

Problem #3

Deterministic Finite Automatons

In the theory of computation, a deterministic finite state machine—also known as deterministic finite automaton (DFA)—is a finite state machine where for each pair of state and input symbol there is one and only one transition to a next state. DFAs recognize the set of regular languages and no other languages.

A DFA will take in a string of input symbols. For each input symbol it will then transition to a state given by following a transition function. When the last input symbol has been received it will either accept or reject the string depending on whether the DFA is in an accepting state or a non-accepting state.

Write a program that simulates a DFA that accepts the language L , where

$$L = \{ w \in \{0,1\}^* \mid w \text{ ends with a } 0 \}$$

This means that your machine will check the word w , a string of 0s and 1s, one index at a time and determine if the string is in the language L . Meaning that w is any string of 0s and 1s and ends with a 0.

Examples:

Input:	Output:
DFA> 011100100101	Rejected 011100100101
DFA> 0110000	Accepted 011000
DFA> 0123000	Rejected 0123000