# Exercício 16

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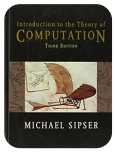

Introduction to the Theory of Computation

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Índice

**Solução** Certificado Solução fornecida há 2 anos

**Passo 1** 1 de 2

Union and concatenation are trivial. Assume that we are given languages $L_1$ and $L_2$ generated by context-free grammars $G_1$ and $G_2$ respectively. Then grammar which includes **all rules of both** grammar $G_1$ and $G_2$ and **one additional rule** $S \to S_1 \mid S_2$, where $S$ is the new starting variable of grammar $G$, and $S_1$ and $S_2$ are old starting variables of grammars $G_1$ and $G_2$, recognizes exactly **union** $L_1 \cup L_2$. Concatenation is obtained analogously, by adding rule $S \to S_1 S_2$.

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Star is also not difficult, but last $\textit{Exercise}$ shows tl
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$$S_0 \to S_0 S_0 \mid S \mid \varepsilon$$

to the new grammar, where $S$ is the old starting variable. Note the analogy with adding a new initial state to NFA which recognizes star of language.

**Resultado** 2 de 2

We modify the context-free grammars generating given languages to capture their union, concatenation and star.

‹ Exercício 15

Avaliar esta solução

Exercício 17 ›