

Priority Encoder Exercises

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Exercise 1

74148 8:3 Priroity Encoder Truth Table

EI_L	I0_L	I1_L	I2_L	I3_L	I4_L	I5_L	I6_L	I7_L	A2_L	A1_L	A0_L	GS_L	EO_L
1	X	X	X	X	X	X	X	X	1	1	1	1	1
0	X	X	X	X	X	X	X	0	0	0	0	0	1
0	X	X	X	X	X	X	0	1	0	0	1	0	1
0	X	X	X	X	X	0	1	1	0	1	0	0	1
0	X	X	X	X	0	1	1	1	0	1	1	0	1
0	X	X	X	0	1	1	1	1	1	0	0	0	1
0	X	X	0	1	1	1	1	1	1	0	1	0	1
0	X	0	1	1	1	1	1	1	1	1	0	0	1
0	0	1	1	1	1	1	1	1	1	1	1	0	1
0	1	1	1	1	1	1	1	1	1	1	1	1	0

Exercise 2

```
library IEEE;
use IEEE.STD_LOGIC_1164.ALL;

entity priority_encoder_8_3 is
    port (decodeIn  : in std_logic_vector(7 downto 0);
          encodeOut : out std_logic_vector(2 downto 0));
end entity priority_encoder_8_3;

architecture Behavioral of priority_encoder_8_3 is
begin
    process (decodeIn)
    begin
        if      decodeIn(7) = '1' then encodeOut <= "111";
        elsif   decodeIn(6) = '1' then encodeOut <= "110";
        elsif   decodeIn(5) = '1' then encodeOut <= "101";
        elsif   decodeIn(4) = '1' then encodeOut <= "100";
        elsif   decodeIn(3) = '1' then encodeOut <= "011";
        elsif   decodeIn(2) = '1' then encodeOut <= "010";
        elsif   decodeIn(1) = '1' then encodeOut <= "001";
        elsif   decodeIn(0) = '1' then encodeOut <= "000";
        end if;
    end process;

end architecture Behavioral;
```

Exercise 3

