

HOMEWORK 4.

Due: Tuesday, April 15, 2003 at 5pm in 558 Cory

This is an individual assignment!

1. Conditional sum adder

- a) Find an error in a table that demonstrates conditional sum addition in slide 24, of lecture 18 notes.
- b) Demonstrate the conditional summation by a similar table for inputs $x = 10110110$ and $y = 01001101$.

2. Ling adder

Read the article "A sub-nanosecond 0.5 μ m 64-bit adder design," by S. Naffziger presented at 1996 IEEE International Solid-State Circuits Conference, Digest of Technical Papers, pp. 362-363.

- a) Reconstruct the key logic equations (from the inputs to the outputs) in the design of this adder.
- b) Draw the parallel prefix tree that this adder implements.

3. Sparse Ling adder

Draw the sum precompute gates for a sparse 64-bit Ling adder with a sparseness of 2. The final sum for both odd and even bits should be performed by selecting one of the possible precomputed sums using the available carry. Use domino logic.