

Exercise 5: SystemC and Virtual Prototyping

Exercise on sc_fifo

Matthias Jung, Lukas Steiner

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The source code to start this exercise is available here:
<https://github.com/TUK-SCVP/SCVP.Exercise5>

Task 1

Kahn Process Networks

Figure 1 shows an example for a *Kahn Process Network* (KPN). It consists of three processes, has zero inputs and one output e . The process **Add** reads one integer number from each of its input a and c and writes the sum of both numbers to its output b ($b = a + c$). The **Split** process copies its input b to two FIFOs (a and d) and to the output signal e . The process **Delay** writes its input d to its output c . Two FIFOs are initialized with single values: $b = 1$ and $c = 0$.

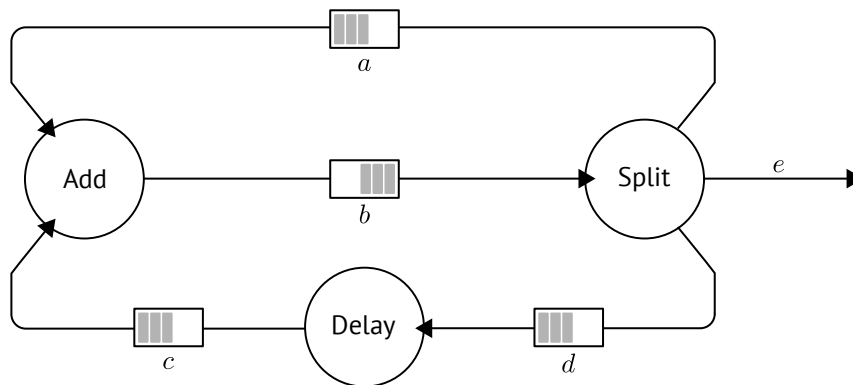


Fig. 1: Simple Kahn Process Network

The task for this exercise is to implement this KPN in SystemC using `sc_fifo<T>` and `SC_THREADS` for the processes. Please use a FIFO depth of 10, unsigned `int` as template type `T` and blocking `read()` and `write()` for accessing the FIFOs. The output e should be printed by the **Split** process. The **Split** process should stop the simulation after 10 prints. Initialize the FIFOs b and c in the `SC_CTOR`.

What is this KPN doing?