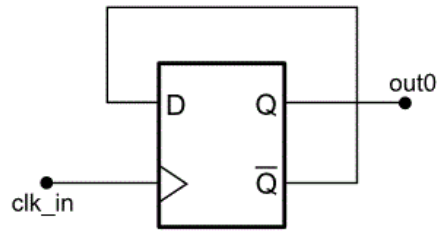
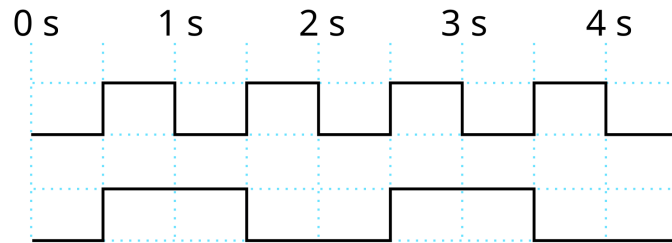


Assume you are using an SN74HCT74 D flip-flop to build the circuit shown here:



a)

Sketch a functional simulation (no propagation delay) of what will happen if a periodic square wave with a frequency of 1 Hz is used for the input. Describe the output frequency in terms of the input frequency.



**The output frequency is half the input frequency.**

b)

Assume a propagation delay of 15 ns, a setup time of 3 ns, and a hold time of 1 ns. Sketch a timing simulation of a few periods of the clock input being 50 MHz.

