

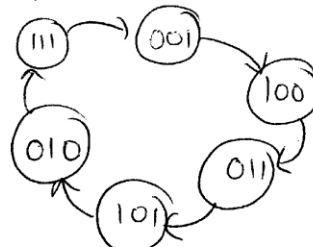
6. [6 marks] Design a counter that goes through the sequence:

1 4 3 5 2 7 and repeat

using a D flip flop for A, a JK flip flop for B, and a T flip flop for C. Use bit A as the least significant bit (LSB) and C as the most significant bit (MSB).

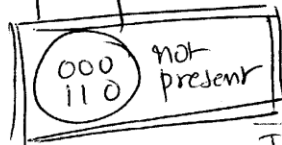
using a D flip flop for A, a JK flip flop for B, and a T flip flop for C Use bit A as the least significant bit (LSB) and C as the most significant bit (MSB).

Present			Next			F/F Inputs			
C	B	A	C ⁺	B ⁺	A ⁺	T _C	J _B	K _B	D _A
0	0	1	1	0	0	1	0	X	0
1	0	0	0	1	1	1	1	X	1
0	1	1	1	0	1	1	X	X	0
1	0	1	0	1	0	1	X	0	1
0	1	0	1	1	1	1	X	1	1
1	1	1	0	0	1	1	X	1	1



Excitation Tables

T	Q	Q ⁺	T
0	0	0	0
0	1	1	1
1	0	1	1
1	1	0	0



K-Maps

T_C:

BA	00	01	11	10
0	X	1	1	1
1	1	1	1	X

T_C = 1

J_B:

BA	00	01	11	10
0	X	0	X	X
1	1	1	X	X

J_B = C

K_B:

BA	00	01	11	10
0	X	X	1	0
1	X	X	1	X

K_B = A

J_K:

Q	Q ⁺	J	K
0	0	0	X
0	1	1	X
1	0	X	1
1	1	X	0

D:

Q	Q ⁺	D
0	0	0
0	1	1
1	0	0
1	1	1

D_A:

BA	00	01	11	10
0	X	0	1	1
1	1	0	1	X

D_A = B + A

