
Methodologies for System Level Design and Modeling

Online Offering – Spring 2017

Homework 5 – SystemC RTL Complete Design

Due Date: March 25

In this assignment you are to design the 4-bit multiplier with SsystemC. Multiplication is performed by adding the multiplicand A to itself B times, where B denotes the multiplier. A multiplier circuit has two 4-bit inputs A and B and its 8-bit output, W . After a complete positive pulse appears on go , the circuit reads the A and B operands from the corresponding busses, after which the multiplication process begins. After the completion of the multiplication process, the multiplier places W on the corresponding busses and issues one-clock duration pulse of $ready$. Following this, the circuit returns to its starting state waiting for another pulse on go .

- A. Write SystemC codes of the datapath components.
- B. Write the controller description with SystemC.
- C. Complete the circuit by putting together the datapath components and controller.
- D. Write a testbench that applies test data and verifies functionality of systems.