The FA serves as a representation and simulator for finite automata. It includes methods to read the automaton's structure from a file, validate transaction sequences, and display information about states, alphabets, transactions, initial state, and final states.

Constructor (FA(String filePath))

Initializes an instance of the Finite Automaton (FA) by reading its structure from a specified file path. The file should contain information about states, alphabets, initial and final states, and transactions.
readFromFile() Method

Reads the FA structure from the specified file, extracting information about states, alphabets, initial and final states, and transactions. It populates the corresponding fields in the class.
transactionResult(String transactions) Method

Validates a sequence of transactions against the FA's defined structure. It checks if each transaction is valid according to the FA's transitions and returns a message indicating whether the sequence is valid, invalid, or if an alphabet symbol is not recognized.
displayStates() Method

Prints the list of states in the FA.
displayAlphas() Method

Prints the list of alphabet symbols (alphabets) in the FA.
displayTransactions() Method

Prints the list of transactions in the FA, including their initial and final states.
displayInitialState() Method

Prints the initial state of the FA.
displayFinalStates() Method

Prints the list of final states in the FA.

The TransactionStructure DA is a tuple with 3 elements.