Symbols

Toc Assignment → 4

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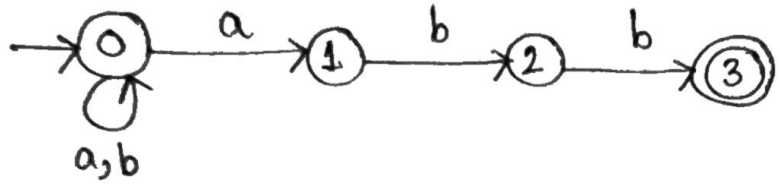
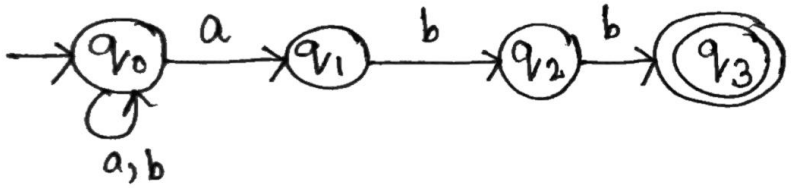
1. Below is a NFA over the ~~languag~~ $\{a,b\}$



for sake of convenience, I'm rewriting the NFA as:



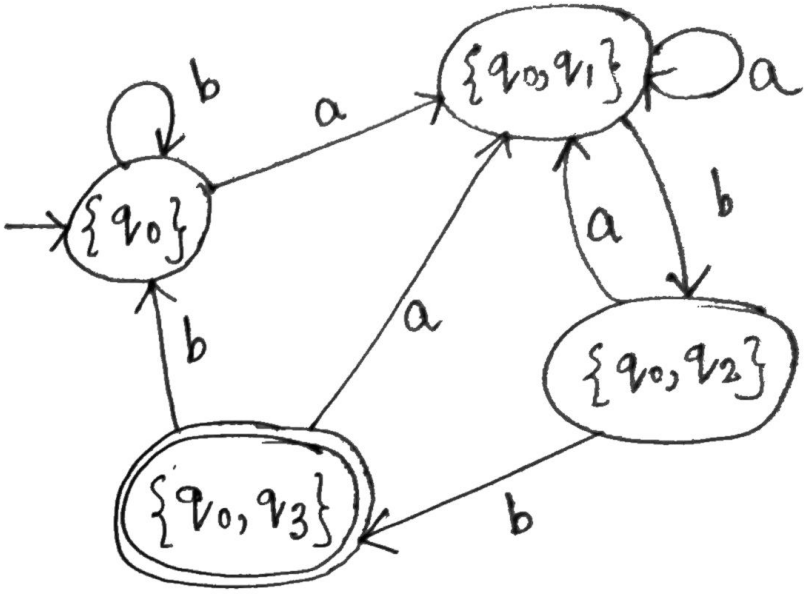
The language accepted by the above NFA is L_1 (say)
Suppose the above NFA is described by N.

$N = \{Q, \Sigma, \delta, q_0, F\}$, where, $Q = \{q_0, q_1, q_2, q_3\}$, $\Sigma = \{a,b\}$,
$q_0 \rightarrow$ initial state, $F = \{q_3\}$, $\delta : Q \times \Sigma \rightarrow P(Q)$.

$L_1(N) = \{ w \in \{a,b\}^* :$ the lastmost substring of length 3 is 'abb'
or, last 3 symbols of string w is 'a', 'b' and 'b' $\}$.

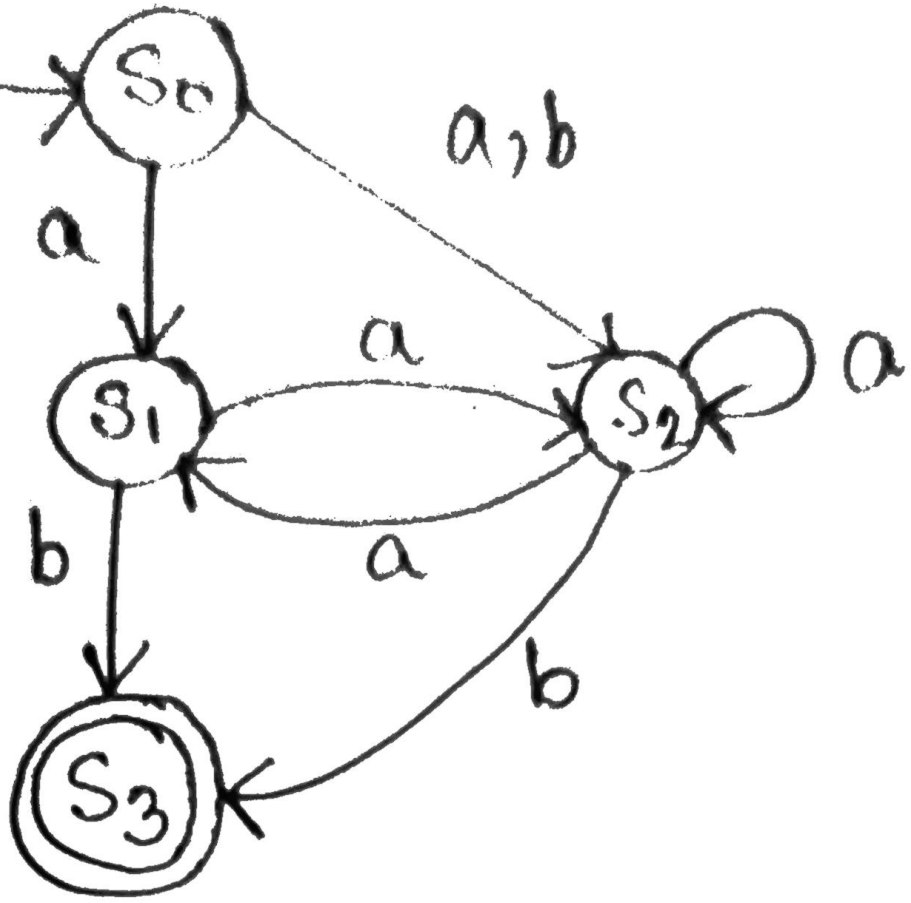
State	Symbols	
	a	b
→ $\{q_0\}$	$\{q_0, q_1\}$	$\{q_0\}$
$\{q_0, q_1\}$	$\{q_0, q_1\}$	$\{q_0, q_2\}$
$\{q_0, q_2\}$	$\{q_0, q_1\}$	$\{q_0, q_3\}$
$\{q_0, q_3\}$ final	$\{q_0, q_1\}$	$\{q_0\}$

State transition table for the DFA.



Converted DFA from NFA N

2.



Abort

The language accepted by the above NFA N_1 is L_2 (say). where, $N_1 = \{ Q, \Sigma, q_0, F, \delta \}$

$Q = \{ s_0, s_1, s_2, s_3 \}$, $\Sigma = \{a, b\}$, $q_0 = s_0$ (initial state), $F = \{s_3\}$

$\delta : (Q \times \Sigma) \to P(Q)$.

Language $L_2(N_1) = \{ w \in \Sigma^* :$ $w = a^m b$ or, $w = ba^n b$, where, $m, n \in \mathbb{I}$, $m \in \mathbb{I}^+$ $\}$

$(n = 0, 1, 2, \cdots$ $(m = 1, 2, 3, \cdots)$.

State	Symbol	
	a	b
→ {S0}	{S1, S2}	{S2}
{S2}	{S1, S2}	{S3}
{S1, S2}	{S1, S2}	{S3}
({S3})	∅	∅

So, the DFA of the NFA would be :