File: C:/my_designs/Pipeline_Test/Pipeline/src/Pipeline_tb.vhd

```
1   ------------------------------------------------------------------------
    ----
2   --
3   -- Title       : Pipeline_tb
4   -- Design      : Pipeline
5   -- Author      : Aaron Lin and Hang Chen
6   -- Company     : Stony Brook University
7   --
8   ------------------------------------------------------------------------
    ----
9   --
10  -- File        : c:\my_designs\Pipeline\Pipeline\src\Pipeline_tb.vhd
11  -- Generated   : Fri May  1 18:01:50 2020
12  -- From        : interface description file
13  -- By          : Itf2Vhdl ver. 1.22
14  --
15  ------------------------------------------------------------------------
    ----
16  --
17  -- Description : Testbench for the top level design pipeline. This loads
    the binary formatted program into the Instruction Buffer
18  --  and provides the clock for
19  --
20  ------------------------------------------------------------------------
    ----
21  library work;
22  use work.all;
23  library IEEE;
24  use IEEE.std_logic_1164.all;
25  use IEEE.NUMERIC_STD.all;
26  use std.textio.all;
27  use ieee.std_logic_textio.all;
28
29  entity Pipeline_tb is
30  end Pipeline_tb;
31
32  --}} End of automatically maintained section
33
34  architecture Pipeline_tb of Pipeline_tb is
35  signal Instruction_Index : std_logic_vector(5 downto 0);
36  signal CLK, W_En_inWB, Forward_Mux1, Forward_Mux2, Forward_Mux3: std_logic;
37  signal Instruction_inIF, Instruction_inID, Instruction_Data :
    std_logic_vector(24 downto 0);
38  signal ALU_Output, Input_rs3, Input_rs2, Input_rs1, Data_inWB :
    std_logic_vector(127 downto 0);
39  signal ALUop_inID, ALUop_inEX : std_logic_vector(7 downto 0);
40  constant period : time := 20ns;
41  begin
42
43      uut : entity Pipeline port map (Instruction_inIF => Instruction_inIF,
    Instruction_inID => Instruction_inID, ALUop_inID => ALUop_inID,
44          ALUop_inEX => ALUop_inEX, Data_inWB => Data_inWB, Instruction_Index
    => Instruction_Index, Instruction => Instruction_Data,
45          CLK => CLK, ALU_Output => ALU_Output, W_En_inWB => W_En_inWB,
    Input_rs3 => Input_rs3, Input_rs2 => Input_rs2, Input_rs1 => Input_rs1,
46          Forward_Mux1 => Forward_Mux1, Forward_Mux2 => Forward_Mux2,
    Forward_Mux3 => Forward_Mux3);
```

```
47
48      store : process
49      file F : TEXT open READ_MODE is "ESE345_Assembler.txt";
50      variable L : LINE;
51      variable temp : std_logic_vector(24 downto 0);
52      variable count : unsigned(5 downto 0) := "000000";
53      begin
54          if not ENDFILE(F) then
55              READLINE(F, L);
56              READ(L, temp);
57              Instruction_Data <= temp;
58              Instruction_Index <= std_logic_vector(count);
59              count := count + 1;
60          end if;
61          wait for period;
62      end process;
63
64      clk_process : process
65      begin
66          CLK <= '0';
67          wait for period/2;
68          CLK <= '1';
69          wait for period/2;
70      end process;
71  end Pipeline_tb;
72
```