

## 0. Understanding the LEDs of the FPGA

LD0: Int0

LD1: Int1

LD2: IM0

LD3: IM1

LD4: Grounded

LD5: IE

LD6: IL

LD7: Interrupted has been requested

## 1. Manipulating Int0 and Int1 onto the FPGA board

Note: This can be done in one of two ways

- a. Push the first switch up and press the South Button, which writes data to the fpga board. The LED zero should turn on, which indicates the Int0 value is now stored.
- b. Now do the same for the second switch and the Int1 value should also be stored which is indicated by the LED one light turning on.
- c. To reset the register, press the North Button and bring the switches back down.
- d. Now press the West Button, then Int0 should be stored (indicated by LED zero). Pressing the East Button will do the same for Int1.
- e. Now reset the register by pressing the North Button again.

## 2. Manipulating the IM0 and IM1 onto the FPGA board

Note: This can be done in only one way

- a. Push the third switch up and press the South Button. The LED two should turn on, which indicates the IM0 value is now stored.
- b. Now do the same for the fourth switch and the IM1 value should also be stored which is indicated by the third LED light turning on.
- c. Reset the register again by pressing the North Button and bring down the two switches.

## 3. Understanding and Manipulating the IL (interrupt level) and IE (interrupt enabled)

- a. Make sure that the rotary knob is pointed south.
- b. Press the South Button. No LED should light up.
- c. Now rotate the rotary knob by one click and press the South Button. The fifth LED light should turn on which indicates that the interrupt level is one and interrupts are no longer blocked.
- d. Reset the register again by pressing the North Button and put the rotary knob back to its original position.
- e. Now press the rotary knob button. The sixth LED light should turn on indicating that the interrupt enable is one.
- f. Reset the register again.

#### 4. Causing an interruption to occur

Note: In order for an interruption to occur, the IE and IL need to both have the value one and at least one pair of Int with IM need to be one.

- a. Push the third switch up and push the rotary knob button. Make sure that the IE (sixth LED) is a one. If it is not, press the knob again.
- b. Now press the South Button to write the IM0 data onto the board. If the IL (fifth LED) is not one, rotate the rotary knob by one click and press the South Button again. Note: Check by making sure LEDs six, five, and two are on right now.
- c. There should not be an interrupt being handled right now, because Int0 does not match the IM0 value. So, press the West Button. Notice that both LEDs zero and seven came on. This means that an interruption has occurred.
- d. Now to do this with IM1 and Int1, pull down the third switch, push up the fourth switch, and press the South Button. The only LEDs that should be lit is six, five, and three.
- e. Press the East Button, and both LED one and seven should light up. This is an interrupt that was caused by IM1 and Int1.

#### 5. Have fun with this information and turn the lab in to your professor.