CLK

Circuit Construction

$Q_1 Q_0$	J_1
0 0	1
0 1	1
1 0	X
1 1	X

Q_0

$\overline{Q_0}$

Q_1

$T_0 \ Q_0$
K_0

$J_1 \ Q_1$
K_1

Current | **Next**

Q_1 Q_0	Q_1 Q_0	J_1 K_1	T_0 K_0
0 0	1 0	1 X	0 X
0 1	0 0	0 X	X 1
1 0	0 1	X 1	1 X
1 1	X X	X X	X X

Q
$0 \rightarrow 1$

J K
1 1 (toggle)
1 0 (set)
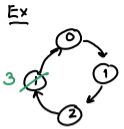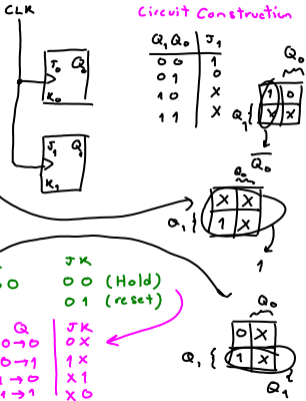
J K
0 0 (Hold)
0 1 (reset)

Q	J K
$0 \rightarrow 0$	0 X
$0 \rightarrow 1$	1 X
$1 \rightarrow 0$	X 1
$1 \rightarrow 1$	X 0

Q_0

$Q_1 , \{$

Q_1

Ex

3

Current | **Next**

Q_1 Q_0	Q_1 Q_0
0 0	
0 1	1 0
1 0	0 0
1 1	

Can't have this.

CLK

1

$T_0 \ Q_0$
K_0

$J_1 \ Q_1$
K_1

Y_0
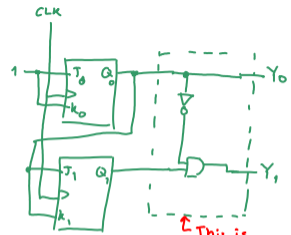
Y_1

This is added to change $3 \rightarrow 1$ on the output.

Input	Output
$Q_1 Q_0$	
0 0	1 0
0 1	0 0
1 0	1 0
1 1	0 0

$Q_1 \cdot \overline{Q_0} \leftarrow$

$Q_1 \cdot \overline{Q_0}$ Q_0

Ex.

CTEN = "

number indicate
value of the
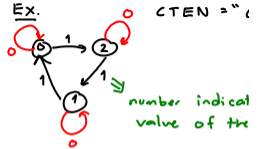
Use D-FF:

When   CTEN = 1,
$D_1 = \overline{Q_0} \cdot \overline{Q_1}$
$D_0 = Q_1$

When   CTEN = 0,
$D_1 = Q_1$
$D_0 = Q_0$

Combine

Count Enable"

tes
  CTEN

$: D_1 = \boxed{} \times CTEN + \bigcirc \times \overline{CTEN}$

$= \overline{Q_0} \cdot \overline{Q_1} \times CTEN + Q_1 \times \overline{CTEN}$