8:1 MUX

.vhd File Code

```
library IEEE;
use IEEE.STD_LOGIC_1164.ALL;
entity mux is
  Port (sel: in STD_LOGIC_VECTOR (2
      downto 0); inp: in
      STD_LOGIC_VECTOR (7 downto 0);
      DIS: out STD_LOGIC_VECTOR (1 downto 0);
      led_p: out STD_LOGIC_VECTOR (3 downto 0);
      led_n: out STD_LOGIC_VECTOR (3 downto 0);
      SEG: out STD_LOGIC_VECTOR (6
downto 0)); end mux;
architecture Behavioral of
mux is begin
      led_n (3 downto 1) <= "111";
      led_p(3 downto 0) <="0001";
      DIS <= "10";
      with sel select
            led_n(0) <= (not inp(0))
            when "000", (not inp (1))
            when "001",
            (not inp (2)) when "010",
            (not inp (3)) when "011",
            (not inp(4)) when "100",
            (not inp (5)) when "101",
            (not inp (6)) when "110",
            (not inp (7)) when
            "111", 'Z' when
            others;
--Display--
      with sel select
```

```vhdl
        SEG <=
        "1000000" when "000",
        "1111001" when "001",
        "0100100" when "010",
        "0110000" when "011",
        "0011001" when "100",
        "0010010" when "101",
        "0000010" when "110",
        "1111000" when "111",
        "0000000" when others;
end Behavioral;
```
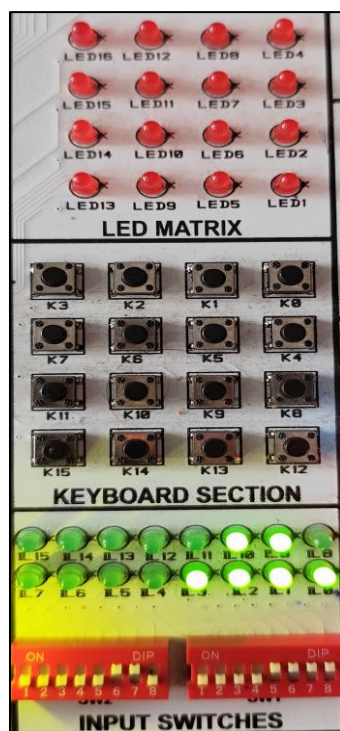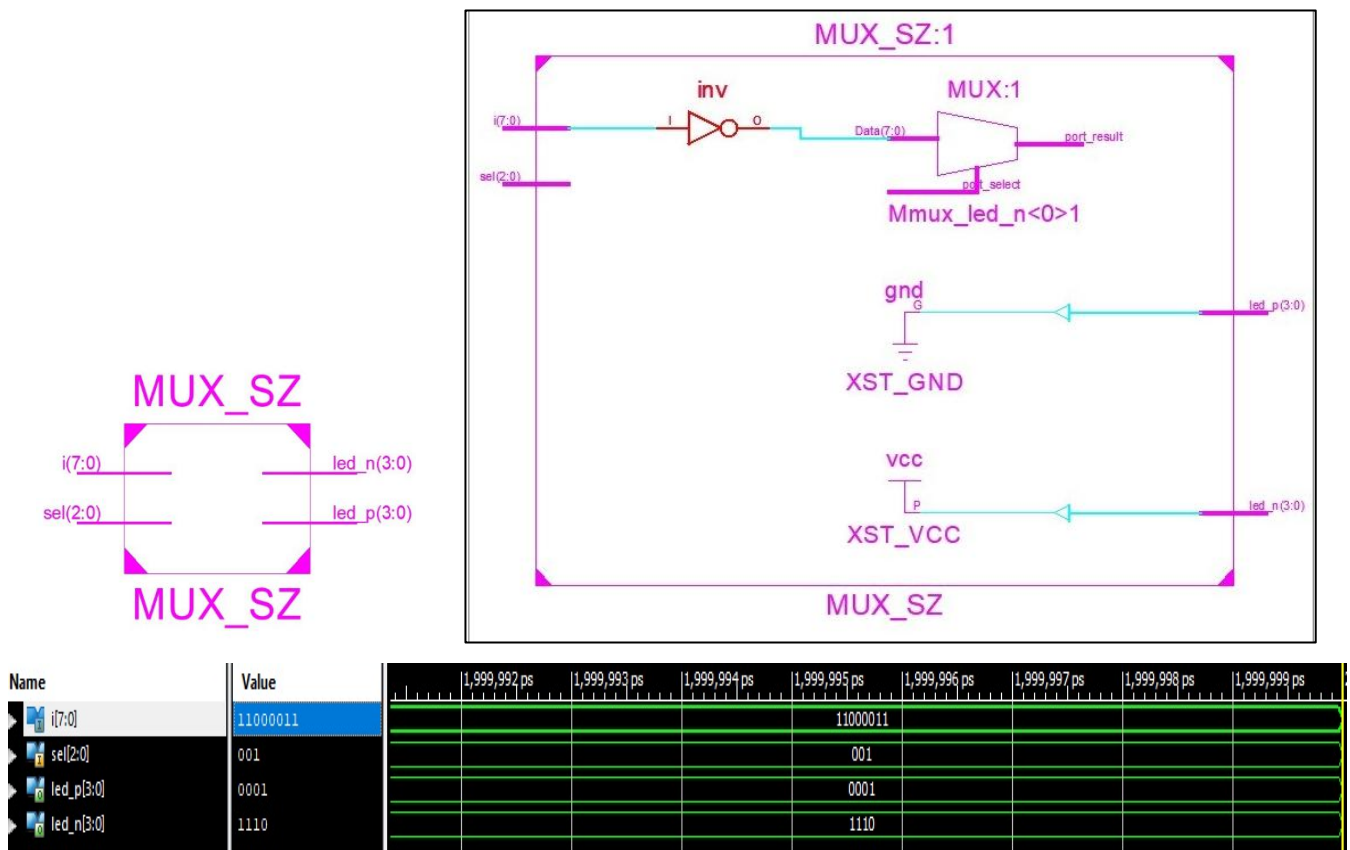
.ucf File Code

```
Net "DIS<0>" loc = "p141";
Net "DIS<1>" loc = "p144";
Net "SEG<0>" loc= "p148";
Net "SEG<1>" loc = "p147";
Net "SEG<2>" loc = "p146";
Net "SEG<3>" loc="p143";
Net "SEG<4>" loc = "p140";
Net "SEG<5>" loc = "p138";
Net "SEG<6>" loc = "p139";

Net "led_n<0>" loc = "p132";
Net "led_n<1>" loc = "p131";
Net "led_n<2>" loc = "p130";
Net "led_n<3>" loc = "p128";
Net "led_p<0>" loc = "p126";
Net "led_p<1>" loc = "p133";
Net "led_p<2>" loc = "p135";
Net "led_p<3>" loc = "p137";

Net "inp<0>" loc = "p101";
Net "inp<1>" loc = "p100";
Net "inp<2>" loc = "p97";
Net "inp<3>" loc = "p96";
Net "inp<4>" loc = "p95";
Net "inp<5>" loc = "p94";
Net "inp<6>" loc = "p93";
Net "inp<7>" loc = "p90";

Net "sel<0>" loc = "p87";
Net "sel<1>" loc = "p86";
Net "sel<2>" loc = "p85";
```

Simulation and RTL Schematic

inp = 00001111
sel = 110

inp = 00001111
sel = 011