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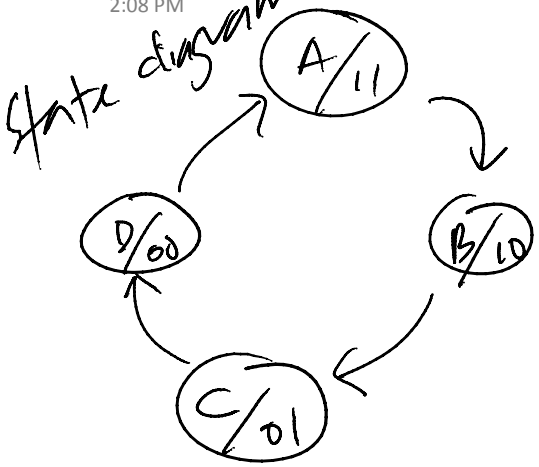
down counter, start at "11"
loop around when reach "00"

State diagram



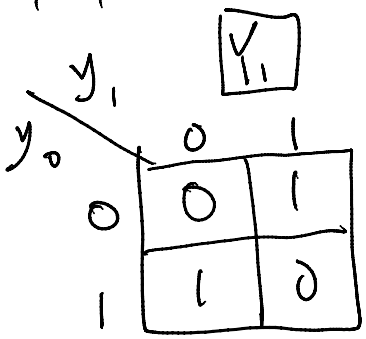
State table

Present State	Next state	output
A	B	11
B	C	10
C	D	01
D	A	00

Decoding ⇒ A ⇒ "00", B ⇒ "01", C ⇒ "10"
D ⇒ "00"

Decoded State Table

Present state $y_1\ y_0$	Next State $Y_1\ Y_0$	output $f_1\ f_0$
0 0	1 1	1 1
0 1	0 0	1 0
1 0	1 1	0 1
1 1	0 0	0 0



$$Y_1 = y_0 \oplus y_1$$

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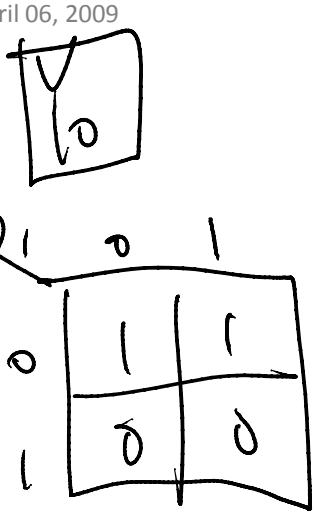
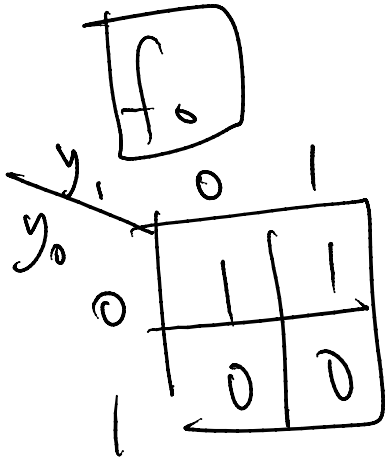
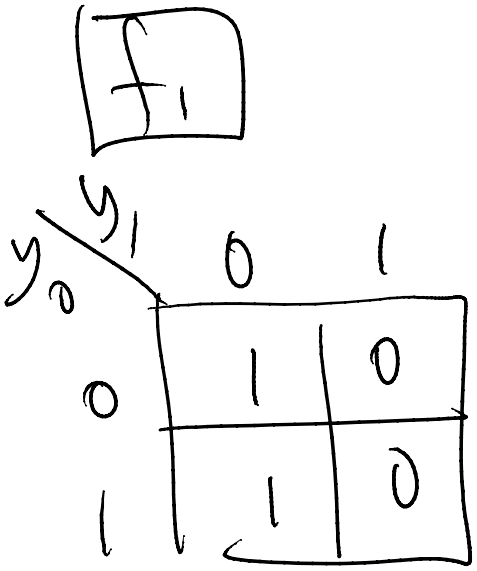


$$Y_0 = \overline{y_0}$$



$$f_0 = \overline{y_0}$$



$$f_1 = \overline{y_1}$$

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Implement the design using D flip-flops
Since we use two bits encoding for four states (A, B, C, and D), we need just TWO D flip-flops