2019 MSOC Assignment 1

Student: 傅子興

Student ID: B04901015

0. Environment Setup

0.1. Hello world result

```
louiefu@louiefu-AB350-Gaming-3:~/Desktop/MSOC2019/Lab1/0_hello$ ./ex0

        SystemC 2.3.2-Accellera --- Mar 27 2019 20:56:48
        Copyright (c) 1996-2017 by all Contributors,
        ALL RIGHTS RESERVED
4 ns Hello world!
louiefu@louiefu-AB350-Gaming-3:~/Desktop/MSOC2019/Lab1/0_hello$
```

1. Counter

1.1. Counter result

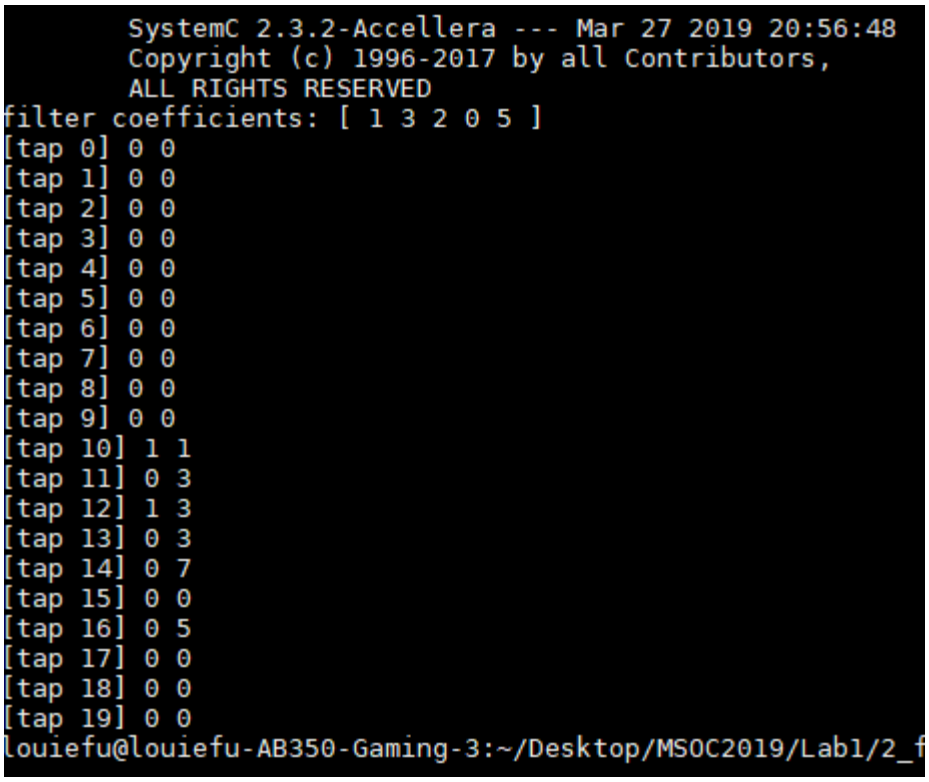
```
louiefu@louiefu-AB350-Gaming-3:~/Desktop/MSOC2019/Lab1/1_

        SystemC 2.3.2-Accellera --- Mar 27 2019 20:56:48
        Copyright (c) 1996-2017 by all Contributors,
        ALL RIGHTS RESERVED
Updated to 1 at 30 ns
Updated to 2 at 40 ns
Updated to 3 at 50 ns
Updated to 4 at 60 ns
Updated to 5 at 70 ns
Updated to 6 at 80 ns
Updated to 7 at 90 ns
Updated to 8 at 100 ns
Updated to 9 at 110 ns
Updated to 10 at 120 ns
Updated to 11 at 130 ns
Updated to 12 at 140 ns
Updated to 13 at 150 ns
Updated to 14 at 160 ns
Updated to 15 at 170 ns
Updated to 16 at 180 ns
Updated to 17 at 190 ns
Updated to 18 at 200 ns
Updated to 19 at 210 ns
Updated to 20 at 220 ns
Updated to 19 at 230 ns
Updated to 18 at 240 ns
Updated to 17 at 250 ns
Updated to 16 at 260 ns
Updated to 15 at 270 ns
louiefu@louiefu-AB350-Gaming-3:~/Desktop/MSOC2019/Lab1/1_
```

1.2. Discussion: The “else” branch is never executed, why?

Inside **Display.cpp**, we wrote *dont_initialize()* in the constructor, and during testing, the counter’s value changed every cycle, so the condition is never triggered. Noted that this branch would be activated if we didn’t write *dont_initialize()*, as the comparison started since Display object is constructed.

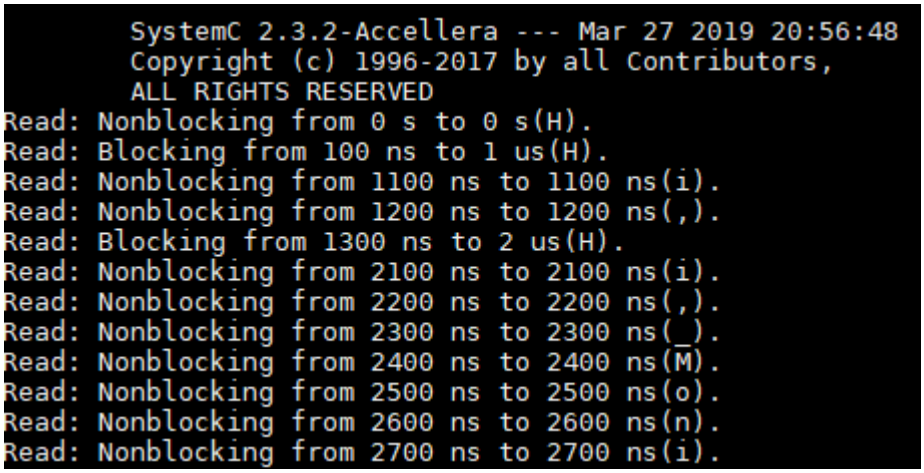
2. FIR

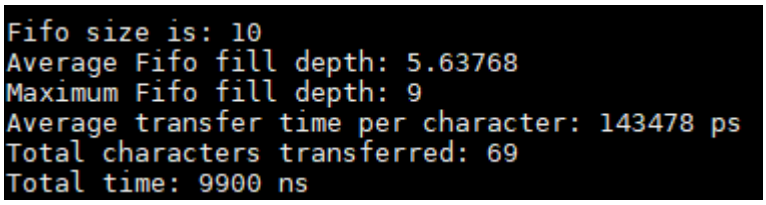
2.1. FIR result



3. FIFO

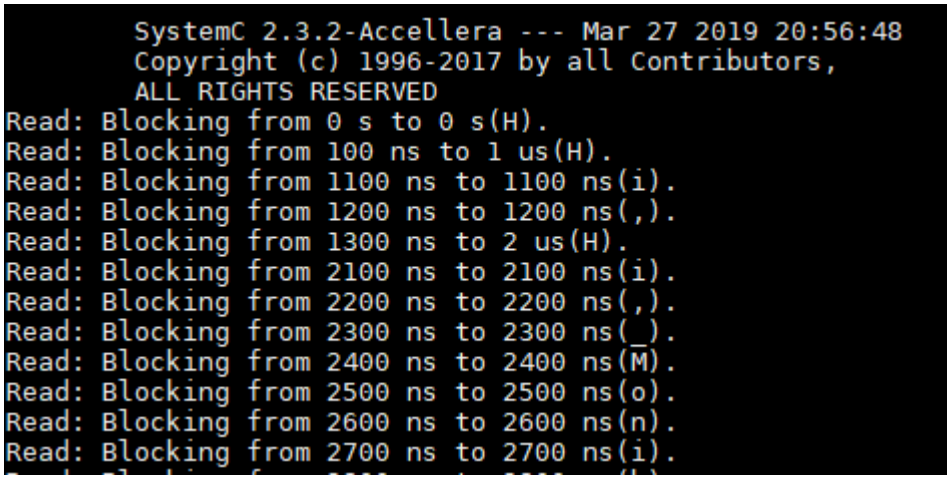
3.1. FIFO result

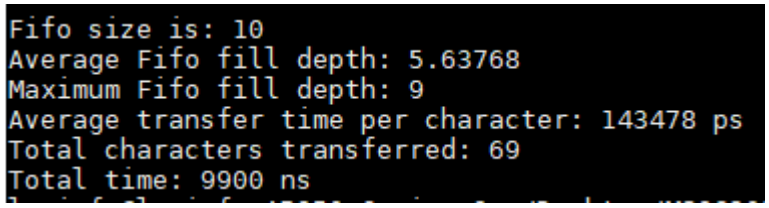




3.2. Discussion: Changing **ALWAYS_BLOCK** flag to “true”

The result is shown as following. We can observe that except the “Blocking” and “nonblocking” word, the output word and time stamp is the same, i.e. the *in_->Empty()* branch is redundant. This is because “Read under empty” issue is already hold by *Read()* function; whenever reading an empty fifo, the fifo will wait until the *write_event_* is notified.





4. Transactor

4.1. Transactor result