# Laboratory 4

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Github Link

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.

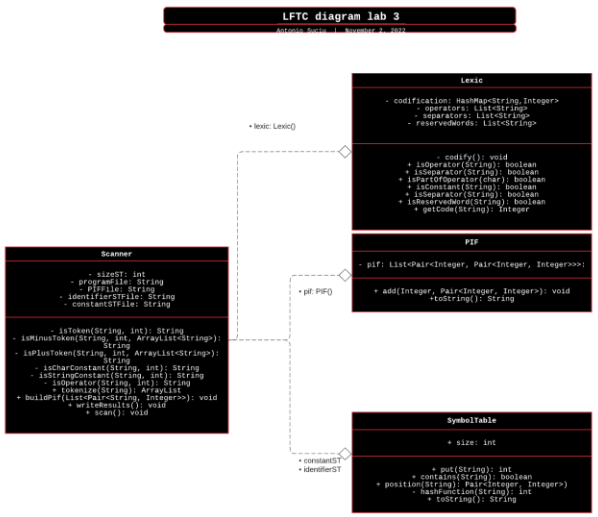
3. For a DFA, verifies if a sequence is accepted by the FA.

**Deliverables:**

1. FA.in - input file (*on Github*)
2. Source code (*on Github*)
3. Documentation. It should also include in BNF or EBNF format the form in which the FA.in file should be written (*on Moodle and Github*)

***Max grade = 9***

***Max grade = 10:*** Use FA to detect tokens <identifier> and <integer constant> in the scanner program



Finite Automaton Class

- Alphabet
- States
- initialState
- finalStates

^ sets of strings

- transitions ( map, keys: Pair(Source state, value to access the destination state), values: set of Destination states)
- DFA ⇔ Destination states set has size 1 (there can be only 1 destination)

Check that FA = DFA: We use the above stated condition

Check that a sequence is accepted by the DFA:

- We start from the initial state
- We iterate through the characters of the sequence
- We check that the pair (currentState, valueOfCurrentChar) is mapped to a set with a single value
- If it is, we have our new current state in for the given iteration
- If we find no mapping => it means it is not accepted