Introduction to Digital Logic

- Adders
- Signed Binary
- Subtractors

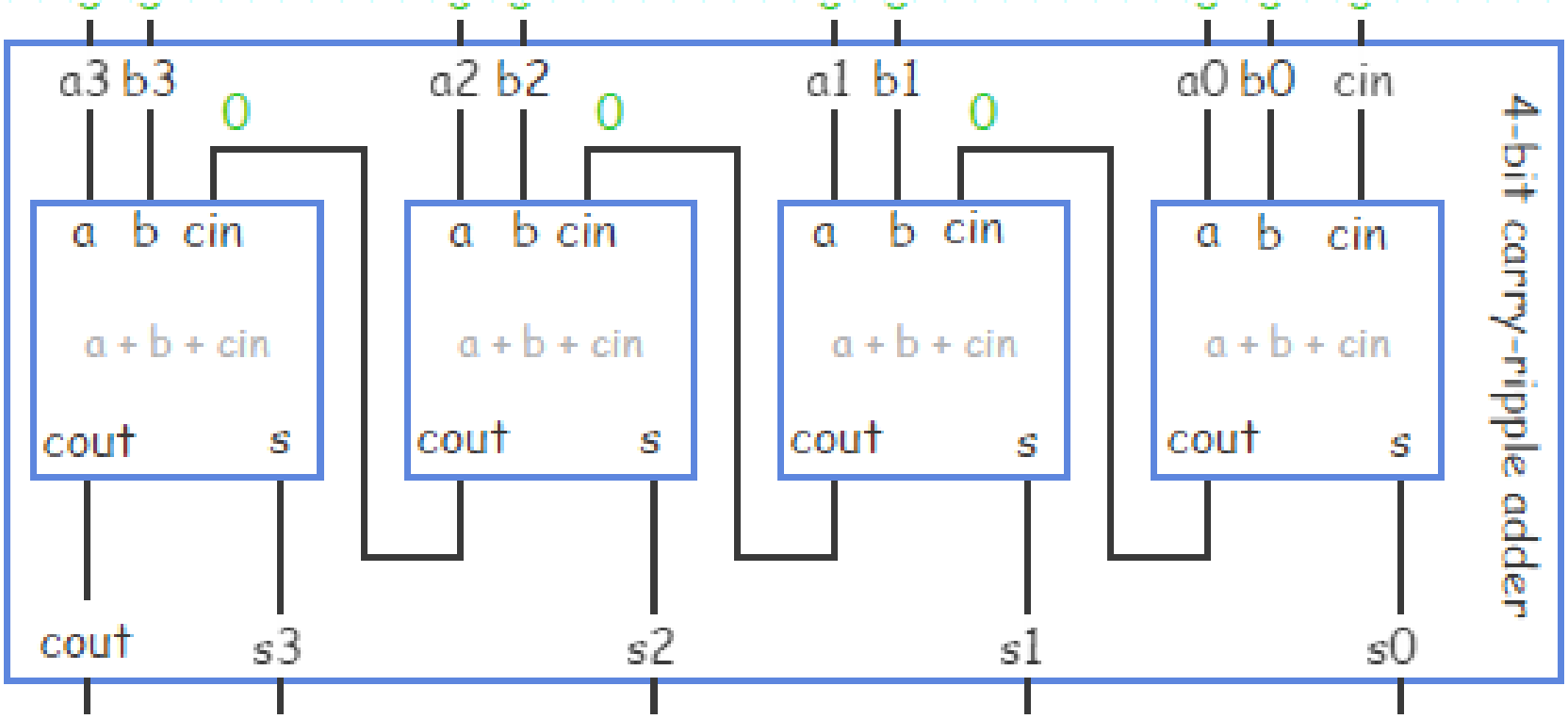
Doug Shook

Review Questions

- What's the difference between a half adder and a full adder?
- Why do we use two's complement to represent negative binary numbers?
- Given a binary number, how do we find the two's complement?
- What is an overflow?

Review Questions

- If we assume that each logic gate has a delay of 2ns, how long will it take a 4-bit carry-ripple adder to compute a result?



- What about a 4-bit subtractor?

Review Questions

- Construct a full adder using half adders.
- Design a counter. Your counter circuit should increase a value by one during every clock cycle.

Review Questions

Design a 3-bit Up/Down counter. This counter has an input called Up. When Up = 1, the counter counts up, when Up = 0, it counts down. You should only account for unsigned numbers. You may use any type of flip flop that you wish.

Hint: you may want to use both outputs of the flip flop: Q and Q'

Lab 3