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2  -- Block code:  simple_dff_circ.vhd
3  -- History:    04.Feb.2014 - 1st version (dgtm)
4  -- Function:   simple 1-DFF circuit for VHDL introduction
5  -----
6
7  -- Library & Use Statements
8  LIBRARY ieee;
9  USE ieee.std_logic_1164.all;
10
11
12  -- Entity Declaration
13  ENTITY simple_dff_circ IS
14      PORT (
15          clock    : in std_logic;
16          reset_n  : in std_logic;
17          data_i   : in std_logic;
18          hold_i   : in std_logic;
19          buff_o   : out std_logic
20      );
21  END simple_dff_circ;
22
23
24  -- Architecture Declaration
25  ARCHITECTURE rtl OF simple_dff_circ IS
26
27      -- Signals & Constants Declaration
28      SIGNAL buff, next_buff : std_logic ;
29
30  -- Begin Architecture
31  BEGIN
32      -----
33      -- Process for combinatorial logic
34      -----
35      comb_logic: PROCESS(ALL)
36      BEGIN
37          -- hold or update
38          IF hold_i='1' THEN
39              next_buff <= buff;
40          ELSE
41              next_buff <= data_i;
42          END IF;
43      END PROCESS comb_logic;
44
45
46      -----
47      -- Process for registers (flip-flops)
48      -----
49      flip_flops : PROCESS(clock, reset_n)
50      BEGIN
51          IF reset_n = '0' THEN
52              buff <= '0';
53          ELSIF RISING_EDGE(clock) THEN
54              buff <= next_buff ;
55          END IF;
56      END PROCESS flip_flops;
57
58      -----
59      -- Concurrent Assignements
60      -- e.g. Assign outputs from intermediate signals
61      -----
62      buff_o <= buff;
63
64  -- End Architecture
65  END rtl;
66

```