COMP3438 Lab 9

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1. Regex to NFA

Apply *Thompson's construction* to get the NFA:

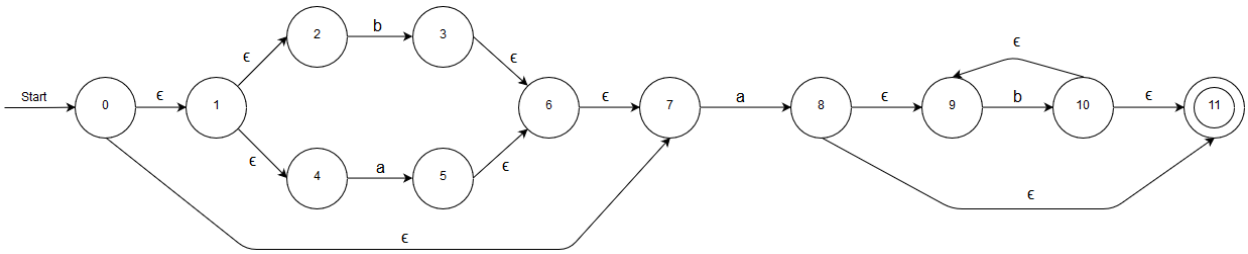

Figure 1: $r = (a|b)^*ab^*$

2. NFA to DFA

T1 = ϵ-closure(1) = {1,2,5,9,10}

move(T1, 0) = {3},
ϵ-closure(3) = {1,2,3,5,6,9,10} = T2

move(T1, 1) = {4,8},
ϵ-closure(4,8) = {1,2,4,5,**7**,8,9,10} = **T3**

move(T2, 0) = {3,10},
ϵ-closure(3,10) = {1,2,3,5,6,9,10} = T2

move(T2, 1) = {4,8,9},
ϵ-closure(4,8,9) = {1,2,4,5,**7**,8,9,10} = T3

move(T3, 0) = {3,8},
ϵ-closure(3,8) = {1,2,3,5,6,8,9,10} = T4

move(T3, 1) = {4,8},
ϵ-closure(4,8) = T3

move(T4, 0) = {3,10},
ϵ-closure(3,10) = T2

move(T4, 1) = {4,8,9},
ϵ-closure(4,8,9) = T3

Transition Table

	0	1
T1	T2	T3
T2	T2	T3
T3	T4	T3
T4	T2	T3

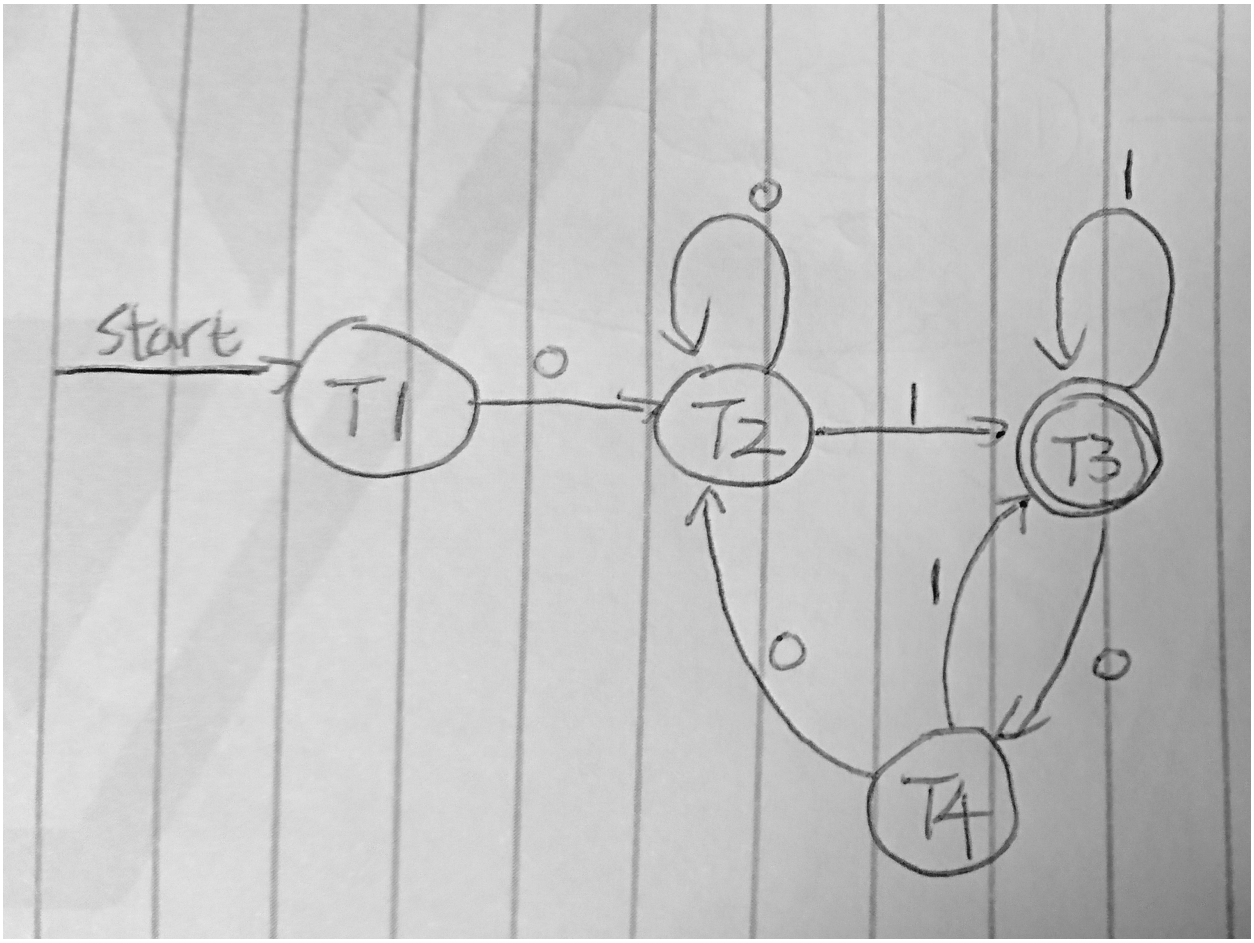

Figure 2: DFA Diagram