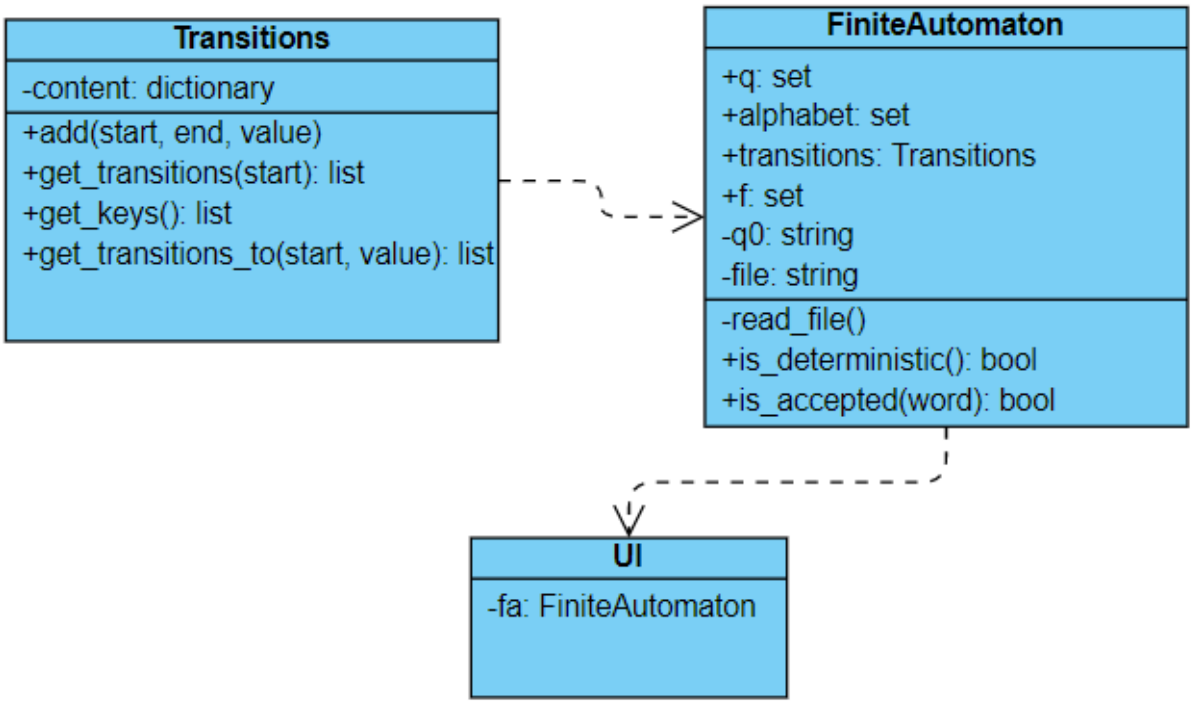
https://github.com/hiImDeni/flcd

Write a program that:

1. Reads the elements of a FA (from file)

2. Displays the elements of a finite automata, using a menu: the set of states, the alphabet, all the transitions, the set of final states.

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



The FiniteAutomaton contains:

- q = set of states
- alphabet
- transitions of type Transitions (which is a dictionary with the key being a state and the value is tuple containing on position 0 the next state and on position 1 is the value)
- F = set of final states
- q0 = initial state

Checking if the FA is deterministic:

- for every state of the FA, we need to check if it can reach a certain value from the alphabet through only one transition

Checking if a word is accepted:

- start from the initial state
- for every character in the word
  - ➔ check if it can be obtained by a transition starting from current state
  - ➔ if it not be obtained => the word is not accepted
  - ➔ else move to the next state
- if the last state we reached is also final => the word is accepted by the FA

Meaning of file:

- Line 1: set of states, initial state is the first one from the set
- Line 2: alphabet
- Line 3: set of final states
- Line 4-eof: transitions -> Separated by space: start_state next_state values

Tests:

fa.in :

```
q1 q2 q3 q4
a b c d
q3 q4
q1 q1 a
q1 q2 b
q2 q4 d
q1 q3 c
```

- States: q1, q2, q3, q4
- Alphabet:
- Deterministic
- Accepted words: a^*c^+, abd