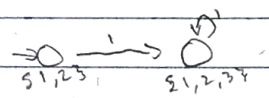
# Homework 2

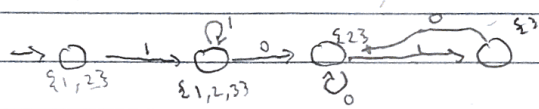
1a NFA states 1, 2, 3 DFA: ∅, 1, 2, 3, 12, 13, 23, 123
Thus there are 8 states in Q'

b The label of the start state s' is 12 or {1,2}

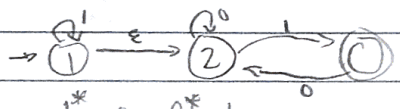
c {1,2} → {123}, {23}, {1,2}, {3}, {} 5 reachable states

d 

After digesting 11, the current state is {1,2,3}

e 

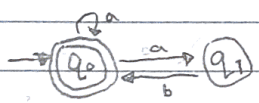
After digesting 11001o, the state the DFA is in is {2}.

2. 

1* ∘ 0* 1

(00*1)*

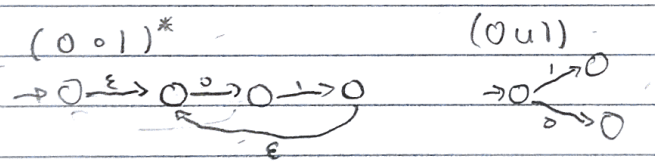
The regular expression recognized by the NFA is 1*0*1(00*1)*

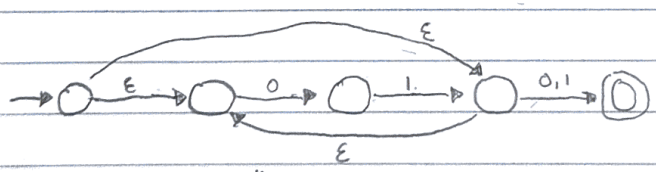
3. 

N = ({q0, q1}, {a, b}, δ, q0, {q1}) with δ =

| | a | b | ε |
|---|---|---|---|
| q0 | {q0, q1} | {q1} | ∅ |
| q1 | ∅ | {q0} | ∅ |

4. (0 ∘ 1)* (0 ∪ 1)




(0 ∘ 1)* ∘ (0 ∪ 1)

Citation: Used class notes, and textbook