

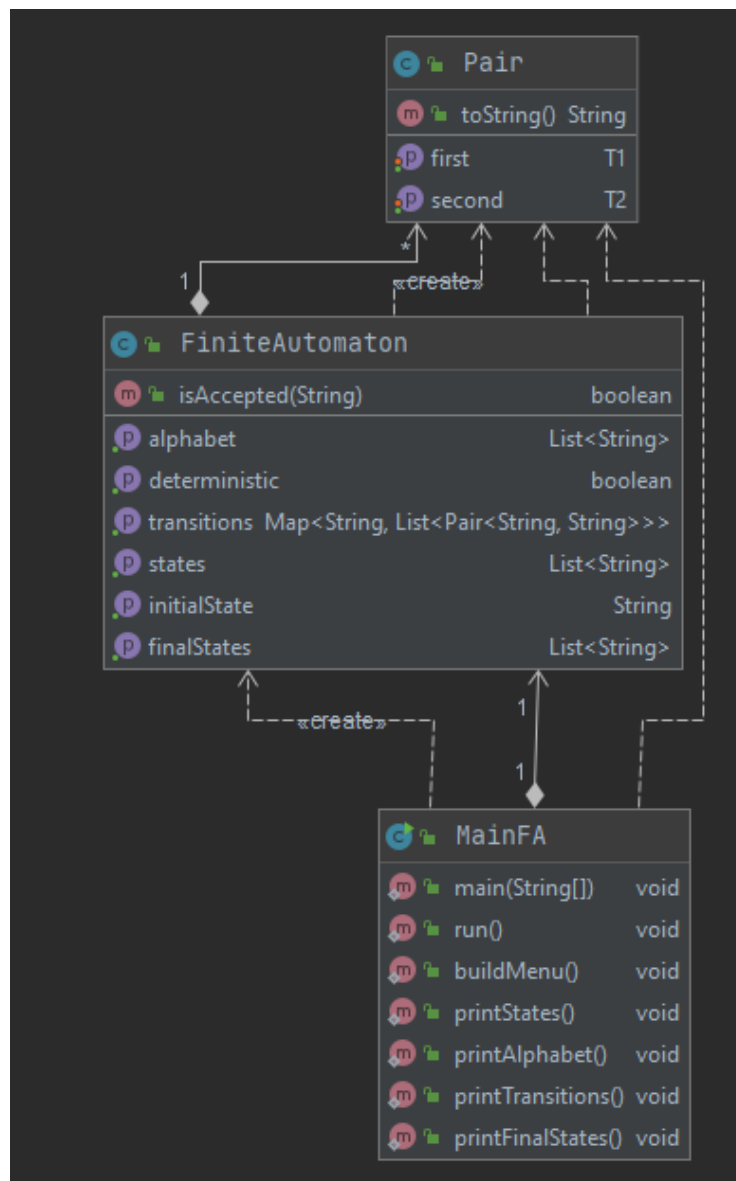
# Lab4 – Gălăţanu Tiberiu

-documentation-

Github link: <https://github.com/Gitbuster1/FLCD/tree/main/Lab2-4>

## Finite Automaton

Class Diagram:



## Structure:

FA has the following components:

- states: list of string
- alphabet: list of string
- transtions: map with source states (String) as keys and list of (symbol, destination state) pairs as values (symbol, destinationa are both strings).
- initialState: string
- finalStates: list of string
- isDeterministic(): Checks if the given FA from FA.in is deterministic. This is done by iterating through all the states and checking if there are any outgoing transitions with the same symbol. If there are such transitions, the FA is not deterministic.
- isAccepted(sequence): Checks if a given sequence is accepted by the FA. The sequence is analyzed character by character. The algorithm starts from the initial state and uses one symbol to perform a transition to another state. The algorithm finishes when a symbol cannot be used for a transition or the sequence is consumed. The sequence is accepted if it is entirely consumed and the state reached is a final state.

## 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"