

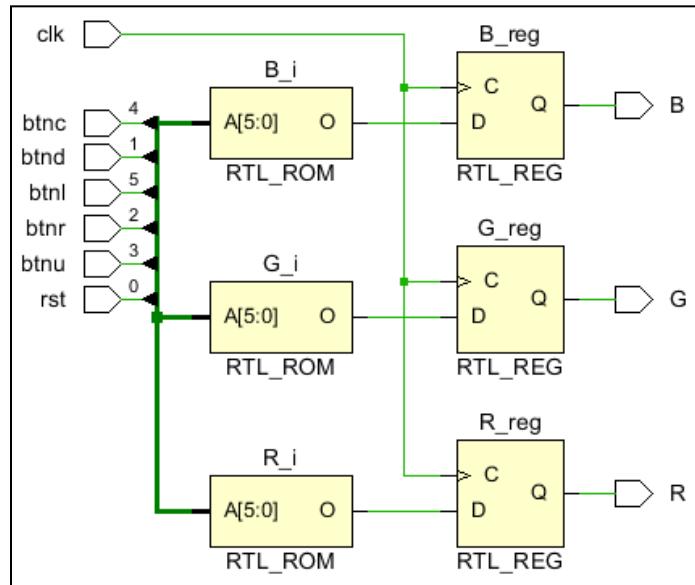
DSD LAB SESSION 11
Assign Tri-color RGB LEDs control on the Nexys A7 Board

Verilog Module:

```

module rgb_led(
    input clk, rst, btnc, btnd, btnc, btnd,
    output reg R, G, B);
    always@(posedge clk) begin
        case ({btnc, btnd, btnc, btnd, rst})
            6'b000000: begin R<=0; B<=0; G<=0; end
            6'b000001: begin R<=1; B<=0; G<=0; end
            6'b000010: begin R<=0; B<=1; G<=1; end
            6'b000100: begin R<=0; B<=1; G<=0; end
            6'b001000: begin R<=1; B<=0; G<=1; end
            6'b100000: begin R<=1; B<=1; G<=0; end
            6'b010000: begin R<=0; B<=1; G<=1; end
            default: begin R<=1; B<=1; G<=1; end
        endcase
    end
endmodule

```



Constraint File

```

## Clock signal
set_property -dict { PACKAGE_PIN E3      IOSTANDARD LVCMOS33 } [get_ports { clk }]; #IO_L12P_T1_MRCC_35
Sch=clk100mhz
create_clock -add -name sys_clk_pin -period 10.00 -waveform {0 5} [get_ports {clk}];

## RGB LEDs
set_property -dict { PACKAGE_PIN R12      IOSTANDARD LVCMOS33 } [get_ports { B }]; #IO_L5P_T0_D06_14
Sch=led16_b
set_property -dict { PACKAGE_PIN M16      IOSTANDARD LVCMOS33 } [get_ports { G }]; #IO_L10P_T1_D14_14
Sch=led16_g
set_property -dict { PACKAGE_PIN N15      IOSTANDARD LVCMOS33 } [get_ports { R }]; #IO_L11P_T1_SRCC_14
Sch=led16_r
##CPU Reset Button
set_property -dict { PACKAGE_PIN C12      IOSTANDARD LVCMOS33 } [get_ports { rst }];
#IO_L3P_T0_DQS_AD1P_15 Sch=cpu_resetn

##Buttons
set_property -dict { PACKAGE_PIN N17      IOSTANDARD LVCMOS33 } [get_ports { btnc }]; #IO_L9P_T1_DQS_14
Sch=btnc
set_property -dict { PACKAGE_PIN M18      IOSTANDARD LVCMOS33 } [get_ports { btnd }]; #IO_L4N_T0_D05_14
Sch=btnd
set_property -dict { PACKAGE_PIN P17      IOSTANDARD LVCMOS33 } [get_ports { btnc }]; #IO_L12P_T1_MRCC_14
Sch=btnc
set_property -dict { PACKAGE_PIN M17      IOSTANDARD LVCMOS33 } [get_ports { btnd }]; #IO_L10N_T1_D15_14
Sch=btnd
set_property -dict { PACKAGE_PIN P18      IOSTANDARD LVCMOS33 } [get_ports { btnd }];
#IO_L9N_T1_DQS_D13_14 Sch=btnd

```