Assignment 7: Swap the content of two 16-bit register using blocking and Non-blocking assignment.

The blocking assignment requires a temp register because the value evaluation happens in the active region, meaning that the change of values is instant and therefore the value of a must be saved to another address or it will get lost.

The non blocking assignment doesn't update the values in the active stage, just evaluates them, and therefore there is no need to the temp register, the values will be updated later without writing over the current data.

top.v × Untitled 3 ×

E:/XLINIX/viv_projects/project_7/project_7.srcs/sources_1/new/top.v

```
1  `timescale 1ns / 1ps
2
3
4  module top;
5  reg [15:0] a = 16'hABCD;
6  reg [15:0] b = 16'h1234;
7  reg [15:0] c = 16'hABCD;
8  reg [15:0] d = 16'h1234;
9
10 reg [15:0] temp;
11 //blocking example
12 initial begin
13     $display("blocking start swap - a : %0h and b :%0h", a, b);
14     temp = a;
15     a    = b;
16     b    = temp;
17     #5
18     $display("blocking end swap - a : %0h and b :%0h", a, b);
19 end
20
21 //non-blocking example
22 initial begin
23     $display("non blocking start swap - a : %0h and b :%0h", c, d);
24     c <= d;
25     d <= c;
26     #5;
27     $display("non blocking end swap : %0h and b :%0h", c, d);
28 end
29 endmodule
30
```

Tcl Console × Messages Log

```
    with args "top_behav -key {Behavioral:sim_1:Functional:top} -tclbatch {top.tcl} -log {simulate.log}"
INFO: [USF-XSim-8] Loading simulator feature
Time resolution is 1 ps
source top.tcl
# set curr_wave [current_wave_config]
# if { [string length $curr_wave] == 0 } {
#   if { [llength [get_objects]] > 0} {
#     add_wave /
#     set_property needs_save false [current_wave_config]
#   } else {
#      send_msg_id Add_Wave-1 WARNING "No top level signals found. Simulator will start without a wave window. If you w
#   }
# }
# run 1000ns
blocking start swap - a : abcd and b :1234
non blocking start swap - a : abcd and b :1234
blocking end swap - a : 1234 and b :abcd
non blocking end swap : 1234 and b :abcd
INFO: [USF-XSim-96] XSim completed. Design snapshot 'top_behav' loaded.
INFO: [USF-XSim-97] XSim simulation ran for 1000ns
launch_simulation: Time (s): cpu = 00:00:02 ; elapsed = 00:00:07 . Memory (MB): peak = 1622.402 ; gain = 0.000
```

Type a Tcl command here