**MUX 4:1 USING WITH SEL**

library IEEE;

use IEEE.STD\_LOGIC\_1164.ALL;

use IEEE.STD\_LOGIC\_ARITH.ALL;

use IEEE.STD\_LOGIC\_UNSIGNED.ALL;

entity mux41 is

 Port ( d : in STD\_LOGIC\_VECTOR (03 downto 0);

 y : out STD\_LOGIC;

 sel : in STD\_LOGIC\_VECTOR (01 downto 0));

end mux41;

architecture dataflow of mux41 is

beginWITH SEL SELECT

y <= d(0) WHEN "00",

 d(1) WHEN "01",

 d(2) WHEN "10",

 d(3) WHEN "11",

 'Z' WHEN OTHERS;

end dataflow;

**MUX 4:1 USING WITH SEL**



**COMPARATOR USING IF ELSE**

library IEEE;

use IEEE.STD\_LOGIC\_1164.ALL;

use IEEE.STD\_LOGIC\_ARITH.ALL;

use IEEE.STD\_LOGIC\_UNSIGNED.ALL;

entity comparator is

 Port ( a,b : in STD\_LOGIC\_VECTOR (03 downto 0);

 i : in STD\_LOGIC\_VECTOR (02 downto 0);

 y : out STD\_LOGIC\_VECTOR (02 downto 0));

end comparator;

architecture Behavioral of comparator is

signal temp: std\_logic\_vector(2 downto 0);

begin

 process(a,b)

 begin

 If(a <= b) then temp <= "001"; End If;

 If (a >= b) then temp <= "100"; End If;

 If (a = b) then

 If (i = "010") then temp <= "010";

**COMPARATOR USING IF ELSE**

 ElsIf (i = "100") then temp <= "100";

 ElsIf (i = "001") then temp <= "001";

 ElsIf( i ="101") then temp <= "000";

 ElsIf (i = "000") then temp<= "101";

 End If;End If;

 End Process;

 y <= temp;

End Behavioral;



**Floating Point Encoder**

library IEEE;

use IEEE.STD\_LOGIC\_1164.ALL;

use IEEE.STD\_LOGIC\_ARITH.ALL;

use IEEE.STD\_LOGIC\_UNSIGNED.ALL;

entity float is

Port(data : in STD\_LOGIC\_VECTOR(10 downto 0);

 M: out STD\_LOGIC\_VECTOR(3 downto 0);

 e : out STD\_LOGIC\_VECTOR(2 downto 0));

end float;

architecture Behavioral of float is

begin

Process(data)

 Begin

 If(data(10) = '1') then

 m <= data(10 downto 7);

 e <= "111";

 elsif (data(9) = '1') then

 m <= data(9 downto 6);

 e <= "110";

 elsif (data(8) = '1') then

 m <= data(8 downto 5);

**Floating Point Encoder**

 e <= "101";

 elsif (data(7) = '1') then

 m <= data(7 downto 4); e <= "100";

 elsif (data(6) = '1') then

 m <= data(6 downto 3); e <= "011";

 elsif (data(5) = '1') then

 m <= data(5 downto 2); e <= "010";

 elsif (data(4) = '1') then

 m <= data(4 downto 1); e <= "001";

 elsif (data(3) = '1') then

 m <= data(3 downto 0); e <= "000";

 End If;

 End Process;

end Behavioral;

