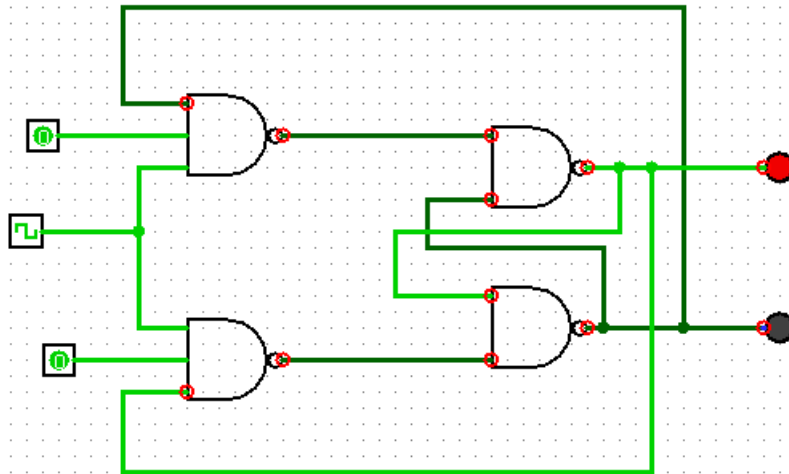
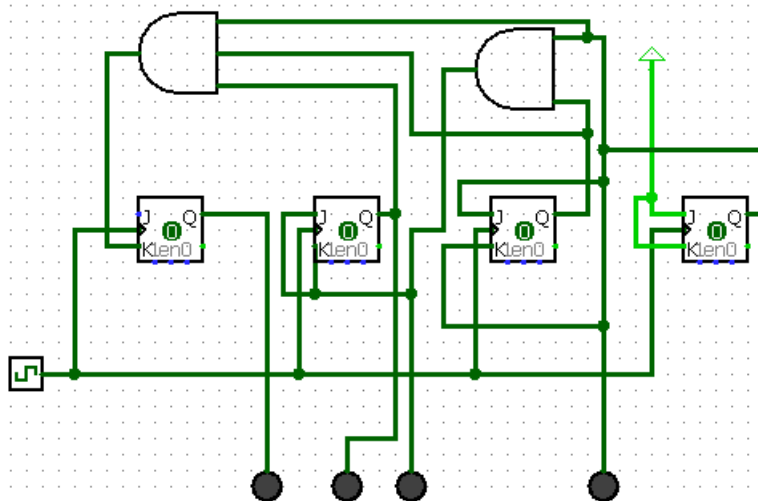
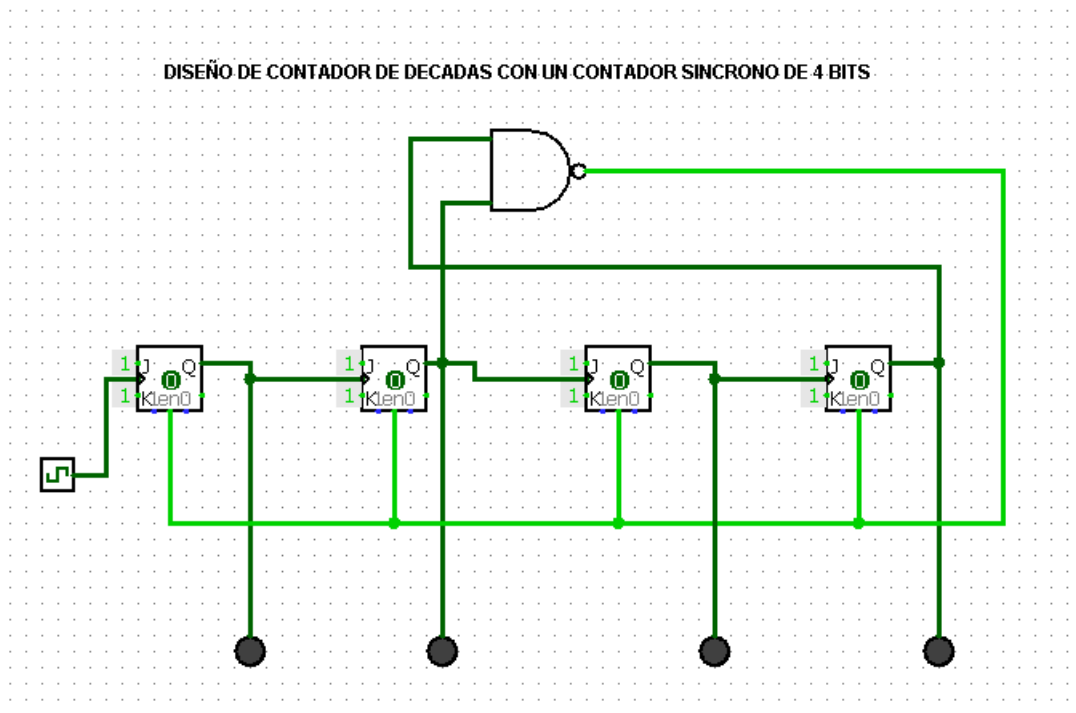


DISEÑO DE FLIP FLOP JK CON COMPUERTAS LÓGICAS

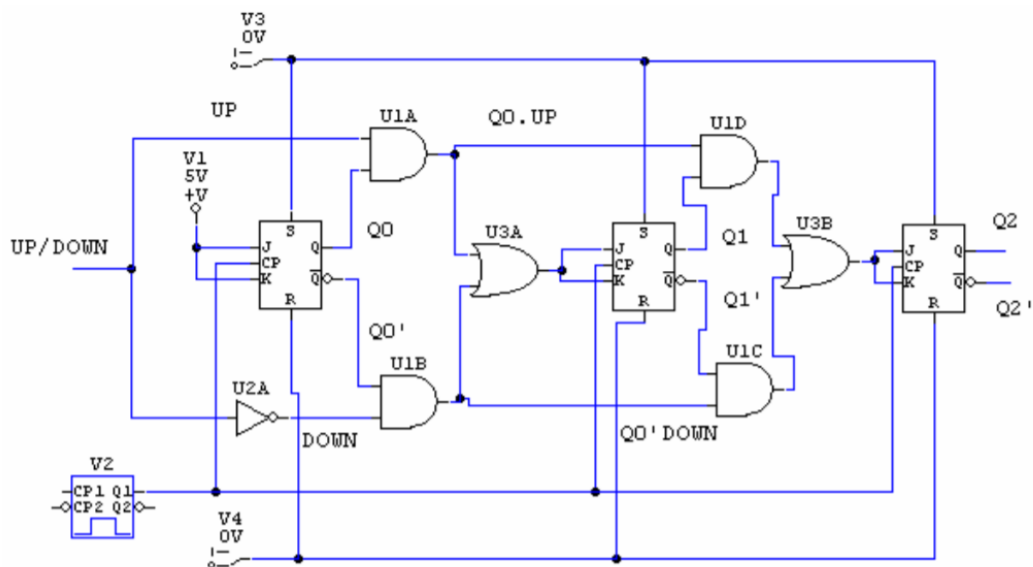


DISEÑO DE CONTADOR SINCRONO DE 4 BITS CON FLIP FLOPS JK





### Contador síncrono de décadas up/down



# Mapas de Karnaugh

x	Q3	Q2	Q1	Q0	Q3+	Q2+	Q1+	Q0+	J3	K3	J2	K2	J1	K1	J0	K0
0	0	0	0	0	0	0	0	1	0	x	0	x	0	x	1	x
0	0	0	0	1	0	0	1	0	0	x	0	x	1	x	x	1
0	0	0	1	0	0	0	1	1	0	x	0	x	x	0	1	x
0	0	0	1	1	0	1	0	0	0	x	1	x	x	1	x	1
0	0	1	0	0	0	1	0	1	0	x	x	0	0	x	1	x
0	0	1	0	1	0	1	1	0	0	x	x	0	1	x	x	1
0	0	1	1	0	0	1	1	1	0	x	x	0	x	0	1	x
0	0	1	1	1	1	0	0	0	0	1	x	1	x	1	x	1
0	1	0	0	0	1	0	0	1	x	0	0	x	0	x	1	x
0	1	0	0	1	0	0	0	0	x	1	0	x	0	x	x	1
1	0	0	1	0	1	0	0	1	1	x	0	x	0	x	1	x
1	0	0	1	1	0	0	0	0	0	x	0	x	0	x	x	1
1	0	0	0	0	0	0	1	1	0	x	0	x	x	1	1	x
1	0	0	0	1	0	0	1	0	0	x	0	x	x	0	x	1
1	0	1	1	0	0	0	1	1	0	x	x	1	1	x	1	x
1	0	1	1	1	0	1	0	0	0	x	x	0	0	x	x	1
1	0	1	0	0	0	1	0	1	0	x	x	0	x	1	1	x
1	0	1	0	1	0	1	1	0	0	x	x	0	x	0	x	1
1	1	0	1	0	0	1	1	1	x	1	1	x	1	x	1	x
1	1	0	1	1	1	0	0	0	x	0	0	x	0	x	x	1

Handwritten Karnaugh maps and Boolean expressions for J2, K2, J0, and K0.

**J2:**  $J_2 = \overline{Q_3}Q_0 + Q_3\overline{Q_0}$

**K2:**  $K_2 = \overline{Q_3}Q_0 + Q_3\overline{Q_0}$

**J0:**  $J_0 = \overline{Q_3}Q_0 + Q_3\overline{Q_0}$

**K0:**  $K_0 = \overline{Q_3}Q_0 + Q_3\overline{Q_0}$

Handwritten Karnaugh maps and Boolean expressions for J3, K3, J1, and K1.

**J3:**  $J_3 = \overline{Q_3}Q_0 + Q_3\overline{Q_0}$

**K3:**  $K_3 = \overline{Q_3}Q_0 + Q_3\overline{Q_0}$

**J1:**  $J_1 = \overline{Q_3}Q_0 + Q_3\overline{Q_0}$

**K1:**  $K_1 = \overline{Q_3}Q_0 + Q_3\overline{Q_0}$