

ENEE 408D
Spring 2003
Homework 8
Due April 15, 2003

Read Chps. 13 in Baker, Li and Boyce (BLB).
Do the following problems from BLB.

1. 13.1
2. Design a one-bit full adder. Use CN20 minimum size transistors. Use the 2 input nand and nor gates, and inverters to realize the circuit. Verify your design using spice. Determine the maximum clock speed you can run your circuit without errors. For the device models, download the library EE408D4T from the web. (Note this is not the same library you used before.) Make sure you set the device attributes in spice to $L=2\mu m$ and $W=3\mu m$.
3. Implement the Flip Flop circuit on page 270 Fig. 13.20b in the text. Verify that it works as a D flip flop. Use the following for the clock and D signal using the spice PULSE source.
CLK: V1=0; V2=5; Td=5 μs , Tr= 5ns; Tf=5ns; PW=3 μs ; PER= 6 μs
D: V1=0; V2=5; Td=2 μs , Tr= 5ns; Tf=5ns; PW=6 μs ; PER= 12 μs

Ethics Lecture

The engineering accreditation board requires that students study ethics. Tues. we will have Steve Norton talk to us on ethics in engineering. It is required that you attend this lecture. He will hand out a small assignment which will be due April 22, 2003. Steve has degrees in math, physics and philosophy, so we are lucky to have his expertise for this part of the course. As preparation, please read a case study and three commentaries before Tuesday's class. The case study and commentaries can be found at:

<http://onlineethics.org/cases/pritchard/property.html>

The case study is titled "Who can change Proprietary Source Code?" Links to the commentaries by John B. Dilworth, Joseph Ellin, and Neil R. Luebke can be found at the end of the piece.