Left-Corner Parsing

(Topic 21: Parsing Techniques - Section 10.1)

Jan Hrstka, Martin Riša

{xhrstk02,xrisam00}@stud.fit.vutbr.cz

Top-down non-canonical Left-Corner (LC) parsing is table-oriented parsing technique with linear properties just like LL-parsing. First, the predictive chain-automaton(CA) is constructed with nodes, the predicted non-terminals, and arrows labeled with the rules involved in the predictions. CA is in general non-deterministic and its reversation makes it deterministic. CA is used to create similar automatons with slightly modified look-ahead sets for subset of cartesian product of nonterminals and look-ahead set. This leads to full-LC parser a comparable to full-LL parser, strong-LC approach is also possible and has comparable relation of stong-LL to full-LL parsings. The combination of created CA's and parse stack is done by extending nonterminals set and modification of existing rules. Extension by new symbols is in form X/Y that matches the rest of X after Y was matched. Then the LC table can be constructed which use gives us parsing output that needs to be transferred into parsing tree. Transformation of LC table to LL table is also possible.

This presentation will explain basic non-canonical parsing properties, reason why LC is called left-corner parsing and all steps involved in parsing that is construction of chain automaton, it's determinization, difference between full-LC and strong-LC approach, construction of LC parsing table using full-LC parsing and obtaining a parse tree by this approach on example. At the end, the principle of transformation of LC(1) parsing table to LL(1) will be described on example.