EASTERN MEDITERRANEAN UNIVERSITY
COMPUTER ENGINEERING DEPARTMENT
CMPE223 LOGIC DESIGN
EXPERIMENT VII-lab5

Title: Design and Implementation of Combinational Logic Circuits.

Objectives: The main objective of this experiment is to exhibit steps of combinational circuit design in two phases: First the circuit is going to be designed and optimized on paper, then the design will be verified in QUARTUS II environment.

Preliminary Work:

1. Carefully review your lecture notes.
2. Carry out the paper-work of the design tasks stated in Experimental Work section.
3. Implement the circuit designed in Step 2 in VHDL.

Experimental Work:

You are required to design the following combinational circuit: the circuit will implement the multiplication of two 2-bit binary numbers $A=A_1A_0$ and $B=B_1B_0$, and generate the product $C=C_3C_2C_1C_0$.

PART A: Make an implementation of the above circuit using four AND gates and two half-adders only. Then, verify the correction of this circuit by entering and simulating its schematic in QUARTUS II environment.

PART B: Make a behavioral implementation and simulation of the above design in VHDL.

NOTES:

You should come to the laboratory with well-prepared preliminary work.

Your preliminary work must be prepared by yourself, it is encouraged to exchange ideas with your friends, but the final work done must be of your own.

Lab duration is 2 hours and it is not possible to extend it. Hence, you should finish experimental work and prepare the experimental report in 2 hours; no delay to the next day or to the next week is possible.

Good Luck

Dr. Adnan Acan