**ECE 3544: Digital Design I**

Project 5 Validation Sheet – Page 1 Student’s Name and Last Four ID Digits

GTA Validation Instructions:

Program the FPGA on the DE1-SoC Nano board with the student’s implementation of the FSM-Datapath. When the programming has successfully completed, perform the tests described below. Apply the values to the switches and/or press the key as indicated, reading from left to right. In general, the first value represents the opcode, the second value represents operand A, and the third value represents operand B. For each step, record the value of HEX[3:0] as the **Result**.

HEX[3:0] should not change its value while the switches are being changed. If they do change, make a note in the comments section. (HEX[3:0] should change while KEY1 or KEY0 is being pressed. That is acceptable and there is no need to make a note of it.)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SW[3:0]** |  | **SW[7:4]** | **SW[3:0]** |  | **SW[7:4]** | **SW[3:0]** |  | **Result** |
|  |  |  |  |  |  |  | KEY0 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
| 0000 | KEY1 | 0000 | 0000 | KEY1 | 0000 | 0000 | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |

*Compare the last result to the last four digits of the student’s ID number. If the digits do not match, STOP THE VALIDATION. DO NOT CONTINUE.*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SW[3:0]** |  | **SW[7:4]** | **SW[3:0]** |  | **SW[7:4]** | **SW[3:0]** |  | **Result** |
| 0001 |  | 1100 | 0001 |  |  |  |  |  |
| 0010 | KEY1 | 0011 | 1001 | KEY1 | 0101 | 0011 | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
| 0011 | KEY1 | 0110 | 1010 | KEY1 | 0011 | 0100 | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
| 0100 | KEY1 | 0011 | 0101 | KEY1 |  |  |  | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
| 0101 | KEY1 | 0111 | 1010 | KEY1 | 1101 | 0110 | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
| 0110 | KEY1 | 0100 | 0011 | KEY1 | 0110 | 1101 | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
| 1000 | KEY1 | 0110 | 0011 | KEY1 | 0000 | 0111 | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
| 1001 | KEY1 | 1110 | 1110 | KEY1 | 0000 | 0011 | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
| 1010 | KEY1 | 0011 | 1010 | KEY1 | 0000 | 0101 | KEY1 |  |
| 1011 | KEY1 | 0011 | 1010 | KEY1 | 0000 | 0101 | KEY1 |  |

**The validation continues on the next page.**

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Project 5 Validation Sheet – Page 2

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SW[3:0]** |  | **SW[7:4]** | **SW[3:0]** |  | **SW[7:4]** | **SW[3:0]** |  | **Result** |
| 1100 |  | 0011 | 1100 |  |  |  |  |  |
| 1101 | KEY1 | 0111 | 1101 | KEY1 | 0110 | 0111 | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
|  |  |  |  |  |  |  | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
|  |  |  |  |  |  |  | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
|  |  |  |  |  |  |  | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
|  |  |  |  |  |  |  | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
|  |  |  |  |  |  |  | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
|  |  |  |  |  |  |  | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
|  |  |  |  |  |  |  | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |
|  |  |  |  |  |  |  | KEY1 | \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ |

Comments (only required if something is unusual or wrong):

GTA Printed Name GTA Signature

Date and Time of Validation