SMART BRIDGE INTERNSHIP

GENERTATIVE AI WITH IBM CLOUD

Project Title:

SmartSDLC -AL-Enhanced Software Development Lifecycle

Team ID: LTVIP2025TMID60583

Team Size:3

Team Members:

1. Lingam Madhuri
2. Palanki Sai Teja
3. Pothana Naga Durga Prasanthi

**Phase-1: Brainstorming & Ideation**

**Objective:**  
Generate and collect initial ideas and raw business requirements from stakeholders.

**\*SmartSDLC Key Features:**

* **Floating AI Chatbot Assistant**
  + Provides instant answers to SDLC-related queries.
  + Assists non-technical users with concepts like test writing, requirement analysis, etc.
  + Uses LangChain for intelligent conversation routing.

**Phase:2. Requirement Analysis**

**Objective:**  
Transform unstructured ideas into clear, categorized, and actionable requirements.

**\*SmartSDLC Key Features:**

* **Requirement Upload and Classification**
  + Upload PDFs or raw documents.
  + Extracts text using PyMuPDF.
  + Uses Watsonx (Granite-20B) to classify sentences into SDLC phases.
  + Automatically generates structured user stories from unstructured input.

**Phase:3. Project Design**

**Objective:**  
Translate user stories into preliminary designs and plan technical implementation.

**\*SmartSDLC Key Features:**

* **Requirement Classifier Output**
  + Organizes requirements by SDLC stage.
  + Aids in UI/UX planning, database modeling, and system architecture decisions.
  + Improves traceability and stakeholder communication.

**Phase:4. Project Planning (Agile Methodologies)**

**Objective:**  
Organize work into sprints or tasks, prioritize features, and assign responsibilities.

**\*SmartSDLC Key Features:**

* **Structured User Stories**
  + Clearly defined and categorized user stories ready for sprint planning.
  + Enables traceable backlog creation with minimal manual work.
  + Supports agile task estimation and progress tracking.

**Phase:5. Project Development Objective**

**Objective:**  
Write, debug, and optimize application code efficiently.

**\*SmartSDLC Key Features:**

* **AI Code Generator**
  + Converts natural language or user stories into code.
  + Supports languages like Python, JavaScript, etc.
  + Produces clean, syntax-highlighted, production-ready code.
* **Bug Fixer**
  + Detects and corrects logical or syntactical errors in code.
  + Offers side-by-side comparison of original and corrected code.

**Phase:6. Functional & Performance Testing**

**Objective:**  
Ensure the application works as expected and meets quality benchmarks.

**\*SmartSDLC Key Features:**

* **Test Case Generator**
  + Automatically creates test cases using frameworks like unittest or pytest.
  + Supports both code-based and requirement-based inputs.
  + Promotes automation and full test coverage.
* **Code Summarizer**
  + Converts code into human-readable explanations.
  + Aids documentation and onboarding of new developers.

**✅ Keypoints of SmartSDLC Impact:**

* **Automation-first:** Reduces manual effort across SDLC.

**AI-Driven Accuracy:** Enhances classification, code generation, and testing precision.

* **Team Collaboration:** Bridges gap between technical and non-technical users.
* **Agile-Ready:** Outputs and modules are structured to support agile workflows.

Would you like a visual (flowchart or infographic-style summary) of this as well?