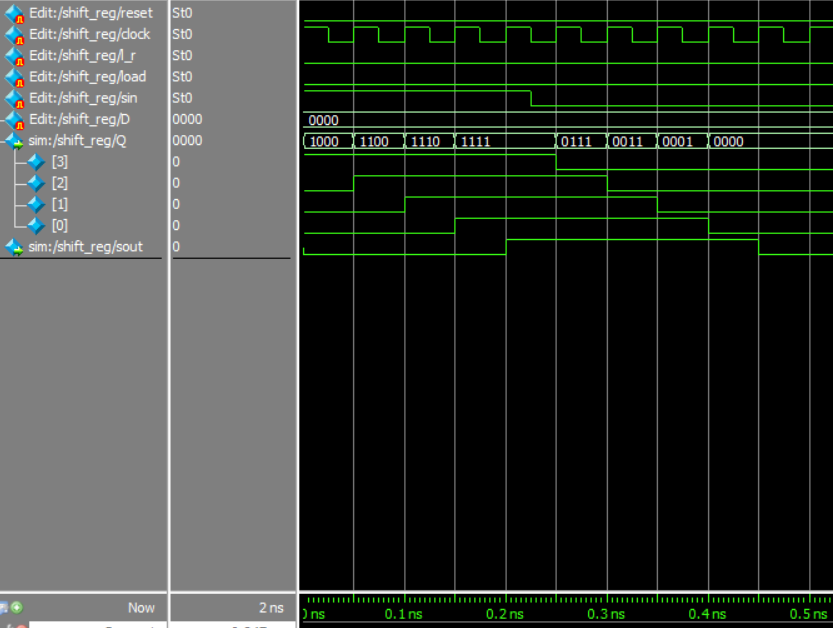
**LAB 6**

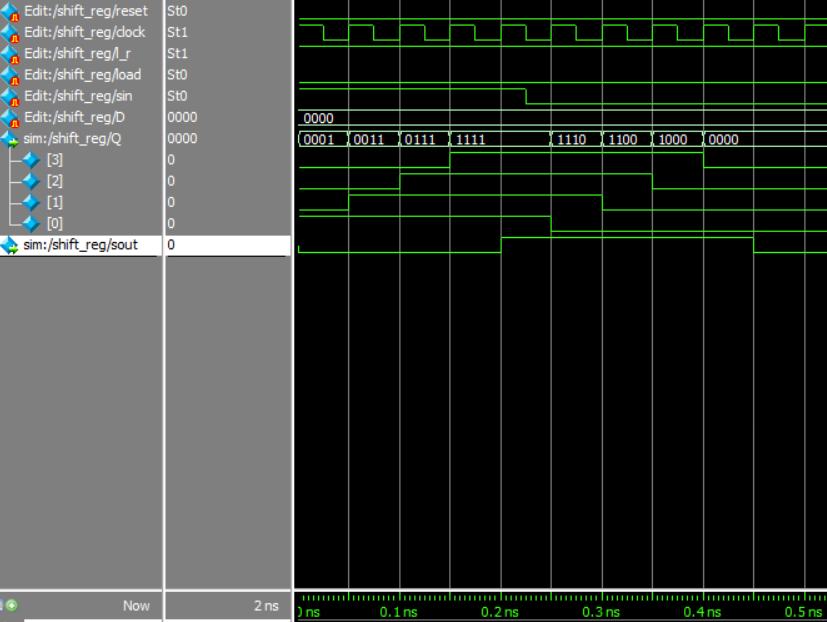
*PART 1 : SYNCHRONOUS SHIFT REGISTER*

**ModelSim**

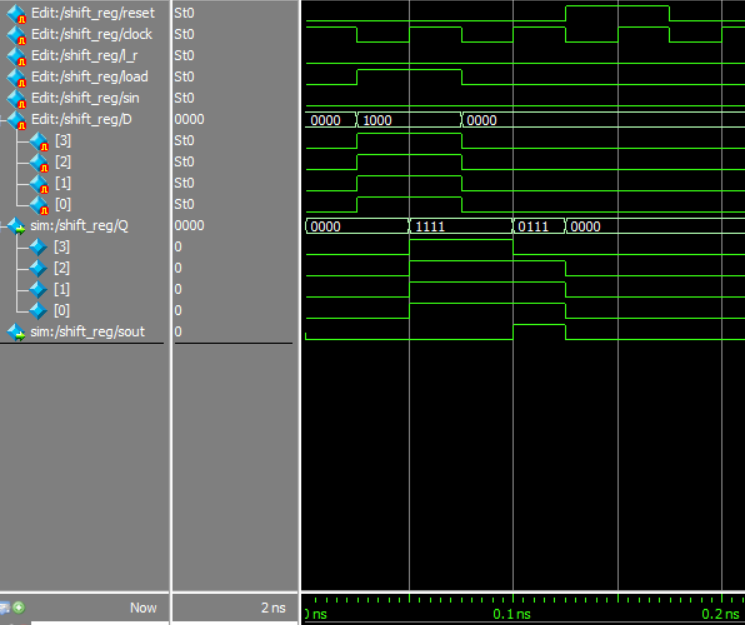
*[shifting in left-to-right; first half w/ sin HI, second half w/ sin LO]*

****

*[shifting in right-to-left; same as above, except l\_r is HI]*

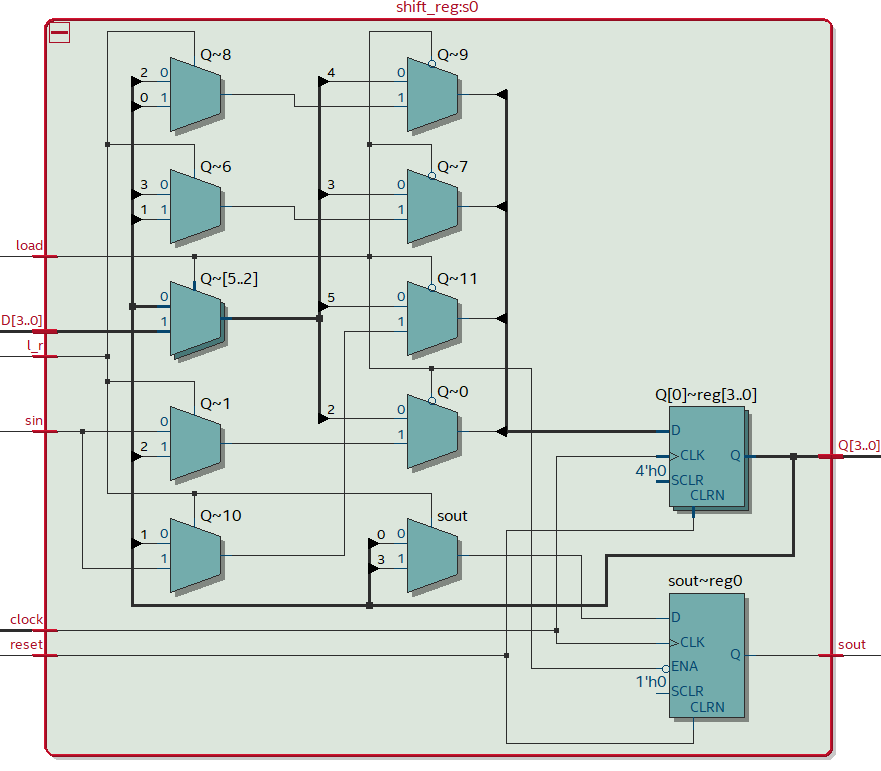
****

*[loading values from D and then resetting]*

****

Note: There is one clock cycle between the load and the reset where load=0 and sin=0 is shifted in from the left

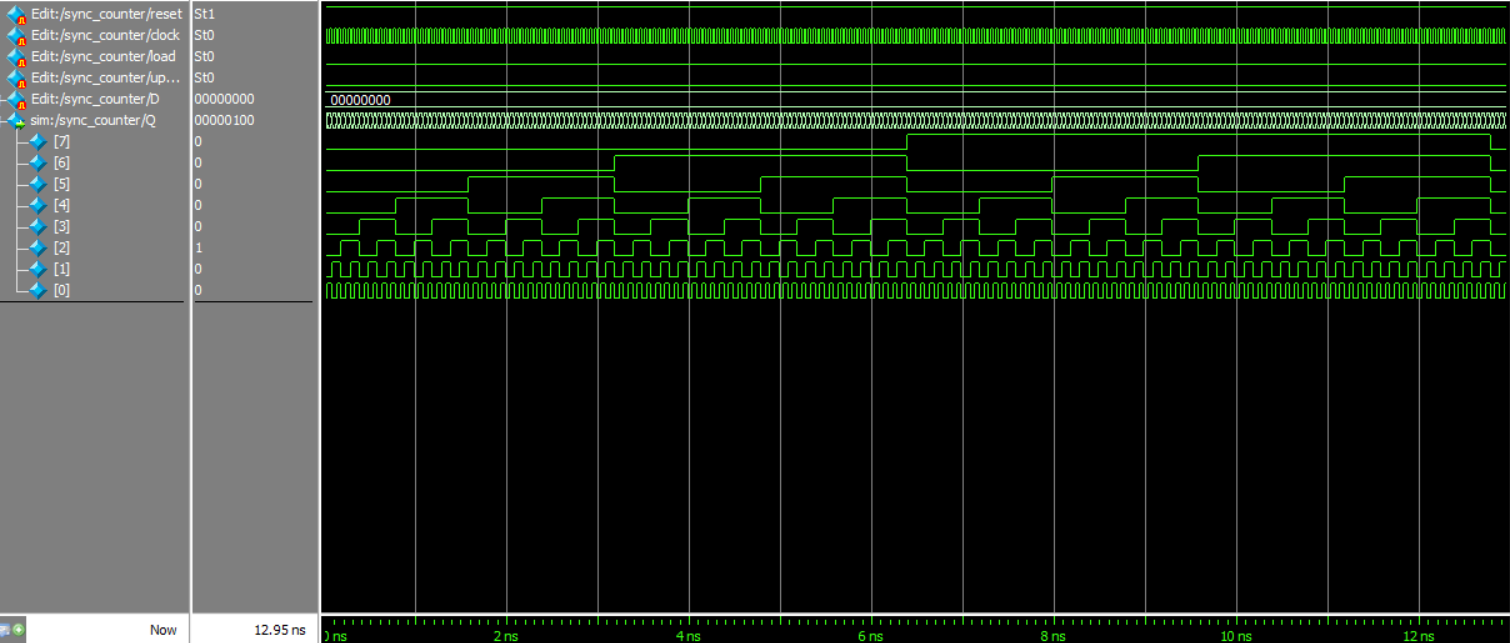
**RTL Viewer**

****

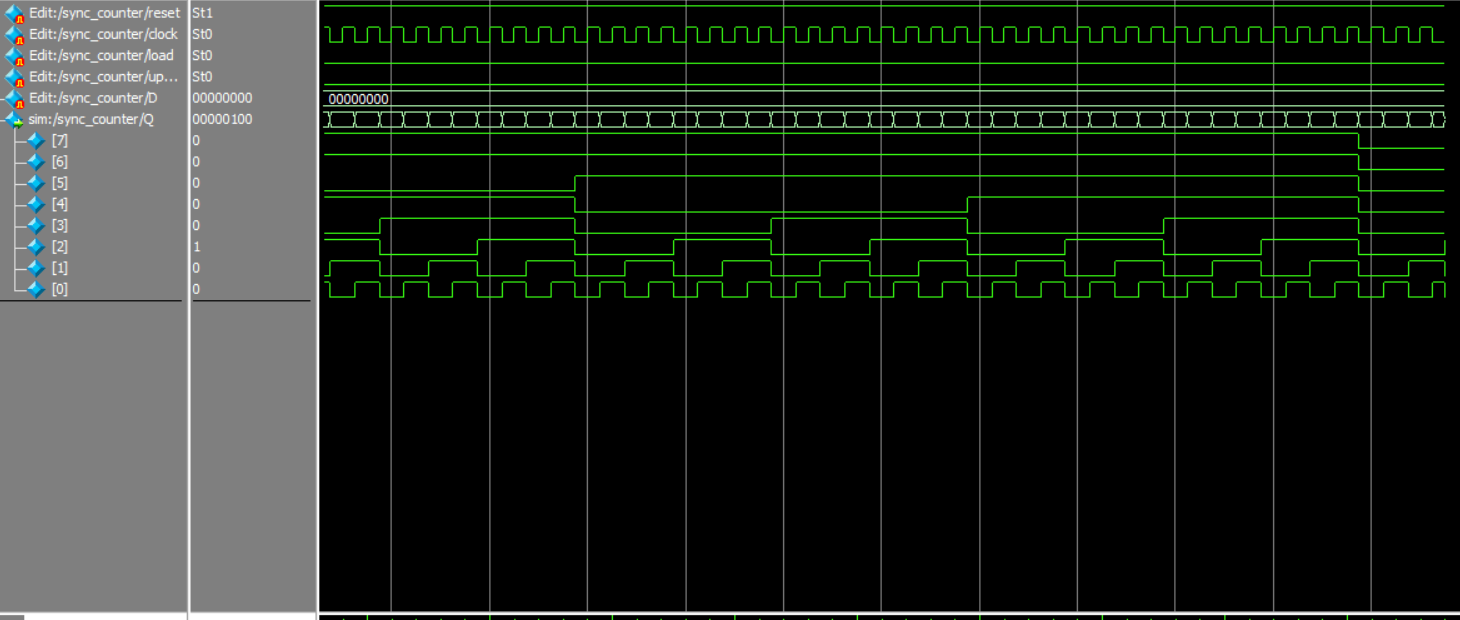
*PART 2 : SYNCHRONOUS BINARY COUNTER*

**ModelSim**

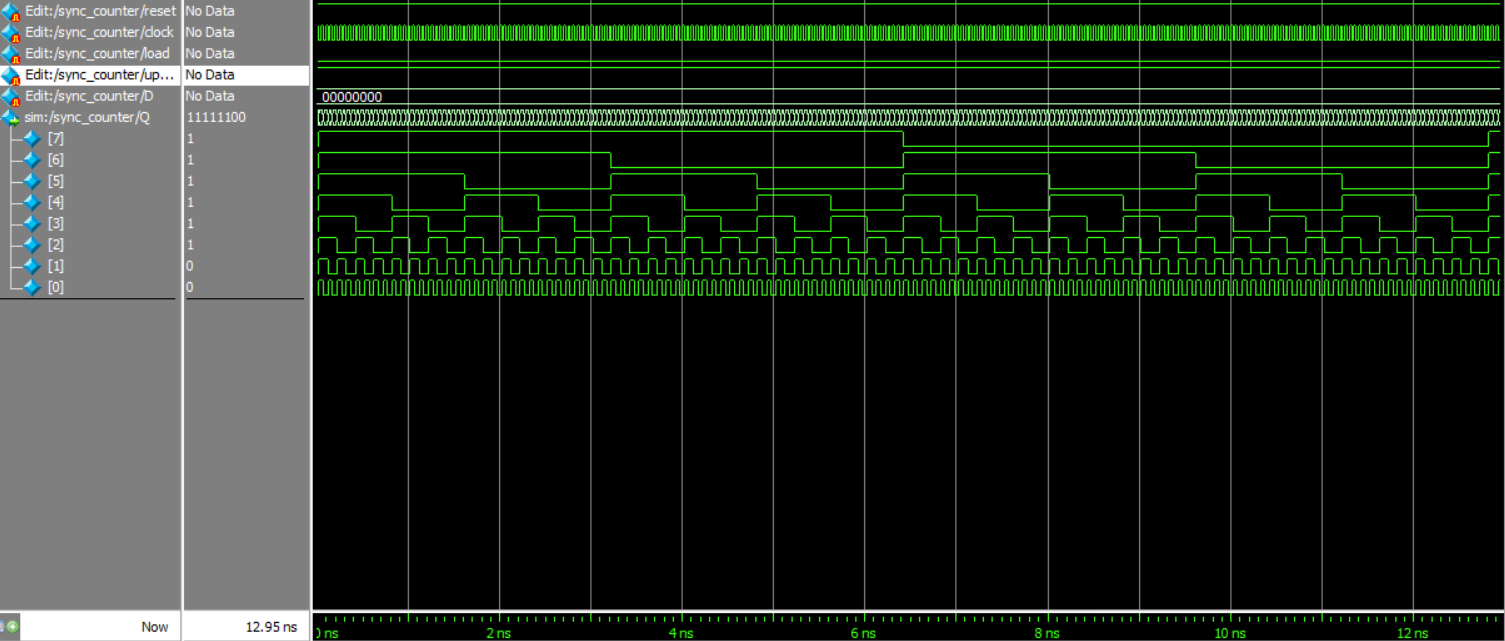
*[counting up from 0 and rolling over at 255]*

****

*[above rollover zoomed in]*

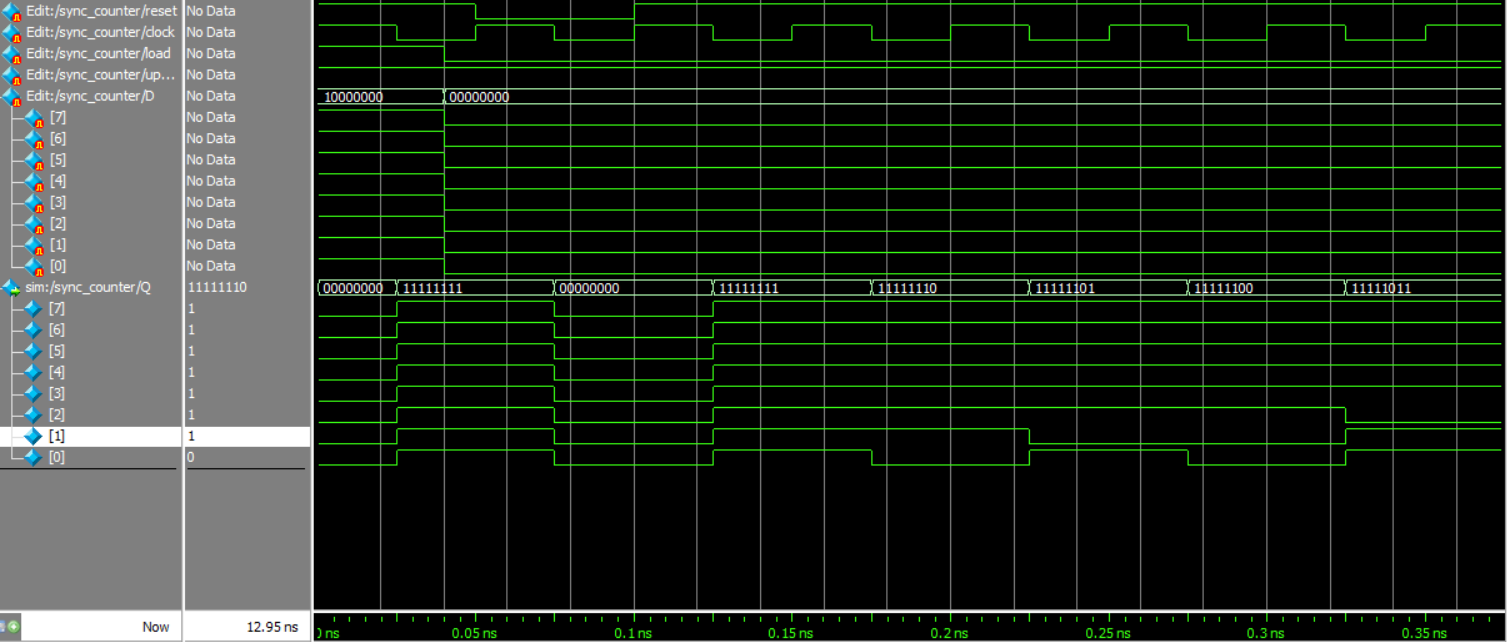
****

*[counting down from 255 and rolling over at 0 (rolls over twice, once at begin and at end]*

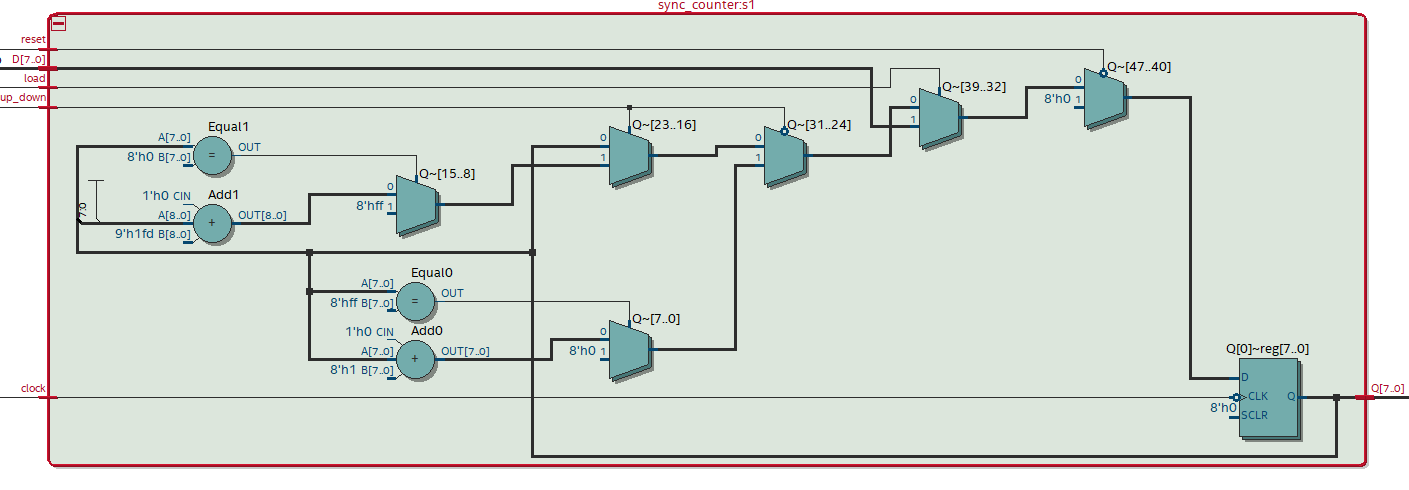
****

*[loading decimal 255, followed by a reset, followed by normal down-count rollover]*

*\*note: clock is negative edge triggered!*

****

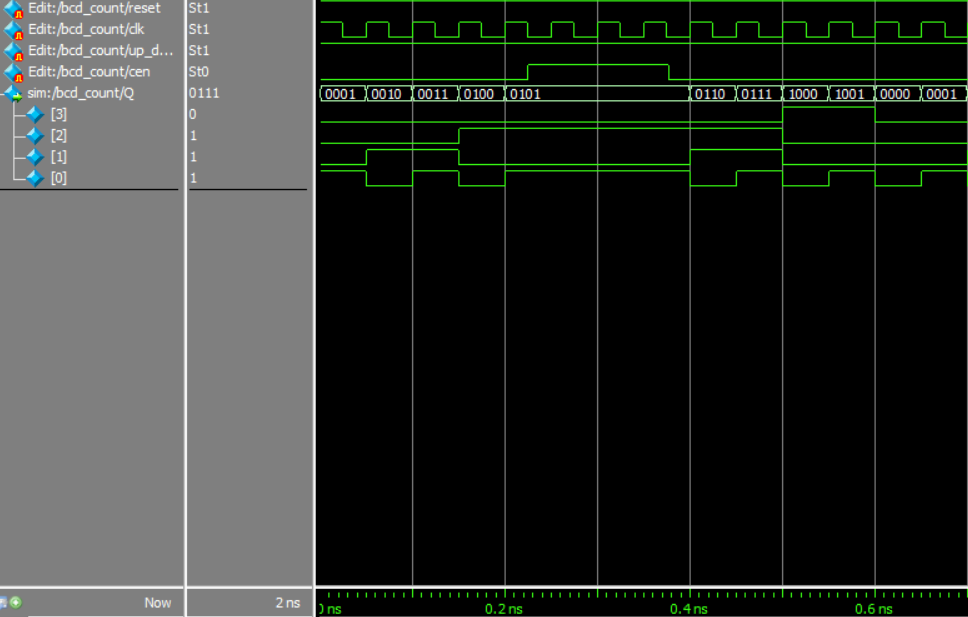
**RTL Viewer**

****

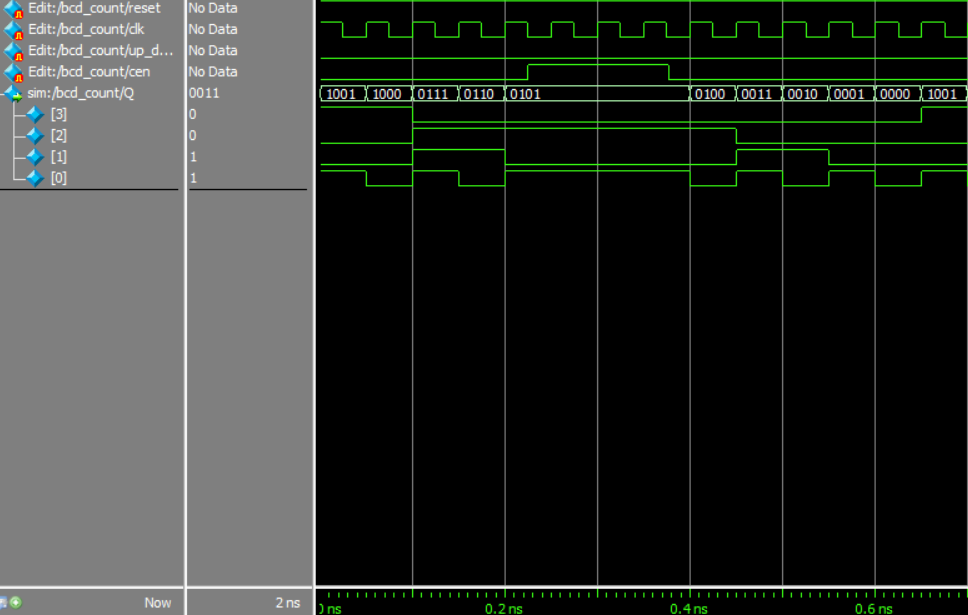
*PART 3 : SYNCHRONOUS BCD COUNTER*

**ModelSim**

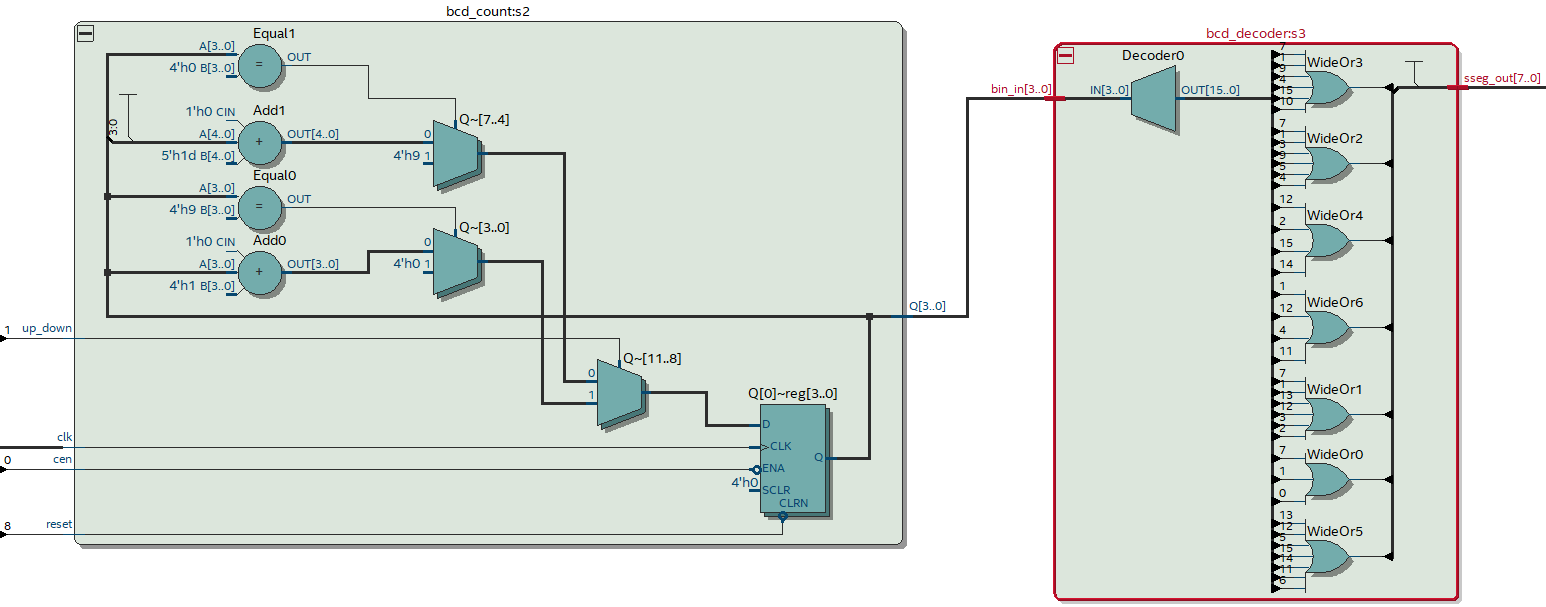
*[counting up and rolling over with cen=1 for three clock cycles to hold count]*

****

*[counting down and rolling over with cen=1 for three clock cycles to hold count]*

**

**RTL Viewer**

****