Theory Of Automata

Home Task # 4

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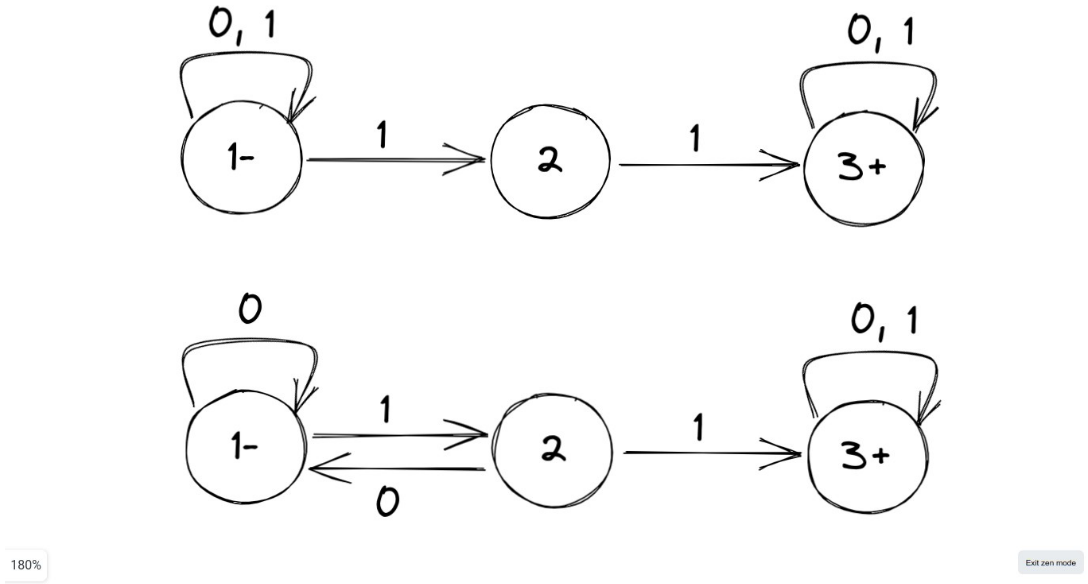
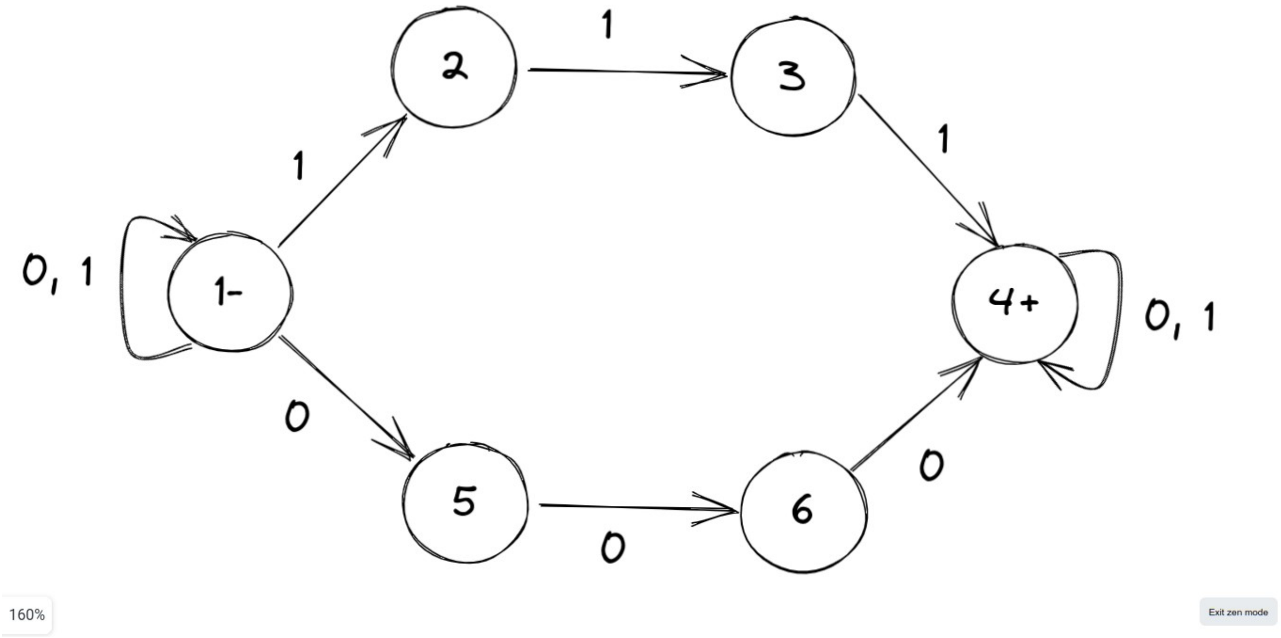
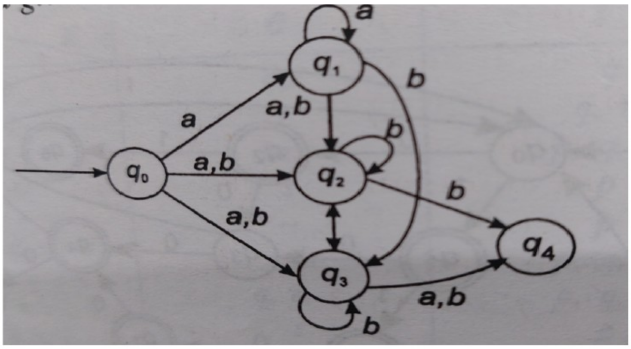
1) Design NFA which accepts all inputs with a 11 and also construct DFA.



2) Design an NFA that accepts all inputs with a triple letter like 111 ,000.



3) Convert the following NFA to an equivalent DFA.

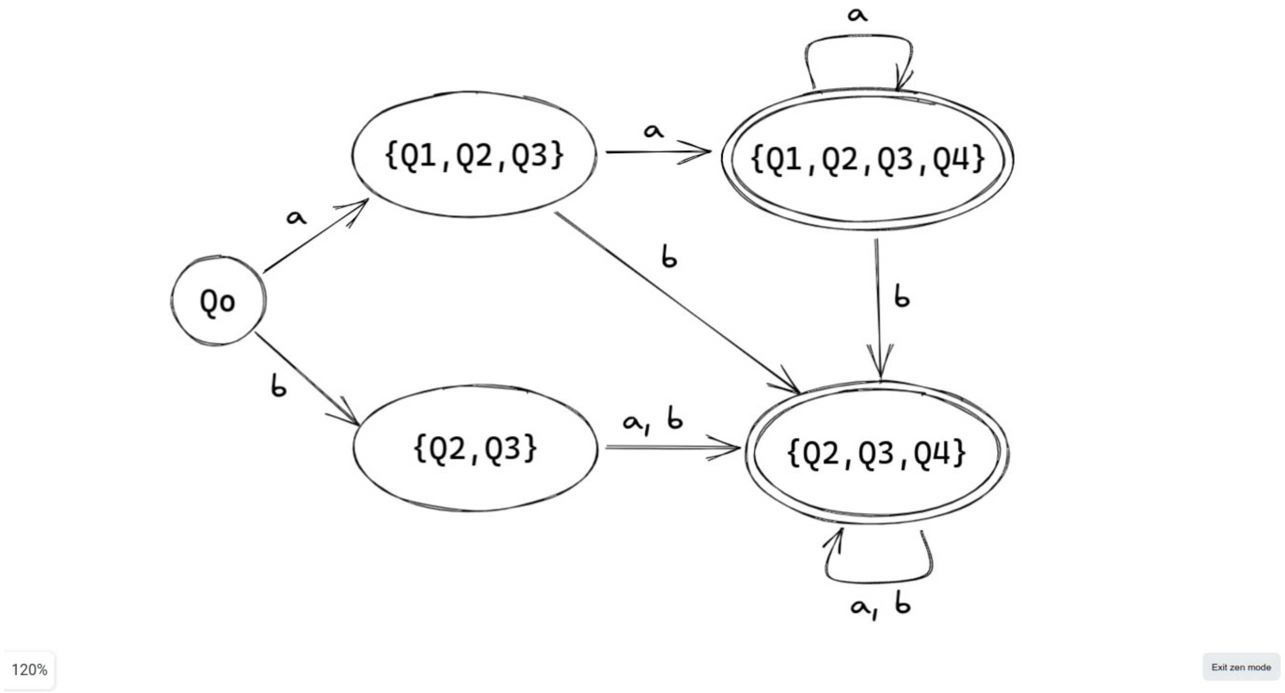


Transition Table:

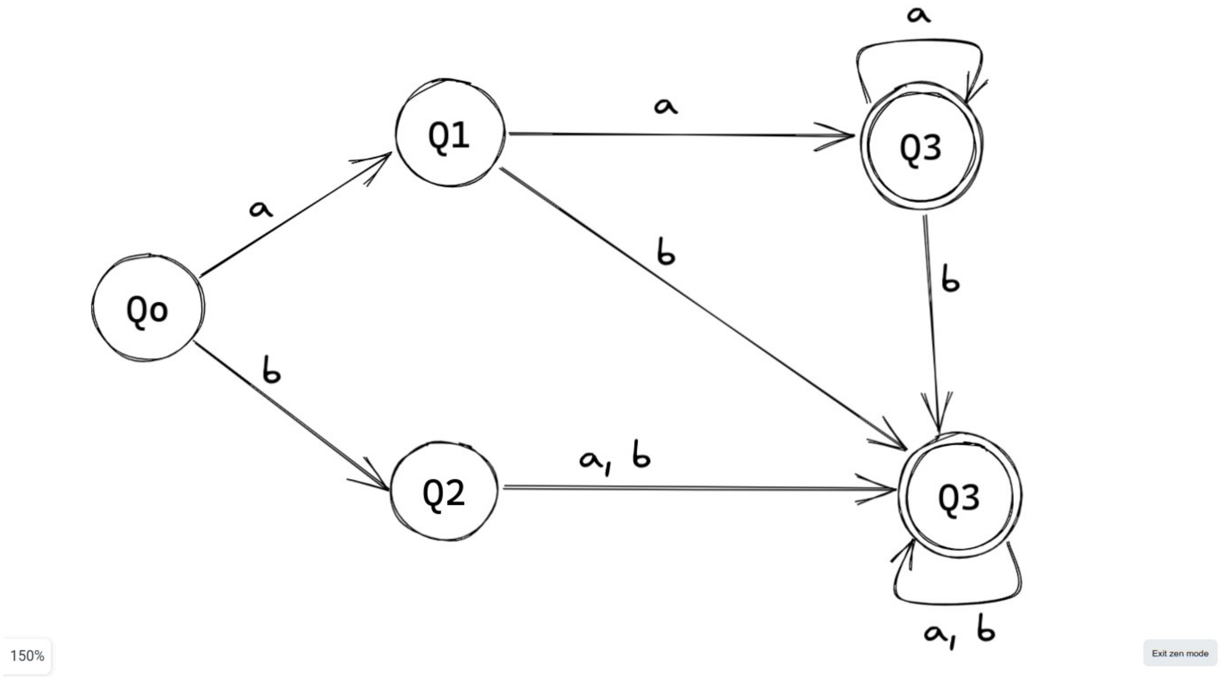
q	**a**	**b**
q_0	$\{q_1, q_2, q_3\}$	$\{q_2, q_3\}$
q_1	$\{q_1, q_2\}$	$\{q_2, q_3\}$
q_2	q_3	$\{q_2, q_3, q_4\}$
q_3	$\{q_2, q_4\}$	$\{q_2, q_3, q_4\}$
q_4	Ø	Ø

Subset Configuration Table:

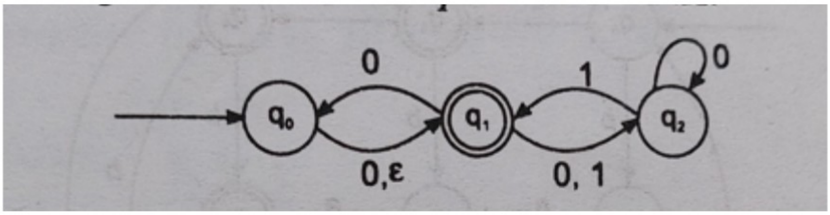
q	**a**	**b**
q_0	$\{q_1, q_2, q_3\}$	$\{q_2, q_3\}$
$\{q_1, q_2, q_3\}$	$\{q_1, q_2, q_3, q_4\}$	$\{q_2, q_3, q_4\}$
$\{q_2, q_3\}$	$\{q_2, q_3, q_4\}$	$\{q_2, q_3, q_4\}$
$\{q_1, q_2, q_3, q_4\}$	$\{q_1, q_2, q_3, q_4\}$	$\{q_2, q_3, q_4\}$
$\{q_2, q_3, q_4\}$	$\{q_2, q_3, q_4\}$	$\{q_2, q_3, q_4\}$


a
{Q1,Q2,Q3}
a
{Q1,Q2,Q3,Q4}
a
b
Qo
b
b
{Q2,Q3}
a, b
{Q2,Q3,Q4}
a, b
120%
Exit zen mode

OR


a
Q1
a
Q3
a
b
Qo
b
b
Q2
a, b
Q3
a, b
150%
Exit zen mode

4) Convert the following Epsilon NFA TO an equivalent DFA.



€ - Closure Table:

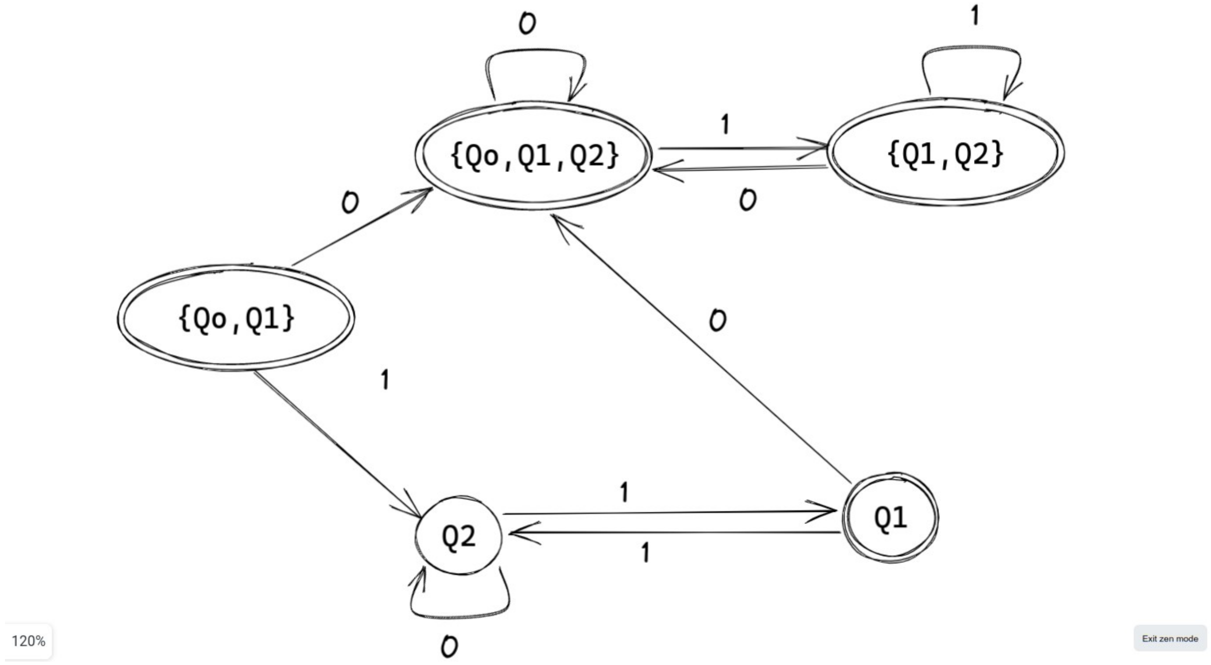
q	**λ-transition**
q_0	$\{q_0 , q_1\}$
q_1	q_1
q_2	q_2

Transition Table:

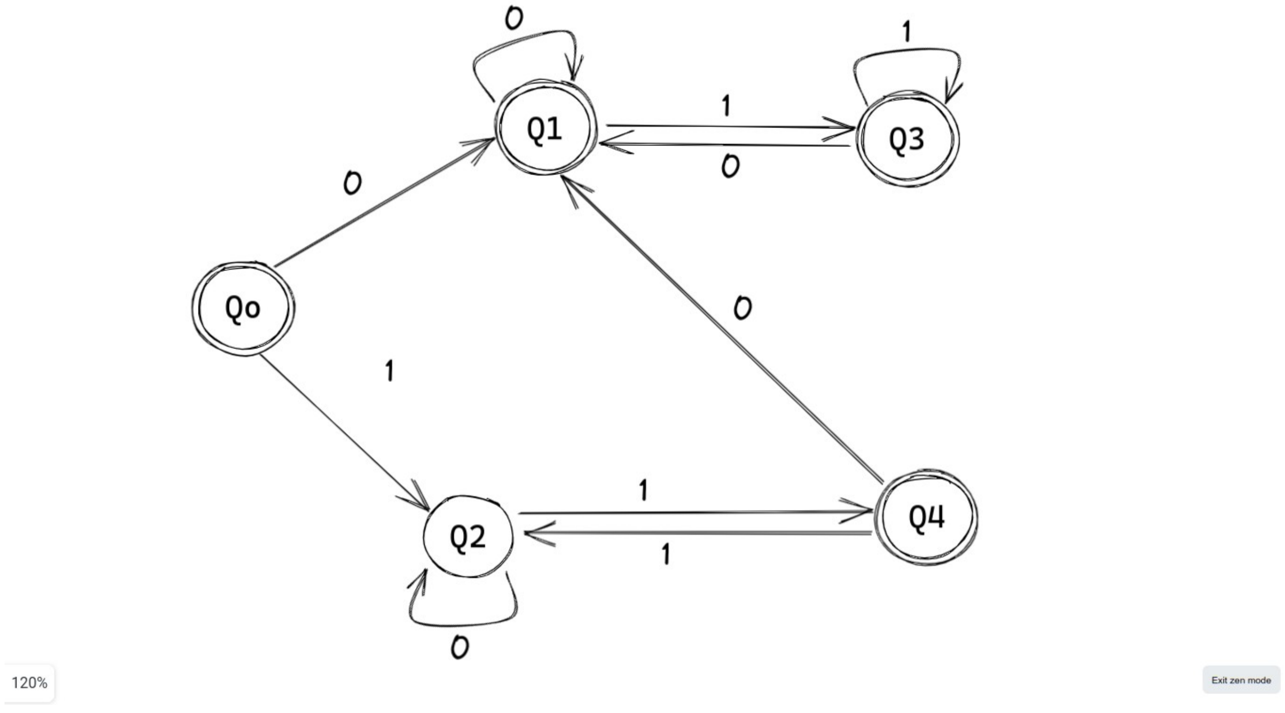
q	**0**	**1**
q_0	q_1	Ø
q_1	$\{q_0 , q_2\}$	q_2
q_2	q_2	q_1

Subset Configuration Table:

q	**0**	**1**
$\{q_0 , q_1\}$	$\{q_0 , q_1, q_2\}$	q_2
$\{q_0 , q_1, q_2\}$	$\{q_0 , q_1, q_2\}$	$\{q_1, q_2\}$
$\{q_1, q_2\}$	$\{q_0 , q_1, q_2\}$	$\{q_1, q_2\}$
q_2	q_2	q_1
q_1	$\{q_0 , q_1, q_2\}$	q_2


0
1
{Qo,Q1,Q2}
1
{Q1,Q2}
0
0
{Qo,Q1}
0
1
1
Q2
Q1
1
120%
Exit zen mode
0

OR


0
1
1
Q1
Q3
0
0
Qo
0
1
1
Q2
Q4
1
0
120%
Exit zen mode