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Post-Effort Write-Up – DataFrame Project

Working on the DataFrame project gave me valuable hands-on experience applying Linux and DevOps concepts to a real Python application. I began with a basic script that I wrote back in 222 to try and practice different concepts from class, and gradually built it into a deployable Debian package complete with systemd integration and a GitHub Actions CI pipeline.

To package the project, I wrote a build_deb.sh script to create the required directory structure and control scripts. I also created a Makefile to automate building, testing with pytest, and linting the .deb package using lintian. The CI workflow ran on every push, executing build, test, and packaging steps, and uploaded the resulting .deb artifact.

One challenge was managing package dependencies like python3-pandas, which initially caused installation issues. In fact, at every stage of development there were different installation issues that needed to be addressed. One issue was getting make for the makefile, and then later on lintian. But all in all it was much better than the earlier homeworks which forced me to learn it all for the first time. Being able to use my older script really helped with having a lot of the dependencies already installed. This taught me how to properly declare and manage system-level dependencies in Debian packaging.

Overall, this project helped me appreciate how DevOps practices—automation, testing, and structured deployment—can make development more reliable and repeatable. This course has deepened my understanding of software beyond just writing code; I now think more critically about deployment, maintainability, and system integration.