

**The George Washington University
Department of Electrical and Computer Engineering**

ECE 2140: Design of Logic Systems I

Experiment 14

Equipment and Parts Required

- Digilent BASYS FPGA Board
- Xilinx ISE software

Procedure

1 Counter

Build a counter that increments each time a switch is changed on the FPGA board. Use the LEDs to display the result. Hint: Use a switch as the Clk, En, and Rst inputs and the LEDs to display the Count output.

```
module counter(  
    input En,  
    input Rst,  
    input Clk,  
    output reg [1:0] Count  
);  
  
always @ (posedge Clk)  
begin  
    if (Rst)  
        Count <= 0;  
    else if (En) begin  
        Count <= Count + 1;  
    end  
end  
  
endmodule
```

2 Timer

Design a timer that blinks a LED every 1 second when SW0 is on. You will need to use a counter that counts the number of clock ticks in each second. Hint: check JP4 to see what the clock frequency is of the built-in clock.