

**CS 303 - Logic and Digital System Design**  
**Laboratory Assignment #02**  
**Deadline: 20/11/2022 23.55**

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In Lab#2, you will start using Digital Software. You can reach Digital Software from:  
<https://github.com/hneemann/Digital>.

1. Pre-lab Assignment

You will design a circuit that takes two 3-bit signed 2's complement binary numbers, add them and display the result in a seven-segment display.

Thus, your design has three main parts:

- 3-bit signed adder
- Seven-segment decoder that maps the output of the adder to seven-segment display.
- A LED showing the sign of addition. The LED will be ON if the result is negative. The LED will be OFF if the result is positive.

Fig. 1 and Fig. 2 show two examples of addition one with positive result and one with negative result.

**Important:** You should submit your Digital software output (with .dig extension) and report showing the design details to SUCourse before Sunday 23.55 November 20, 2022.

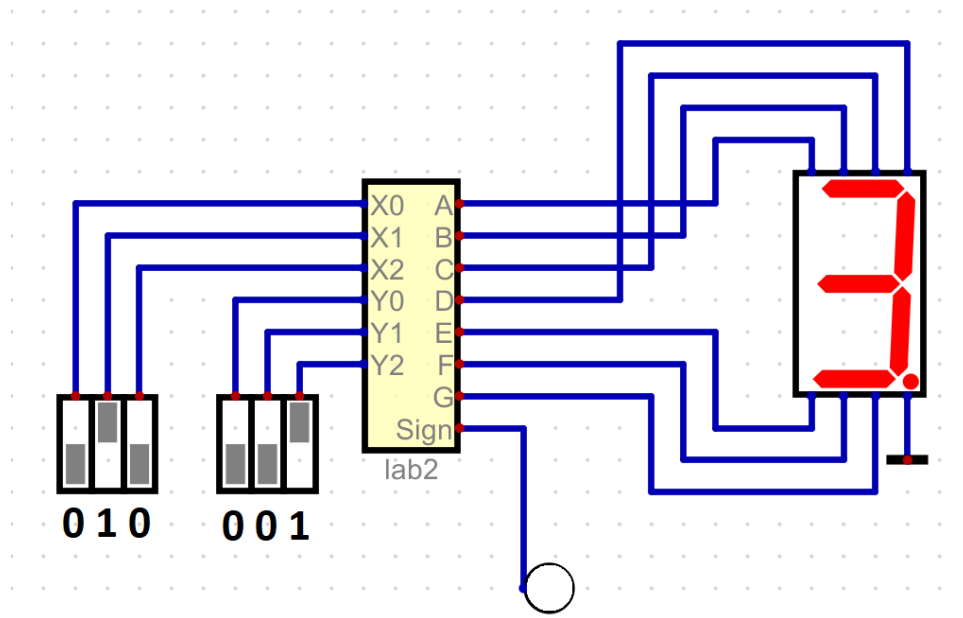


Figure 1: Summation of 1 and 2. The LED is OFF since the result is positive.

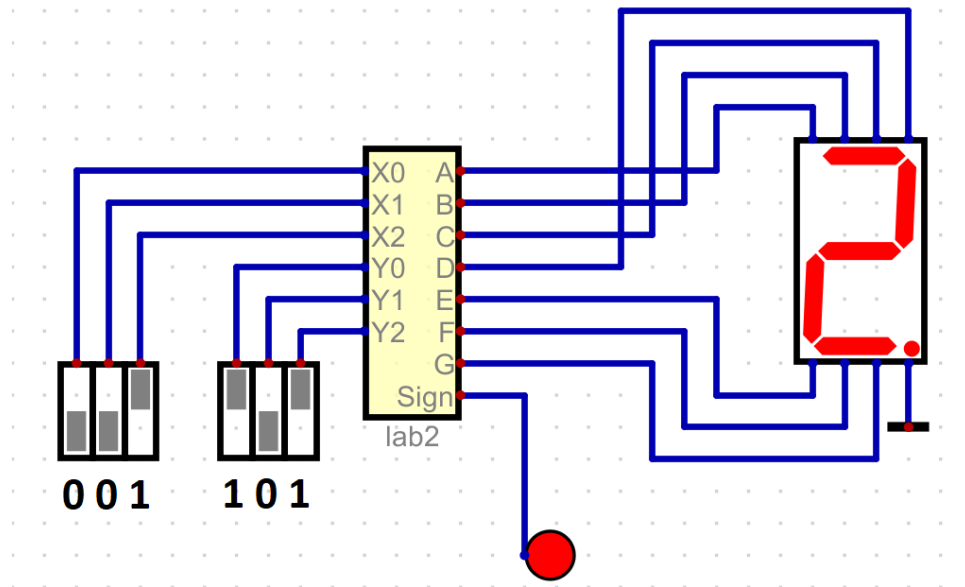


Figure 2: Summation of 1 and -3. The LED is ON since the result is negative.

## 2. In-lab

During the laboratory session, you will be asked to design an improved version of the circuit you designed in the pre-lab. Thus, it is important to know how the design works and how the Digital software works.

### Important:

- In Lab#2 you will work individually.
- You need to bring your computers with Digital software ready to use.