SYNCHRONOUS COUNTER DESIGN STEPS/PROCEDURES

1. **Determine the # of FFs needed to support the counting sequence's highest #.**

   $$2^n - 1 \geq \text{Highest \#}$$

2. **Build a State Transition Diagram. Be sure to include all states.**

3. **Build a State/Excitation Truth Table.**

4. **Simplify expressions for J and K inputs for each F/F on K-Maps.**

5. **Implement the Synchronous Counter/State Machine Circuit.**

6. **Draw the Timing Diagram (If Needed).**

RULES

	J	K
0 → 0	0	X
0 → 1	1	X
1 → 0	X	1
1 → 1	X	0