Theory of Automata and Formal Language

Lecture-4

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Examples

Find grammars for $\Sigma = \{a,b\}$ that generates the sets of

1. All strings with exactly one a.
2. All strings with at least one a.
3. All strings with no more than three a's.
4. All strings with at least three a's.

Examples

Find grammars for the following languages on $\Sigma = \{a\}$

1. $L = \{ w\,! \mid w \mid \bmod 3 = 0\}$
2. $L = \{ w\,! \mid w \mid \bmod 3 > 0\}$
3. $L = \{ w\,! \mid w \mid \bmod 3 \neq \mid w \mid \bmod 2\}$
4. $L = \{ w\,! \mid w \mid \bmod 3 \geq \mid w \mid \bmod 2\}$

Examples

Find grammars for the following languages over $\Sigma = \{a,b\}$

1. $L = \{ w \mid n_a(w) = n_b(w)+1\}$
2. $L = \{ w \mid n_a(w) > n_b(w)\}$
3. $L = \{ w \mid n_a(w) = 2n_b(w)\}$
4. $L = \{ w \mid | n_a(w) - n_b(w) | = 1\}$