Lab4 - Finite Automata

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Github: https://github.com/iuliagalatan/FLCD/tree/main/lab2

The FA instance has the following attributes:

- self.__Q = which represents the list of states(alist)

- self. __A = which represents the alphabet of the finite automata(a list)

- self. __F = which represents the set of final states(a list)

- self.__qo = which represents the initial state (a string)

- self. __S= which represents the transition function (a dictionary in which evey state(the key) has associate one or more productions)

readFile() – method called in the init method of FA

- it reads the file line by line and constructs the FA.

The file should be constructed in the following order:

o First line has the form: Q=q1 q2 ..

▪ Row1 = “Q” “=” arrayOfStates

- arrayOfStates = {state}
- state = letter{positive_integer}
- letter = a|b|..|z|A|..|Z
- positive_integer = 0 | non_zero_digit {positive_integer}
- non_zero_digit = 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9

Second line has the form: E=a b ..

▪ “E” “=”arrayOfElems

▪ elem = a | b | .. | z |A|..|Z|0 | 1 | .. | 9 |’

▪ arrayOfElems = {elem}

Third line has the form: F=q0,q1,…

▪ “F” “=” arrayOfStates

Fourth line has the form: Q0=q0

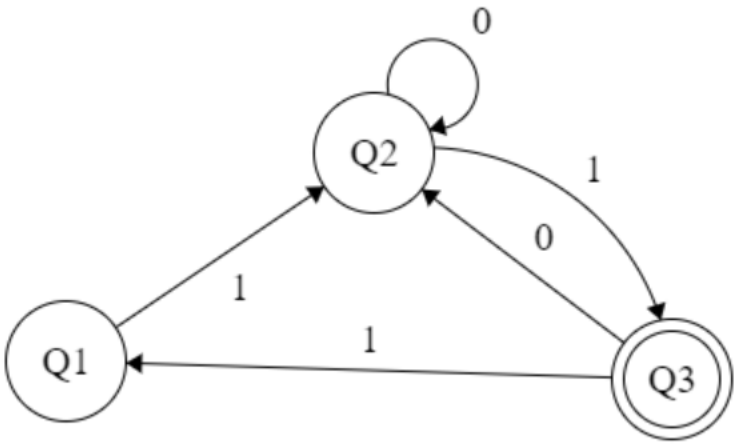
▪ “Q0” “=” state

o The next lines contain productions, and every line has the following form:

d(q0, a) = q1

▪ prod = “d” “(“ state elem “)” “=” state

For the following Automata:



And the corresponding `input Q = Q1 Q2 Q3`

```
E = 0 1
q0 = Q1
F = Q3
S =
    d(Q1,1)=Q2
    d(Q1,1)=Q2
    d(Q2,0)=Q2
    d(Q2,1)=Q3
```

d(Q3,0)=Q2
d(Q3,1)=Q1

The accepted sequences are: (1 1), (1 0 0 1), (1 0 1), etc

Sequences that are not accepted: (1) , (1 0), etc.