**Project Design Phase**

**Solution Architecture**

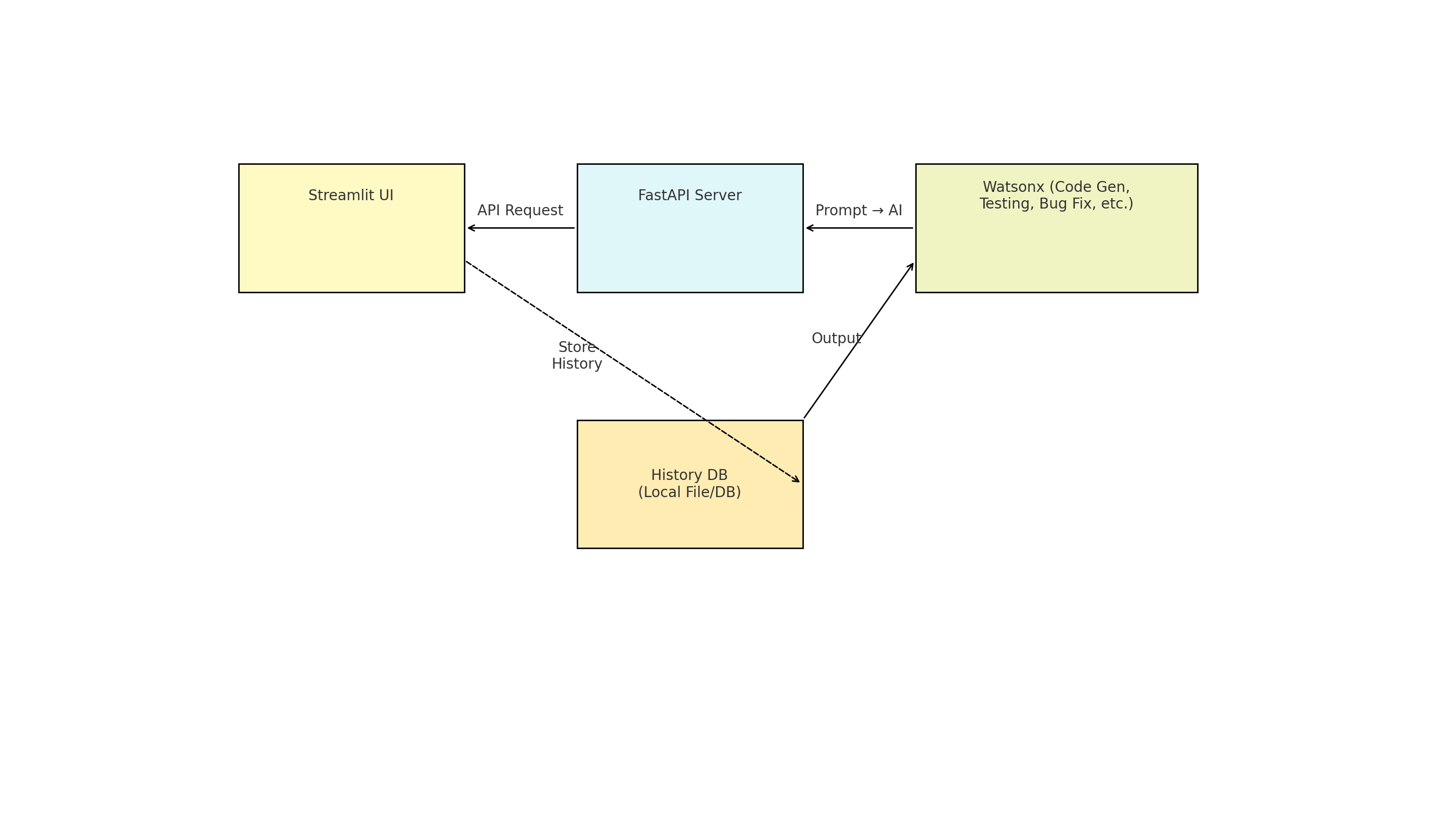
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| Date | 27 June 2025 |
| Team ID | LTVIP2025TMID29152 |
| Project Name | SmartSDLC – AI-Enhanced Software Development Lifecycle |
| Maximum Marks | 4 Marks |

### Solution Architecture (SmartSDLC – AI-Powered SDLC Automation Tool)

The SmartSDLC solution architecture connects a user-friendly **Streamlit frontend** with a **FastAPI backend** that interacts with **IBM Watsonx** to perform various software development lifecycle tasks. Each feature like code generation, bug fixing, test generation, and summarization is modularly triggered based on user interaction. Results are stored locally or in a lightweight database for reference and download.

* **Frontend**: Streamlit-based UI for user interaction (input, download, upload)
* **Backend**: FastAPI that handles API requests, prompts, and service routing
* **LLM Service**: IBM Watsonx for all AI-driven SDLC tasks
* **Storage**: Local storage or DB used to save history and logs
* **Flow**: User → UI → Backend → AI Model → Response → Display + Save

**Example - Solution Architecture Diagram:**

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