ECE-301-204

Lab2 Introduction & Binary Numbers

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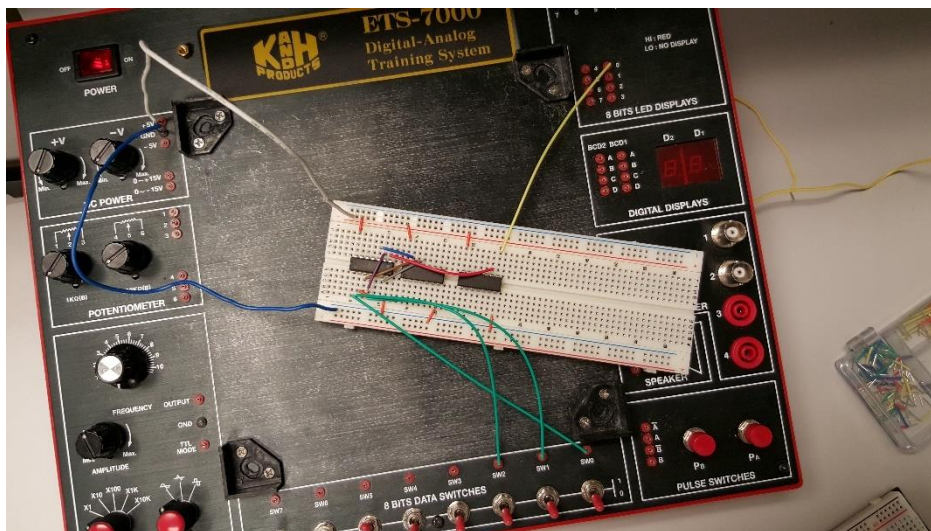
Objective:

To demonstrate the function of the basic logic gates and functions.

Materials and Equipment:

- Wires

- ET-1000 Trainer

- Breadboard

- 1 74xx00 (NAND gates), 1 74xx02 (NOR gates), 1 74xx04 (NOT gates)

Laboratory Data:

Here we have the breadboard with the NAND, NOR, and NOT IC's. We utilized 3 gates in the NAND IC, 1 in the NOR IC, and 1 in the NOT IC. We also used 3 switches for 3 different inputs. Only when all 3 switches were flipped to "1" did the LED light up meaning that the final output of the combination of the gates was a 1. All other cases the output was 0 therefore the LED didn't light up.

Truth table for the circuit:

sw_0	sw_1	sw_2	f
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1
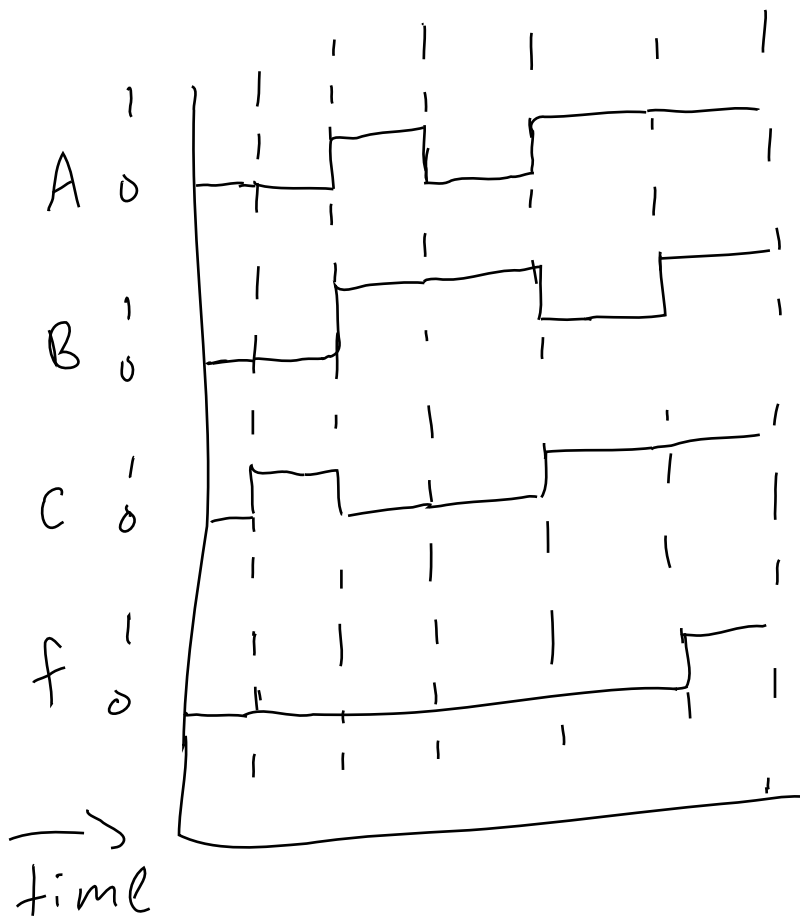
6.

Truth Table 1:

A	B	C	f
0	0	0	0
1	1	0	0
0	0	0	0
0	0	1	0
0	0	0	0
1	1	1	1
0	0	0	0

$$f = A \cdot B \cdot C$$
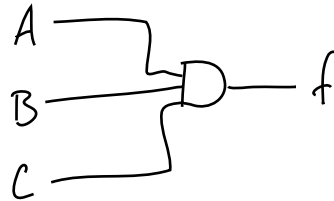
Truth Table 2:

$$f = \overline{A \cdot B \cdot C}$$

A	B	C	f
0	0	0	1
1	1	0	1
0	0	0	1
0	0	1	1
0	0	0	1
1	1	1	0
0	0	0	1
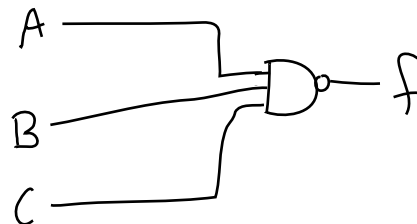
Comments and Conclusions:

This lab equips of with knowledge of how to set up inputs and outputs of certain gates in their respective IC's. This lab also gives us information that may be vital later on in building circuits such as timing being a major factor in our designs and the use of certain gates for certain situations.