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Finite State Transducer:

• A finite state transducer is a kind of deterministic finite state automaton which consists of both the input string and the output string.

• It converts the input string into an output string.

The formal definition of Finite State Transducer (FST) is as follows:

A Finite State Transducer is a 6-tuple machine and is represented as $M=(Q,\Sigma,\Gamma,\delta,q_0)$ where

• Q is a finite set of states.

• Σ is a finite set of input alphabets.

• Γ is a finite set of output alphabets.

• $\delta: Q\times\Sigma\rightarrow Q\times\Gamma$ is the transition function that defines rules.

• $q_0\in Q$, is the start state.

The formal definition of the computation of Finite State Transducer (FST) is as follows:

• The computation of the finite state machine is carried out by translating the input string into output string.

• Assume that *w* is an input string over the input alphabet Σ and *x* is an output string consisting of alphabet of Γ.

• The transition is carried out over a sequence of states $q_0', q_1', ...q_n'$ in Q' such that

• $q_0'=q_0$

• The transition of $\delta(q_{i+1}', w_{i+1})=(q_{i+1}', x_{i+1})$ for $0\le i<n$.