FLCD FA Documentation

Link to github repository:

https://github.com/dianaaadumitru/FLCD/tree/main/lab4

Problem Requirements:

Write a program that:

1. Reads the elements of a FA (from file).

2. Displays its elements, using a menu: the set of states, the alphabet, all the transitions, the initial state and the set of final states.

3. For a DFA, verifies if a sequence is accepted by the FA.

FA:

Data is read from the file fa.in. This file contains on the first row the states (kept in a list of strings), on the second the alphabet (kept in a list of strings), on the third the initial state (kept in a list of strings), on the forth the final states (kept in a list of strings) and in the remaining rows the transitions (kept in a list of Pair<Pair<String, String> String>).

To check if the given sequence is accepted by the FA the Boolean method checkIfAccepted() is used, which returns true if it is accepted and false otherwise. This method starts with the initial state and for each letter in the word it checks if there exists a transition from the current state to another state that goes through the letter. In the end if the current state is not the final state or there is no such transition, the word is not accepted.

Fa.in representation:

digit = 0|1|…|9

smallLetter = a|b|…|z

capitalLetter = A|B|…|Z

letter = smallLetter | capitalLetter

character = letter | digit

listOfCharacters = {character} {"," character}

firstLine = listOfCharacters

secondLine = listOfCharacters

thirdLine = character

fourthLine = character

fifthLine = {listOfCharacters} {“\n” listOfCharacters}

inputFile = firstLine "\n" secondLine "\n" thirdLine "\n" fourthLine "\n" fifthLine