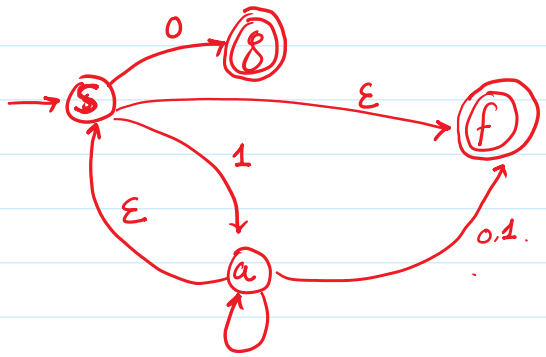
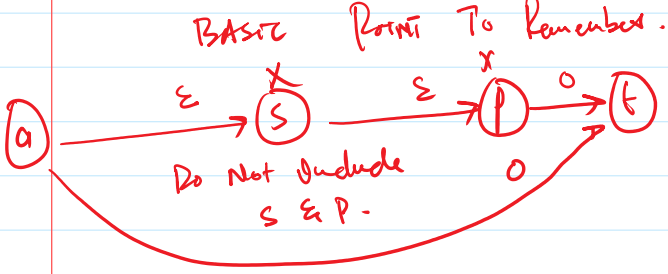
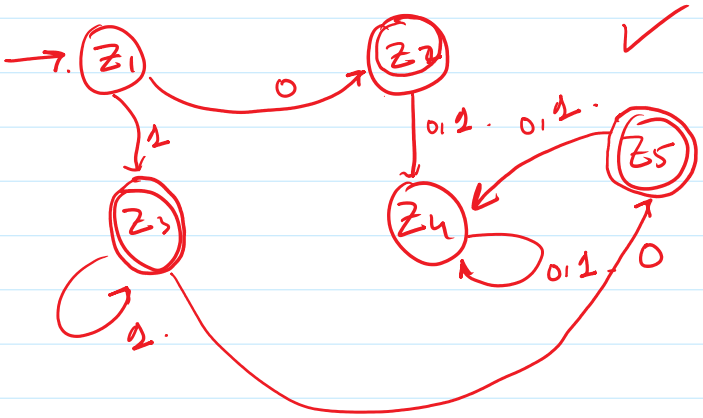
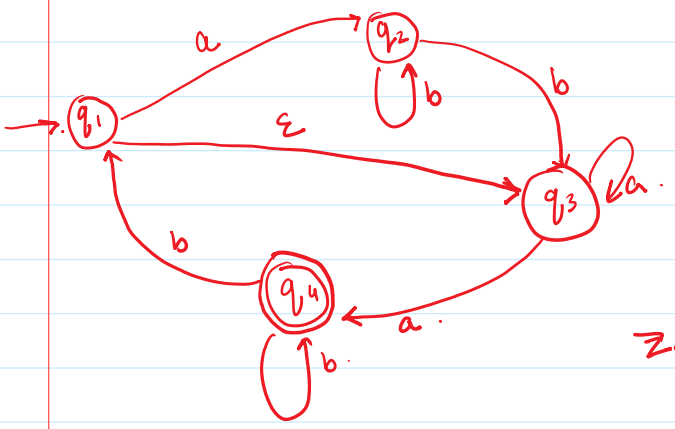
lecture 13:- NFA To DFA Conversion. (without Closure).



	0	1
$Z_1 \equiv \{S, f\}$	$Z_2^+ \equiv \{8\}$	$Z_3^+ \equiv \{a, S, f\}$
$Z_2^+ \equiv \{8\}$	$Z_4 \equiv \phi$	$Z_4 \equiv \phi$
$Z_3^+ \equiv \{a, S, f\}$	$Z_5^+ \equiv \{8, f\}$	$Z_3^+ \equiv \{a, S, f\}$
$Z_5^+ \equiv \{8, f\}$	$Z_4 \equiv \phi$	$Z_4 \equiv \phi$







	a	b.
$Z_1 \equiv \{q_1, q_3\}$	$Z_2^+ \equiv \{q_2, q_3, q_4\}$	$Z_3 \equiv \phi$
$Z_2^+ \equiv \{q_2, q_3, q_4\}$	$Z_4^+ \equiv \{q_3, q_4\}$	$Z_5^+ \equiv \{q_2, q_3, q_4, q_1\}$
$Z_4^+ \equiv \{q_3, q_4\}$	$Z_4^+ \equiv \{q_3, q_4\}$	$Z_6^+ \equiv \{q_4, q_1, q_3\}$
$Z_5^+ \equiv \{q_1, q_2, q_3, q_4\}$	$Z_2^+ \equiv \{q_2, q_3, q_4\}$	$Z_5^+ \equiv \{q_2, q_3, q_4, q_1\}$
$Z_6^+ \equiv \{q_1, q_3, q_4\}$	$Z_2^+ \equiv \{q_2, q_3, q_4\}$	$Z_6^+ \equiv \{q_4, q_1, q_3\}$

Construct Automata Now.

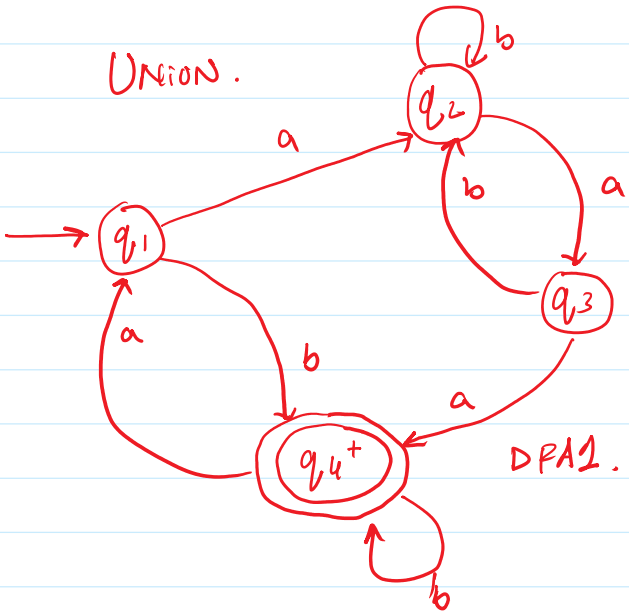
DFA.

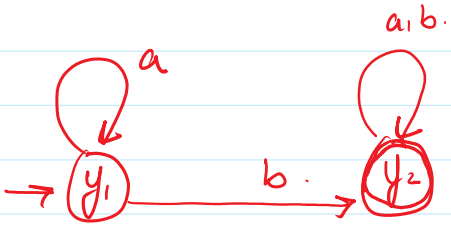
Observation:- For every NFA, There is a Corresponding DFA.

Theorem.

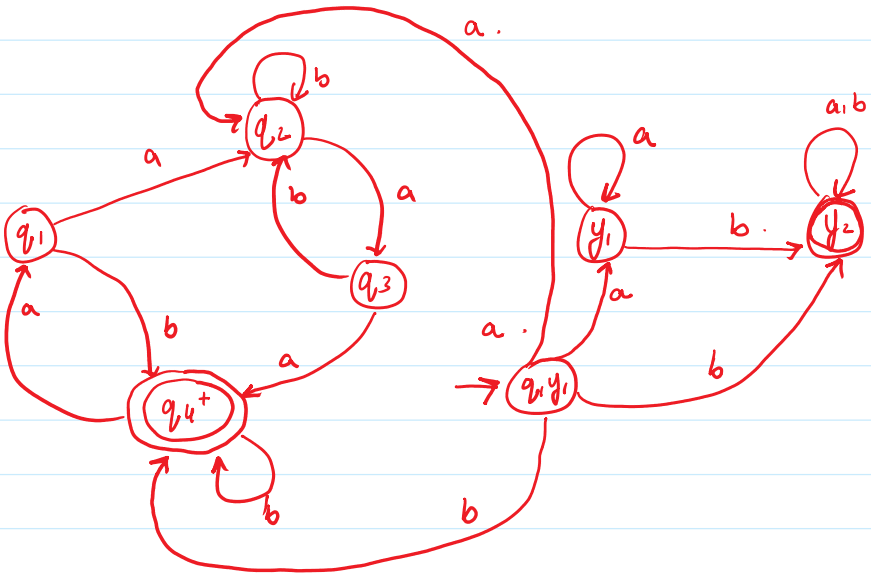
If there exist multiple DFA's So how to Construct the NFA's.

- Union.
- Concatenation
- Closure.





DFA to. NFA Convetsion Using UNION.



1- Step: Delete the initial states of Both DFA's.

2-Step: Make transitions of New Initial Similar to Starts of both FA's.

DFA to NFA Using Concatenation.
" " " " Closure.

NFA to Regex.