COL215: LAB ASSIGNMENT 9
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Description of logic-

1. We used 100MHz Clock and reduced its frequency to get desired value of 153609.83Hz because the 16 cycle with such frequency will have 9600.61Hz which is close to baud rate = 9600.
2. We observed eight consecutive zero to mark beginning of si state, when it was counting eight starter '0' bits it was in start state.
3. Once in si state it starts storing rx_in in rx_reg after every 16 cycles of frequency 153609.83Hz which makes its own frequency 9600.61Hz. This is done for storing eight such value of rx_in in rx_reg and then state is changed to stop.
4. After that it check for stop bit with frequency 9600.61Hz till it gets '1' which will mark idle state.
5. When in idle state it checks for '0' from rx_in with a frequency of 153609.83Hz. It remains in idle state till it does not find eight consecutive '0' of start state, after si state comes and it goes so on…
6. Value stored in rx_reg will get printed in binary form with the help of LEDs on Basys board. If LED is on implies '1' else '0'.
7. For transmitter we took parallel input from rx_reg from start to stop and gave output one bit at a time. That is parallel input and serial output.

Correctness of our work-

We have checked our project by giving input from gtkTerm. We getting correct results. We were getting ascii value of of the key we were giving as input. Our reset button was taking it back to idle state as long as it was pressed i.e. rx_reg was not getting feed at that time hence showing the previous value. Some testcases are shown below for acsii value of 0 and 8-