

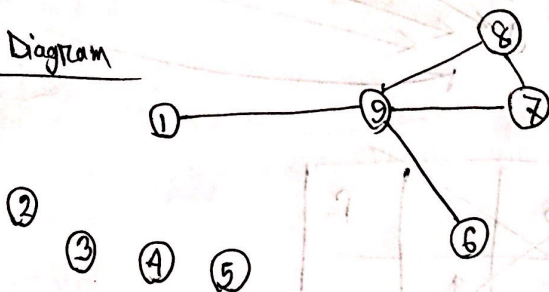
Primitive Flow Table:

	$x_1 x_2$			
	00	01	11	10
1	①, 0	9, 0	—	2, 0
2	3, 0	—	7, 0	②, 0 ←
3	③, 0 ←	4, 0	—	8, 0
4	5, 0	④, 0 ←	7, 0	—
5	⑤, 0 ←	9, 0	—	6, 0
6	1, —	—	7, 0	⑥, 1 ←
7	—	9, 0	③, 0	8, 0
8	1, 0	—	7, 0	⑧, 0
9	1, 0	⑨, 0	7, 0	⑧, 0

Implication Table:

2	13							
3	49 28	28						
4	15 49	35	35					
5	26	35 26	49 68	49				
6	X	X	X	15	15			
7	28	28	49	49	68	X		
8	28	13	13	15	15 68	X	✓	
9	✓	13	13 49	15	15	✓	✓	✓
	1	2	3	4	5	6	7	8

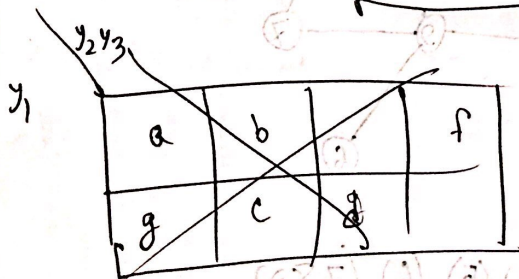
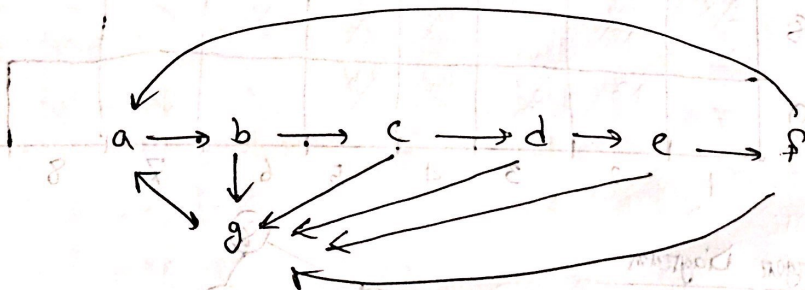
Merge Diagram



$\therefore (1)(2)(3)(4)(5)(6)(789)$

Reduced Flow Table:

		00	01	11	10
a	1	①, 0	9, 0	—	2, 0
b	2	3, 0	—	7, 0	②, 0
c	3	③, 0	4, 0	—	8, 0
d	4	5, 0	④, 0	7, 0	—
e	5	⑤, 0	9, 0	—	6, —
f	6	1, —	—	7, 0	⑥, 1
g	7 8 9	1, 0	⑨, 0	⑦, 0	⑧, 0



$y_3 y_4$

$y_3 y_2$	00	01	11	10
00	a	b	c	d
01	f ₂	a	g	e
11	f ₁		g ₄	f
10		g ₃	g ₂	g ₁

	00	01	11	10
a	Ⓐ, 0	g, 0	—	b, 0
b	Ⓓ, 0	—	g ₃ , 0	Ⓑ, 0
c	Ⓒ, 0	d, 0	—	g, 0
d	e, 0	Ⓐ, 0	g ₁ , 0	—
e	Ⓔ, 0	g, 0	—	Ⓕ, 0
f	f ₁ , —	—	g ₄ , —	Ⓖ, 1
g	a, 0	Ⓙ, 0	Ⓚ, 0	Ⓛ, 0
g ₁	—	—	—	—
g ₂	—	—	g ₂ , 0	—
g ₃	—	—	g ₄ , 0	—
g ₄	—	—	g ₂ , 0	—
f ₁	f ₂ , —	—	g, 0	—
f ₂	a, —	—	—	—

Transition Table:

$y_1 y_2 y_3 y_4$	00	01	11	10
x 0000	-	-	-	-
b 0001	0011	-	1001	0011
d 0010	0110	0010	1010	-
c 0011	0011	0010	-	0111
f ₂ 0100	0101	-	-	-
a 0101	0101	0111	10	0001
e 0110	0110	0111	011	1110
g 0111	0101	0111	011	0111
x 1000	-	-	011	011
g ₃ 1001	-	011	011	011
g ₁ 1010	-	-	1011	011
g ₂ 1011	-	-	1111	-
f ₁ 1100	0100	-	-	-
x 1101	-	-	-	-
f 1110	0100	-	1111	1110
g ₄ 1111	-	-	0111	-

K-map using D latch

$y_1 y_2$	$y_3 y_4$	00	01	11	10
00	-	0	0	0	0
01	0	0	0	0	0
11	0	-	-	-	0
10	-	-	-	-	-

$Y_1 =$

$y_1 y_2$	$y_3 y_4$	00	01	11	10
00					
01					
11					
10					

$Y_2 =$

$y_1 y_2$	$y_3 y_4$	00	01	11	10
00					
01					
11					
10					

$Y_3 =$

$y_1 y_2$	$y_3 y_4$	00	01	11	10
00					
01					
11					
10					

$Y_4 =$