Problem

a) Design and implement a device which generates one when user presses set button and zero when user presses reset button. The device is equivalent to a one-bit storage where content can be set and reset. Show correctness on buttons and LED.

entity btn_s_reset is
port (ck, set, reset : in std_logic;
              z: out std_logic
      );
end btn_s_reset;

b) Modify "set and reset" storage in Part (a) to delay the set action by two seconds. The reset button will reset the device immediately cancels the set action.

```vhdl
--------------------------------------------------
-- Company: Drexel ECE
-- Engineer: Prawat
-- Set-reset storage - delay the set action by
-- two seconds. The reset button will reset the
-- device immediately cancels the set action.
--------------------------------------------------
library IEEE;
use IEEE.STD_LOGIC_1164.ALL;

entity delayed_btn is
port (ck, set, reset : in std_logic;
                      z: out std_logic
      );
end delayed_btn;

architecture Behavioral of delayed_btn is
signal temp: std_logic;
type my_state is (led_off, delayed_on, led_on);
signal n_s : my_state;
begin


process(ck)
variable count : integer;
begin
if ck = '1' and ck'event then
  if reset = '1' then
    n_s <= led_off; count := 0; else
  case n_s is
    when led_off => temp <= '0';
    if set = '1' then n_s <= delayed_on; end if;
    when delayed_on =>
     if count < 200000000 then
        count := count + 1;
     else n_s <= led_on;
     end if;
    when led_on => temp <= '1';
  end case;
  end if;
end if;
end process;
z <= temp;
end Behavioral;
```