The **Top-level** entity we were given was broken so I had to fix it by adding **GO** signals to the **counter**, **gray2** and the **Top-level** entity. Hex5 displays the **gray2** table values and hex4 displays the values being loaded into the **counter** via switches 9-6. Switch4 causes the **counter** to increment, and switch4 and switch5 together decrement the **counter**. **BUTTON\_N** of **CLK\_GEN** is loaded into button1 and **GO** is loaded into switch0, as long as **BUTTON\_N** is pressed and **GO** is high, the clock will generate a signal and both **gray2** and the **counter** will begin to increment/decrement accordingly, If it is not pressed nothing happens. No values will be loaded into the **counter** if switch4 is high. I loaded the **RST** into switch0 which will reset the current values on the board whenever it goes high regardless of whether there is a clock signal. The clocks are controlled using the clock outs from the **CLK\_GEN** and the **clk50MHz** set to P11 on the board controls the **CLK\_GEN** input. The constant **MS\_CLOCK\_PERIOD** sets the appropriate period for the **CLK\_GEN**.