

Synchronous Sequence detector

Sequence: 1001

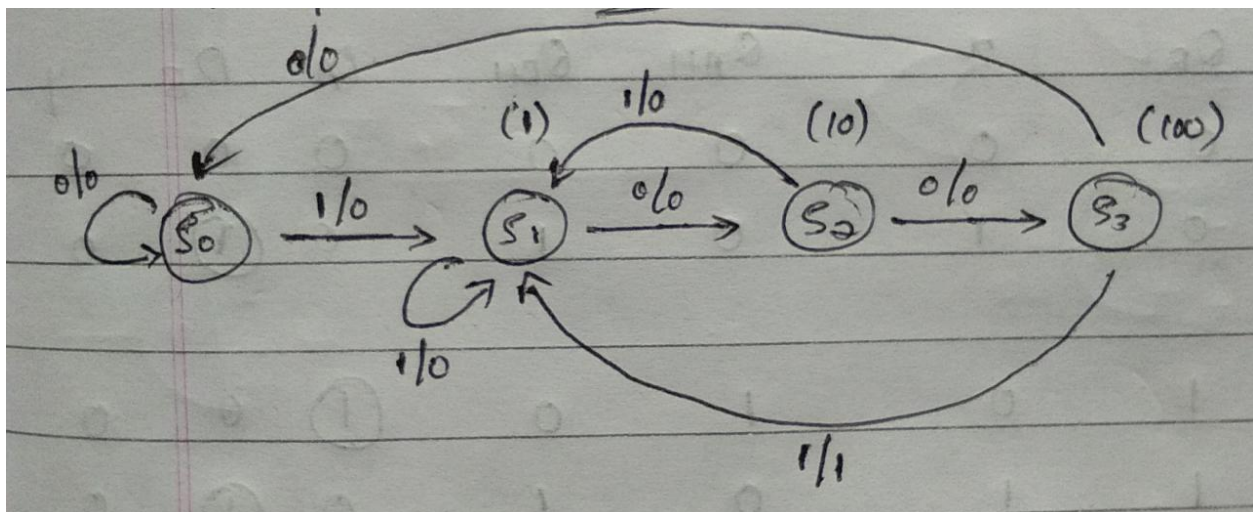
Overlapping is allowed

Flip flop used: D flip flop

States	
S0	00
S1	01
S2	10
S3	11

Test Bench input

x	1	0	1	1	0	0	1	0	0	1	0	0
y	0	0	0	0	0	0	1	0	0	1	0	0



	Present state		inp	Next state		F/E - inp		o/p
	Q_A	Q_B	x	Q_{A+1}	Q_{B+1}	D_A	D_B	y
0	0	0	0	0	0	0	0	0
1	0	0	1	0	1	0	1	0
2	0	1	0	1	0	1	0	0
3	0	1	1	0	1	0	1	0
4	1	0	0	1	1	1	1	0
5	1	0	1	0	1	0	1	0
6	1	1	0	0	0	0	0	0
7	1	1	1	0	1	0	1	1

$$D_A = f(Q_A, Q_B, x) = \Sigma(2, 4) = \bar{Q}_A Q_B \bar{x} + Q_A \bar{Q}_B \bar{x}$$

$$D_B = f(Q_A, Q_B, x) = \Sigma(1, 3, 4, 5, 7) = x + Q_A \bar{Q}_B$$

$$y = f(Q_A, Q_B, x) = \Sigma(7) = Q_A Q_B x$$

Vidya (254)

