Automata & languages
A primer on the Theory of Computation

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Part 3 out of 4
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
- concatenation
- star

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

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

is equivalent to

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

\[ L_1 \quad \{0^n1^n \mid n \geq 0\} \]

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

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

(only one of them actually is)
Advanced Automata

Thu Oct 7

1. Equivalence (the end)
   - DFA
   - NFA
   - Regular Expression

2. Non-regular languages

3. Context-free languages