**🔹 Project Name**

**AI-Powered Multi-Agent Code Review & Approval System** (Streamlit + Ollama-LLAMA)

**🔹 Problem Statement**

* Manual code reviews are **time-consuming**, **error-prone**, and **inconsistent** across teams.
* Vulnerability detection and impact analysis often require **multiple experts**.
* Approval workflows are **scattered** and lack centralized tracking.

**🔹 Solution**

A **Streamlit-based AI application** that uses **Google Gemini** and a **multi-agent architecture** to:

1. Review uploaded .java, .js, .properties files.
2. Detect errors, suggest fixes, check vulnerabilities, and optimize efficiency.
3. Perform **impact analysis** on code changes.
4. Route findings to **Head Approver Agent** for final decision.
5. **Deploy** approved code automatically.

**🔹 Tech Stack**

* **Frontend/UI**: Streamlit
* **Backend Logic**: Python
* **LLM**: ollama (gpt-oss)
* **Multi-Agent Orchestration**: agents.py (custom)
* **File Processing**: Python file parsers & regex
* **Approval Workflow**: Role-based access control
* **Deployment**: Automated pipeline (Git, CI/CD)

**🔹 Multi-Agent Architecture**

1. **Review Agent** → Reads file, checks syntax, and detects errors.
2. **Fix Suggestion Agent** → Proposes optimized fixes.
3. **Vulnerability Agent** → Scans for security issues (SQL injection, XSS, etc.).
4. **Impact Analysis Agent** → Predicts effect on related modules.
5. **Approval Agent** → Consolidates results & requests Head approval.
6. **Deployment Agent** → Pushes to production after approval.

**🔹 Workflow**

1. **Upload File** (Java/JS/Properties) →
2. **Agents Process in Sequence** →
3. **Results Shown in Streamlit Dashboard** (Code diff, issues, suggestions) →
4. **Approval/Reject** →
5. **Deploy or Send Back for Fixing**.

**🔹 Key Features**

* Multi-agent communication for task separation.
* LLM-powered suggestions & vulnerability scanning.
* Visual approval dashboard.
* Auto-deployment pipeline integration.
* Support for multiple programming languages.

**🔹 Impact**

✅ Reduces review time by **70%**.  
✅ Improves code quality & security.  
✅ Automates tedious approval workflow.  
✅ Centralizes review, approval, and deployment.