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library IEEE;
use IEEE.STD_LOGIC_1164.ALL;

-- Uncomment the following library declaration if using
-- arithmetic functions with Signed or Unsigned values
use IEEE.NUMERIC_STD.ALL;
--use ieee.std_logic_arith.all;
use ieee.std_logic_unsigned.all;

-- Uncomment the following library declaration if instantiating
-- any Xilinx leaf cells in this code.
--library UNISIM;
--use UNISIM.VComponents.all;

entity sixteen_bit_countr is
  Port ( CEn, CLK : in STD_LOGIC;
        RST : in STD_LOGIC;
        OUTPUT0 : out STD_LOGIC_VECTOR (3 downto 0);
        OUTPUT1 : out STD_LOGIC_VECTOR (3 downto 0);
        OUTPUT2 : out STD_LOGIC_VECTOR (3 downto 0);
        OUTPUT3 : out STD_LOGIC_VECTOR (3 downto 0));
end sixteen_bit_countr;

architecture Behavioral of sixteen_bit_countr is
  signal s_cnt_tenths,s_cnt_ones,s_cnt_tens,s_cnt_hundos : std_logic_vector(3
downto 0):="0000";
begin

  process(Cen, RSt,CLK)
  begin
  if (RST = '1' and (CEn='1' or CEn='0')) then --if rst=1 set all values back
  to zero...
  s_cnt_tenths <= (others=> '0');
  s_cnt_ones <= (others=> '0');
  s_cnt_tens <= (others=> '0');
  s_cnt_hundos <= (others=> '0');
  ELSif (CEn = '1' and rising_edge(CLK)) then--...otherwise, if cen is one
  start counting

      if s_cnt_tenths="1001" then
      s_cnt_tenths<="0000";--when count s_cnt gets to 9 reset, tc goes high
      if s_cnt_ones="1001" then
      s_cnt_ones <="0000";
      if s_cnt_tens = "1001" then
      s_cnt_tens <="0000";
      if s_cnt_hundos ="1001" then
      s_cnt_hundos<="0000";
      else s_cnt_hundos <= s_cnt_hundos+1;end if;
      else s_cnt_tens <= s_cnt_tens +1; end if;
      else s_cnt_ones <= s_cnt_ones +1; end if;
      else s_cnt_tenths <= s_cnt_tenths+1; end if;
      end if; end process;

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output0<=s_cnt_tenths;  
output1<=s_cnt_ones;  
output2<=s_cnt_tens;  
output3<=s_cnt_hundos;
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end Behavioral;
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