



- source program: The input C code that is compiled by the C4 compiler.
- Lexer: Converts the source code into tokens (keywords, operators, variables).
- Parser: Analyzes the tokens, builds the structure of the code, and generates VM instructions.
- Symbol Table: Stores information about program identifiers (types, memory locations).
- Code Generation: Creates VM instructions from the parsed code (e.g., arithmetic, logic).
- Virtual Machine: Executes the generated instructions using a stack-based architecture.
- Memory Management: Handles dynamic memory allocation (e.g., malloc, free) and stack.
- Program Output: The result of executing the compiled code