

User Question: Deterministic finite automaton

AI Answer: A deterministic finite automaton (DFA) is a finite-state machine that can be used to recognize strings. It is defined as a 5-tuple  $(Q, \Sigma, \delta, q_0, F)$ , where:

$Q$  is a finite set of states

$\Sigma$  is a finite set of input symbols

$\delta: Q \times \Sigma \rightarrow Q$  is a transition function that takes a state and an input symbol as input and returns the next state

$q_0 \in Q$  is the start state

$F \subseteq Q$  is the set of accepting states