

TITLE OF THE EXPERIMENT -

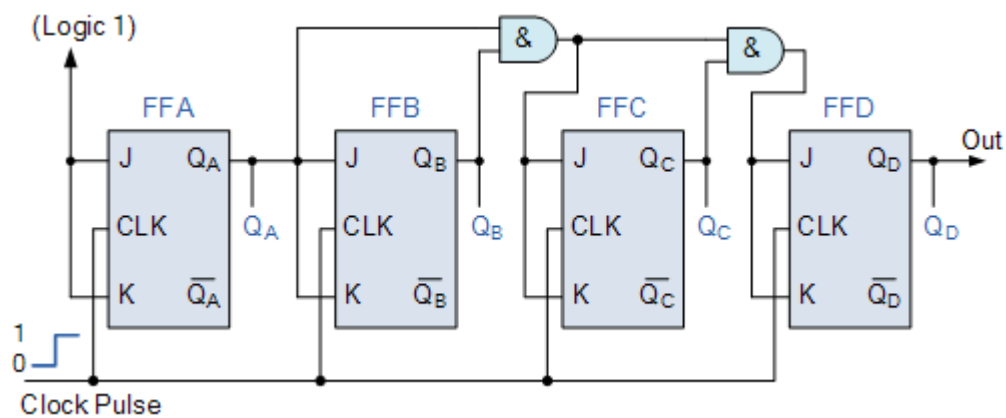
4 BIT SYNCHRONOUS UP - COUNTER

Theory -

A counter is a device which stores (and sometimes displays) the number of times a particular event or process has occurred, often in relationship to a clock signal. Counters are used in digital electronics for counting purpose, they can count specific event happening in the circuit. In UP counter a counter increases count for every rising edge of clock.

In Synchronous Up Counter, the external clock signal is connected to the clock input of EVERY individual flip-flop within the counter so that all of the flip-flops are clocked together simultaneously (in parallel) at the same time giving a fixed time relationship. In other words, changes in the output occur in "synchronization" with the clock signal.

Circuit Diagram:

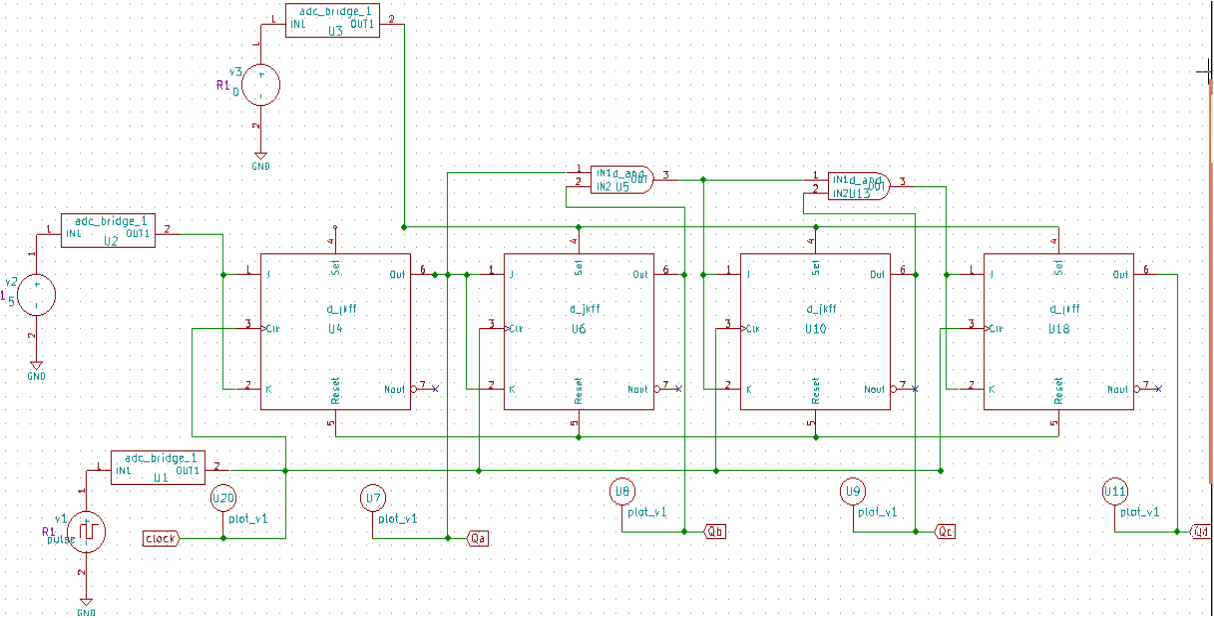


eSim Required Components -

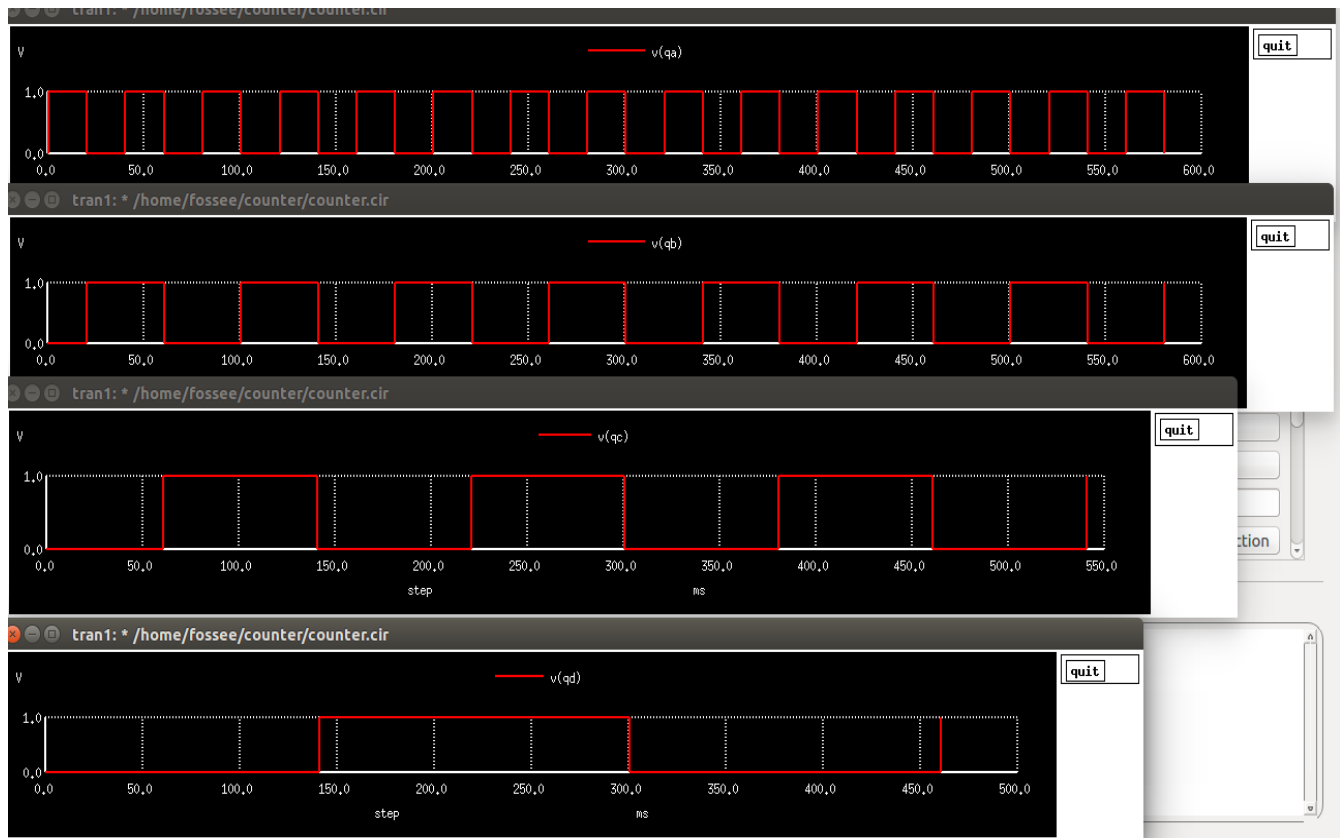
Synchronous up counter	
Component Name	Type
d_jkff	j-k flip flop
clock	clock input
d_and	and gate

DC	dc voltage source for logic 1
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ESIM Circuit design snapshot:



OUTPUT -



References:

- https://www.electronics-tutorials.ws/counter/count_3.html
- <http://ngspice.sourceforge.net/>