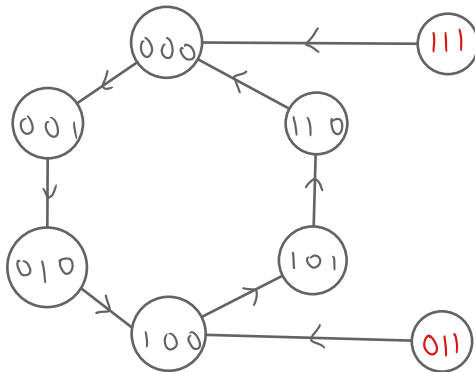


Counter for a non-binary sequence (ie. with skipped states)

Create a state table for the below sequence:

$0 \rightarrow 1 \rightarrow 2 \rightarrow 4 \rightarrow 5 \rightarrow 6$

* We see that 3 and 7 (011 and 111) are missing, so when we draw the state diagram, we include them but without transitions to them



$Q(t)$	$Q(t+1)$	J	K
0	0	0	X
0	1	1	X
1	0	X	1
1	1	X	0

(b) JK

JK excitation table from Morris Mano 6.6

	$Q(t)$			$Q(t+1)$			$J_A K_A$		$J_B K_B$		$J_C K_C$	
	A	B	C	A	B	C						
0	0	0	0	0	0	1	0	X	0	X	1	X
1	0	0	1	0	1	0	0	X	1	X	X	1
2	0	1	0	1	0	0	1	X	X	1	0	X
4	1	0	0	1	0	1	X	0	0	X	1	X
5	1	0	1	1	1	0	X	0	1	X	X	1
6	1	1	0	0	0	0	X	1	X	1	0	X

		J_A			
		00	01	11	10
A	0			X	1
	1	X	X	X	X

$J_A = B$

		J_B			
		00	01	11	10
A	0		1	X	X
	1		1	X	X

$J_B = C$

		J_C			
		00	01	11	10
A	0	1	X	X	
	1	1	X	X	

$J_C = B'$

		K_A			
		00	01	11	10
A	0	X	X	X	X
	1			X	1

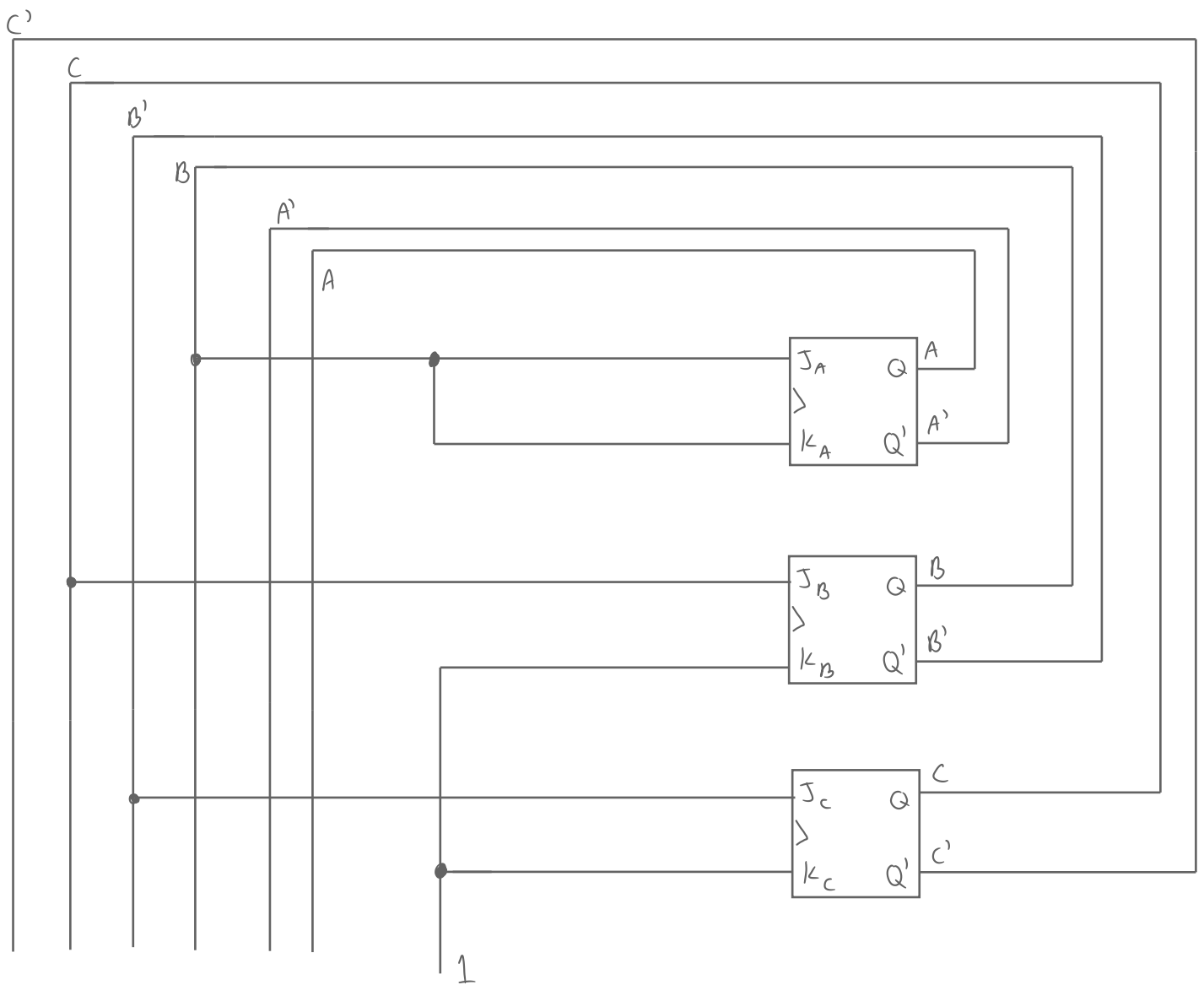
$K_A = B$

		K_B			
		00	01	11	10
A	0	X	X	X	1
	1	X	X	X	1

$K_B = 1$

		K_C			
		00	01	11	10
A	0	X	1	X	X
	1	X	1	X	X

$K_C = 1$



We then determine how this self corrects for the unused states

<table border="1"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>1</td> </tr> <tr> <td>↓</td> <td>↓</td> <td>↓</td> </tr> <tr> <td>1</td> <td>0</td> <td>0</td> </tr> </tbody> </table>	A	B	C	0	1	1	↓	↓	↓	1	0	0	$\left. \begin{array}{l} J_A = 1 \\ K_A = 1 \end{array} \right\} Q(t+1) = Q(t)'$	$\left. \begin{array}{l} J_B = 1 \\ K_B = 1 \end{array} \right\} Q(t+1) = Q(t)'$	$\left. \begin{array}{l} J_C = 0 \\ K_C = 1 \end{array} \right\} Q(t+1) = 0$
A	B	C													
0	1	1													
↓	↓	↓													
1	0	0													

A	B	C
1	1	1
↓	↓	↓
0	0	0

(reset)

* explain in exam: set, reset, or complement