

Milestone 4 : Development and Deployment

Milestone 4 focuses on developing, testing, and deploying a user-facing application that integrates all components from previous milestones. This milestone ensures the project is functional, well-tested, and ready for real-world usage through automation and deployment strategies.

Key dates:

- Due date: 11/25

Template Repository

[Milestone 4 Template](#)

Objectives:

- **App Design, Setup, and Code Organization:**
 - Design the application's overall architecture, including the user interface and underlying code structure.
 - Emphasize clean code organization for maintainability and efficiency.
- **APIs & Frontend Integration:**
 - Develop robust APIs for communication between the front end and back end.
 - Implement a user-friendly front-end interface using these APIs for a seamless user experience.
- **Continuous Integration (CI):**
 - Implement CI using GitHub Actions or a similar tool.
 - Automate building, testing, and deployment processes to ensure new code merges are automatically validated.
- **Automated Testing:**
 - Write and integrate unit tests and end-to-end tests for APIs and the front end.
 - Ensure all tests run automatically in the CI pipeline, with results reported on every commit or pull request.

Deliverables:

- 1 **Application Design Document:**
 - A detailed document outlining the application's architecture, user interface, and code organization.
 - **Should Include:**
 - **Solution Architecture:** High-level overview of system components and their interactions.
 - **Technical Architecture:** Specific technologies, frameworks, and design patterns used.
- 2 **APIs & Frontend Implementation:**
 - Working code for APIs and the front-end interface.
 - **Should Include:**
 - **GitHub Repository:** All source code with logical organization and proper documentation.
 - **README File:** Description of application components, setup instructions, and usage guidelines.
- 3 **Continuous Integration Setup:**
 - A functioning CI pipeline that runs on every push or merge.

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- **Pipeline Must Include:**

- **Code Build and Linting:** Automated build process and code quality checks using linting tools (e.g., ESLint, Flake8) running on GitHub Actions.
- **Automated Testing:** Execution of unit, integration and systems tests with test results reported.

4 **Automated Testing Implementation:**

- Integration of automated tests within the CI pipeline using GitHub Actions.
- **Should Include:**
 - **Unit Tests:** For individual components and functions.
 - **Integration Tests:** For integrating multiple components.
 - **System Tests:** Covering user flows and interactions.
 - **Test Coverage Reports:** Integrated into the CI pipeline to monitor code coverage to be at least 50%.

5 **Test Documentation:**

- Detailed explanations of the testing strategy and implemented tests.
- **Should Include:**
 - **Testing Tools Used:** (e.g. PyTest)
 - **Instructions to Run Tests Manually:** For developers to replicate test results locally.