ECEN3002_Lab9Report_ChengmingLi
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In this lab, I almost finished it, but it still has some timing issues. My monitor is able to display the four colors I load into the SDRAM, but the pattern isn't static for a really long time, or stable. In other ways, I can see the refreshing period on the screen, or the pattern like loading the RGB value onto the monitor.

There are two problems I ran into before. The first problem is the monitor only displays one color, which is the majority and another color, which only takes up a tiny bit of the screen. And the reason behind that is the way of incrementing the memory location when I write 32 bits RGB value into the SDRAM. For each memory block in the SDRAM, they take up one location for each 8 bits value. The mistake I made was I only increased the memory location by 1 each time so that the first RGB value I wrote into the SDRAM became the majority on the monitor.

The second problem I ran into was that all colors were flashing on the monitor. And I also created a SignalTape file to help me to debug it. The result was exactly the same as what I saw on the screen. At the same line location, the RGB received different color values from the FIFO whenever I try to capture the data by hitting the play button. After I received the help from Prof. Robinson, there was a timing issue related to the visible region. In each iteration, the visible region was going to low logic level one clock cycle before what it supposed to be, which is 639, or 479. Meanwhile, it means the FIFO closes the transmission one clock earlier than what it is supposed to be. And the RGB value that is supposed to be displayed in the current video frame will display in the next video frame, or next visible region period. The mistake I made was the inequality, I used to decide the visible region, which had an extra -1 in the equation so that the visible went to low logic level one clock cycle before what it is supposed to be.

The remaining problem I have right now is that the displaying pattern is not static for a really long time, and I am still able to see the period of loading RGB value onto the monitor.