Finite Automaton (FA) Class Documentation

This module defines the FA class, representing a Finite Automaton. It provides

methods for reading an input file, checking if the automaton is a Deterministic

Finite Automaton (DFA), checking if a sequence is accepted by the FA, and

printing various components of the FA.

Class FA:

Methods:

\_\_init\_\_(self, filename): Constructor that initializes the FA based on

the information provided in the input file.

read\_input\_file(self, filename): Reads the input file and populates

the FA's states, alphabet, transitions, etc.

is\_dfa(self): Checks if the FA is a Deterministic Finite Automaton.

is\_accepted\_by\_fa(self, sequence): Checks if a given sequence is

accepted by the FA.

check\_if\_null(self): Checks if the empty sequence is accepted by the FA.

is\_fa\_valid(self): Checks if the FA is a valid automaton with correct

states, alphabet, and transitions.

\_\_str\_\_(self): Returns a string representation of the FA, including

states, alphabet, initial state, final states, and transitions.

Main Program Documentation

This module contains a simple interactive program to interact with an FA

instance, allowing the user to query and perform operations on the FA.

Usage:

1. Run the program.

2. Choose options to display information about the FA or check if a

sequence is accepted.

3. Enter '8' to exit the program.

Options:

1. Display the set of states (Q).

2. Display the alphabet (E).

3. Display the transitions (T).

4. Display the initial state (q0).

5. Display the set of final states (F).

6. Check if the FA is a DFA.

7. Check if a sequence is accepted by the FA.

8. Exit the program.

Note: The program assumes a valid input file format for the FA.