System on Chip: Class Report 2

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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 editted the modules to display the millisecond timer while it was running. Our main development occured in one module, "reaction_timer".

Results

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

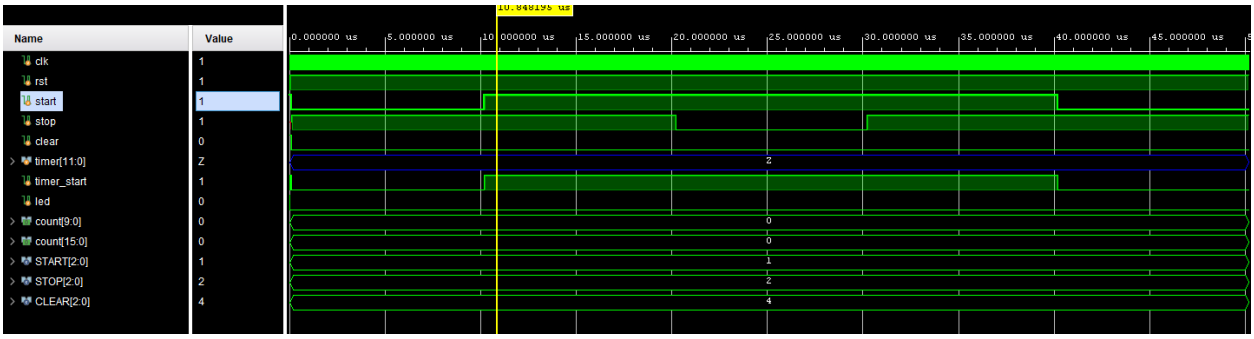

Figure 1: reaction_timer Simulation

In this GitHub link provided below, there is a video of our board working mostly as desired. As of the writing of this report, we are struggling to have "Hi" displayed before the game starts and some other overflow when pressing the button before the LED goes off.

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
          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
...
```