

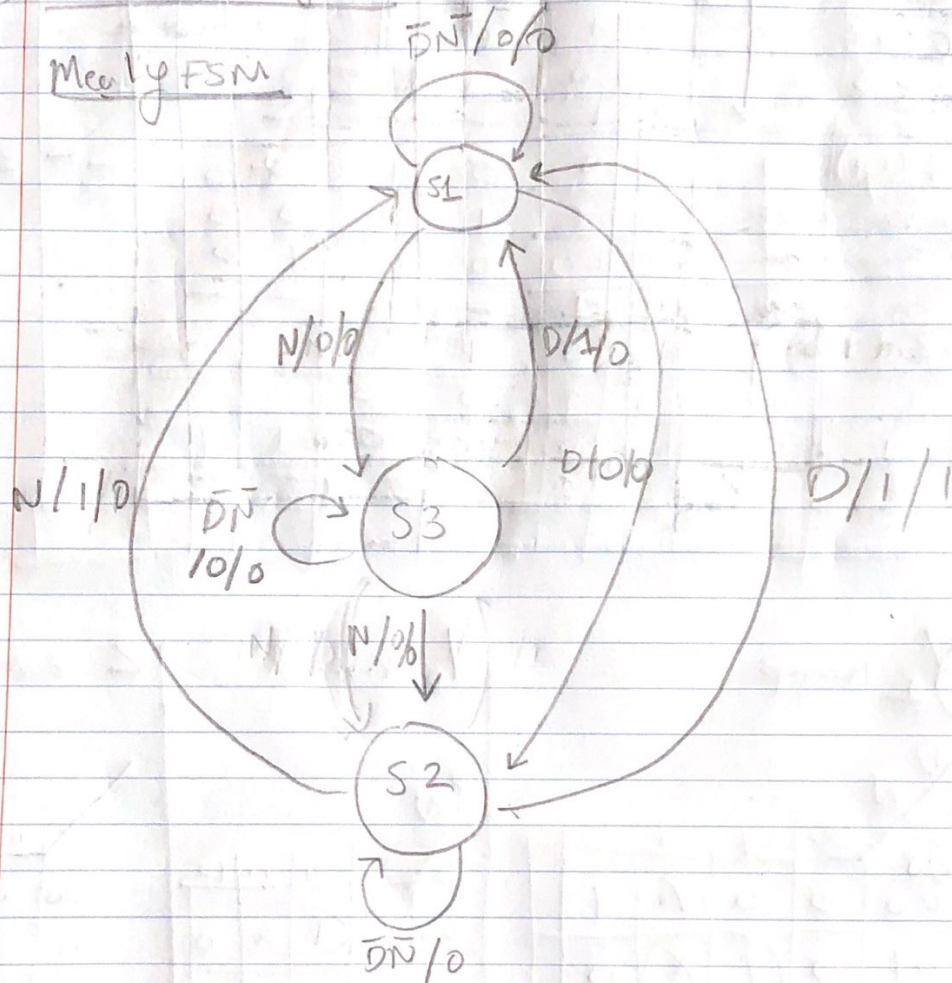
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3/4/2022

Lab 8 → CBN-21

Prelab

- a) Read Book
- b) State Diagram

Mealy FSM



c) State TABLE

Present State	input		NEXT STATE		output	
	D	N	Y_1	Y_0	Z	C
$S_1 (0,0)$	0	0	0	0	0	0
	0	1	0	1	0	0
	1	0	1	0	0	0
	1	1	-	-	-	-
$S_2 (0,1)$	0	0	0	1	0	0
	0	1	1	0	0	0
	1	0	0	0	1	0
	1	1	-	-	-	-
$S_3 (1,0)$	0	0	1	0	0	0
	0	1	0	0	0	0
	1	0	0	0	1	1
	1	1	-	-	-	-

- = DONT CARE TERMS

d) Y_1 Kmap

y_1	y_0			
	00	01	11	10
00	0	0	X	1
01	0	1	X	0
11	X	X	X	X
10	1	0	X	0

$$Y_1 = \bar{y}_1 \bar{y}_0 D + y_0 N + y_1 \bar{D} \bar{N}$$

Y_0 Kmap

y_1	y_0			
	00	01	11	10
00	0	1	X	0
01	X	0	X	0
11	X	X	X	X
10	0	0	X	0

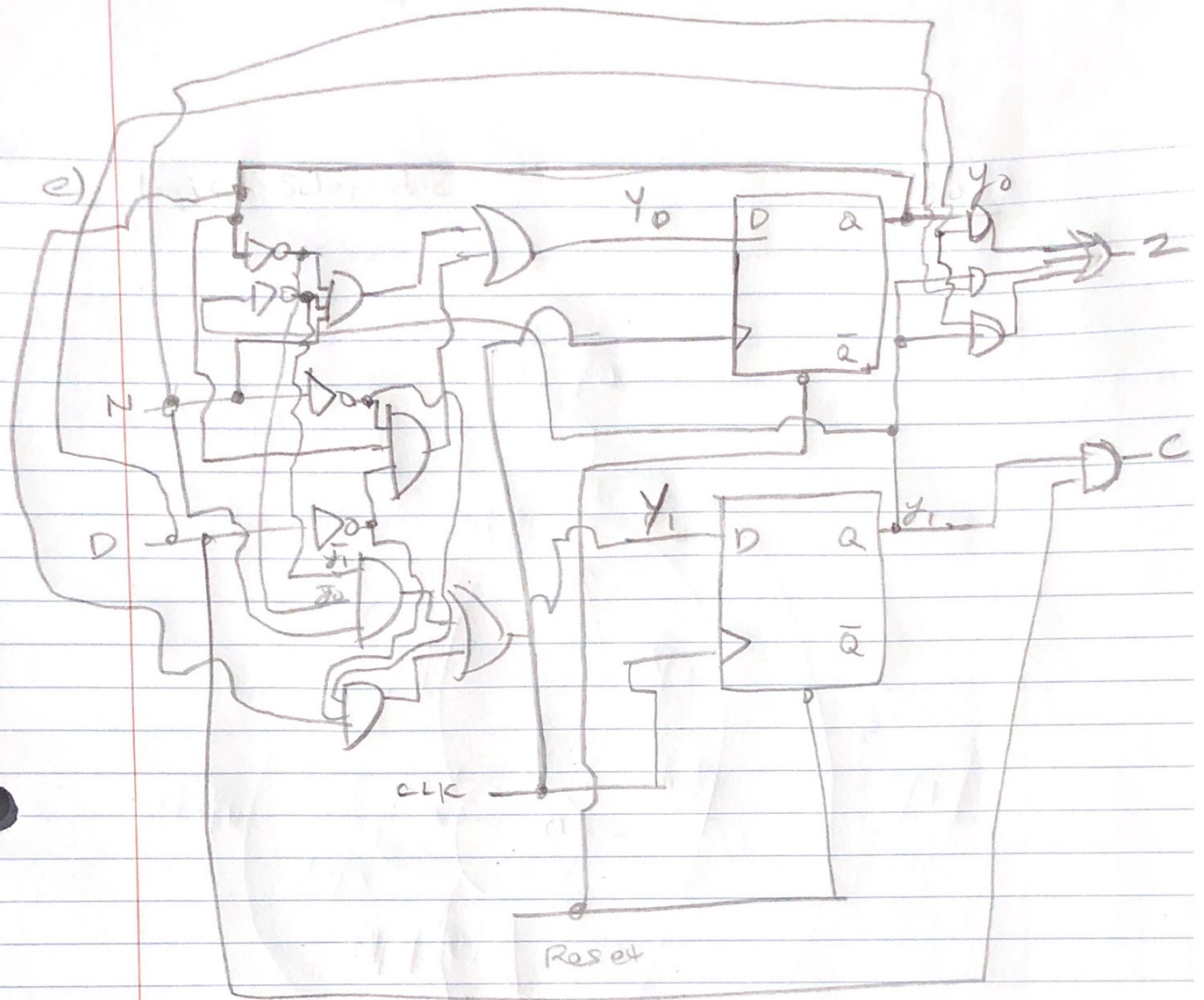
$$Y_0 = \bar{y}_1 \bar{y}_0 N + y_0 \bar{D} \bar{N}$$

Z Kmap

y_1	y_0			
	00	01	11	10
00	0	0	X	0
01	0	0	X	1
11	X	X	X	X
10	0	1	X	1

$$Z = y_0 D + y_1 N + y_1 D$$

$$C = y_1 D$$



f) verilog submitted as .v file on canvas submission.