

Formal Languages and Compiler Design – Lab 4

<https://github.com/baraganio/Formal-languages-and-compiler-design/tree/master/Lab%204>

The project consists of 3 classes and one .in file. The .in file will be the input to the FA containing the set of states, the alphabet, a list of transitions (initial state, value, final state), the final states and of course the initial state.

Talking about the java classes we have the Main one. It is in charge of showing the menu, manage the option introduced by the user and showing the result of the operation required.

The Transition class contains three properties: the initial state, the value and the list of final states. As methods it only contains setters and getters as well as the toString method.

The FiniteAutomata class contains five properties. The initial state, the transitions list, the final states list, the alphabet and the states list. As methods it has the required setters and getters as well as the readFile() in order to extract the information from the FA.in file. Also, it has a private method nextState() which given the initial state and the value from a transition, evaluates the final state searching it in the transitions list. It also contains the public method isDFA() in charge of evaluate if the finite automata is deterministic or not. And finally, the isSequenceAccepted() method that receives a sequence, and evaluating transition by transition, see if when it finishes with the sequence is in a finally state of the finite automata or not.

```
Transition
  • initialState : String
  • value : String
  • finalState : List<String>
  • Transition()
  • setStartState(String) : void
  • setValue(String) : void
  • setEndState(List<String>) : void
  • getStartState() : String
  • getValue() : String
  • getEndState() : List<String>
  • toString() : String
```

```
FiniteAutomata
  • initialState : String
  • finalStates : List<String>
  • transitionsList : List<Transition>
  • alphabet : List<String>
  • statesList : List<String>
  • FiniteAutomata(String)
  • getFinalStates() : List<String>
  • getTransitionsList() : List<Transition>
  • getAlphabet() : List<String>
  • getStatesList() : List<String>
  • getInitialState() : String
  • readFile(String) : void
  • nextState(String, String) : String
  • isDFA() : boolean
  • isSequenceAccepted(String) : boolean
```

