EXERCISE 1 LAB REPORT - Frank Shan - Mark Naguib

The Green LED lights are done like in experiment 1.

For Green LED 0: to test if switches from 7 to 0 are all turned on, you would need to AND switches 7 to switch 0;

For Green LED 1: to test if at least one of the switch from 7 to 0 is turned on, you would OR switches 7 to 0;

For Green LED 2: to check if all switches 15 to 8 are turned off, you would AND all the complement signal of switches 15 to 8;

For Green LED 3: to check if at least one of the switches from 15 to 8 is turned off, you would OR all the complement signal of switches 15 to 8;

For Green LED 4: to check if the number of switches from 15 to 0 that are turned on is an odd number, you would need to XOR all the switches from 15 to 0;

For Green LED 8 to 5: to display the least significant switch that is turned off from you would check the switches one by one, starting with the least significant switch. If they are all turned on, then just show an arbitrary value.

For the two 7-segment display, the code would be almost identical to experiment 5. The only difference is that you need to add a way to stop the counter once it either reaches 0 or 59. The way that was done in this exercise is to add an AND statement to the increment/decrement counting parts. The counting stops when the counter reaches 0 or 59.

To make sure that it is stuck in counting up when it reaches 0 and counting down when it reaches 59. It is required to add a OR statement to button 2 and button 3 :

```
(push_button_status_buf[1] == 1'b0 && push_button_status[1] == 1'b1) || counter==8'd0

(push_button_status_buf[2] == 1'b0 && push_button_status[2] == 1'b1) || counter==8'd59
```