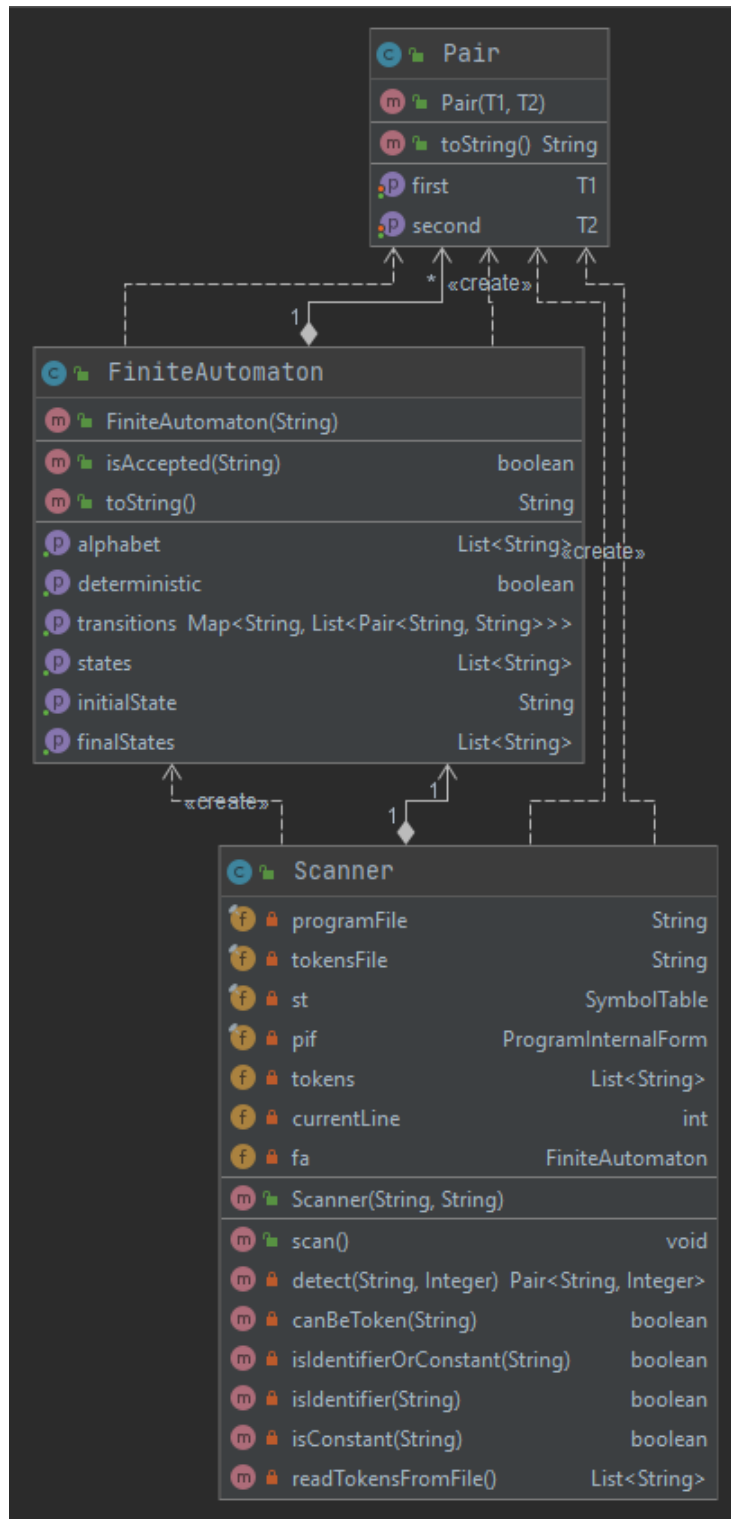


## Lab4 - Documentation

## Class diagram:



## Format of FA.in:

FA = STATES\_LIST "\n" ALPHABET "\n" STATE "\n" STATES\_LIST "\n"  
TRANSITIONS\_LIST

STATES\_LIST = STATE | STATE " " STATES\_LIST

STATE = WORD

WORD = SYMBOL | SYMBOL WORD

ALPHABET = SYMBOL | SYMBOL " " ALPHABET

TRANSITIONS\_LIST = TRANSITION | TRANSITION "\n" TRANSITIONS\_LIST

TRANSITION = STATE " " LIST\_OF\_TRANSIT " " STATE

LIST\_OF\_TRANSIT = SYMBOL | SYMBOL " " LIST\_OF\_TRANSIT

SYMBOL = "a" | "b" | ... | "z" | "A" | "B" | ... | "Z" | "0" | "1" | ... | "9"

Finite automaton structure:

FA has the following components:

- States: list of string
- Alphabet: list of string
- Transitions: map with source states (String) as keys and list of (symbol, destination state) pairs as values (symbol, destination are both strings).

Example:

FA.in:

p q r

0 1

p

r

p 1 p

p 0 q

q 1 p

q 0 r

r 0 1 r

Sequence: "101"

The FA is deterministic. (There are no transitions that have the same source state and the same symbol).

Current state = p, sequence = "101"

Iteration 1:

Current state = p, sequence = "01"

Iteration 2:

Current state = q, sequence = "1"

Iteration 2:

Current state = p, sequence = ""

P is not a final state, thus "101" is not accepted by the FA.

### FA for identifiers or constants:

