  - F1: Requirement Document → P1

- F2: Text Data → P2 → Classified SDLC Outputs
- F3: User Story → P3 → Code Snippet
- F4: Buggy Code → P4 → Fixed Code
- F5: Code Snippet → P5 → Test Cases
- F6: Code → P6 → Summary
- F7: User Query → P7 → Expert Reply



User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Developer (Mobile/Web)	Requirement Classification	USN-1	As a user, I can upload a PDF of software requirements for classification.	Output shows categorized requirements under SDLC phases.	High	Sprint-1
	Code Generation	USN-2	As a user, I can input a user story to generate Python code.	System generates syntactically valid, commented code.	High	Sprint-1
	Bug Fixing	USN-3	As a user, I can input buggy code and receive a corrected version.	Output displays fixed and commented code.	High	Sprint-2
	Test Case Generation	USN-4	As a user, I can input code or a requirement to generate test cases.	Output includes well-structured pytest test functions.	Medium	Sprint-2
	Code Summarization	USN-5	As a user, I can paste source code to get a summary of its	Summary includes purpose, key functions, inputs, and outputs.	Medium	Sprint-2

			functionality .			
	AI Assistant	USN-6	As a user, I can ask any SDLC-related query to an AI assistant.	System provides accurate, context-aware responses.	Medium	Sprint-3
Admin	Usage Analytics	USN-7	As an admin, I can view module usage reports for the SmartSDLC app.	Dashboard shows user counts and activity logs.	Medium	Sprint-3
Admin	Access Management	USN-8	As an admin, I can manage user access and privileges across modules.	Admin panel enables adding, removing, or restricting users.	Medium	Sprint-3