Automata & languages

A primer on the Theory of Computation

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Part 3 out of 5
Last week, we started to learn about closure and equivalence of regular languages.
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The class of regular languages is closed under the

- union
- concatenation
- star

regular operations
The class of regular languages is closed under the regular operations if \( L_1 \) and \( L_2 \) are regular, then so are:

- union: \( L_1 \cup L_2 \)
- concatenation: \( L_1 \cdot L_2 \)
- star: \( L_1^* \)
Last week, we started to learn about closure and equivalence of regular languages.

\[
\text{DFA} \equiv \text{NFA}
\]

is equivalent to

\[
\text{REX}
\]
We’ll finish that today then start asking ourselves whether all languages are regular.

$L_1 \{0^n1^n \mid n \geq 0\}$

$L_2 \{w \mid w \text{ has an equal number of 0s and 1s}\}$

$L_3 \{w \mid w \text{ has an equal number of occurrences of 01 and 10}\}$

Hint: only one of them actually is
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