

```
timescale 1ns / 1ps
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
// Company:
// Engineer:
//
// Create Date: 12/02/2020 06:47:22 PM
// Design Name:
// Module Name: Test_Bench
// Project Name:
// Target Devices:
// Tool Versions:
// Description:
//
// Dependencies:
//
// Revision:
// Revision 0.01 - File Created
// Additional Comments:
//
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
```

```
module Test_Bench();
//    reg [15:0] In;
//    reg start, btnR, clkin, Clear;
//    wire [15:0] Divisor;
//    wire nprime, prime;

    reg [15:0] sw;
    reg clkin, btnC, btnD, btnL, btnR;
    wire [15:0] led;
    wire [6:0] seg;
    wire [3:0] an;
    wire dp;

//    input [15:0] A,
//    input [15:0] B,
//    output EQ, LT
//    wire [7:0] D7Seg3,D7Seg2,D7Seg1,D7Seg0;

    Top_Level UUT (
        .clkin(clkin),
        .sw(sw),
```

```

        .btnC(btnC),
        .btnD(btnD),
        .btnL(btnL),
        .btnR(btnR),
        .led(led),
        .seg(seg),
        .an(an),
        .dp(dp)

//      .In(In),
//      .Clear(Clear),
//      .start(start),
//      .btnR(btnR),
//      .Divisor(Divisor),
//      .nprime(nprime),
//      .prime(prime)

    );

parameter PERIOD = 10;
parameter real DUTY_CYCLE = 0.5;
parameter OFFSET = 2;

    initial      // Clock process for clkin
    begin
//      start = 1'bx;
        btnR = 1'b0;
//      btnU = 1'bx;
//      btnD = 1'bx;
//      btnL = 1'bx;

#OFFSET
        clkin = 1'b1;
    forever
    begin
        #(PERIOD-(PERIOD*DUTY_CYCLE)) clkin = ~clkin;
    end
end

    initial
    begin
// Comparator Test
//      #1000;
//      In  = 16'd205;
//      start = 1'b1;

```

```
//      Clear = 1'b1;
//      #100;
//      Clear = 1'b0;
//      #1200;
```

```
sw[0]    = 1'b1;
sw[1]    = 1'b0;
sw[2]    = 1'b1;
sw[3]    = 1'b0;
sw[4]    = 1'b0;
sw[5]    = 1'b0;
sw[6]    = 1'b0;
sw[7]    = 1'b0;
sw[8]    = 1'b0;
sw[9]    = 1'b0;
sw[10]   = 1'b0;
sw[11]   = 1'b0;
sw[12]   = 1'b0;
sw[13]   = 1'b0;
sw[14]   = 1'b0;
sw[15]   = 1'b0;
btnL     =1'b1;
btnC     =1'b0;
btnD     =1'b0;
#3000;
btnD = 1'b1;
#5000;
btnC =1'b1;
#200;
```

```
//      A = 1'b0;
//      B = 1'b1;
//      #300;
//      A = 16'b00000000000001100;
//      B = 16'b00000000000110000;
//      #400;
//      A = 16'b0000001100100000;
//      B = 16'b0000000000110000;
//      #500;
//      A = 16'b0000000001100000;
//      B = 16'b0000000000110000;
//      #600;
```

```
////// 16bit Subtractor test
```

```
//      #100;
//      A = 16'b000000000000000001;
//      B = 16'b000000000000000000;
//      #200;
//      A = 16'b0000000000000000111;
//      B = 16'b0000000000000000100;
//      #300;

end

//show_7segDisplay showit (.seg(seg),.dp(dp),.an(an),
//      .D7Seg0(D7Seg0),.D7Seg1(D7Seg1),.D7Seg2(D7Seg2),.D7Seg3(D7Seg3));

endmodule
```