Topic 15: RGA - Elimination of Erasing Rules (Chapter 7) VYPe 2016

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Problem of Elimination of Erasing Rules from Context-Free Grammars solve two algorithms, the old one (*Standard elimination of erasing rules from context-free grammars*) and the new one (*Elimination of erasing rules from context-free grammars without any predetermination of ε-nonterminals*). As a matter of fact, the elimination of erasing rules described in the first algorithm works in two phases and is based on well-known technique.

First, it determines all ε-nonterminals in a given context-free grammar. Then, having determined these nonterminals, it performs the desired elimination. The new one algorithm works without predetermination of ε-nonterminals. The new algorithm introduces compound nonterminals of the form <X,U>, in which X is a symbol that is not erased during the derivation, and U is a set of symbols that are erased. The Erasing Rules can not be Eliminated from Regulated Grammars.

Workspace theorem for regular-controlled grammar gives derivation conditions under which can be erasing rules removed.

Family of recursively enumerable languages is characterized by scattered context grammars which contain erasing rules, where propagating scattered context grammars cannot generate non-context-sensitive languages. Not all of scattered context grammars with erasing rules are convertible to equivalent propagating scattered context grammars. There is a sufficient condition under which is the previous conversion always possible.

References:

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