Games, graphs, and machines



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Building trickier regexps

Find regular expressions that describe the following languages.

- 1. $\{w \mid 0 \text{ and } 1 \text{ alternate in } w\}$
- 2. $\{w \mid \text{every 0 in } w \text{ has 1 on its left and on its right}\}$.

2.
$$\varepsilon | 1 (1|01)^* \checkmark$$

 $\varepsilon | (10|1)^* 1 \checkmark$
 $(1|101)^*$ misses 10101

Building automata

Construct a DFA whose language is $\{0, 1\}$.



Building automata

Construct a DFA with the same language as 01*. (01)*



Construct a DFA with the language

 $\{w \mid w \text{ has an even number of 0s}\}.$



Construct a DFA with the language

 $\{w \mid 0 \text{ and } 1 \text{ alternate in } w\}.$

Even trickier languages

Can you find receipts or DFAs that describe the following languages?

- $(1. \{w \mid w \text{ has as many 0s as 1s}\}.$
- 2. $\{w \mid w \text{ is a palindrome}\}.$

