

Binary Trees

Alphabet $\Sigma = \{a, b\}$

Tree domain

prefix-closed subset D
of $\{0, 1\}^*$

prefix-closed = $s \in D \mid s' \preceq s \Rightarrow s' \in D$

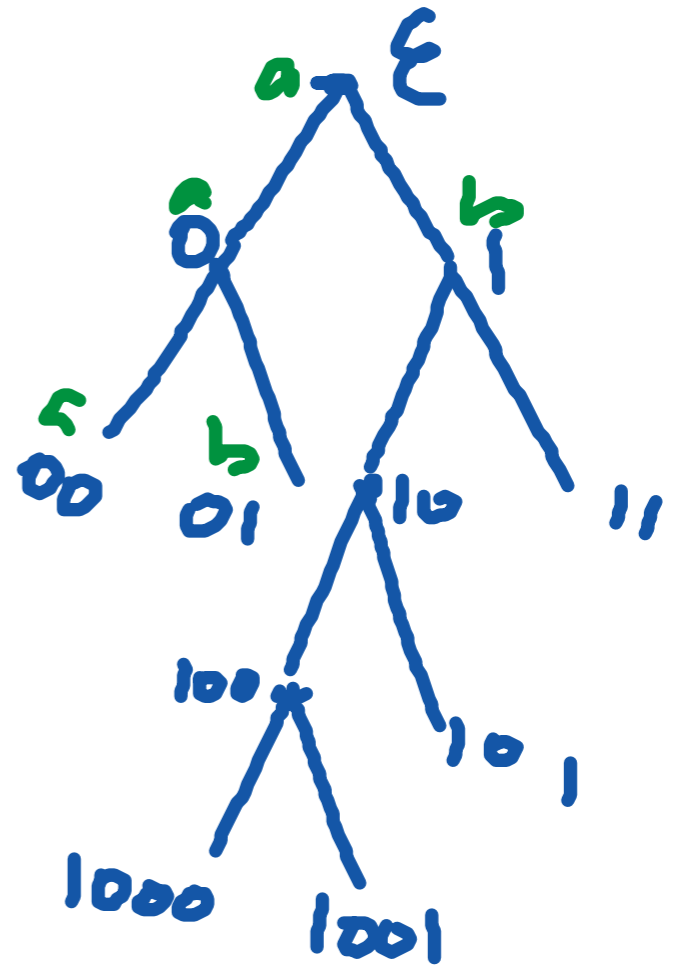
Convenient



if

$s \in D$, then either

- 1 $s0, s1 \in D$
- 2 $s0, s1 \notin D$

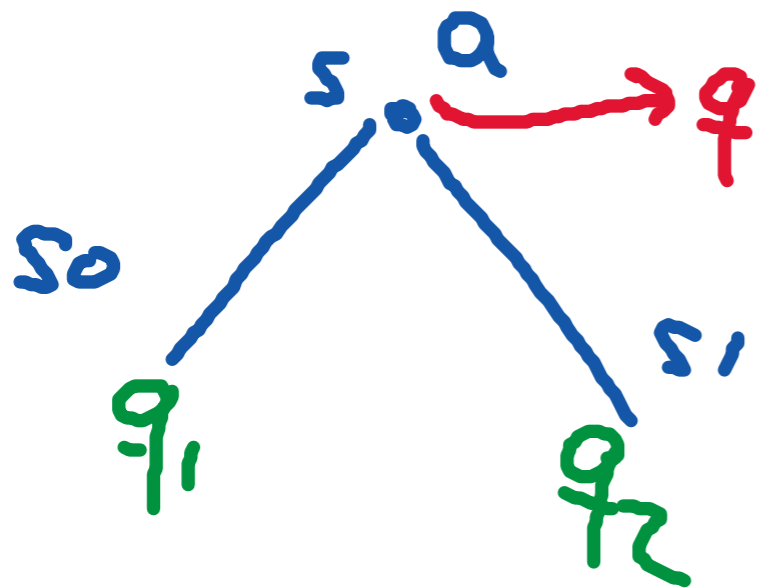


Automata for trees

Top-down nondet tree automata

A: (Q, Q_0, F, δ)
States initial states final states transition function

$$\delta: Q \times \Sigma \rightarrow \mathcal{P}(Q \times Q)$$



Bottom-up (nondet) tree automata

$$A = (Q, q_0, F, \delta)$$

$$\delta: Q \times Q \times \Sigma \rightarrow 2^Q$$

