

System on Chip: Class Report 2

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September 14, 2023

Summary

In this class report, our goal was to create a reaction game using an LED on our NEXYS board. Once the LED lit up, a timer started to see how long it took the person playing to press a button and react. To accomplish this, we took code from a previous class which converted binary to Binary Coded Decimal and displayed it on the 7 segment display. Then, we added our own code and edited the modules to display the millisecond timer while it was running. Our main development occurred in one module, "reaction_timer".

Results

Here is a test we did for reaction_timer module which ensures its functionality

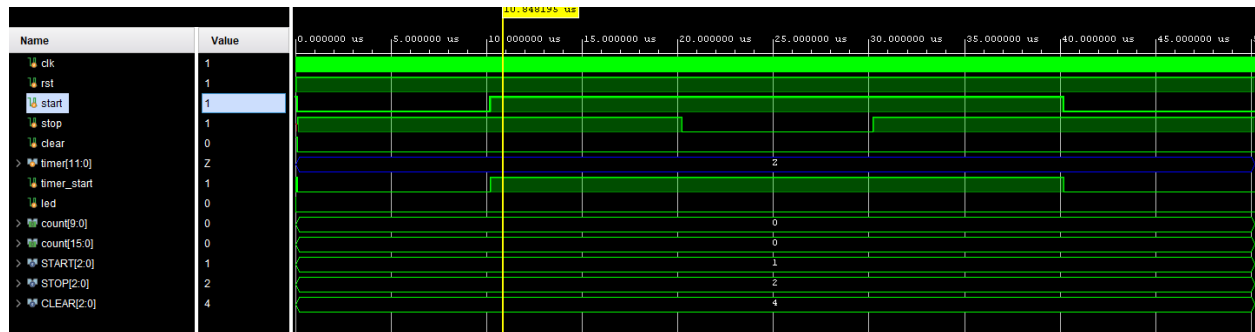


Figure 1: reaction_timer Simulation

Code

Here is the GitHub repo with our modules: https://github.com/JhnWstbrk/ELC4396_ClassReport2

In Listing 1, you can see a section of our main module, "reaction_timer", which is the main logic that implements the game part.

Listing 1: Main Logic of reaction_timer

```
...
    always_comb begin
        if(reaction_state == START) begin
            led = 1'b1;
            led_on = 1'b1;
            timer_start = 1'b1;
        end
    end
```

```
    if(reaction_state == STOP && timer_start == 1'b1) begin
        //display last time on the screen
        timer_start = 1'b0;
        led = 1'b0;
    end
    if(timer == 1000) begin
        timer_start = 1'b0;
        led = 1'b0;
    end

    if(reaction_state == STOP && led_on != 1'b1) begin

    end
    if(reaction_state == CLEAR || rst == 1'b1) begin
        led = 1'b0;

    end
end
...

```
