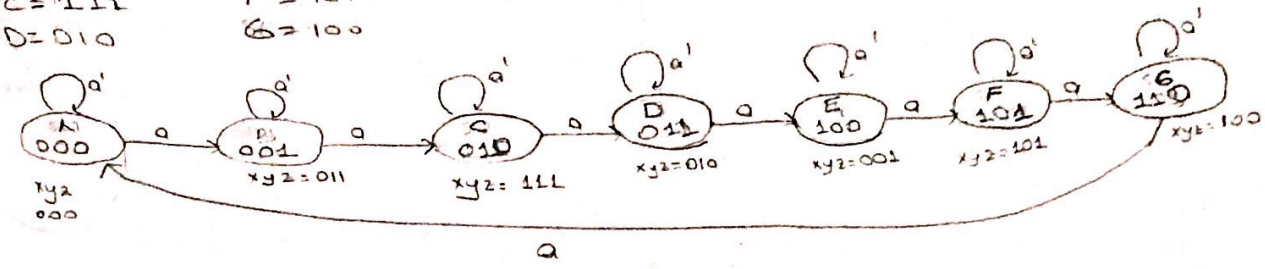
A = 000
B = 011
C = 111
D = 010
E = 001
F = 101
G = 100



→ 7 states (3 bits register)

→ a is input.

→ 3 outputs (xyz)

States	S_2	S_1	S_0
A	0	0	0
B	0	0	1
C	0	1	0
D	0	1	1
E	1	0	0
F	1	0	1
G	1	1	0

S_2	S_1	S_0	a	n_2	n_1	n_0	x	y	z
0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	1	0	0	0
0	0	1	0	0	0	1	0	1	1
0	0	1	1	0	1	0	0	1	1
0	1	0	0	0	1	0	1	1	1
0	1	0	1	0	1	1	1	1	1
0	1	1	0	0	1	1	0	1	0
0	1	1	1	1	0	0	0	1	0
1	0	0	0	1	0	0	0	0	1
1	0	0	1	1	0	1	0	0	1
1	0	1	0	1	0	1	1	0	1
1	0	1	1	1	1	0	1	0	1
1	1	0	0	1	1	0	1	0	0
1	1	0	1	0	0	0	1	0	0
1	1	1	0	0	0	0	0	0	0
unused 1	1	1	1	0	0	0	0	0	0

$n_2 = \Sigma(7,8,9,10,11,12)$

$n_1 = \Sigma(3,4,5,6,11,12)$

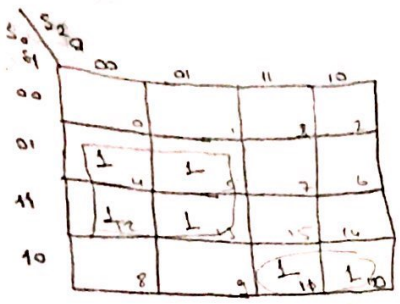
$n_0 = \Sigma(1,2,5,6,9,10)$

$x = \Sigma(4,5,10,11,12,13)$

$y = \Sigma(2,3,4,5,6,7)$

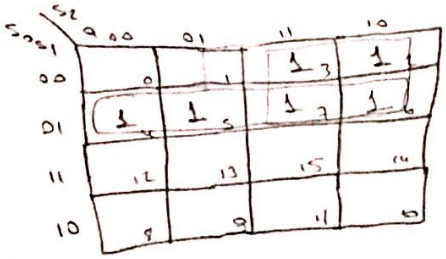
$z = \Sigma(2,3,4,5,8,9,10,11)$

X



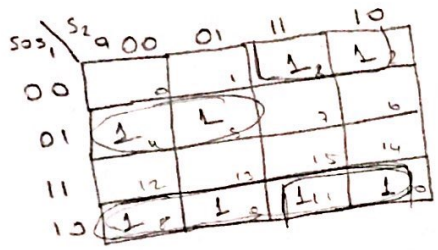
$x = S_1 S_2' + S_0 S_1' S_2$

Y



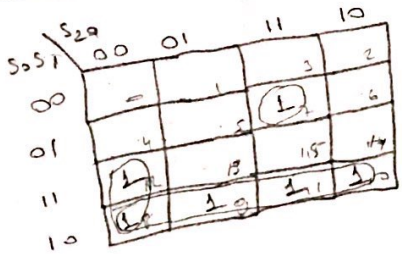
$y = S_0' S_2 + S_0' S_1$

Z



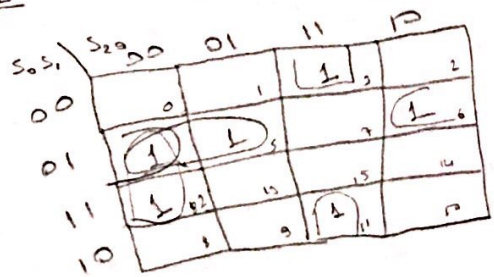
$z = S_1' S_2 + S_0' S_1 S_2' + S_0 S_1'$

N_2



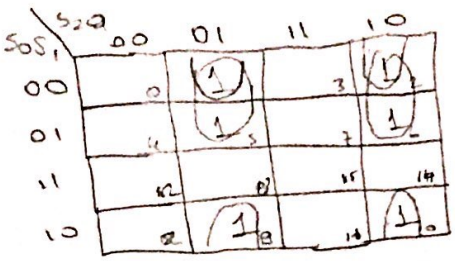
$N_2 = S_0' S_1 S_2 a + S_0 S_2' a' + S_0 S_1'$

N_1



$N_1 = S_1' S_2 a + S_0' S_1 S_2' + S_0' S_1 a' + S_1 S_2' a'$

N_0



$N_0 = S_1'S_2'a + S_1'S_2a' + S_0'S_2'a + S_0'S_2a'$