# 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

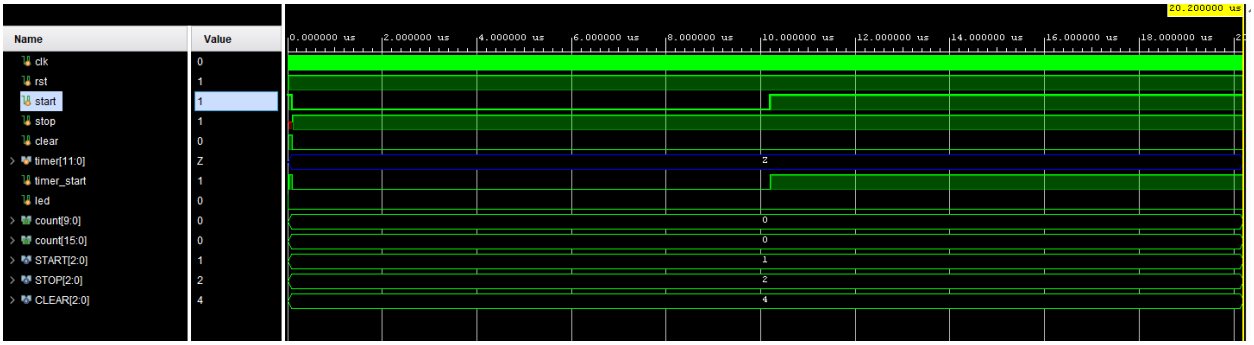


Figure 1: reaction_timer Simulation

## 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
...
```