

Project 4: Driving a Tool from Python

As discussed in class, you will be using Python to drive hspice. The goal is to minimize the delay from an initial inverter to a capacitive load, measuring from the midpoint of the rising edge on the first inverter to the midpoint of the falling edge on the capacitive load.

In this project, we will have a rule that each inverter must be an integer multiple larger than the inverter which drives it, and the multiple must be the same for all inverters. That is, the first inverter is the minimum size, and then each invert is “fan” times bigger than the one preceding it where “fan” is an integer.

You will determine the best value of fan and N to use to minimize the delay, where N is the number of inverters.

Take the InvChain.sp module as a starting point, but change it so that the capacitive load is 30pF.

NOTE: You may have to increase the .tran statement to handle longer delays!

Turn in your Python script named project4.py. Also submit any additional files required for your script to run but do NOT turn in the CMOS library file. Your script should print the delay for each combination of fan and N that you try and then print the optimal combination and time delay.