Finite Automaton

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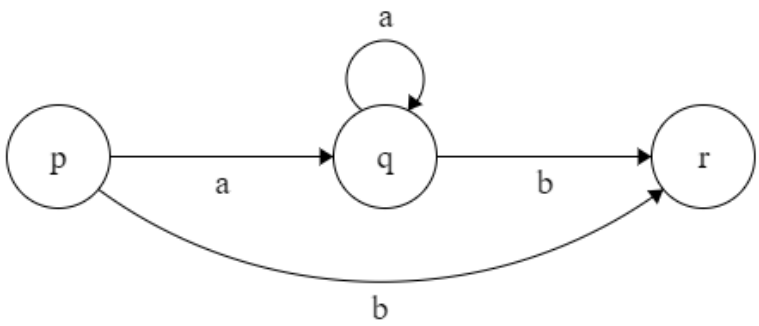
Implementation: [Repository Link]

1. File Structure (FA.in)

s_1 s_2 ... s_n (states)
a_1 a_2 ... a_m (alphabet)
noTran (number of transitions)
p_1 b_1 q_1 (delta(p_1, b_1) = q_1)
...
p_{noTran} b_{noTran} q_{noTran}
q_0 (initial state)
f_1 f_2 ... f_o (final states)

Example:

p q r
a b
4
p a q
q a q
q b r
p b r
p
r



TODO: ebnf form

2. Program details

Method *readFA* is used to read the data from the *FA.in* file and store it accordingly in the RAM. Some error cases are treated such as:

- one of the transition terms (state 1, transition term, state 2) does not belong to the declared states / alphabet respectively
- the initial state does not belong to the declared states
- one of the final states does not belong to the declared states

Method *verifySequence* checks whether a given sequence is accepted by the FA. This is done by simply using a for loop to cycle through the characters of the sequence and using a *currentState* variable to keep track of the current state. The method *move* is used to transition between states using the current symbol from the alphabet. In case the sequence could not be consumed entirely, an error occurs.