

Práctica 2

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2º A Ingeniería Informática

28 de octubre de 2022

Activities

1. Consider the language over the alphabet $\{a, b\}$ that only contains the string a .

a) Build a DFA that recognizes this language and rejects all those strings that do not belong to the language.

Sea $M = (K, \Sigma, \delta, s, F)$ el autómata pedido, luego:

$$K = \{q_0, q_1, q_2\}$$

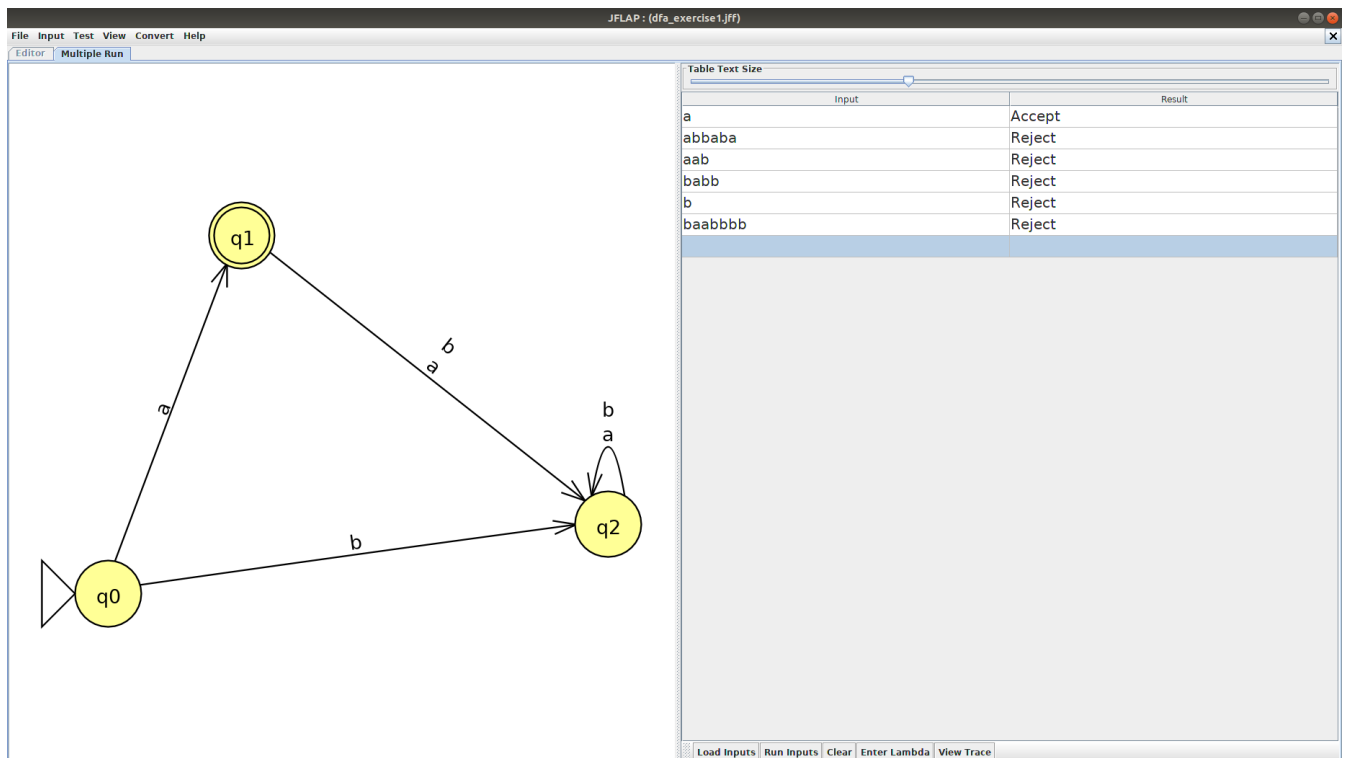
$$\Sigma = \{a, b\}$$

$$\delta = \{(q_0, a, q_1), (q_0, b, q_2), (q_1, a, q_2), (q_1, b, q_2), (q_2, a, q_2), (q_2, b, q_2)\}$$

$$s = q_0$$

$$F = q_1$$

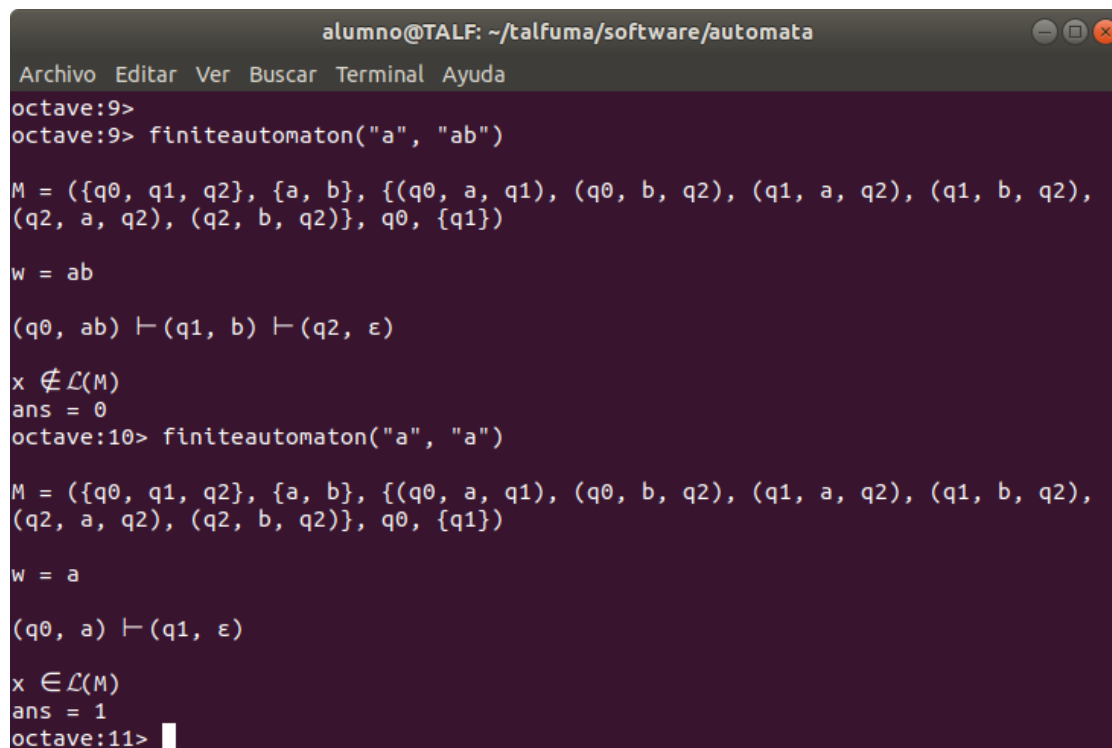
b) Test the automaton that you have created by introducing 6 chains.



2. Finite automaton in Octave:

- a) Open the Octave finiteautomata.m script and test it with the given example (see script help) in the GitHub repository.
- b) Specify in finiteautomata.json the automaton created in Activity 1 and test it with the script!

```
[
  {
    "name" : "a",
    "representation" : {
      "K" : ["q0", "q1", "q2"],
      "A" : ["a", "b"],
      "s" : "q0",
      "F" : ["q1"],
      "t" : [
        ["q0", "a", "q1"],
        ["q0", "b", "q2"],
        ["q1", "a", "q2"],
        ["q1", "b", "q2"],
        ["q2", "a", "q2"],
        ["q2", "b", "q2"]
      ]
    }
  }
]
```



```
alumno@TALF: ~/talfuma/software/automata
Archivo Editar Ver Buscar Terminal Ayuda
octave:9>
octave:9> finiteautomaton("a", "ab")

M = ({q0, q1, q2}, {a, b}, {(q0, a, q1), (q0, b, q2), (q1, a, q2), (q1, b, q2),
(q2, a, q2), (q2, b, q2)}, q0, {q1})

w = ab

(q0, ab) ⊢ (q1, b) ⊢ (q2, ε)

x ∉ L(M)
ans = 0
octave:10> finiteautomaton("a", "a")

M = ({q0, q1, q2}, {a, b}, {(q0, a, q1), (q0, b, q2), (q1, a, q2), (q1, b, q2),
(q2, a, q2), (q2, b, q2)}, q0, {q1})

w = a

(q0, a) ⊢ (q1, ε)

x ∈ L(M)
ans = 1
octave:11> 
```