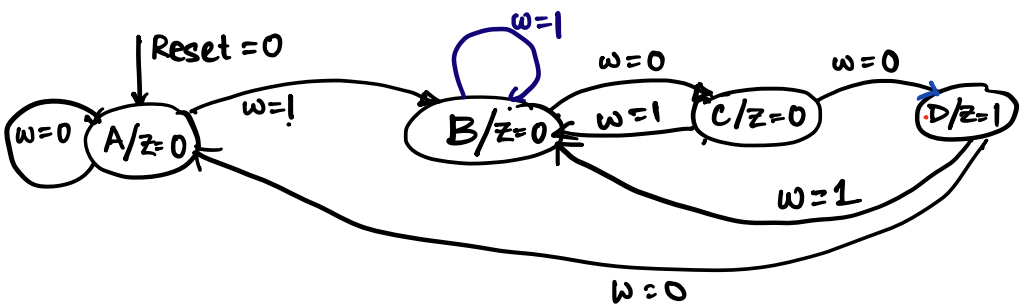
CSE460: Quiz 2 Fall 2022 Solution. Set A

Question

i) Design a moore type sequence detector for 100
[State diagram only; Overlapping allowed]

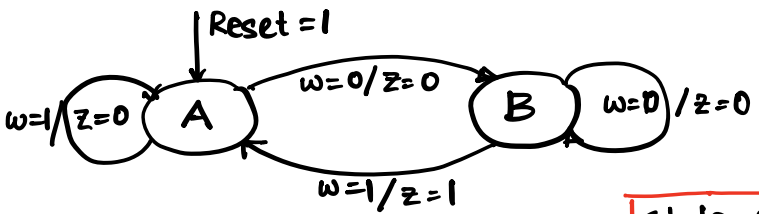
ii) Design a mealy type sequence detector for 01. clearly show state diagram, state table, state assigned table and by using k-map design the gate level circuit.
[Overlapping allowed]

i) state diagram for 100 pattern detector. [Moore]



Test
w = 101001101000
z = 000010000001

ii) state diagram for 01 pattern detector. [Mealy]



Test
w = 101011001
z = 001010001

State Table

PS	Next state		z	
	w=0	w=1	w=0	w=1
A	B	A	0	0
B	B	A	0	1

State assigned table

PS	Next state (Y)		z	
y	w=0	w=1	w=0	w=1
0	1	0	0	0
1	1	0	0	1

K-MAPS

For Y,

w \ y	0	1
0	1	1
1	0	0

$Y = \overline{w}$

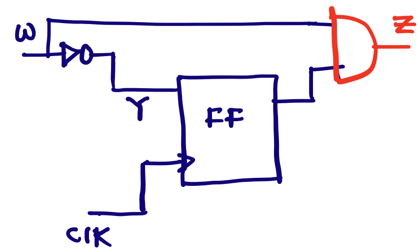
For Z,

w \ y	0	1
0	0	0
1	0	1

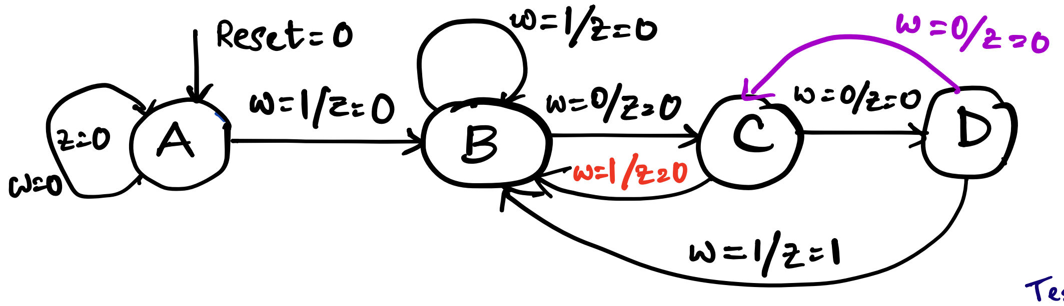
common values.

$Z = wy$

GATE Level circuit



i) If your pattern is 1001 [setA] {Mealy machine}



Test Sequence.

0	1	1	0	0	1	0	0	1	1	1	0	1	0	0	1
0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1

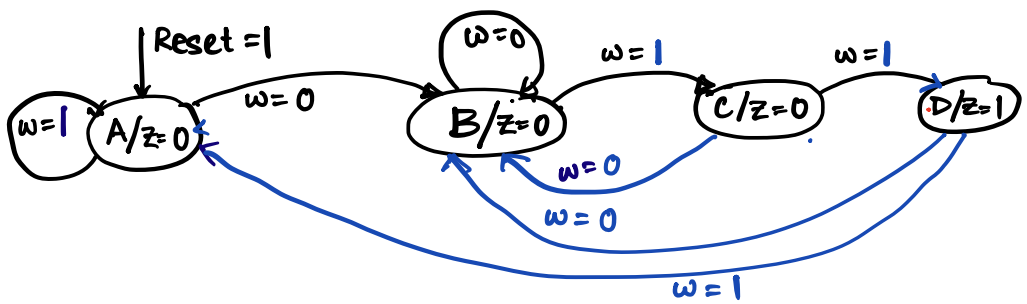
CSE 460: Quiz 2 Fall 2022 Solution. Set B

Question

i) Design a moore type sequence detector for 011
[State diagram only; Overlapping allowed]

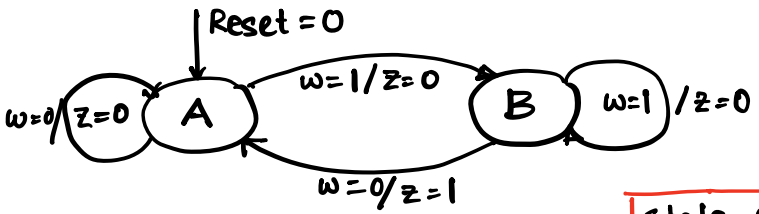
ii) Design a mealy type sequence detector for 10. clearly show state diagram, state table, state assigned table and by using k-map, design the gate level circuit.
[Overlapping allowed]

i) state diagram for 011 pattern detector. [Moore]



Test
w = 10011011010
z = 00000100100

ii) state diagram for 10 pattern detector. [Mealy]



Test
w = 101011001
z = 010100100

State Table

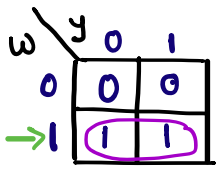
PS	Next state		z	
	w=0	w=1	w=0	w=1
A	A	B	0	0
B	A	B	1	0

State assigned table

PS	Next state (Y)		z	
y	w=0	w=1	w=0	w=1
0	0	1	0	0
1	0	1	1	0

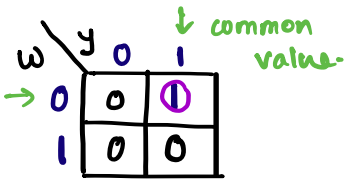
K-MAPS

For Y,



$Y = w$

For z,



$z = \bar{w}y$

GATE Level circuit