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LIBRARY ieee;
USE ieee.std_logic_1164.all;
ENTITY lab2 IS
PORT (P1, P2: IN STD_LOGIC_VECTOR(2 DOWNTO 0); -- Player's input
      G: OUT STD_LOGIC_VECTOR(1 DOWNTO 0) -- Game's result (G(1) = player1, G(0) = player2));
END lab2;
ARCHITECTURE game OF lab2 IS
signal C1, C2: STD_LOGIC_VECTOR(1 DOWNTO 0); -- Signals that connect the player's inputs and the logic block
BEGIN
PROCESS(P1, P2) --PROCESS FOR THE PLAYER'S SELECTION
BEGIN
CASE P1 IS -- Case for the first player

    WHEN "001" => C1 <= "01"; -- PAPER
    WHEN "010" => C1 <= "10"; -- ROCK
    WHEN "100" => C1 <= "11"; -- SCISSORS
    WHEN OTHERS => C1 <= "00"; -- NO OPTION SELECTED

END CASE;
CASE P2 IS -- Case for the second player

    WHEN "001" => C2 <= "01"; -- PAPER
    WHEN "010" => C2 <= "10"; -- ROCK
    WHEN "100" => C2 <= "11"; -- SCISSORS
    WHEN OTHERS => C2 <= "00"; -- NO OPTION SELECTED

END CASE;
END PROCESS;
PROCESS(C1, C2) -- PROCESS LOGIC BLOCK
BEGIN
IF C1 = "00" AND C2 = "00" THEN -- Neither are playing

    G <= "00"; -- No one wins

ELSIF C1 = "00" THEN -- Player2 wins

    G <= "10";

ELSIF C1 = "10" AND C2 = "11" THEN -- Cases when player1 wins

    G <= "10";

ELSIF C1 = "01" AND C2 = "10" THEN

    G <= "10";

ELSIF C1 = "11" AND C2 = "01" THEN

    G <= "10";

ELSIF C1 = C2 THEN

    G <= "11";

ELSE -- The rest of the cases (player2 wins)

    G <= "01";

END IF;
END PROCESS;
END game;

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