Question: Determine how many valid ‘Y’ positions there are for the rectangle

* 411

Question: If you want the rectangle to move at a speed of 1000 pixels/second, how many clock cycles of delay are needed if the clock is running at 50 MHz?

* 50000 cycles

Question: How many clock cycles of delay did you use for your bouncing square?

* 200000 cycles

Question: What is the speed of your bouncing ball in terms of pixels/second?

* 25 pixels/second

Question: This lab could be the start to a simple game of “pong”. What would need to be done in order to get the ball to “bounce” off the rectangle paddles at each end of the screen?

* I need to add some logics to change the direction of the ball whenever the horizontal position of the ball is same as that of the yellow bar or green bar when vertical position overlaps.

Question: Review your synthesis logs and report on all warnings. Summarize these warnings and justify the warnings if you believe they are acceptable.

* All of my warnings came from signals that I didn’t have to use. I didn’t have to move the yellow and green bars horizontally, and I didn’t need any reset signal. I received some warnings because of them, but I think it’s acceptable for this project.

Question: What is the minimum clock period of your circuit (review the “Post-PAR Static Timing Report” and search for “Minimum period”)?

* 13.556ns

Question: Review the “Map Report” and determine the number of “slices” used by your design.

* 130

Personal Exploration

I tried to set some different counter cycles, and the speed of the ball and bars changed. It was actually really cool to see the result of my code through VGA screen. Being able to change colors of the background was also enjoyable.