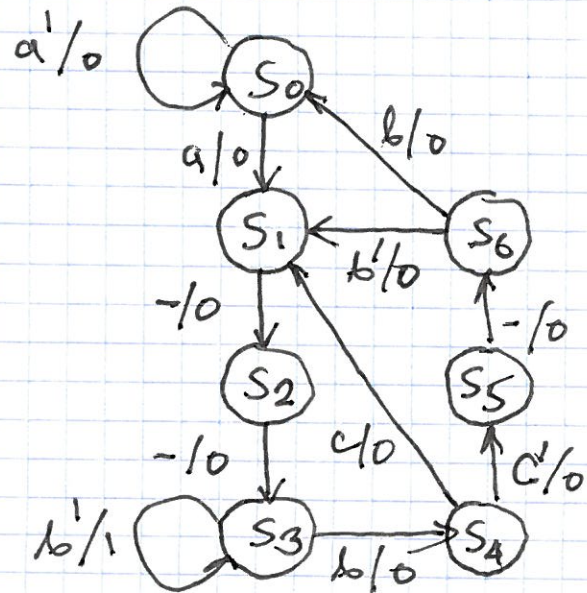EXAMPLE 11.4   COUNTER AS STATE REGISTER

COUNTING: $S_0 \xrightarrow{a} S_1 \rightarrow S_2 \rightarrow S_3 \xrightarrow{b} S_4 \xrightarrow{c'} S_5 \rightarrow S_6$

JUMPING: $S_0 \xrightarrow{a'} S_0 ;\ S_3 \xrightarrow{b'} S_3$

$S_4 \xrightarrow{c} S_1 ;\ S_6 \xrightarrow{b'} S_1 ;\ S_6 \xrightarrow{b} S_0$

$CNT = S_0 a + S_1 + S_2 + S_3 b + S_4 c' + S_5$

$LD = \overline{CNT}$

DETERMINE PARALLEL INPUTS (JUMP STATE)

	I_3	I_2	I_1	I_0	IF
$\rightarrow S_6$	0	0	0	0	$S_6 a' + S_6 b = S_0 + S_6 b$
					(LD IF a')
$\rightarrow S_1$	0	0	0	1	$S_4 c + S_6 b' = S_4 + S_6 b'$
$\rightarrow S_3$	0	0	1	1	$S_3 b' = S_3$

DURING LOAD

S_1, S_2, S_5, S_7 ARE d.c.

STATE MAP:

	Q_0		
S_0	S_1	S_3	S_2
S_6	S_7	S_5	S_4

Q_2 (left label), Q_1 (bottom label)

$I_3 = I_2 = 0$

$I_1:$

	Q_0		
0	—	1	—
0	—	—	—

Q_2 (left), Q_1 (bottom)

$I_1 = Q_0$

$I_0:$

	Q_0		
0	—	1	—
1	—	—	b'

Q_2 (left), Q_1 (bottom)

$I_0 = Q_0 + Q_2 Q_1' + Q_2 b'$