

CS 421 Final Project Proposal – Todo-MD

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Many codebases accumulate in-code reminders and work items that get lost in sprawling directories. Therefore, I'd like to build a small command-line utility, tentatively called Todo-md, that analyzes a programming project, whatever language it is written in, including Python, JavaScript, Java, and Haskell, and extracts every TODO and FIXME comment into a single, easy-to-read Markdown report. This tool will give students and developers a quick “technical debt” snapshot without manually opening every file.

The tool's core will be written in Python 3, using standard libraries like `os.walk` and `re` for directory traversal and pattern matching. In class, we've discussed building scanners or lexers and using regular expressions to recognize tokens. This tool will essentially perform a line-by-line regex scan to identify comment markers and capture the information for each marker respectively. In addition to the core functionality, I may experiment with a tiny lexer generator to support multi-line comment blocks, and a simple AST-based or regex-based mapping to associate each marker with its enclosing function or module.

Over the first two weeks, I'll set up the project structure, implement the basic scanner and Markdown writer, and write unit tests for key functions. In week 3 I'll add integration tests—running the tool on sample repos—and build a Makefile with targets like `make run` and `make test`. If time allows in week 4 I'll layer on the optional multi-line and context-mapping features. In week 5 I'll finalize tests, polish the report layout, draft the final PDF with the four required sections (Overview, Implementation, Tests, Listing), and rehearse a brief demo.

For the end-of-semester presentation, I'll demo running `todo_md.py` on a sample project to generate a Markdown report. The demo will show how the Makefile automates report generation and testing, and explain how the implementation reflects concepts from courses. I am working alone, so I will be responsible for design, coding, testing, documentation, and the live demo.