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Q5: WHAT CHALLENGES YOU FACE DURING THE PROJECT?

1. Understanding Theory: Compiler construction involves understanding complex theoretical concepts such as formal languages, grammars, lexical analysis, parsing, semantic analysis, optimization, and code generation. It might take time to become familiar with these concepts, especially for those new to compiler construction.

2. Optimization: Implementing effective code optimization strategies can be challenging. Optimizing the generated code while maintaining correctness and not introducing bugs can be intricate.

3. Code Generation: Generating efficient and correct machine code or intermediate code for the target architecture can be challenging. Balancing the trade-off between optimization and simplicity is often required.

4. Error Handling: Designing a robust error-handling mechanism to provide meaningful error messages to the user can be challenging. Identifying and recovering from errors while maintaining a good user experience is important.

5. Testing: Comprehensive testing is crucial but challenging. Creating a test suite that covers all possible scenarios and edge cases can be time-consuming. Additionally, debugging the compiler itself can be complex due to the multiple stages of compilation.