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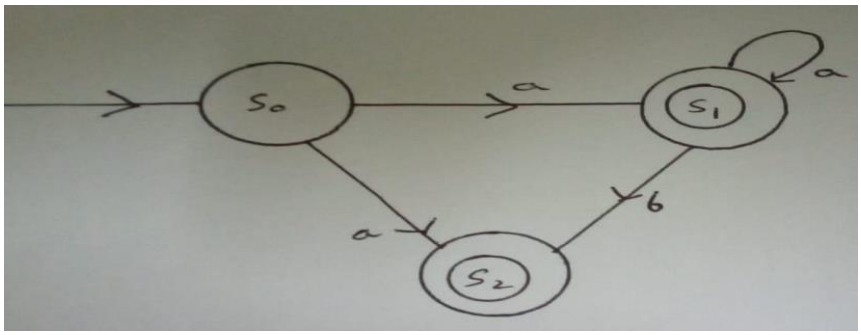
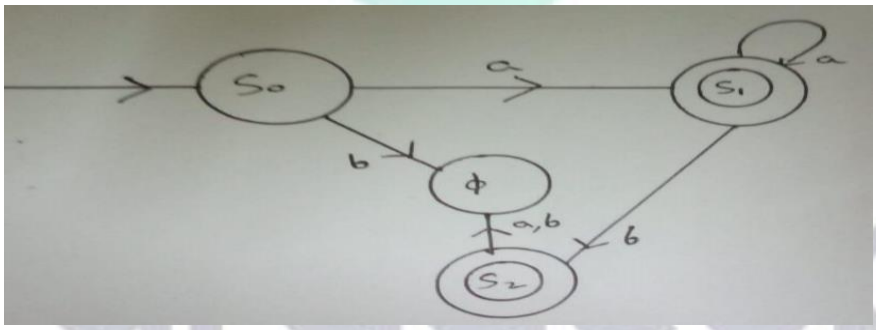
Regular Language Models Part-3

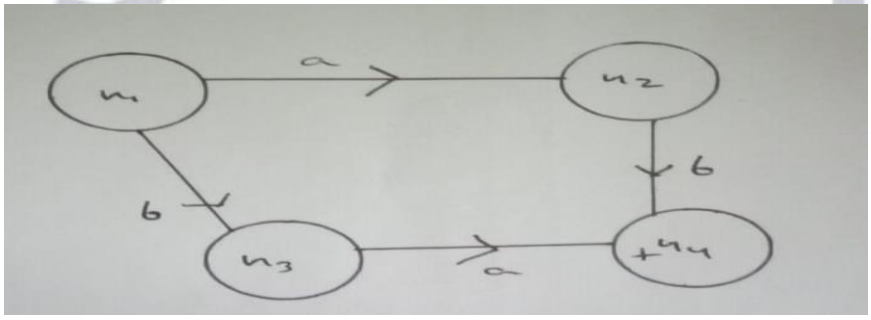
Conversion of NFA to DFA:-

- 1NFA can have multiple DFA

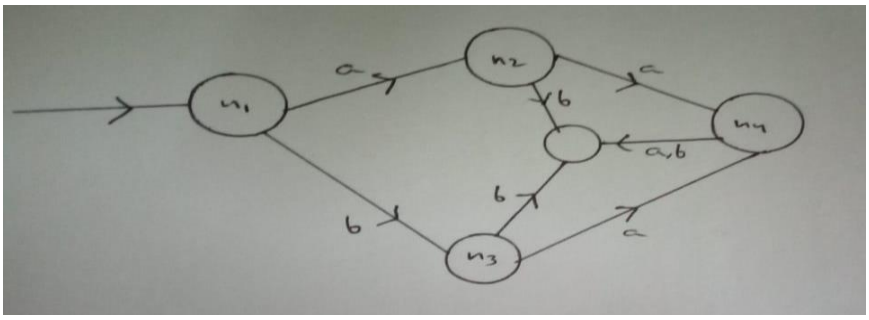


∂	A	B
S_0	S_1	∅
S_1	S_2	S_2
S_2	S	∅





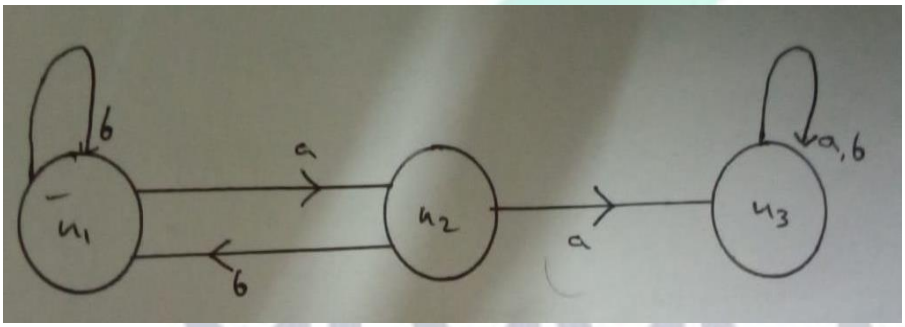
∂	A	B
N_1	N_2	N_3
N2	N_4	∅
N3	N_4	∅
N_4	∅	∅



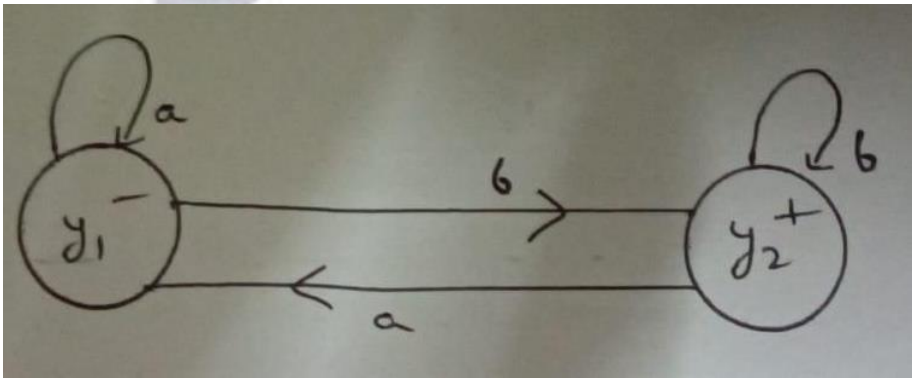
Note: Power of DFA &NFA is same because the functionality is same & we can convert NFA to DFA & DFA to NFA.

Union of 2 FA'S

FA1



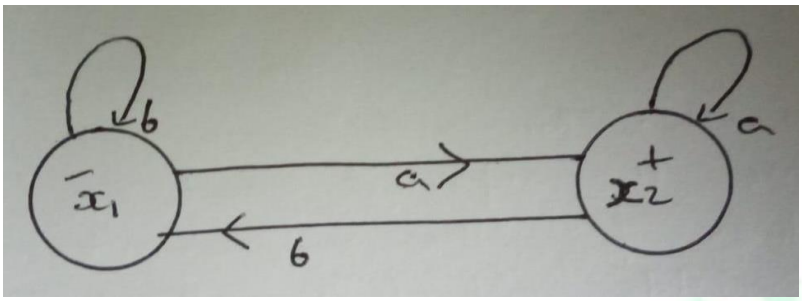
FA2



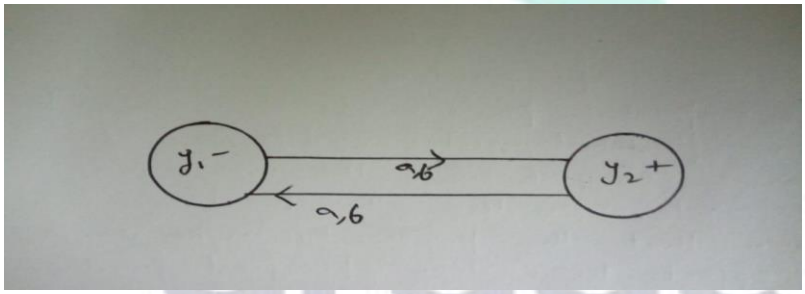
∂_1	A	B
$Z_1(X_1\ Y_1)$	$Z_2\ (X_2\ y_1)$	$+Z_3\ (x_1\ y_2)$
$Z_2\ (X_2 Y_1)$	$+Z_4\ (X_3\ y_1)$	$+Z_3\ (x_1\ y_2)$

$+Z_3\ (X_1 Y_2)$	$Z_2\ (X_2\ y_1)$	$+Z_3\ (x_1\ y_2)$
$+Z_4(X_3\ Y_1)$	$+Z4\ (X_3 Y_1)$	$+Z_5(X_3 Y_2)$
$+Z_5(X_3 Y_2)$	$+Z4(X_3 Y_1)$	$+Z_5(X_3 Y_2)$

FA1



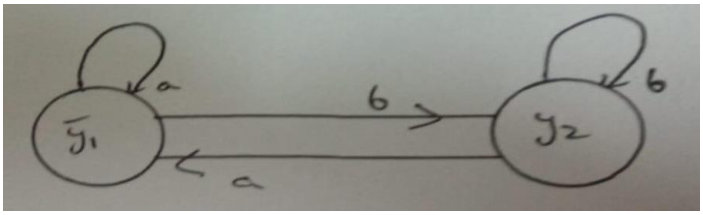
FA2

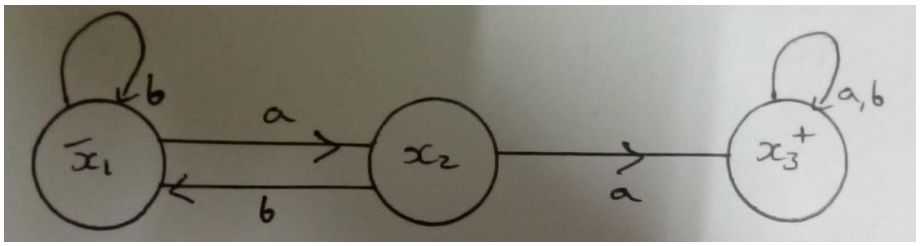


∂	A	B
$Z_1(X_1\ Y_1)$	$+Z_2\ (X_2\ y_2)$	$+Z_3\ (x_1\ y_2)$
$+Z_2\ (X_2 Y_1)$	$+Z_4\ (X_2\ y_1)$	$Z_1\ (x_1\ y_1)$
$+Z_3\ (X_1 Y_2)$	$+Z_2\ (X_2\ y_1)$	$Z_1\ (x_1\ y_1)$
$+Z_4(X_3 Y_1)$	$+Z_4\ (X_2\ y_2)$	$+Z_3\ (x_1\ y_2)$

Concatenation of 2 FA's

FA 1



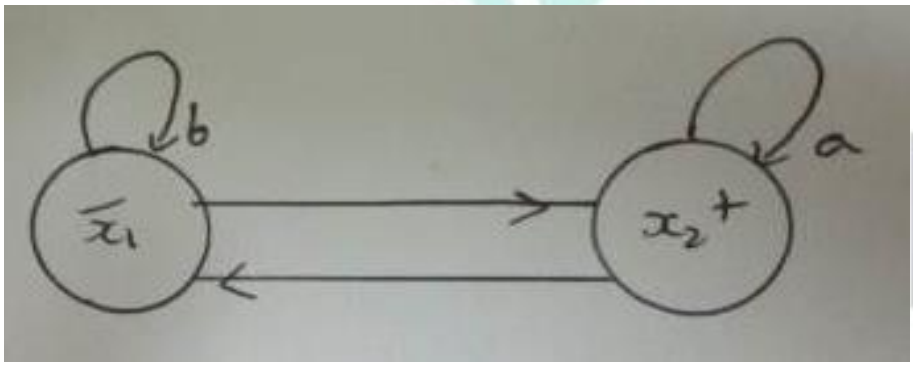


FA 2

$Z_1(x_1)$

	a	b
$Z_1(x_1)$	$Z_2(x_2)$	$Z_1(x_1)$
$Z_2(x_2y_2)$	$Z_3(x_2y_1)$	$Z_1(x_1)$
$Z_3(x_3y_1)$	$Z_3(x_3y_1)$	$Z_4(x_3\ y_1\ y_2)$
$Z_4(x_3Y_1\ y_2)$	$Z_3(x_3y_1)$	$Z_4(x_3y_1Y_2)$

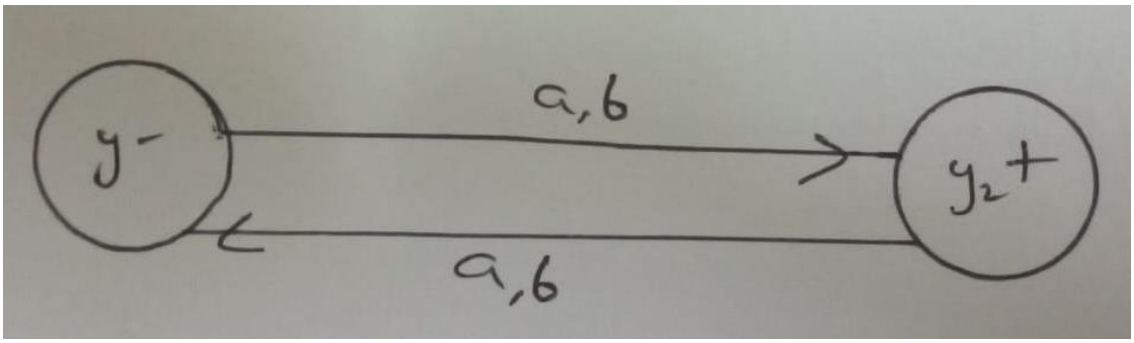
FA1



FA2

	a	b
$Z_1(x_1)$	$Z_2(x_2\ y_1)$	$Z_1(x_1)$
$Z_2(x_2y_2)$	$Z_3(x_2y_1y_2)$	$Z_4(x_1\ y_2)$
$Z_3(x_2y_1y_2)$	$Z_3(x_2y_1y_2)$	$Z_5(x_1\ y_2\ y_1)$
$Z_4(x_1\ y_2)$	$Z_2(x_2y_1)$	$Z_6(x_1y_1)$
$Z_5(x_1\ y_2\ y_1)$	$Z_3(x_2b_1y_2)$	$Z_5(x_1y_1y)$

$Z_6(X_1Y_1)/Z_3(X_2Y_1Y_2)$ $Z_4(X_{1,},y_2)$



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