

LAB No. 9

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Div: AI-A

Roll: 38

Subject: DSAAT

name - aayush A. Gore

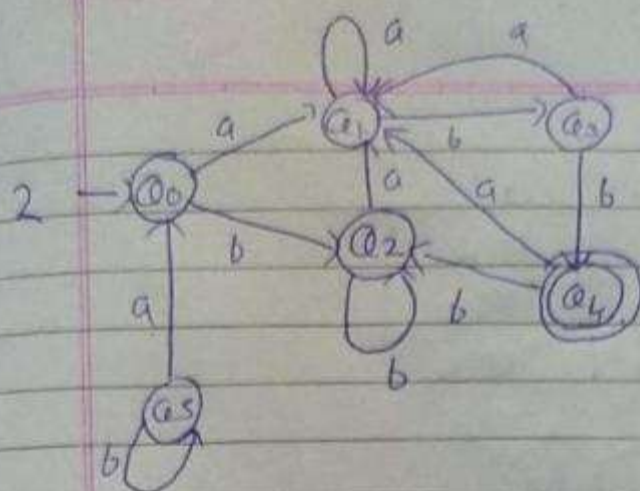
Lab 9

Step 1: reachable = q_0, q_1, q_2, q_3
unreachable = q_4, q_5, q_6, q_7 .

Step 2: T.T

T.T \ Σ	a	b
q_0	q_1	q_0
q_1	q_0	q_2
q_2	q_3^*	q_1
q_3^*	q_3^*	q_0

no duplicates occur. so minimized DFA is



reachable states = q_0, q_1, q_2, q_3, q_4
 unreachable states = q_5

T.T for reachable states:

$q \backslash \Sigma$	a	b
q_0	q_1	q_2
q_1	q_1	q_3
q_2	q_1	q_2
q_3	q_1	q_4^*
q_4^*	q_1	q_2

T.T

for non final states

$q \backslash \Sigma$	a	b
q_0	q_1	q_2
q_1	q_1	q_3
q_2	q_1	q_2
q_3	q_1	q_4^*

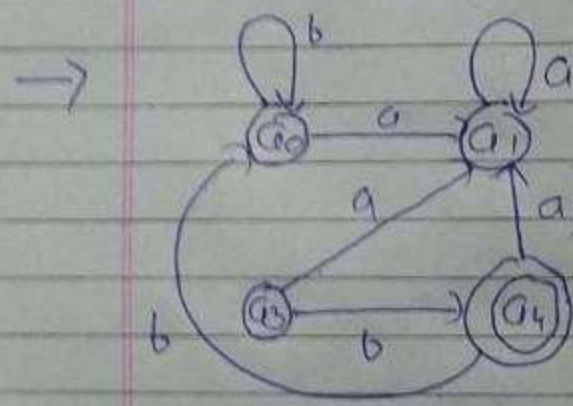
$\begin{matrix} \text{--- } q_0 \\ \text{--- } q_2 \end{matrix}$ same rows.

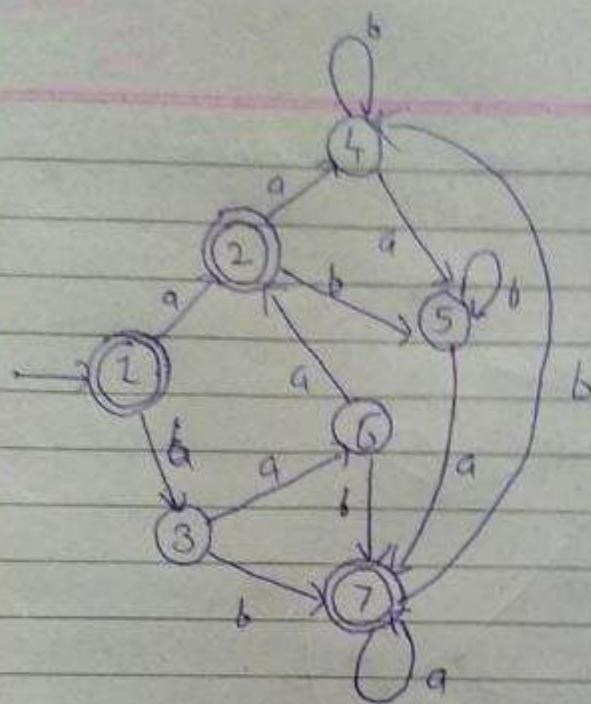
$\Sigma \backslash Q$	a	b
Q_0	Q_1	Q_0
Q_1	Q_1	Q_3^*
Q_3	Q_1	Q_4^*

for final states

$\Sigma \backslash Q$	a	b
Q_4^*	Q_1	Q_2

Minimize DFA.





Reachable state = 1^* , 2^* , 3, 4, 5, 6, 7^*

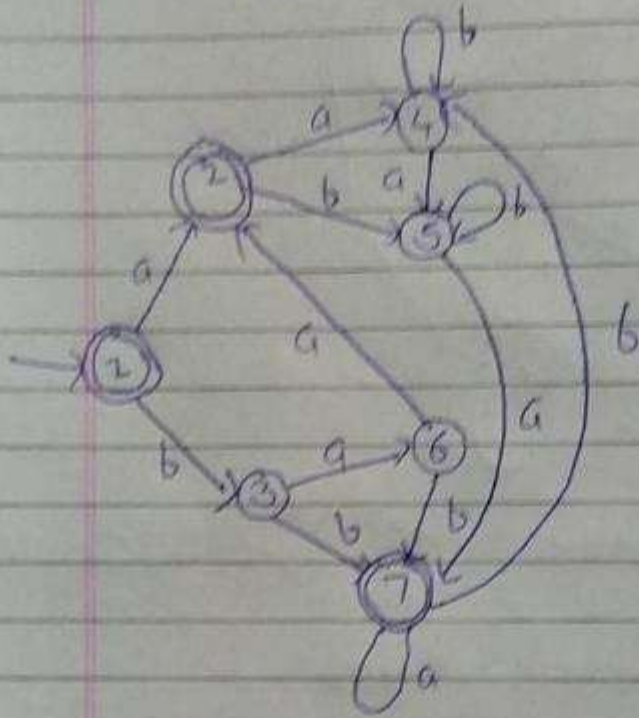
T.T for reachable states.

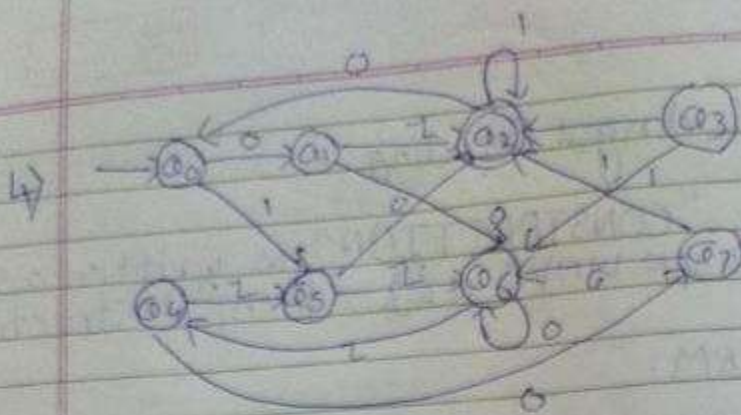
Q \ Z	a	b
1^*	2^*	3
2^*	4	5
3	6	7^*
4	5	4
5	7^*	5
6	2^*	7^*
7^*	7^*	4

- (1,1)

Divide into final & non-final state.

no duplicates are presents so final
T.T is 1:1





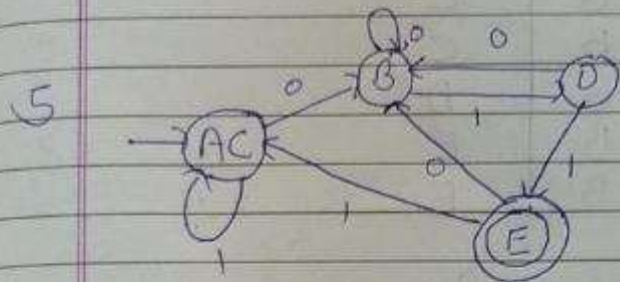
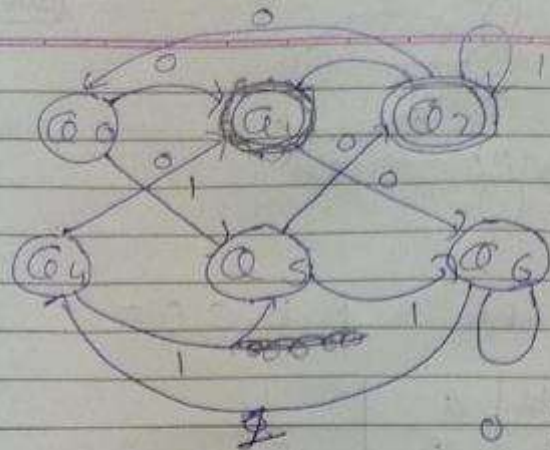
reachable states

$Q_0, Q_1, Q_5, Q_6, Q_2^*, Q_4, Q_7$

T.T	$0/\Sigma$	0	1
Q_0	Q_1	Q_5	
Q_1	Q_6	Q_2^*	
Q_2^*	Q_0	Q_2^*	
Q_4	Q_7	Q_5	
Q_5	Q_2^*	Q_6	
Q_6	Q_6	Q_4	
Q_7	Q_6	Q_2^*	

Q_1 & Q_7 are non final states and have same rows.

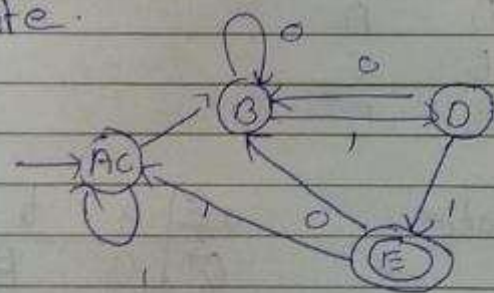
Final T.T	0	1
Q_0	Q_1	Q_5
Q_1	Q_6	Q_2^*
Q_2^*	Q_0	Q_2^*
Q_4	Q_7	Q_5
Q_5	Q_2^*	Q_6
Q_6	Q_6	Q_4

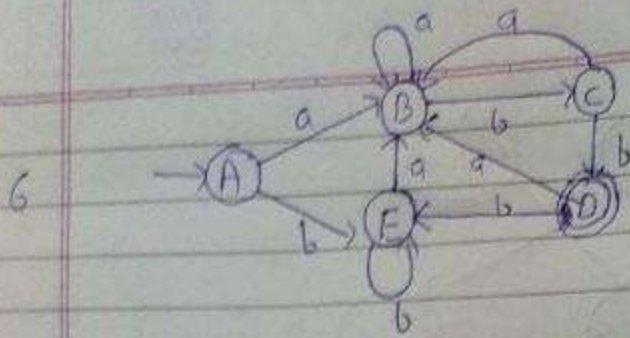


Reachable states: AC, B, D, E

T: T	G/E	a	b
AC	B	AC	
B	B	D	
D	B	E*	
E*	B	AC	

No similar row find within non final & final state.





unreachable state = A, B, C, D, E

T.T	q/z	a	b
	A	B	E
	B	B	C
	C	B	D*
	D*	B	E
	E	B	E

Split in non final & final.

q/z	a	b
A	B	E
B	B	C
C	B	D*
E	B	E

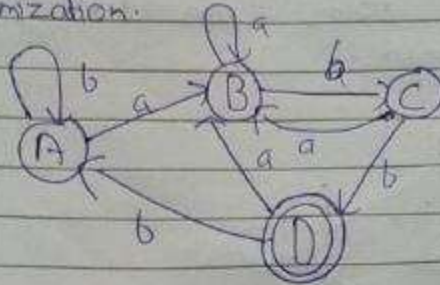
A & E are same

q/z	a	b
A	B	A
B	B	C
C	B	D*

for final state

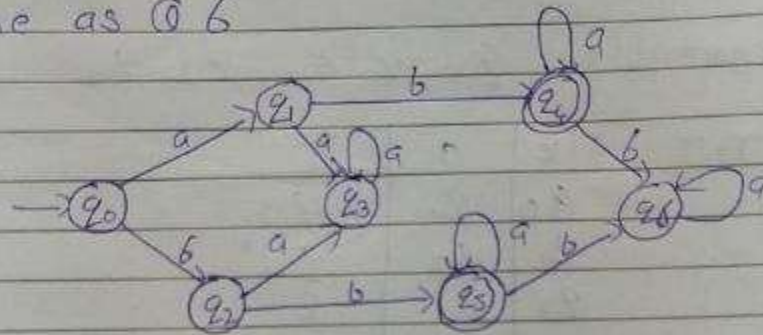
q/z	a	b
D*	B	A

Minimization:



7 Same as Q 6

8

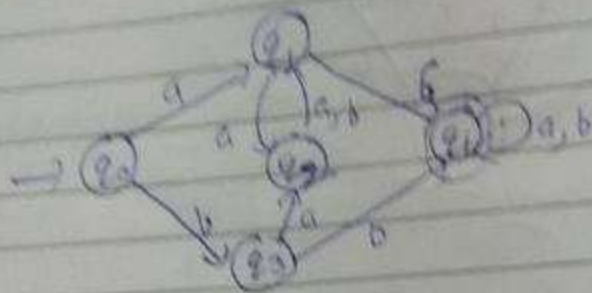


reachable state = $q_0, q_1, q_2, q_3, q_4, q_5, q_6$

T.T	$Q \setminus \Sigma$	a	b
	q_0	q_1	q_2
	q_1	q_3	q_4^*
	q_2	q_3	q_5^*
	q_3	q_3	\wedge
	q_4^*	q_4^*	q_6
	q_5^*	q_5^*	q_6
	q_6	q_6	\wedge

as no same rows present.
no minimization present.

Q.4



reachable q_0, q_1, q_2, q_3, q_4

T.T	a/E	a	b
	q_0	q_1	q_3
	q_1	q_2	q_4^*
	q_2	q_1	q_1
	q_3	q_2	q_4^*
	q_4^*	q_4^*	q_4^*

T.T for non final

Q/E	a	b
q_0	q_1	q_3
q_1	q_2	q_4^*
q_2	q_1	q_1
q_3	q_2	q_4^*

Q/E	a	b
q_0	q_1	q_3
q_1	q_2	q_4^*
q_2	q_1	q_1

q_4^* | q_4^* q_4^*

