

Design Name : Use of the For Loop

Objective :

Understand the for-loop and use it in a simple design.

Assignment 1:

Problem:

We have two sets of LED condition; SL, SR. Each set is 8 bits. Whatever the values in SL and SR, they continue to rotate towards right and left with 2 bits per second. The actual LEDs on the board will show ORed version of these two sets.

Leftmost bit of SL will be inverted when L button is pressed.

Rightmost bit of SR will be inverted when R button is pressed.

SL and SR will continue to rotate during button press and LEDs will display the ORed version of these two.

Design the circuit in VHDL, implementing the rotations with for-loop.

Note that if the user presses L button for 1 seconds, two leftmost bits of SL will be inverted since it continues to rotate at 2 bits per second. Similar for the R set.

Assignment 2:

Let SL and SR be 16 bits, but LEDs will show ORed version of leftmost 8 bits of SL and rightmost 8 bits of SR. This time, instead of for-loop, use concatenation method for rotation.

You need to note down some synthesis report values since they are asked in your Experiment Report. For example; max operating clock frequency.

