/home/sutner/projects/Automata/Browser/Guides/FSM.nb

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# Acceptance and Multiplicity

## Acceptance of a FSM

## LanguageFA

## Transition Relations and Functions

The transition relation of a FSM can naturally be extended to a relation

$$\tau^* \subset Q \times \Sigma^* \times Q.$$

The crucial property of $\tau^*$ is that $\tau^*(p, x, q)$ iff there is a computation of the machine with source $p$, target $q$ and trace $x$. Since relations are somewhat difficult to deal with, it is often convenient to think of the extended transition relation instead as of a (possibly partial and multivalued) function

$$\delta^* : Q \times \Sigma^* \to Q.$$

If the underlying machine is a DFA, then $\delta^*$ is indeed a function and can be defined inductively by

$$\delta^*(p, \epsilon) = p,$$

$$\delta^*(p, x a) = \delta(\delta^*(p, x), a),$$