Lab 1 - Combinational Analysis & Implementation

- Primary Objectives:
  1. Implement a solution for the light switch circuit using pseudo-code controlled by a computer program
  2. Evaluate a combinational circuit design with a truth table
  3. Create a Boolean expression for the function of the device
- Objective #1: Complete pseudo-code for controlling the light
  - The circuit will consist of two inputs; motion and light, and one output named lamp. The lamp should be switched on only when, the motion input is switched on(indicating motion was detected), and the light input is switched off(indicating no light present).
  - Code:
    ```
    while (true) {
    boolean motion = isMotionDetected();
    boolean light = isLightDetected();
    boolean lamp = !light && motion;
    showLight(lamp)
    }
    ```
- Objective #2: Evaluate circuit with a truth table
  - Table #1: Truth table of combinational circuit

Motion	Light	Lamp
0	0	0
0	1	0
1	0	1
1	1	0

- This truth table demonstrates that this circuit will function as intended
- Objective #3: Provide a Boolean expression for the function of the device
  - Table #2: Name to Symbol Mapping

Name	Symbol
Motion	Mo
Light	Li

Name	Symbol
Lamp	La

- La = Mo • $\overline{Li}$
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