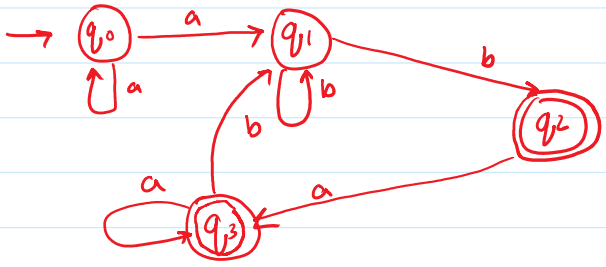
lecture 11 & 12 Sessional

lecture 12 :-

NFA to DFA Conversion.

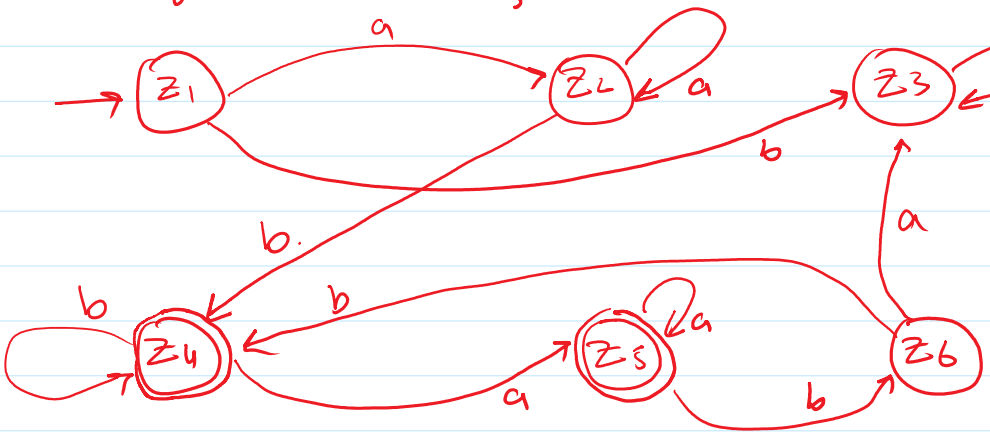
1- When NFA do not have an Null transition.



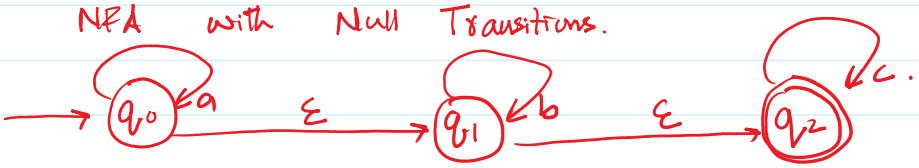
Σ, h = Transition.

q = state.

old States	Transition at 'a'	Transition at 'b'
$Z_1 \equiv q_0$	$Z_2 \equiv (q_0, q_1)$	$Z_3 \equiv \phi$
$Z_2 \equiv (q_0, q_1)$	$Z_2 \equiv (q_0, q_1, \phi)$	$Z_4^+ \equiv (\phi, q_1, q_2)$
$Z_4^+ \equiv (q_1, q_2)$	$Z_5^+ \equiv (\phi, q_3)$	$Z_4^+ \equiv (q_1, q_2, \phi)$
$Z_5^+ \equiv q_3$	$Z_5^+ \equiv q_3$	$Z_6 \equiv q_1$
$Z_6 \equiv q_1$	$Z_3 \equiv \phi$	$Z_4^+ \equiv (q_1, q_2)$



2: NFA with Null Transitions.



ε-NFA -

old state	a	b	c	ε
$\to q_0$	$\{q_0\}$	ϕ	ϕ	$\{q_1\}$
q_1	ϕ	$\{q_1\}$	ϕ	$\{q_2\}$.
$+ q_2$	ϕ	ϕ	$\{q_2\}$	ϕ

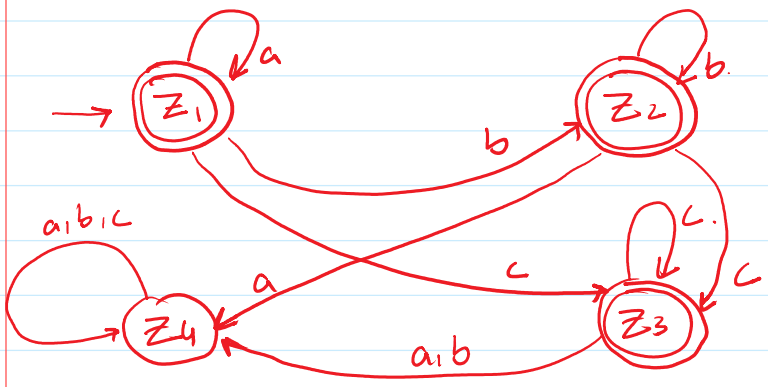
ε-closure $(q_0) = \{q_0, q_1, q_2\}$

ε-closure $(q_1) = \{q_1, q_2\}$

ε-closure $(q_2) = \{q_2\}$.

q_1	ϕ	$\{q_1\}$	ϕ	$\{q_2\}$.	ε-closure$(q_2) = \{q_2\}$.
$+q_2$	ϕ	ϕ	$\{q_2\}$	ϕ	

DFA. δ_D.	a	b	c
$+^{-}Z_1 = \{q_0, q_1, q_2\}$.	$+^{-}Z_1 = \{q_0, q_1, q_2\}$.	$Z_2^{+} = \{q_1, q_2\}$	$Z_3^{+} = \{q_2\}$.
$Z_2^{+} = \{q_1, q_2\}$.	$Z_4 = \phi$	$Z_2^{+} = \{q_1, q_2\}$	$Z_3^{+} = \{q_2\}$
$Z_3^{+} = \{q_2\}$.	$Z_4 = \phi$	$Z_4 = \phi$	$Z_3^{+} = \{q_2\}$.



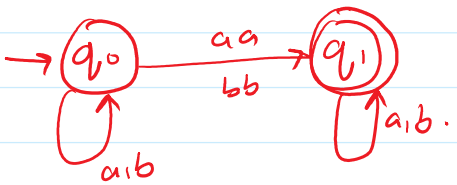
$\delta_D(\{q_0, q_1, q_2\}) = \varepsilon\text{-closure}(\delta_E(q_0, a) \cup \delta_E(q_1, a) \cup \delta_E(q_2, a))$

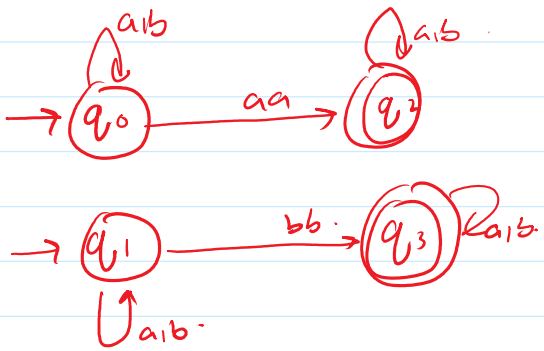
$= \varepsilon\text{-closure}(\{q_0\} \cup \phi \cup \phi)$

$= \varepsilon\text{-closure}(q_0) =$

Sessional 1. 26th Sep Solution.

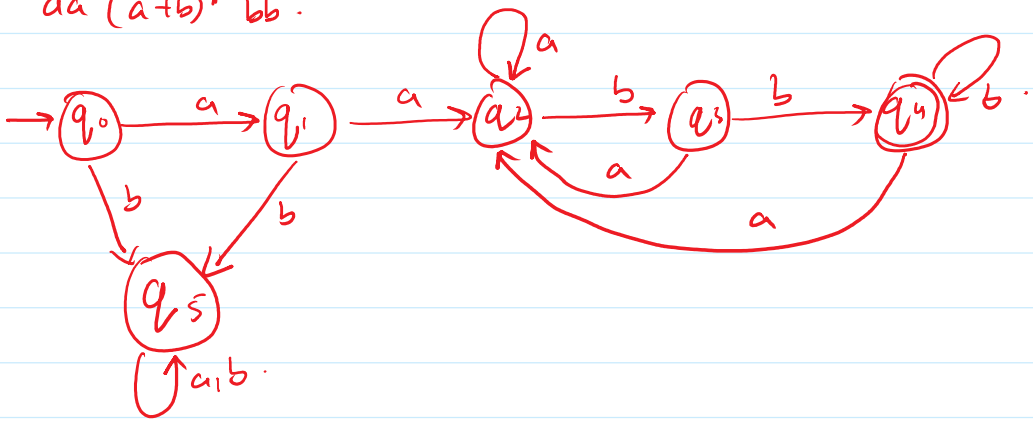
1). $(a+b)^*(aa+bb)(a+b)^*$.



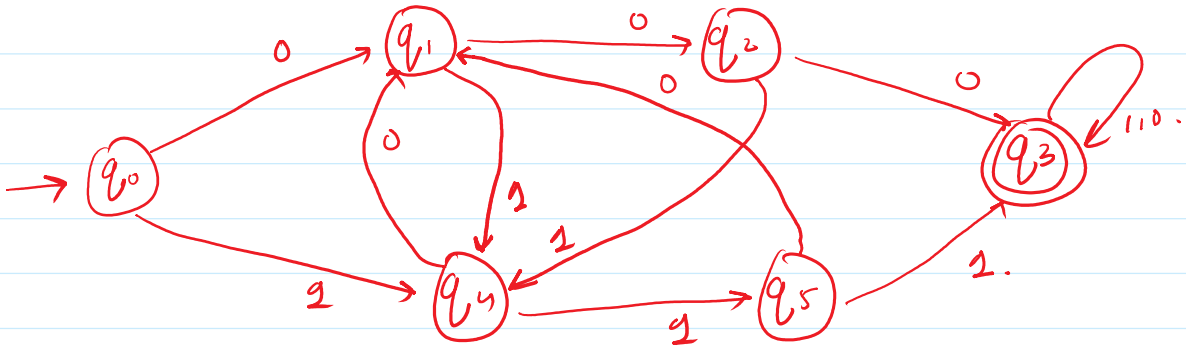


2) $aa(a+b)^*bb$.

3) aa (a+b)* bb.

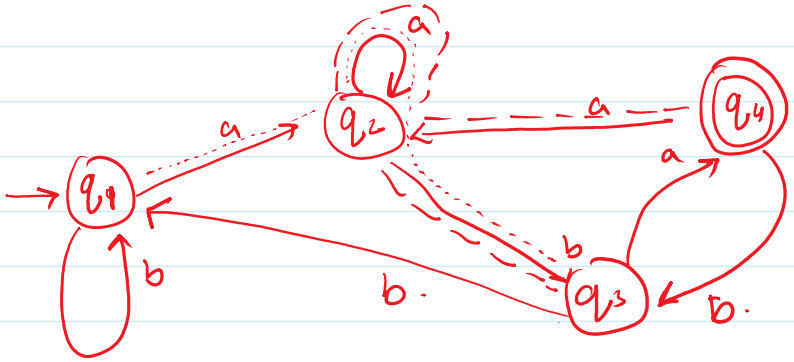


4). 000 or 111.

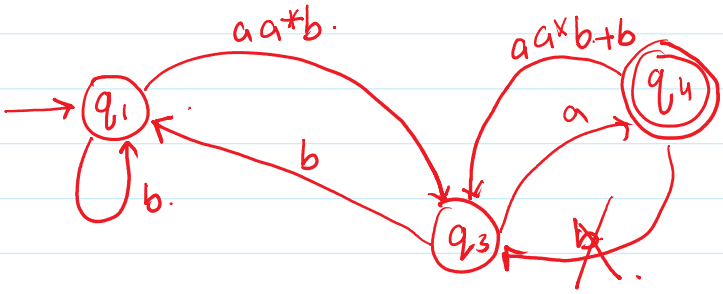


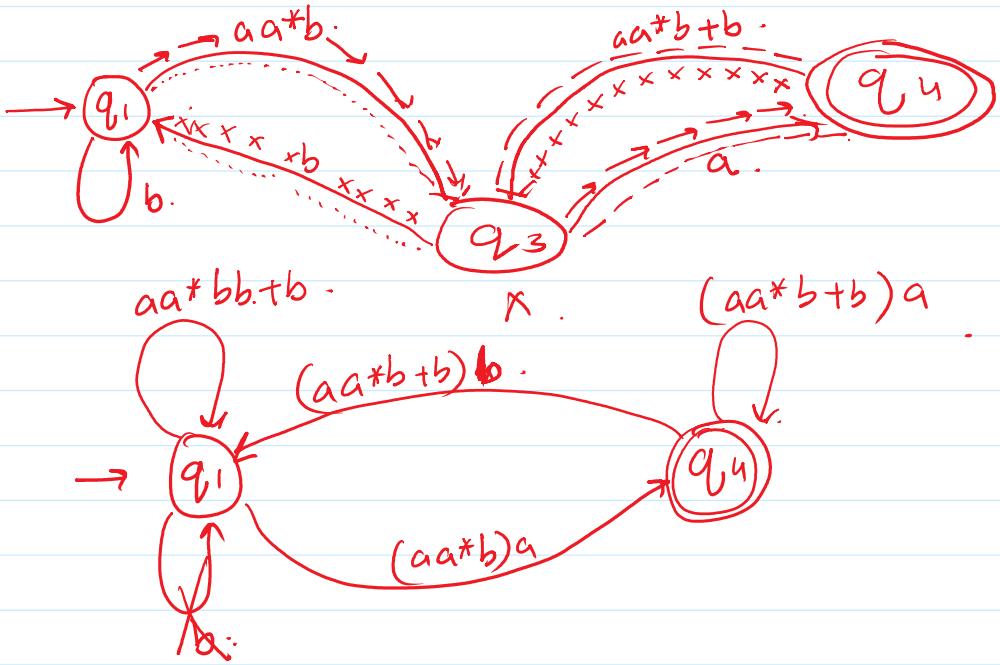
5) (a+b+c)*aa.

Q2:-



aa*b.
aa*b.





a a*bb.

(a a*b+b)a.

(aa*b+b)b.

(aa*b)a.