

Lab 7: Half/Full Adder
EECE 2106.05

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Abstract

In Experiment 7 we tested and designed a half adder circuit, and a full adder circuit. So we were given a circuit diagram, and we were told to construct this breadboard circuit using AND and XOR gates. One highlight was the inclusion of two LED per circuit, not just our usual one. Our group was able to successfully construct both circuits. Our goal was to construct functioning, correct circuits.

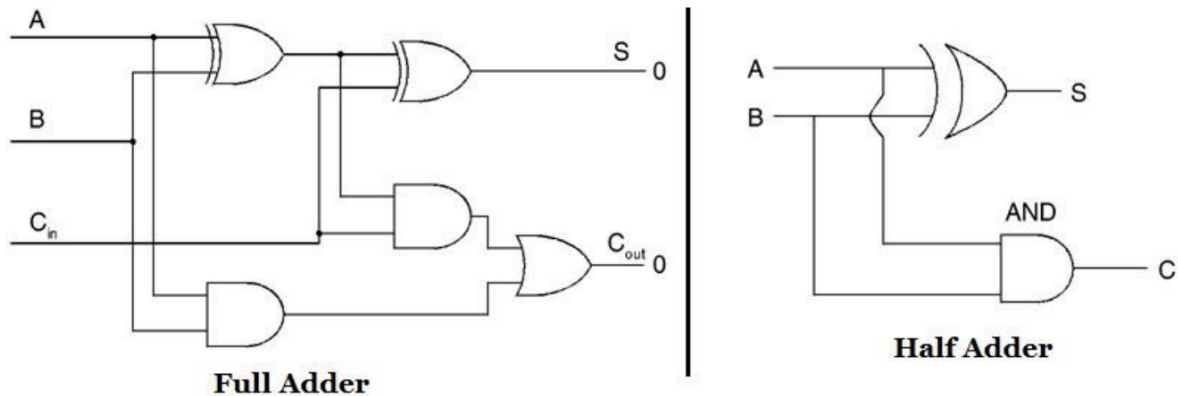
Components:

The components utilized to complete the experiment include:

- Gate 7408 (AND gate)
- Gate 7486 (XOR gate)
- 4 resistors
- 4 LED lights
- Two Breadboards (we both tried construction)
 - Cable wires
- Power supply (w/ 5v battery)
 - Multimeter

Experiment:

Experiment 7 consisted of coming up with truth tables for half and full adders. We were given this circuit diagram:



We figured out that S, C and C_{out} are LED lights that turn on when input is 1, and off when input is 0.

Here is the truth table for half adder:

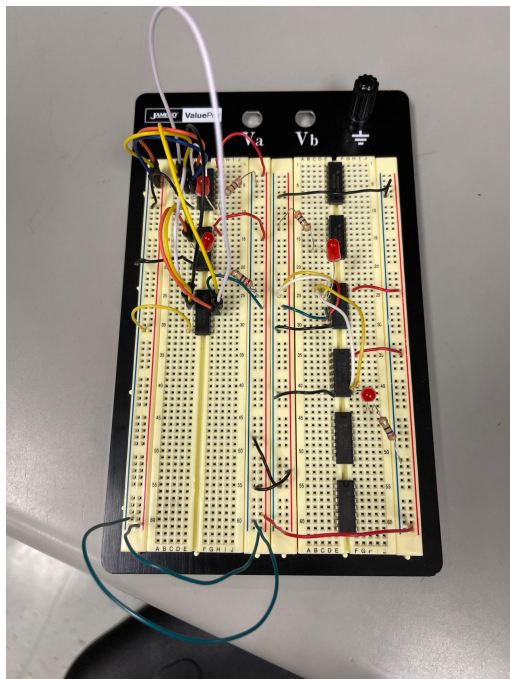
A	B	SUM	CARRY
0	0	0	0
0	1	1	0
1	0	0	1
1	1	0	1

Here is the truth table for the full adder:

A	B	Cin	SUM	CARRY
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

Complete Working Half Adder/Full Adder

Note: circuit on right is half adder, circuit on left is full adder.



Conclusion:

Samuel constructed the breadboard, wrote half of this lab report and came up with truth tables. Carlos assisted in writing the lab report. Both teammates contributed evenly however since Carlos had to present last week's breadboard circuit, since we had issues with broken circuits the entire week. Broken circuits continued to be a issue this week, and we need the lab assistant to issue new, unbroken circuits.