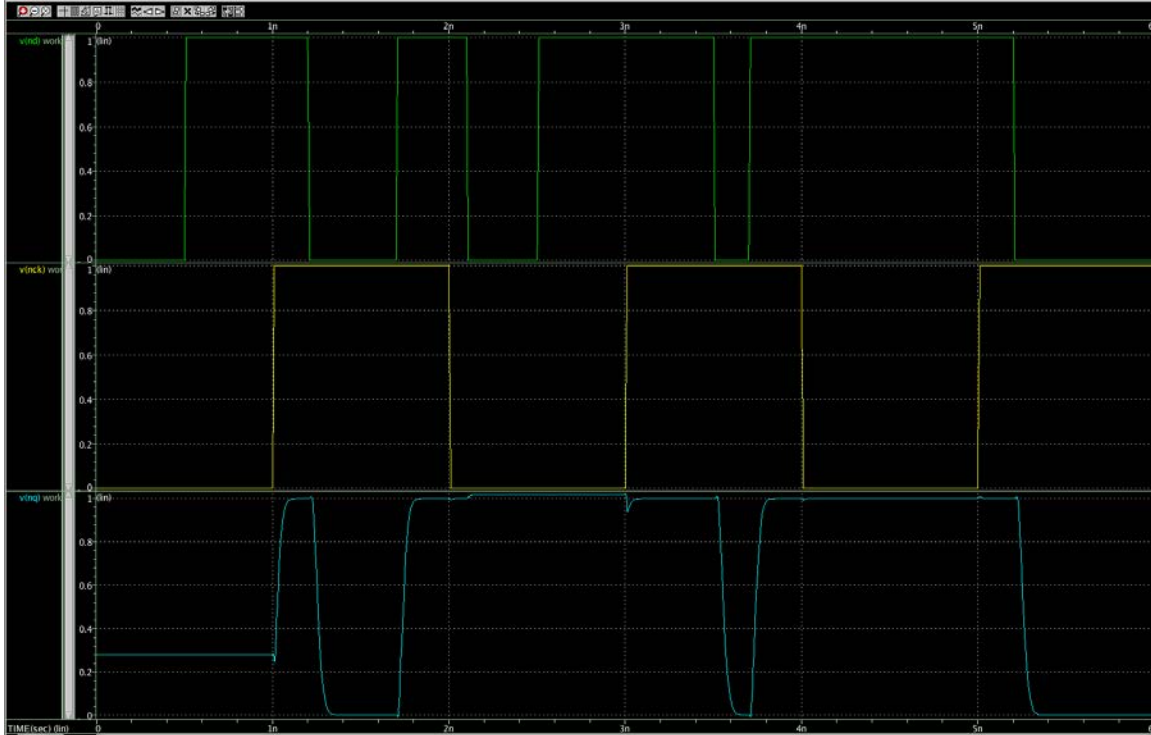
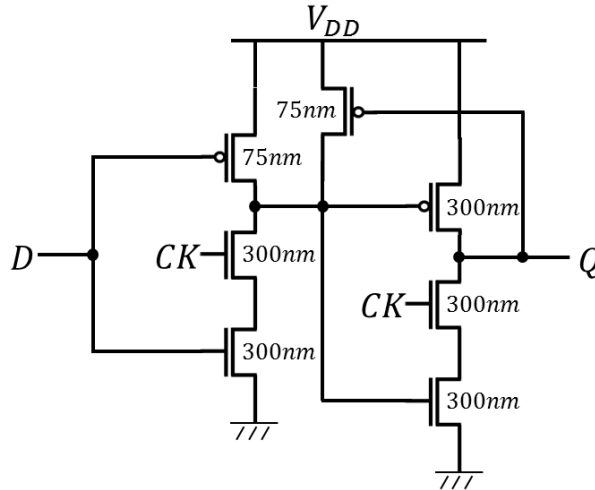
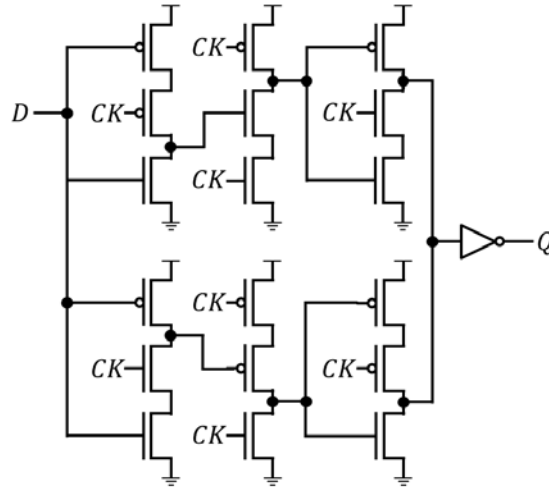


## Homework Assignment 4 (Due 4:10pm, Feb. 15)

(1) [HSpice, 20 points] Download <http://eecs.wsu.edu/~ee434/Homework/hw04.zip>. Unzip the file. Open hw04-1.sp in a text editor. Just translate the following circuit into a SPICE-level netlist and put it into the file.  $L=45\text{nm}$  for all the transistors. Run HSpice and submit the waveforms of D, CK, and Q (in a single screenshot).



(2) [HSpice, 30 points] Open hw04-2.sp in a text editor. Just translate the following circuit into a SPICE-level netlist and put it into the file.  $L=45\text{nm}$  and  $W=300\text{nm}$  for all the transistors. Run HSpice and submit the waveforms of D, CK, and Q (in a single screenshot). Briefly describe what the circuit does.



**Dual-edge-triggered D-F/F.**