LFCD – FA

Bogdan Cristina

Git link: https://github.com/bcie2480/FLCD-FA

In the txt file (“fa.txt”) the automata is represented like this:

On the first line is a list of all states separated by “ “

On the second line is a list of the alphabet separated by “ ”

On the third line is a list of initial states separated by “ “

On the fourth line is a list of final states separated by “ “

The rest of the lines are the transitions written like this:

[outstate instate value

…]

They are interpreted in this way:

outstate -> instate = value

Specification for fa.txt:

States = state {state}

alphabet = letter | number {alphabet}

initialState = state

finalStates = state {state}

transitions = state state letter “\n” {transitions} | state state number “\n” {transitions}

State = letter{number}

letter = "a" | "b" | ... | "z"

number = "0“ | “1“ | … | "9"

In my FA class I have:

```
self.__states=[]
#list of all states
self.__alphabet=[]
#list of all elements of the alphabet
self.__initial = 0
#initial state
self.__final = []
#list of final states
self.__fa =[]
#list of transitions
#they are saved each transition in its own list such that
#fa[0] = instate, fa[1] = outstate and fa[2] = values of transition
self.readFromFile()
#the function that reads from file and fills the fields
```

In order to display the required information I have the funtions:

displayStates():

Input:-

Output:-

Displays a list of all states from FA

displayAlphabet():

Input:-

Output:-

Displays a list of all elements from alphabet of FA

displayTranstions():

Input:-

Output:-

Displays a list of all transitions from FA

displayInitialSt():

Input:-

Output:-

Displays a list of all initial states from FA

displayfinalSt():

Input:-

Output:-

Displays a list of all final states from FA

printMeniu ():

Input:-

Output:-

Displays a list of all commands available for the user

start():

Input:-

Output:-

Reads the input from the user and calls the functions to display the desired information

The function to read from file:

readFromFile()

Input:-

Output:-

Reads input from file (“fa.txt”), completes each attribute of FA with the information from file and eliminates unwanted “\n” characters

Functions for checking the sequence:

isDeterministic():

Input: -

Output: true if fa is deterministic, false otherwise

Goes through all transitions and if it finds a transition between the same 2 states it means it's not deterministic and returns false

getTransForState(state):

Input: state – a state from fa

Output: all – a list

Returns a list with all available transitions from a given state

verifySequence(sequence)

Input: sequence – given by the user, a string

Output: True if sequence is accepted by fa, false otherwise

Goes through all transitions and if it can't find anything that matches the given sequence returns false. If it can find transitions that perfectly match the sequence and the current sequence is a final state it returns true.