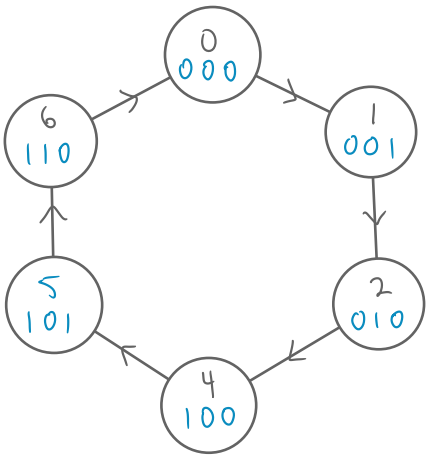
Problem statement: Implement the sequential circuit needed for the following sequence (using T f/f)

0 → 1 → 2 → 4 → 5 → 6



$Q(t)$	$Q(t+1)$	T
0	0	0
0	1	1
1	0	1
1	1	0

(d) T

T flip flop

Excitation table

	Q(t)			Q(t+1)					
	A	B	C	A	B	C	T_A	T_B	T_C
0	0	0	0	0	0	1	0	0	1
1	0	0	1	0	1	0	0	1	1
2	0	1	0	1	0	0	1	1	0
4	1	0	0	1	0	1	0	0	1
5	1	0	1	1	1	0	0	1	1
6	1	1	0	0	0	0	1	1	0

T_A

A \ BC	00	01	11	10
0			X	1
1			X	1

$T_A = B$

T_B

A \ BC	00	01	11	10
0		1	X	1
1		1	X	1

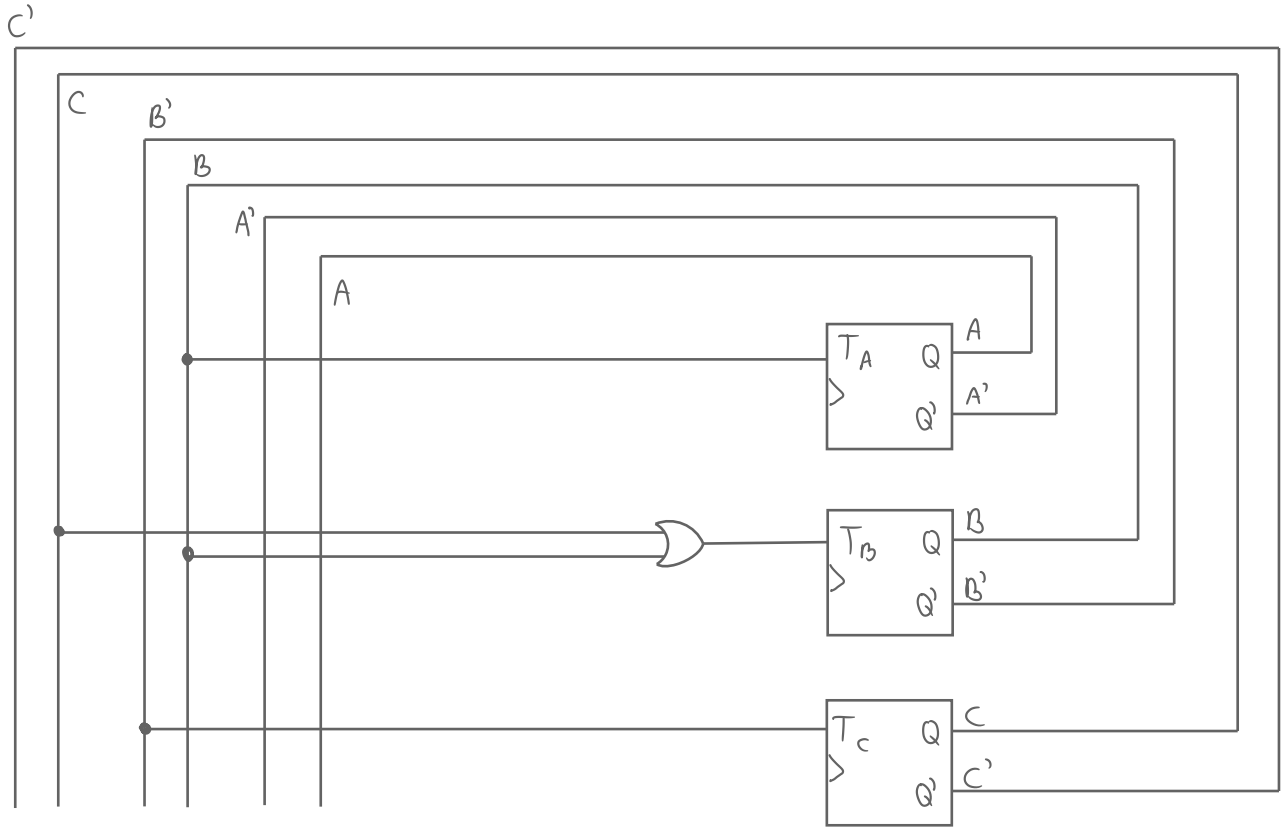
$T_B = B + C$

T_C

A \ BC	00	01	11	10
0	1	1	X	
1	1	1	X	

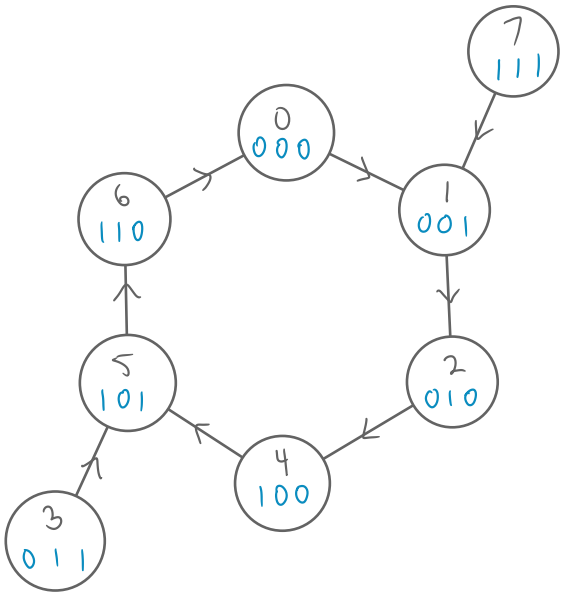
$T_C = B'$

Note: Failure to simplify to the simplest boolean expression can lead to incorrectly determining which states the invalid states transition to, potentially leading to an incorrect conclusion as to whether the circuit is self-correcting or not.



T	$Q(t+1)$
0	$Q(t)$
1	$Q'(t)$

T flip flop characteristic table



Unused State 011

A	B	C
0	1	1
↓	↓	↓
1	0	1

$T_A = B =$ 1 ⇒ toggle

$T_B = B + C = 1 + 1$

$=$ 1 ⇒ toggle

$T_C = B'$

$=$ 0 ⇒ no change

Unused State 111

A	B	C
1	1	1
↓	↓	↓
0	0	1

$T_A = B =$ 1 ⇒ toggle

$T_B = B + C = 1 + 1$

$=$ 1 ⇒ toggle

$T_C = B'$

$=$ 0 ⇒ no change

Since the invalid states transition to valid states

(011 → 100 and 111 → 001),

then this circuit is self correcting