

EE 245

Digital System Design

Project 2 – Hex Calculator

The goal of this project is to make a simple calculator which can add, subtract, and multiply two-digit (unsigned) hexadecimal integers. Specifications are as follows:

1. Two two-digit hex numbers are the input for the calculator. They will be entered on the DE2 board as two hex nibbles. Switches SW_{15-8} will be used to define a two-hex digit number B , and switches SW_{7-0} will be used to define the other two-hex-digit number A .
2. The hexadecimal number B will be displayed on seven segment displays HEX_{7-6} , and A will be displayed on seven segment displays HEX_{5-4} .
3. When KEY_0 is pressed, the sum $A + B$ will be displayed on seven segment displays HEX_{3-0} .
4. When KEY_1 is pressed, the difference $A - B$ will be displayed on seven segment displays HEX_{3-0} .
5. When KEY_2 is pressed, the product $A \times B$ will be displayed on seven segment displays HEX_{3-0} .
6. When none of the keys are pressed, displays HEX_{3-0} will be blank (no lights on).

This project will be completed by teams of *no more than two* persons. You may consult students outside of your team for help, but you may not use their code. The lab in 319 will be available for most of the day on Tuesday, November 13th for you to work. You do *not* need to attend your regular lab time on Tuesday. This project will substitute for lab for the week of November 13th. If you do not have enough time on November 13th to complete your work, you may schedule with additional time in the lab. As always, you are encouraged to write *and simulate* your code at home so lab time will be minimized.

These projects must be finalized, and the working code submitted, prior to 11 am on Monday, November 19th. We have lab practical exams scheduled for lab time on the 19th and 20th, but you should also have time to demonstrate your working project to me during lab on those days. Note that all students must email the completed Verilog files to ee347Lsdsu@gmail.com before 11 am on Monday. After demonstrating your working project to the instructor you must submit a report detailing your design, test procedure, and results. The report will be graded on your approach, content, style, and delivery and is due no later than class time on Monday November 26th.