ECE 3544: Digital Design I

Project 3A Validation Sheet Student’s Name

GTA Validation Instructions:

Program the FPGA on the DE1-SoC Nano board with the student’s implementation of the comparator system. When the programming has successfully completed, perform the set of tests described in the table below. For each case, indicate whether or not the student’ design demonstrates the behavior described.

|  |  |
| --- | --- |
| Procedure and *Expected Result* | Correct Operation  (**Yes** or **No**) |
| With SW[6] = 0, set SW[5:0] = 011001.  *HEX4 should display “b”. HEX[3:2] should display “19”. HEX[1:0] should display “25”.* **Binary 011001 is hex 19. This is equivalent to decimal 25.** |  |
| Change SW[6] to 1.  *HEX4 should display “d”. HEX[3:2] should display “19”. HEX[1:0] should display “13”.* **BCD 011001 is decimal 19. This is equivalent to binary 010011, which is hex 13.** |  |
| With SW[6] = 0, set SW[5:0] = 001110.  *HEX4 should display “b”. HEX[3:2] should display “0E”. HEX[1:0] should display “14”.* **Binary 001110 is hex 0E. This is equivalent to decimal 14.** |  |
| With SW[6] = 1, set SW[5:0] = 010100.  *HEX4 should display “d”. HEX[3:2] should display “14”. HEX[1:0] should display “0E”.* **BCD 010100 is decimal 14. This is equivalent to binary 001110, which is hex 0E.** |  |
| With SW[6] = 0, choose a 6-bit binary number whose value is between 0 and 39, inclusive. Write down the value you choose and its decimal equivalent.  SW[5:0] = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (binary) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (decimal)    *HEX4 should display “b”. HEX[3:2] should display the hexadecimal equivalent of the binary value on SW[5:0]. HEX[1:0] should display the decimal value that corresponds to the binary number on SW[5:0].* |  |
| With SW[6] = 1, choose a valid 6-bit binary coded decimal number. It should correspond to a number that is between 0 and 39 inclusive. Write down the binary value you choose and its equivalent in binary. For example, SW[5:0] = 011000 is BCD 18, which is equal to 010010 in binary.  SW[5:0] = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (BCD) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (binary)    *HEX4 should display “d”. HEX[3:2] should display the decimal equivalent of the BCD value on SW[5:0]. HEX[1:0] should display the hexadecimal value that corresponds to the binary equivalent of the BCD number on SW[5:0]. (Whew!)* |  |

GTA Printed Name and Signature:

Date and Time of Validation: