

Half Adder Activity

Date: September 6, 2019

Name:

- Fill out the truth table for the half adder.

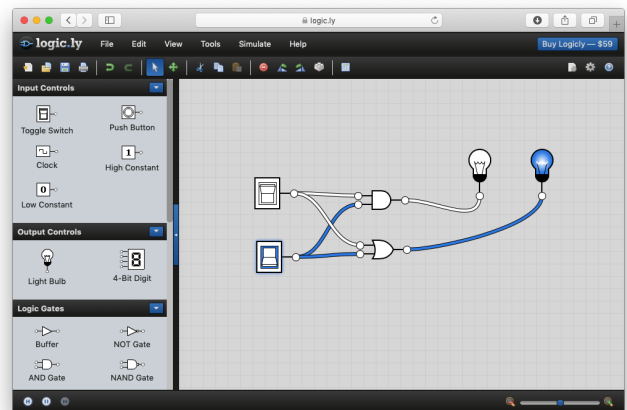
| A_{in} | B_{in} | C_{in} | C_{out} | S_{out} | Sum (Decimal) |
|----------|----------|----------|-----------|-----------|---------------|
| 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 | 1 | 1 |
| 0 | 1 | 0 | | | |
| 0 | 1 | 1 | | | |
| 1 | 0 | 0 | | | |
| 1 | 0 | 1 | | | |
| 1 | 1 | 0 | | | |
| 1 | 1 | 1 | | | |

- Write a boolean logic expression for the following:

$$C_{out} =$$

$$S_{out} =$$

- Navigate to <https://logic.ly/demo> and implement your logic expression with gates. Switches are inputs, and light bulbs are outputs. An example of switches connected through an AND and OR gate is below



- When you're finished implementing your half-adder, flag down Neil and demonstrate it. Screen shot your design and save it on your computer. You'll need it for the next lab.
- If each gate adds 10ms of delay from input to output, what is the total propagation delay through the circuit? What is the critical path?