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2  -- Block code:  alarm_level_display.vhd
3  -- History:    30.Sep.2011 - example for introduction to comb logic
4  --            05.Okt.2013 - added default statements (dgtm)
5  -- Function:   Decodes the output for a alarm level display.
6  --            Only comb logic. Example of logic with priority.
7  -----
8
9  -- Library & Use Statements
10 LIBRARY ieee;
11 USE ieee.std_logic_1164.all;
12
13 -- Entity Declaration
14 ENTITY alarm_level_display IS
15     PORT(
16         alarm_prio1      : IN      std_logic;
17         alarm_prio2      : IN      std_logic;
18         alarm_prio3      : IN      std_logic;
19         display_red       : OUT     std_logic;
20         display_orange   : OUT     std_logic;
21         display_yellow    : OUT     std_logic;
22         display_green     : OUT     std_logic
23     );
24 END alarm_level_display ;
25
26 -- Architecture Declaration
27 ARCHITECTURE rtl OF alarm_level_display IS
28
29 -- Begin Architecture
30 BEGIN
31     -----
32     -- Process for combinational logic
33     -----
34     -- OBS.: The implementation with Default Statements is only
35     --         possible within a process (sequential statements)
36     -----
37     comb_alarm: PROCESS(alarm_prio1,alarm_prio2,alarm_prio3)
38     BEGIN
39         -- Default Statements
40         display_red      <= '0';
41         display_orange   <= '0';
42         display_yellow    <= '0';
43         display_green     <= '0';
44         --Check inputs
45         IF (alarm_prio1 = '1') THEN
46             display_red      <= '1';
47
48         ELSIF(alarm_prio2 = '1') THEN
49             display_orange   <= '1';
50
51         ELSIF(alarm_prio3 = '1') THEN
52             display_yellow    <= '1';
53
54         ELSE
55             display_green     <= '1';
56         END IF;
57     END PROCESS comb_alarm;
58
59 END rtl;
60
61 -----
62 -- Because there is only 1 statement after each then
63 -- you could also write the IF/ELSIF/THEN as
64 --
65 -- IF      (alarm_prio1 = '1') THEN  display_red      <= '1';
66 -- ELSIF (alarm_prio2 = '1') THEN  display_orange   <= '1';
67 -- ELSIF (alarm_prio3 = '1') THEN  display_yellow    <= '1';
68 -- ELSE                                     display_green     <= '1';
69 -- END IF;
70 --
71 -----

```