Review of Knuth's Mathematical Analysis of Algorithms

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Outline

Frontend

Backend

The parser phase

- ► Alex & Happy: The lexer/parser generation tools in Haskell.
- ► Decorated Parse Tree: All operators are left-recursion; Treat indents as virtual curly
- ▶ Detour: Monadic Combinatorial Parsers

The renamer and typechecker phase

- ► Renamer: Locate all the names and refractor the syntax tree
- ► Typechecker: type reconstruction and OutSideIn(X) method

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Backend

The simplifier and optimizer phase

- ► Core language: the most stable part of GHC
- Optimizations

Code generator: from lazy,functional to strict,imperative

- ► Spineless Tagless G-machine: The key of the compilation
- ▶ C—: a portable assembly language