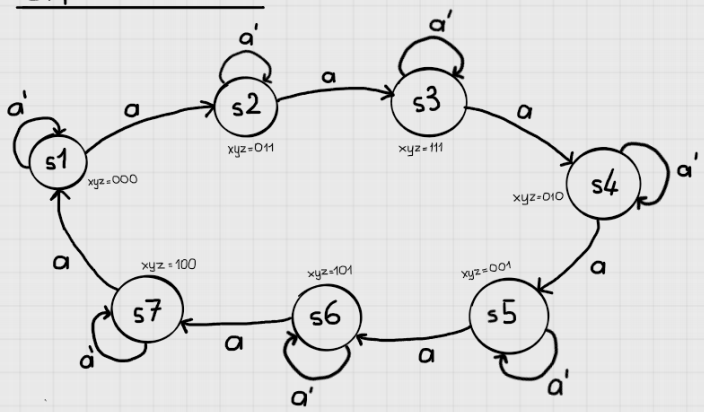
CSE232 Homework3

Step1 : Create FSM



Step2 : Obtain Architecture

→ 7 states

→ 3 bit for incoming states

→ input : a

→ outputs : x, y, z

Step3 : Encode States

States	s_2	s_1	s_0
s1	0	0	0
s2	0	0	1
s3	0	1	0
s4	0	1	1
s5	1	0	0
s6	1	0	1
s7	1	1	0

Step4 : Generate State Table

	s_2	s_1	s_0	a	x	y	z	n_2	n_1	n_0
s1	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	1
s2	0	0	1	0	0	1	1	0	0	1
	0	0	1	1	0	1	1	0	1	0
s3	0	1	0	0	1	1	1	0	1	0
	0	1	0	1	1	1	1	0	1	1
s4	0	1	1	0	0	1	0	0	1	1
	0	1	1	1	0	1	0	1	0	0
s5	1	0	0	0	0	0	1	1	0	0
	1	0	0	1	0	0	1	1	0	1
s6	1	0	1	0	1	0	1	1	0	1
	1	0	1	1	1	0	1	1	1	0
s7	1	1	0	0	1	0	0	1	1	0
	1	1	0	1	1	0	0	0	0	0
	1	1	1	0	x	x	x	x	x	x
	1	1	1	1	x	x	x	x	x	x

Step 5 : Boolean Expressions and Controller

s_2s_1 \ s_0a	00	01	11	10
00				
01	1	1		
11	1	1	x	x
10			1	1

$X = s_1s_0' + s_2s_0$

s_2s_1 \ s_0a	00	01	11	10
00			1	1
01	1	1	1	1
11			x	x
10				

$Y = s_2's_1 + s_2's_0$

s_2s_1 \ s_0a	00	01	11	10
00			1	1
01	1	1		
11			x	x
10	1	1	1	1

$Z = s_2's_1s_0' + s_2's_1's_0 + s_2s_1'$

s_2s_1 \ s_0a	00	01	11	10
00				
01			1	
11	1		x	x
10	1	1	1	1

$n_2 = s_2s_0'a' + s_1s_0a + s_2s_1'$

s_2s_1 \ s_0a	00	01	11	10
00			1	
01	1	1		1
11	1		x	x
10			1	

$n_1 = s_1's_0a + s_2's_1s_0' + s_1a'$

s_2s_1 \ s_0a	00	01	11	10
00		1		1
01		1		1
11			x	x
10		1		1

$n_0 = s_1's_0'a + s_2's_0'a + s_0a'$

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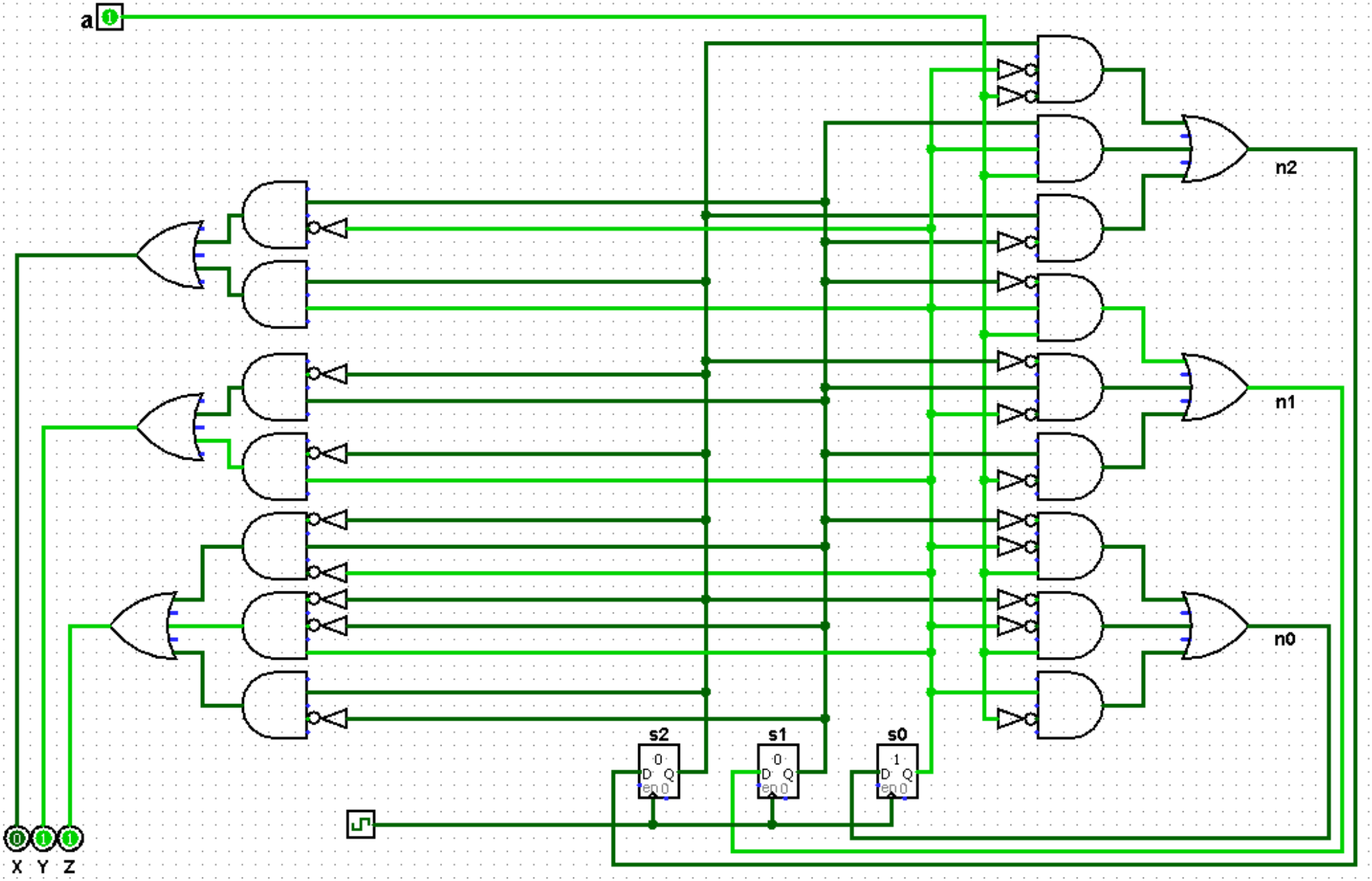
a
n2
n1
n0
s2
s1
s0
0
D Q
en 0
0
D Q
en 0
1
D Q
en 0
X Y Z