Lab 11- PS/2 Keyboard

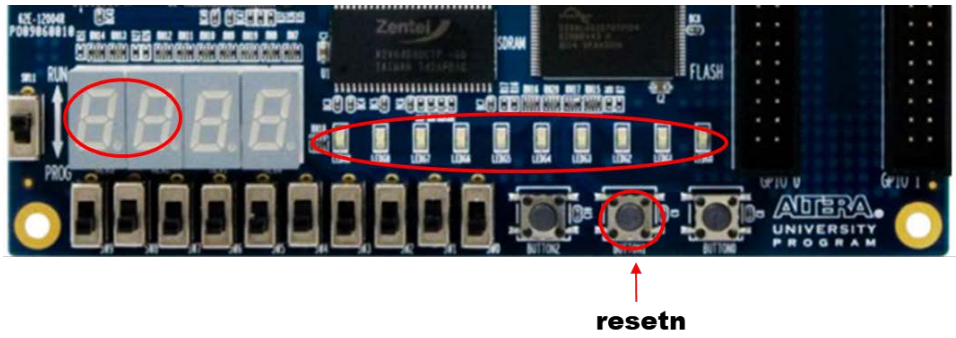
The purpose of this lab is to practice the PS/2 keyboard.

Lab 11.1:

Design a keyboard-controlled indicator.

With reference to the given ps2_keyboard.vhd and ps2_keyboard_to_ascii.vhd, design a keyboard-controlled indicator on DE0 as follows.

- When a number button '0' to '9' is pressed, a designated LED will be on.
  (i.e., LEDG0 corresponds to '0', LEDG1 corresponds to '1', ..., and LEDG9 corresponds to '9'.)
- The ASCII code of the pressed button is also shown on two 7-segment displays.
- Use Button1 as an active-low asynchronous reset to turn off all leds and 7-segment displays.

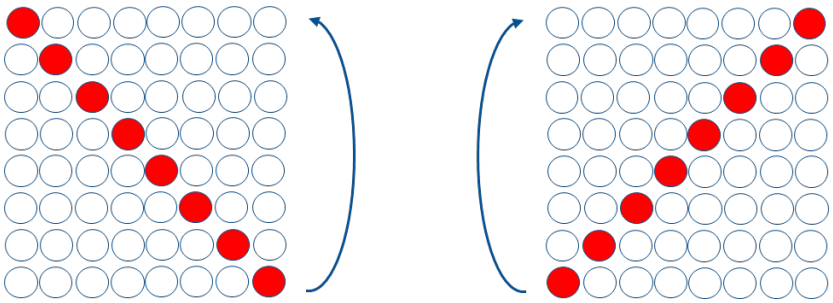


Lab 11.2:

Design a keyboard-controlled LED lighting circuit.

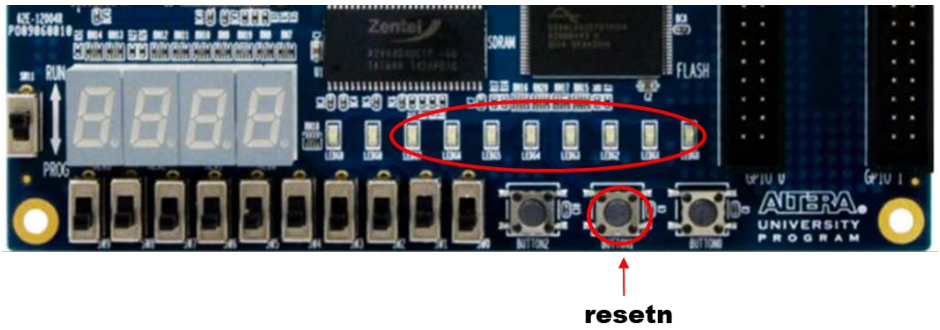
With reference to the given ps2_keyboard.vhd and ps2_keyboard_to_ascii.vhd, design a keyboard-controlled LED lighting circuit on DE0 as follows.

- When '0' is pressed, right-rotate LEDG7~LEDG0, see Figure1(a).
- When '1' is pressed, left-rotate LEDG7~LEDG0, see Figure1(b).
- Use Button1 as an active-low asynchronous reset to turn off all leds.



(a) (b)

Figure 1: lighting patterns.



Lab-report:

Submit a lab report on **ilearn** by 11:00pm the day before of next lab. (The lab report must be a **PDF** file.) Your Lab report should include the following items:

1) VHDL design for Lab 11.1.

2) VHDL design for Lab 11.2.

3) observations and comments.