https://github.com/alexandra-olahut/FLCD-assignments

FLCD Documentation

Olahut Alexandra – 935/2

Finite Automata

Finite automata

Was implemented as a class with the following fields:

- *states*: list of states
- *alphabet*: list of alphabet symbols
- *initial*: the initial state
- *finals*: list of final states
- *transitions*: represented with a dictionary where the keys are (source_state, symbol) and the value is the target state / list of states

The FA is read from a file with the following structure:

file = states *NEWLINE* alphabet *NEWLINE* initial *NEWLINE* finals *NEWLINE* transitions

states = state {*SPACE* state}

alphabet = symbol {*SPACE* symbol}

initial = state

finals = state {*SPACE* state}

transitions = transition {*NEWLINE* transition}

transition = state *SPACE* symbol *SPACE* state

state = letter {digit}

symbol = letter | digit | specialCharacter

letter = “a” | … | “z” | “A” | … | “Z”

digit = “0” | “1” | … | “9”

specialCharacter = “+” | “_” | “-“ | …

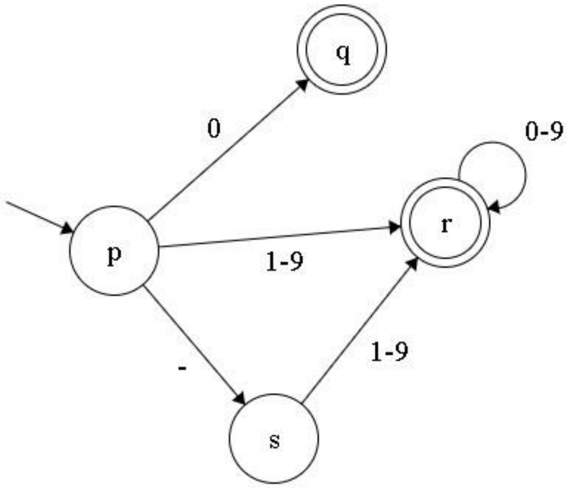
FA methods:

- *read_from_file*: initializes the fields read from a given file
- validate: checks if the FA is valid, verifying some conditions (initial and final states are among the states, a transition is formed as (state,symbol)->state, states and symbols don't intersect)
- *isDFA*: checks if the finite automata is deterministic
- *isSequenceAccepted*: for a given sequence (if the FA is DFA) checks if the sequence is accepted by the FA
- *getters for all the fields

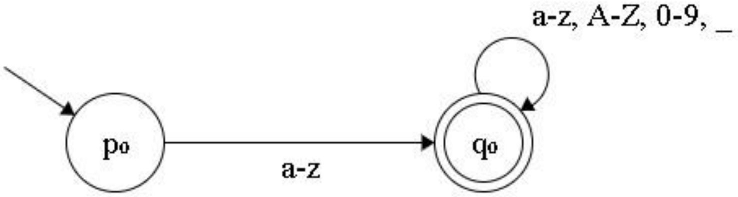
FA integration in Scanner

Two finite automatas are used in the scanner, one for integer constants and one for identifiers, each read from its separate file (*FA_id.in, FA_int.in*).

Integers



Identifiers


a-z, A-Z, 0-9, _
p_0
a-z
q_0