

Handout 3

Let us have a closer look at automata and their relation to regular expressions. This will help us to understand why the regular expression matchers in Python and Ruby are so slow with certain regular expressions.

A deterministic finite automaton (DFA), say A , is defined by a four-tuple $A(Q, q_0, F, \delta)$ where

- Q is a set of states,
- $q_0 \in Q$ is the start state,
- $F \subseteq Q$ are the accepting states, and
- δ is the transition function.

The transition function determines A typical example of a DFA is

