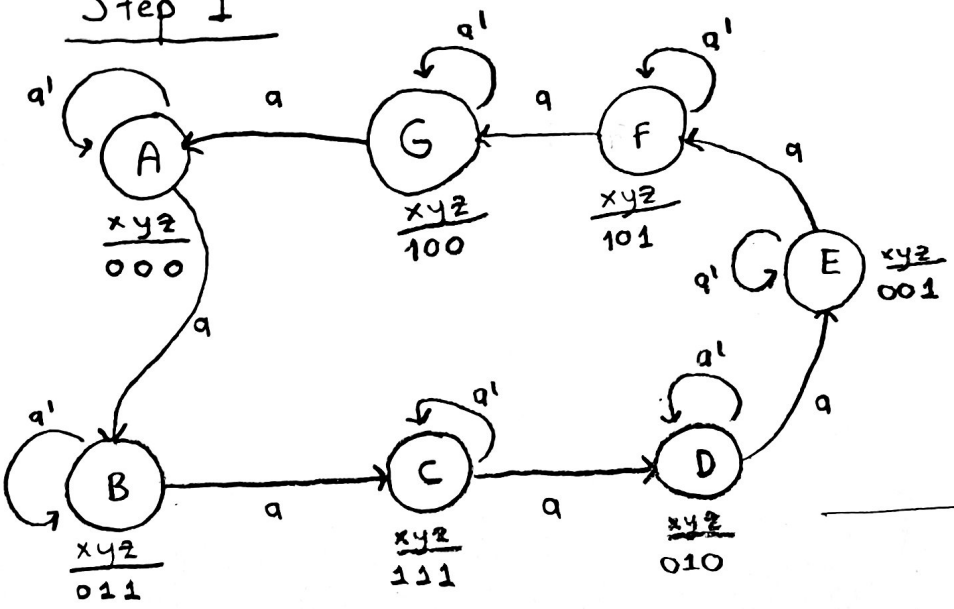
Step 1



Step 3

A : 000
B : 001
C : 010
D : 011
E : 100
F : 101
G : 110

Step 2

→ 7 states (3 bits register, S_2, S_1, S_0)
→ 3 bits for next states (n_2, n_1, n_0)
→ a is input
→ x, y, z are outputs

Step 4

	S_2	S_1	S_0	a	x	y	z	n_2	n_1	n_0
A	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	1	1	0	0	1
B	0	0	1	0	0	1	1	0	0	1
	0	0	1	1	1	1	1	0	1	0
C	0	1	0	0	1	1	1	0	1	1
	0	1	0	1	0	1	0	0	1	1
D	0	1	1	0	0	1	0	0	1	1
	0	1	1	1	0	0	1	1	0	0
E	1	0	0	0	0	0	1	1	0	0
	1	0	0	1	1	0	1	1	0	1
F	1	0	1	0	1	0	1	1	1	0
	1	0	1	1	1	0	0	1	1	0
G	1	1	0	0	1	0	0	1	1	0
	1	1	0	1	0	0	0	0	0	0
	1	1	1	0	0	0	0	0	0	0
	1	1	1	1	0	0	0	0	0	0

Step 5

$S_2 S_1$ \ S_0 a	00	01	11	10
00	0	0	1	0
01	1	0	0	0
11	1	0	X	X
10	0	1	1	1

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

$S_2 S_1$ \ S_0 a	00	01	11	10
00	0	1	1	1
01	1	1	0	1
11	0	0	X	X
10	0	0	0	0

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

S_2S_1 \ S_0a	00	01	11	10
00	0	1	1	1
01	1	0	1	0
11	0	0	X	X
10	1	1	0	1

$$Z = S_2'S_1S_0'a' + S_2S_1'S_0' + S_2'S_1'a + S_2'S_0a + S_2'S_1'S_0 + S_2S_0a'$$

S_2S_1 \ S_0a	00	01	11	10
00	0	0	0	0
01	0	0	1	0
11	1	0	X	X
10	1	1	1	1

$$n_2 = S_2a' + S_2S_1' + S_1S_0a$$

S_2S_1 \ S_0a	00	01	11	10
00	0	1	0	1
01	0	1	0	1
11	0	0	X	X
10	0	1	0	1

$$n_0 = S_1'S_0'a + S_2'S_0'a + S_0a'$$

S_2S_1 \ S_0a	00	01	11	10
00	0	0	1	0
01	1	1	0	1
11	1	0	X	X
10	0	0	1	0

$$n_1 = S_2'S_1S_0' + S_1a' + S_1'S_0a$$