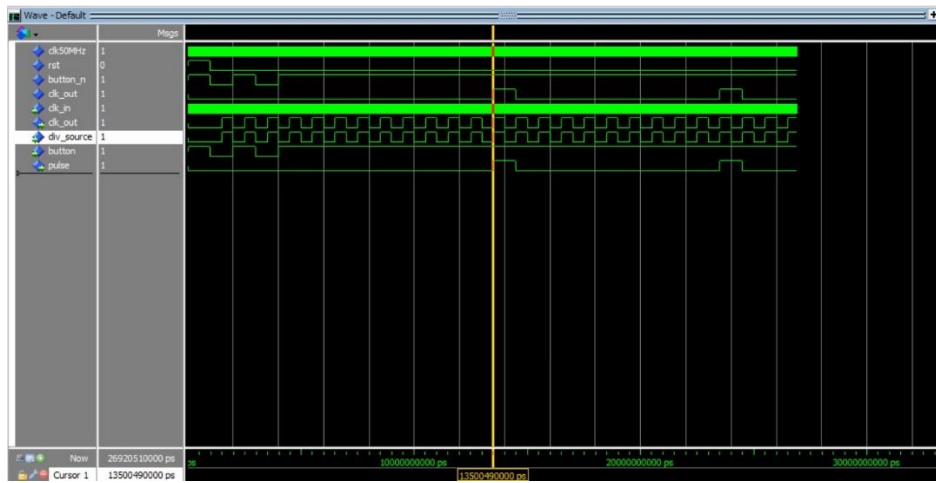


1.

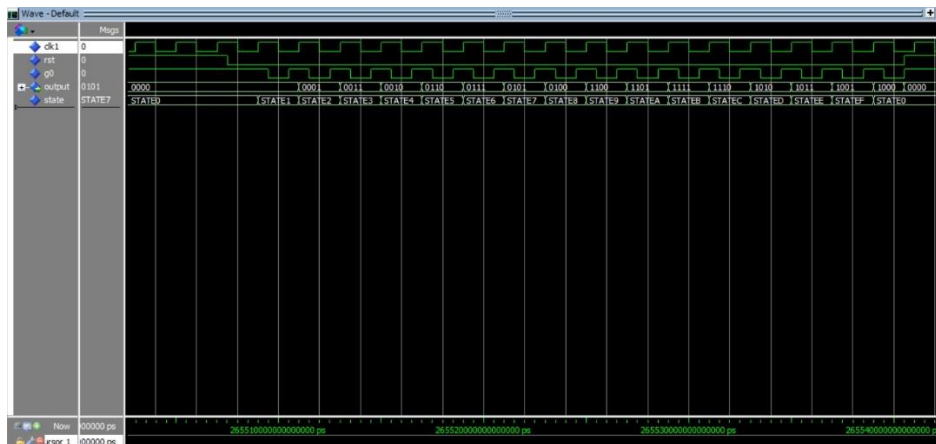
Waveform for ratio of 2



Ratio is 50000 and clk_out set to occur 10ms after the button is pressed. It takes 10 of the divided clock's cycles to make clk_out true.

2.

Gray 1 waveform



3.

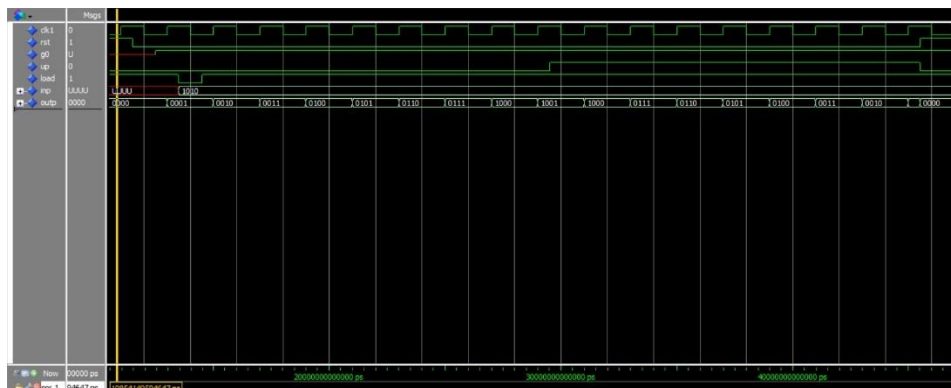
Gray 2 waveform



Gray 2 stepping through all states and looping back to state 0.

4.

Counter waveform



The counter is able to count up from zero and down from whatever value is stored in it affectively, but it cannot store new values via load.

5.

The top level for this design instantiates an instance of `clk_gen`, `counter`, and `gray2` and connects their outputs to `leds`. The inputs are 50MHz clock to `clk_gen`, and switches and push buttons for counter and `gray2`.