Kris M. Vallozo
BSCpE- 3A

SEVEN SEGMENT DISPLAY INTERFACE

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

entity SEVEN_SEGMENT_DISPLAY_INTERFACE        is
Port (
   clk     : in  STD_LOGIC;
   rst     : in  STD_LOGIC;
   seg     : out STD_LOGIC_VECTOR(6 downto 0);
   dig     : out STD_LOGIC_VECTOR(3 downto 0)
);
end SEVEN_SEGMENT_DISPLAY_INTERFACE;

architecture Behavioral of SEVEN_SEGMENT_DISPLAY_INTERFACE is
   signal counter     : unsigned(23 downto 0) := (others => '0');
   signal clk_1hz     : STD_LOGIC := '0';

   signal hex_value   : unsigned(3 downto 0) := "0000";

   signal dig_sel     : unsigned(1 downto 0) := "00";
begin

   process(clk, rst)
   begin
      if rst = '1' then
         counter <= (others => '0');
         hex_value <= "0000";
      elsif rising_edge(clk) then
         if counter = x"F42400" then
            counter <= (others => '0');
            hex_value <= hex_value + 1;
         else
            counter <= counter + 1;
         end if;
      end if;
   end process;

   dig_sel <= counter(15 downto 14);
   dig <= "1110" when dig_sel = "00" else
         "1101" when dig_sel = "01" else
         "1011" when dig_sel = "10" else
         "0111";
```

```
    with hex_value select
        seg <= "0000001" when x"0",  -- 0
               "1001111" when x"1",  -- 1
               "0010010" when x"2",  -- 2
               "0000110" when x"3",  -- 3
               "1001100" when x"4",  -- 4
               "0100100" when x"5",  -- 5
               "0100000" when x"6",  -- 6
               "0001111" when x"7",  -- 7
               "0000000" when x"8",  -- 8
               "0000100" when x"9",  -- 9
               "0001000" when x"A",  -- A
               "1100000" when x"B",  -- B
               "0110001" when x"C",  -- C
               "1000010" when x"D",  -- D
               "0110000" when x"E",  -- E
               "0111000" when others; -- F
end Behavioral;
```