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Lab 2 Report

IV. REPORT

The report should be completed with your lab group and each group should submit a report before the deadline specified by your lab assistant.

Write a short introduction and include results from each team member's prelab.

Describe the procedures your group took to complete the construction and testing of your motion sensor circuits.

Include your schematic, simulation results, and proof of successful download to FPGA.

Include answers to the following questions:

- o In Lab 1, what would you have had to change to use three motion detectors such that any of three different motion detectors could turn on the light and could also turn on the buzzer if the light were already on because the manual switch S was on? Specifically consider the component changes or additions, the wiring changes, and the testing.

- o Compare that to the changes you would need to make for the Intel FPGA implementation of a logic circuit using three motion detector inputs.

Introduction:
In this Lab we used Quortus in order to design a circuit to execute a series of tasks and also executed a simulation for the circuit. We then used this simulation to execute a physical representation of this. We set up two and gates, a not gate, and an or gate. We used these gates to run LED lights. We both used a multiplexer for our prelabs which we were not able to translate into the lab. We had to create a circuit that utilized and, or, and not gates.

Procedure:
Step 1: Created digital circuit using and, or, and not gates
Step 2: Set the pins to corresponding assignment
Step 3: Created timing diagram
Step 4: Began simulation
Step 5: Connected physical board and correctly programed the FPGA and Quortus
Step 6: observed disable switch function and flashing lights

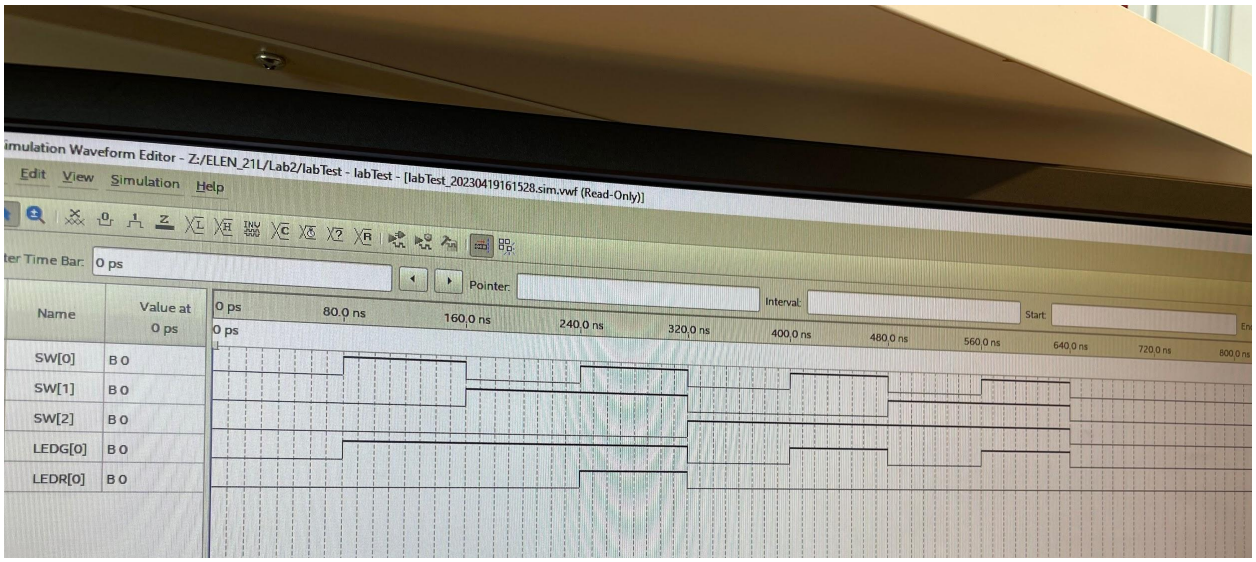
Report Questions:

1. In Lab 1 we did not use motion detectors because the majority of the motion detectors did not function properly, however, if we were to connect the circuit to the Quortus

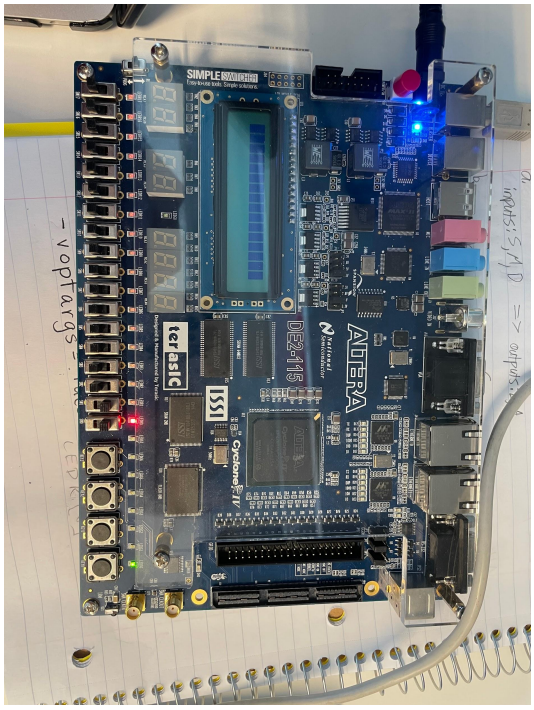
software we could create a circuit that allowed a motion sensor to also turn on a buzzer if the light is already on through the use of and, not, and or gates.

2.

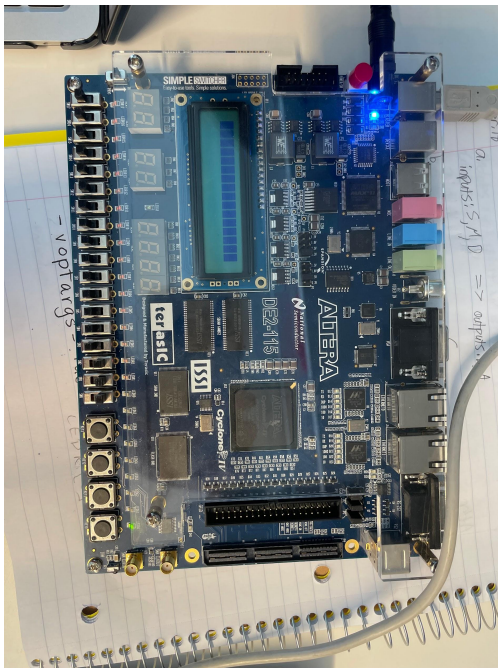
Simulation / timing diagram:



Before disable switch was flipped:



After switch was flipped: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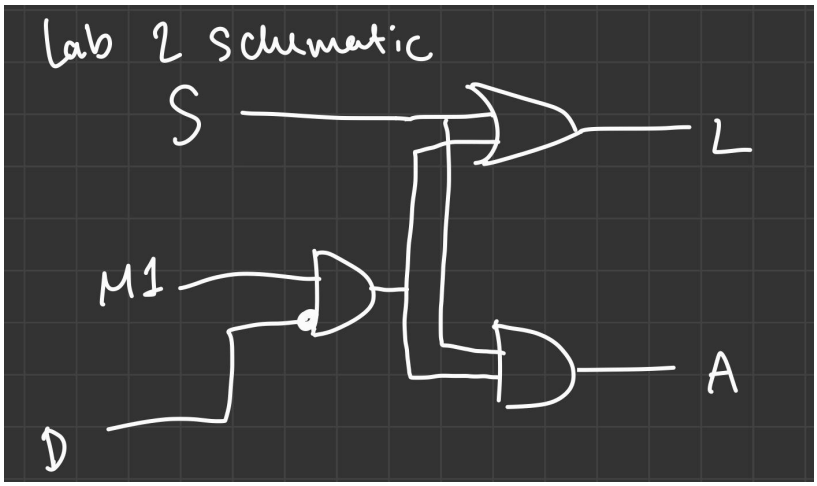
lab 2 schematic
S
L
M1
A
D