# Lab4 Practice: LED Signal Control

You do NOT need to submit this practice

## Description

- Control the LEDs by the BTNC (as the reset), BTNL, and BTNR buttons:
  - The output LED[15:0] will be reset to 16'b0. That is, all LEDs will be turned off upon the reset.
  - When the BTNL is pressed, turn on the leftmost darkened LED.
    - When all the LEDs are on, BTNL takes no effect.
  - When the BTNR is pressed, turn off the rightmost lightened LED.
    - When all the LEDs are off, BTNR takes no effect.
  - When either one of the BTNL or BTNR is pressed and held, the other button cannot trigger the operation.
  - Signals from the pushbuttons (except for the reset, i.e., rst) should be processed by the debounce circuit and one-pulse generator properly.

## I/O signal specification

- **clk**: the clock signal with the frequency of 100MHz (connected to pin W5)
- **rst**: the asynchronous positive reset (connected to BTNC).
- **BTNL, BTNR**: the control pushbuttons.
- **LED[15:0]**: the signals to control LEDs (connected to **LD15 ~ LD0**).

## HINT

1. You can use the following template for your design:

```
module lab4_practice (
            input wire clk,
            input wire rst,
            input wire btnL,
            input wire btnR,
            output reg [15:0] LED
);
/* Note that output ports can be either reg or wire.
* It depends on how you design your module. */
// add your design here
endmodule
```

2. Demo video: https://drive.google.com/file/d/1Tjr5G7xteAoOB3FJAuNEuyfytGh2RKex/view?usp=sharing