



Analysis of a state machine circuit to extract the logic equations and state diagram.

$$D_A = Q_B X Y + Q_A Y$$

$$D_B = Q_A + X$$

$$P = Q_A X$$

$$Q_{out} = \overline{Q_B}$$

Q_A	Q_B	D_A	D_B
0	0	\overline{X}	0
0	1	$\overline{X}\overline{Y}$	0
0	1	$\overline{X}Y$	0
0	1	$X\overline{Y}$	0
0	1	XY	1
1	0	\overline{Y}	0
1	0	Y	1
1	1	\overline{Y}	0
1	1	Y	1

NOTE: $XY + Y = Y$

Q_A	Q_B	D_A	D_B
0	0	0	0
0	1	X	X
1	0	X	X
1	1	X	X

$P = Q_A X$

Q_A	Q_B	Q
0	0	1
0	1	0
1	0	0
1	1	0

$Q = \overline{Q_B}$