Create and specify a software design for a medium-size software product using a software requirement specification, an accepted program design methodology (e.g., structured or object-oriented), and appropriate design notation. Design, evaluate and implement a test plan for a medium-size code segment or larger. Compose a software configuration and release pipeline that complies with industry best practices.

We adopted an object-oriented design methodology to align with Python best practices and modular architecture goals. It separates concerns and improves code reuse and maintainability. I specified software requirements. (Kloda, 2025a; Kloda, 2025b)

I created and specified a software design and development methodology. As part of this, I designed UML, flow diagram illustrating the user registration or login process involving a user, an API, and a database server. (Kloda, 2025c; Kloda, 2025d; Kloda, 2025e)

I implemented Jest for unit and integration tests, which ensured that UI components, user interactions, and API calls function correctly. (Kloda, 2025f) My team also implemented pytest to validate API endpoints and data processing. (Kloda, 2025g) We also verified communication between the client and server through API requests. This testing confirmed that the end-to-end workflows, from user interactions to data handling and API responses.

I set up Bitbucket Pipelines to automate the build, test, and deployment process. (Kloda, 2025h) It includes client build and jest testing and pytest testing. It also automated deployment to production upon changes to the master branch and automated testing for pull requests to ensure the new code doesn’t break existing functionality. While the current setup provides automation, in future projects I would choose to implement Docker for containerizing both the backend and frontend services.

# References

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