https://github.com/911-Abrudan-Rebeca/FLCD/tree/main/L4

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Finite Automata

The FiniteAutomata class reads from a file then extracts information to configure the finite automaton. The file contains set of states, the alphabet, transitions between states, the initial state and the final states. It parses the file, then it can check if a given sequence is accepted by the automaton or not, for the Scanner. It also has a menu to test it.

Operations:

-init(self, filepath) -initializes the finite automata, reads from a file and parses the file

-separate(self, line, delimiter) -splits a line into a list of elements

-parse_file(self) -analyzes the content of the file and initializes the fa attributes (set of states, alphabet, transitions, initial state, final states)

-menu(self) -displays the menu with a few options to test the fa

-print for all the fa attributes

-is_final_state(self, state) -checks if the state is final

-check(self, final_sequence) -checks if the sequence is accepted by the fa or not

-check_sequence(self) -checks if an input sequence is accepted by the fa or not using check()

-run(self) -runs the main loop

Ebnf

file := states newLine alphabet newLine transitions newLine initialState newLine finalStates

states := state {space state}

state := {char}

alphabet := char {space char}

initialState := state

finalStates := state {space state}

transitions := transition {space transition}

transition := state ';' state ';' transitionChar

transitionChar := char | sign

char := letter | digit | '_'

letter := 'a' | 'b' | 'c' | ... | 'z' | 'A' | 'B' | 'C' | ... | 'Z'

digit := '0' | '1' | '2' | ... | '9'

sign := '+' | '-'

space := ' '

newLine := '\n'