Basketball Scoreboard

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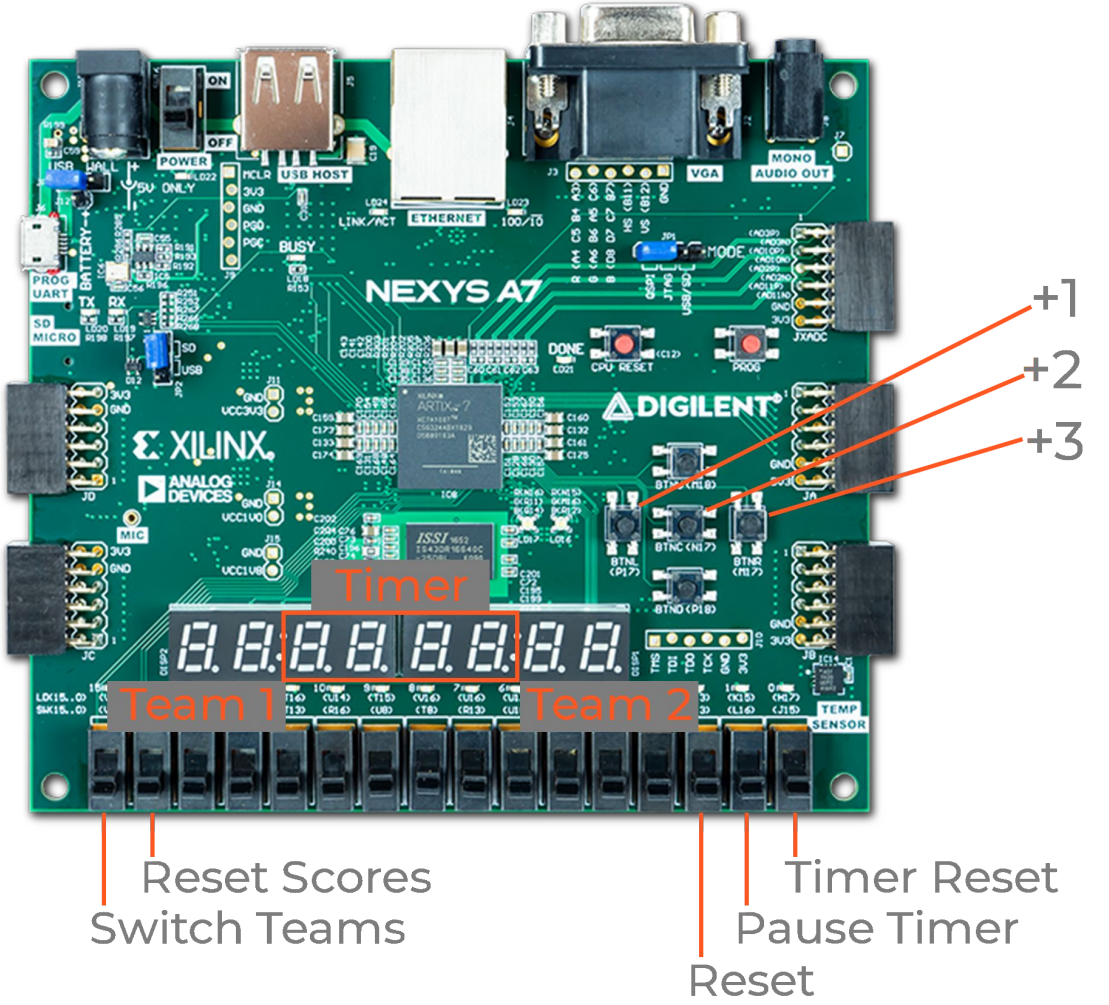
Inspiration

Functionalities



Countdown Timer

```
always @(posedge clock)
    begin

     if(reset_score) begin //reset timer  here
            minutes <= 12;
            seconds <= 00;//default to 12:00 min once enabled
        end
        else if (one_second_enable == 1)
                 seconds <= seconds - 1;
        else if (seconds == 0) begin
                 seconds <= 59;
                 minutes <= minutes - 1;
        end
        else if (pause)
            seconds=seconds;
end
```

```
case(LED_activating_counter)
3'b000: begin
    Anode_Activate = 8'b11111110;
    // activate LED1 and Deactivate LED2, LED3, LED4
     LED_BCD = minutes / 10;//10s place
    // the first digit of the 16-bit number
      end
3'b001: begin
    Anode_Activate = 8'b11111101;
    // activate LED2 and Deactivate LED1, LED3, LED4
    LED_BCD = minutes % 10;//1s place
    // the second digit of the 16-bit number
      end
3'b010: begin
    Anode_Activate = 8'b11111011;
    // activate LED3 and Deactivate LED2, LED1, LED4
     LED_BCD = seconds / 10;
    // the third digit of the 16-bit number
       end
3'b011: begin
    Anode_Activate = 8'b11110111;
    // activate LED4 and Deactivate LED2, LED3, LED1
     LED_BCD = seconds % 10;
    // the fourth digit of the 16-bit number
      end
3'b100: begin
    Anode_Activate = 8'b11101111;
    // activate LED5 and Deactivate LED2, LED3, LED4
        LED_BCD = (team_2 / 10);
    // the first digit of the 16-bit number
      end
```

Team Points Counter

```
reg [7:0] team_1;
reg [7:0] team_2;
```

```
always @(posedge slow_clock)
begin
    if(reset_points) begin //reset team scores here
        team_1 = 7'b0000000;
        team_2 = 7'b0000000;
        end

       if (one_point)
        begin
        if(team)
            team_1 = team_1 + 2'b01;
            else
            team_2 = team_2 + 2'b01;
        end
        else if (two_point) begin
            if(team)
            team_1 = team_1 + 2'b10;
            else
            team_2 = team_2 + 2'b10;
        end
        else if (three_point) begin
            if(team)
            team_1 <= team_1 + 2'b11;
            else
            team_2 <= team_2 + 2'b11;
        end

        if(team_1 >= 7'b1100100)
            team_1 = 7'b0000000;

        if(team_2 >= 7'b1100100)
            team_2 = 7'b0000000;
    end
```

Seven Segment Display

```
3'b100: begin
    Anode_Activate = 8'b11101111;
    // activate LED5 and Deactivate LED2, LED3, LED4
        LED_BCD = (team_2 / 10);
    // the first digit of the 16-bit number
      end
3'b101: begin
    Anode_Activate = 8'b11011111;
    // activate LED6 and Deactivate LED1, LED3, LED4
        LED_BCD = (team_2 % 10);
    // the second digit of the 16-bit number
      end
3'b110: begin
    Anode_Activate = 8'b10111111;
    // activate LED7 and Deactivate LED2, LED1, LED4
        LED_BCD = (team_1 / 10);
    // the third digit of the 16-bit number
        end
3'b111: begin
    Anode_Activate = 8'b01111111;
    // activate LED8 and Deactivate LED2, LED3, LED1
    begin
        LED_BCD = (team_1 % 10);
    end
    // the fourth digit of the 16-bit number
       end
```

Difficulties

- Getting the 7 segment display to work independently
  - *Have to cycle anode rapidly*
- Having to activate correct LED bits, and corrects 10s and 1s place for the bits to display correctly.
  - *Need a combo of % and /*
- Having to wrap countdown timer values correctly.
- Points displayed random number when adding score
  - *Need debouncer, limiting many inputs per press to one.*


STATE WARRIORS
LOS ANGELES LAKERS
GOLDEN STATE WARRIORS
LOS ANGELES LAKERS
GOLDEN STATE WARRIORS
LOS ANGELES LAKERS
GOLDEN STATE WARRIORS
LAKERS
6
Lebron Scores 56
AT
Mar. 5, 2022
GOLDEN STATE WARRIOR
OLDEN STATE WARRIORS
LOS ANGELES LAKERS
GOLDEN STATE WARRIORS
LOS AN

Demo

Questions?