

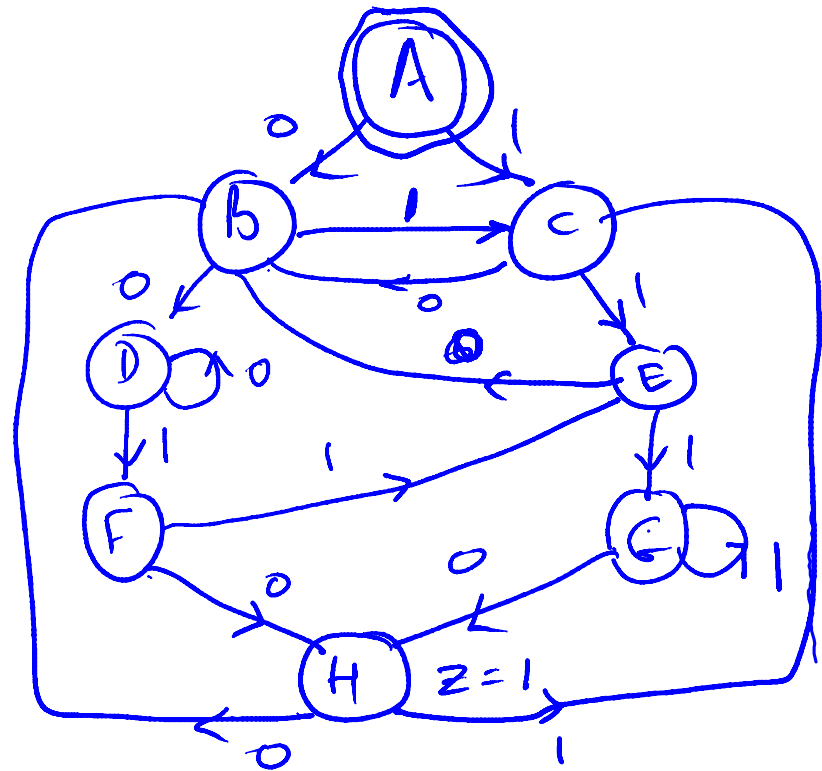
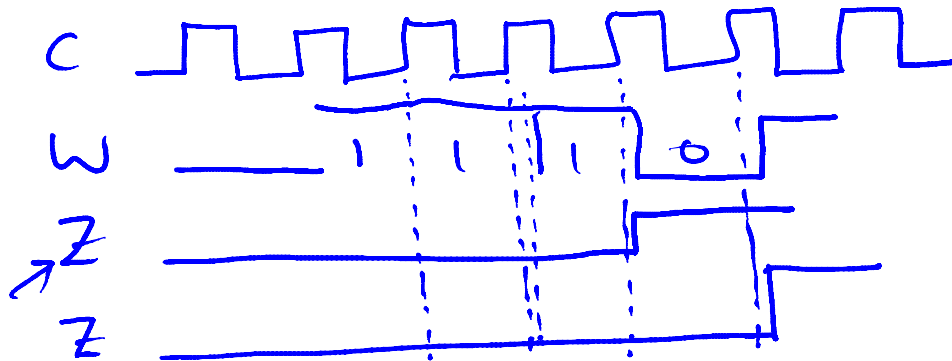
Design FSM with given specification (8.11)

Friday, August 25, 2017

10:19 PM

Input w, Output z

Detect sequence 0010 or 1110



Present State	Next state $w=0$	Next state $w=1$	Output z
000 A	010 B	010 C	0
001 B	010 D	010 C	0
010 C	010 D	010 C	0
011 D	010 B	010 C	0
100 E	010 B	010 C	0
101 F	010 B	010 C	0
110 G	010 B	010 C	1
111 H	010 B	010 C	1

Present state $y_2 y_1 y_0$	Next state $y_2 y_1 y_0$	Output z
000 A	010 B	0
001 B	010 D	0
010 C	010 C	0
011 D	010 B	0
100 E	010 B	0
101 F	010 B	0
110 G	010 B	1
111 H	010 B	1

Present state $y_2 y_1 y_0$	Next state $y_2 y_1 y_0$	Output z
001	010	0
011	010	0
001	100	0
011	101	0
001	110	0
111	100	0
111	110	0
001	010	0

Present state $y_2 y_1 y_0$	Next state $y_2 y_1 y_0$	Output z
001	010	0
011	010	0
001	100	0
011	101	0
001	110	0
111	100	0
111	110	0
001	010	0

$y_2 y_1$

$y_0 w$

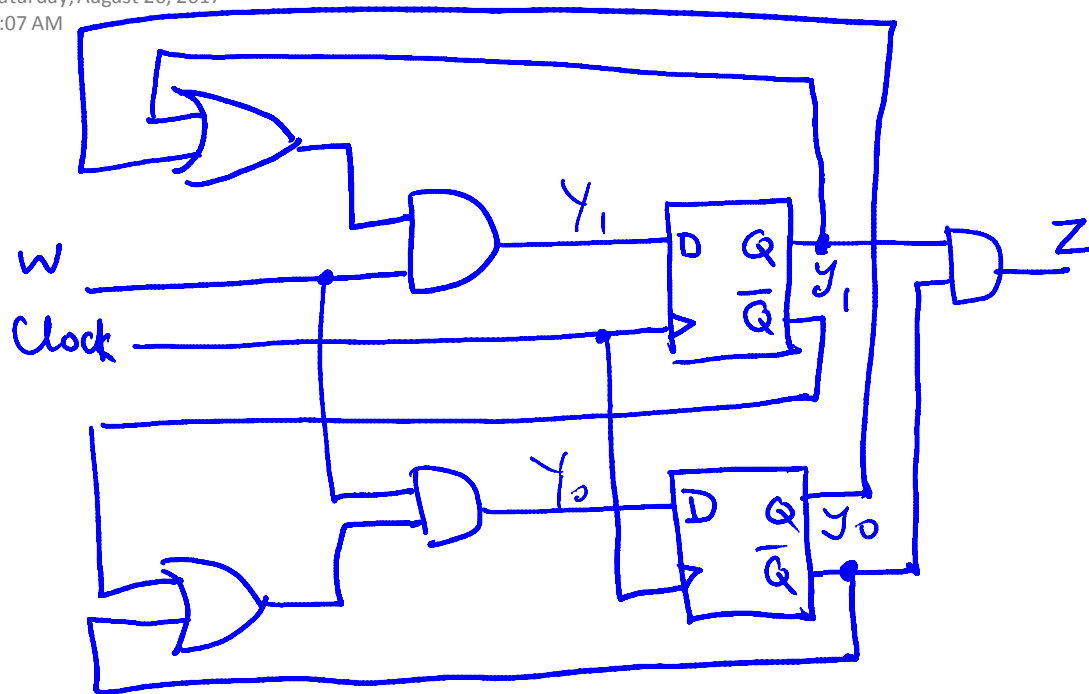
	00	01	11	10
00	0	0	0	0
01	0	1	1	0
11	1	1	0	0
10	0	1	1	1

Y_2

$$Y_2 = y_2' y_1 w + y_2 y_1 y_0' + y_2 y_1' w + y_2 y_1' y_0$$

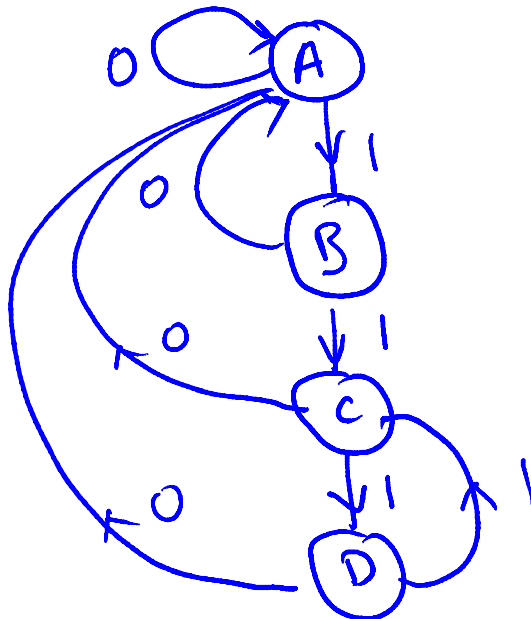
Derive state table from circuit (8.29)

Saturday, August 26, 2017
8:07 AM



$Y_1 Y_0$	$w=0$	$w=1$
00	00	01
01	00	11
11	00	10
10	00	11

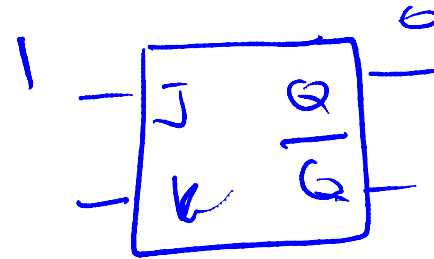
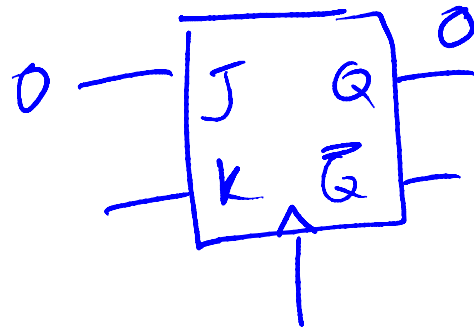
	A	B
A	A	B C
B	A	B
C	A	C
D	A	



Designing with JK flip-flops

Saturday, August 26, 2017
10:35 AM

JK	$Q(t+1)$
0 0	$Q(t)$
0 1	0
1 0	1
1 1	$\bar{Q}(t)$



	J	K
0 \Rightarrow 0	0	—
0 \Rightarrow 1	1	—
1 \Rightarrow 0	—	1
1 \Rightarrow 1	—	0