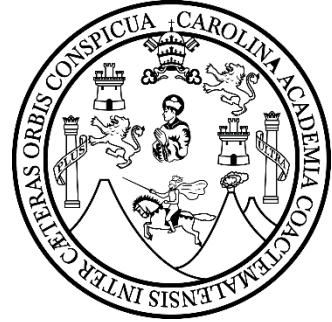


UNIVERSIDAD DE SAN CARLOS DE GUATEMALA
FACULTAD DE INGENIERÍA
ESCUELA DE MECÁNICA ELÉCTRICA
LABORATORIO DE ELECTRÓNICA 3
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PRACTICA No. 2
CONTADOR DE 0 A 999

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

```
entity Contador is
```

```
    Port (  
        clk: in STD_LOGIC;  
        salida: out STD_LOGIC_VECTOR( 7 downto 0);  
        seg: out STD_LOGIC_VECTOR ( 2 downto 0)    );
```

```
end Contador;
```

```
architecture Behavioral of Contador is
```

```
Signal numero: integer range 0 to 9;  
signal contador: integer range 0 to 4000000;  
signal unidades, decenas, centenas: integer range 0 to 9;  
signal mul: integer range 0 to 2000:=0;  
signal bandera: integer range 0 to 2 := 0;
```

```
begin
```

```
    process(clk)
```

```
    begin
```

```
        if rising_edge (clk) then
```

```
            contador <= contador +1;
```

```
            if      contador = 4000000 then
```

```
                unidades <= unidades +1;
```

```
                contador <= 0;
```

```
                if unidades = 9 then
```

```
                    decenas <= decenas +1;
```

```
                    unidades <= 0;
```

```
                    if decenas = 9 then
```

```
                        centenas <= centenas +1;
```

```
                        decenas <= 0;
```

```
                        if centenas=9 then
```

```
                            centenas <=0;
```

```
                        end if;
```

```
                    end if;
```

```
                end if;
```

```
            end if;
```

```
            if (mul = 2000) then
```

```
                mul <= 0;
```

```
                bandera <= bandera + 1;
```

```
                if bandera = 2 then
```

```
                    bandera <= 0; -- Reiniciar el ciclo del multiplexado
```

```
                end if;
```

```
            else
```

```
                mul <= mul + 1;
```

```
            end if;
```

```
            case bandera is
```

```
                when 0 => -- Mostrar unidades
```

```
                    numero <= unidades;
```

```
                    seg <= "110"; -- Activa el display de unidades
```

```
                when 1 => -- Mostrar decenas
```

```
                    numero <= decenas;
```

```
                    seg <= "101"; -- Activa el display de decenas
```

```
                when 2 => -- Mostrar centenas
```

```
                    numero <= centenas;
```

```
                    seg <= "011"; -- Activa el display de centenas
```

```
                when others =>
```

```
                    numero <= unidades;
```

```
                    seg <= "110"; -- Por defecto, mostrar unidades
```

```
            end case;
```

```
        case numero is
```

```
            when 0 => salida <= "11000000";
```

```
            when 1 => salida <= "11111001";
```

```
            when 2 => salida <= "10100100";
```

```
            when 3 => salida <= "10110000";
```

```
            when 4 => salida <= "10011001";
```

```
        ---hgfedcba
```

```
        when 5 => salida <= "10010010";
        when 6 => salida <= "10000010";
        when 7 => salida <= "11111000";
        when 8 => salida <= "10000000";
        when 9 => salida <= "10011000";
        when others => salida <="11111111";
    end case;

end if;

end process;

end Behavioral;
```

LINK DE DRIVE PARA EL VIDEO

https://drive.google.com/drive/folders/1W_Ckoywxvl86_GgV7i2n2VXetW5jG9ys?usp=drive_link