Theoretical-Computer-Science

This repository contains basic notes about Theoretical-Computer-Science course of Università Della Calabria. You can use this repo for review but not for study as proofs of the theorems are missing

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Languages

What is a language? It is simple. A set of strings. Now the question is obvious. What are strings? Strings are a sequence of simbol of an alphabet. Mathematically we denote with this simbol Σ an alphabet, and with Σ^* all the strings from the alphabet.

Now we can define formally a language given an alphabet Σ like the set $L= (w \mid w \in \Sigma ^*)$

Example: $\Sigma =${ 0,1 }, $L=${11,01,1}

Grammars

Grammars generate languages. Formally a grammar is a quadruple $G = (V,T,P,S)$

- V is the set of non-terminal symbols
- T is the set of terminal symbols
- S is the initial non-terminal symbol
- P is a set of productions

What is a production? Simple a rule that allows you to replace the left side with the right. Formally a production is $\alpha A \beta => \alpha \gamma \beta$ e $A \in V$, e $`\alpha , \gamma , \beta \in (V \cup T )^*`$, With $(V \cup T)^*$ we identify strings of non-terminal and terminal symbols.

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