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Object Orientation in Compiler Construction

Bachelor thesis for Barbara Ortmayr
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Compiler construction is a well-researched field. In this theses we explore the possibility to use object oriented techniques in recursive descent parsers. The idea is to improve on flexibility and error correction at runtime.

Recursive descent parsers map productions to methods. At runtime the grammar exists only as code. Further the parse tree exists only in the procedure stack. This makes error correction in recursive descent parsers less powerful as in table driven parsers.

This work explores the possibility to map productions to classes, and grammars to graphs of productions, terminals and meta-symbols (alternative, option, iteration). Such a graph can be explored and even changed at runtime. The access to the grammar at runtime can for example be used to improve error correction.

Tasks of this thesis:

- Design a class infrastructure for symbols (terminal, non-terminal, meta).
- Explore the possibilities on a small language (e.g.: MicroJava).
- Apply the result to a compiler generator (e.g.: Coco/R)

Platform: Java or C#

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