# Documentation

https://github.com/Aurelian-Iancu/UBB-Computer-Science/tree/main/Semester5/Formal%20Languages%20and%20Compiler%20Design/Lab4

## FA

The FA class is a finite automata which contains states, an alphabet, transitions, an initial state and final states. They are kept in lists and read from file.

Operations:

- readFromFile() – reads the file and separates the states, alphabet, transitions, the initial state and the final states; throws Exception if the file is not correct
- printListOfString(String listname, String[] list): formats a list of strings
- printStates(), printAlphabet(), printOutputStates() – use printListOfString to print the desired list from the FA
- printInitialState() – prints the initial state
- printTransitions() – prints the transitions of the finite automata
- checkAccepted(String word) – checks if the given string is accepted by the FA
- getNextAccepted(String word) – gets the substring of the input word that is accepted by the FA

## Transition

This class is used for representing a transition. It has 3 fields: from, to and label. It basically works like a weighted graph and you are going from node 1 to node 2 with a given weight. The transitions have the form(from, to, label)

## FA.in file format written in EBNF

non_zero_digit = 1|2|..|9

digit = 0|1|…|9

number = non_zero_digit{digit}

letter = a|b|…|z|A|B|…|Z

character = letter|digit

firstLine =“states”“:”{character}{“,” character}

secondLine=”alphabet”“:”{character}{“,”character}

thirdLine = “initial state” “:” {character}

fourthLine=“final states” “:” {character}{“,”character}

transition = {character} “ “ {character} “ ”{character}

fifthLine = “transitions” “:” {transition} {“,” transition}

inputFile = firstLine “\n” secondLine “\n” thirdLine
“\n” fourthLine “\n” fifthLine “\n”