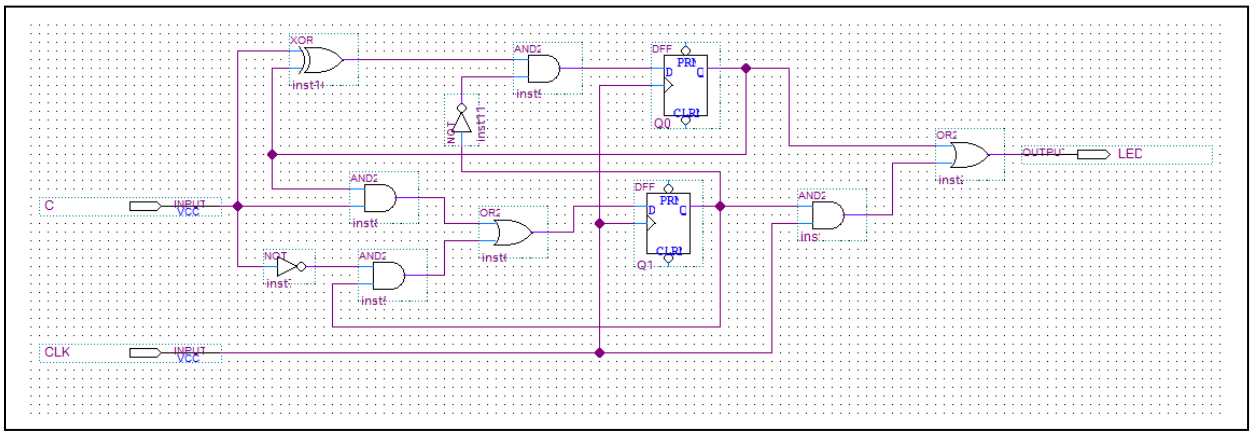
Assignment – State machine



Output decoder:

Q1	Q0	CLK	LED
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	-
1	1	1	-

CLK	00	01	11	10
	0	1	-	0
	0	1	-	1

LED = Q0 + Q1*CLK

Input decoder:

Q1	Q0	C	D1	D0	
0	0	0	0	0	off
0	0	1	0	1	continues
0	1	0	0	1	continues
0	1	1	1	0	Blinking
1	0	0	1	0	Blinking
1	0	1	0	0	Off
1	1	0	-	-	
1	1	1	-	-	

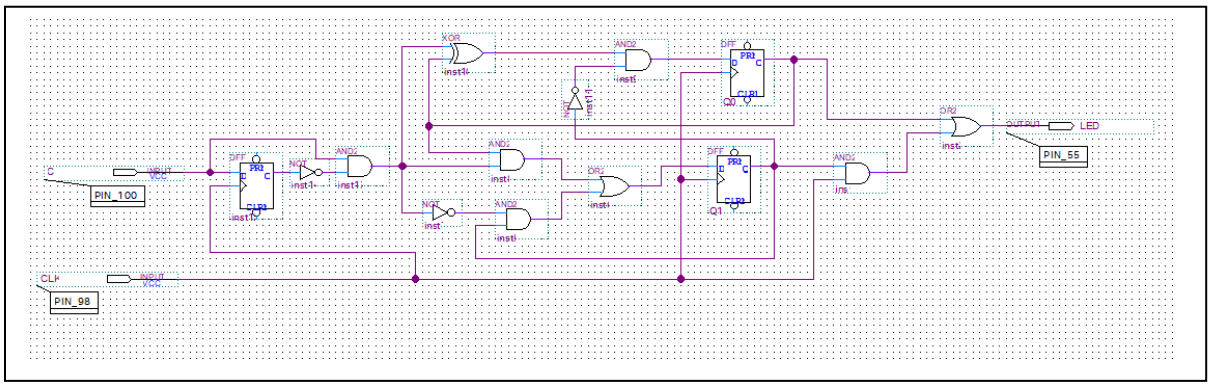
C	00	01	11	10
	0	0	-	1
	0	1	-	0

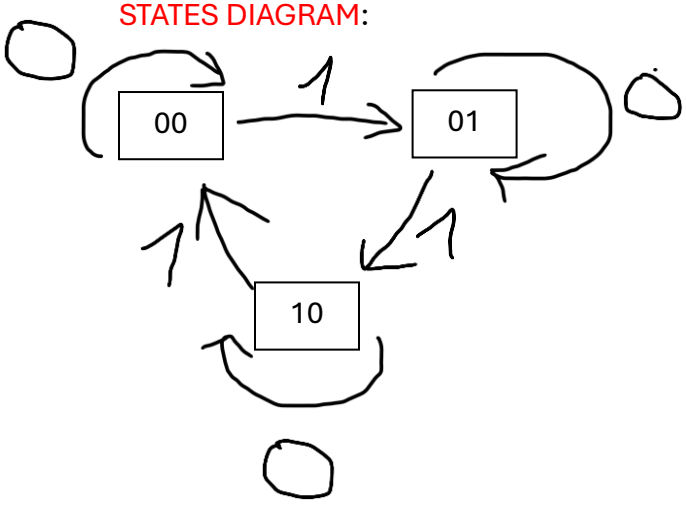
$$D1 = \bar{C} * Q1 + C * Q0$$

C	00	01	11	10
	0	1	-	0
	1	0	-	0

$$D0 = \overline{Q1} * (C \oplus Q0)$$

EDGE DETECTOR:



An edge detector is a digital circuit that identifies a change in a signal, typically a transition from low to high (rising edge) or high to low (falling edge). It outputs a single pulse in response to this transition, regardless of how long the signal remains in its new state. This ensures that only one action is triggered per button press, eliminating repeated signals caused by holding the button down.

STATES DIAGRAM: