Games, graphs, and machines
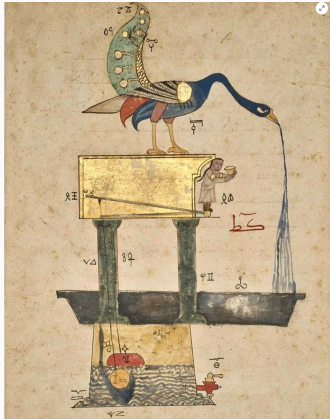
Building trickier regexps

Find regular expressions that describe the following languages.

1. $\{w \mid 0 \text{ and } 1 \text{ alternate in } w\}$
2. $\{w \mid \text{every } 0 \text{ in } w \text{ has } 1 \text{ on its left and on its right}\}$.
3. $\{w \mid w \text{ has an even number of 0s}\}$

Building automata

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

Construct a DFA with the same language as 01∗.

Building automata

Construct a DFA with the language

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

Building automata

Construct a DFA with the language

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

Even trickier languages

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

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