REPORT
Asynchronous Serial Receiver

Operations performed:

Frequency down: In this assignment we need a clock of frequency 16 * 9600 Hz , so here the counter code is made with number of count = 326.
Bound rate is 9600 here.

Receiver:

States: Four states of the FSM are defined in case of this receiver as IDLE, START, STOP and Si.
1. IDLE: In this state the value of rx_in is 1. and during this state the receiver will not read any bit. If the value of rx_in changes from 1 to 0 then the state changes from idle to start.

2. START: If the value of rx_in remains 0 for 8 consecutive cycles of the clock rxclk then the state contianing these 8 0's is referred to as start state and the next state occurred is Si. Else if 8 consecutive 0's doesnt occur then the state again changes to idle.

3. Si: This is the state in which after every 16 cycle of the clock a bit is read. After 8 consecutive Si states the state called STOP occurs.

4. STOP: Stop is the end state which comes after the sequence of 8 Si's . Before this all the 8 bits are read by the receiver. After the completion of this state the IDLE state comes.

GTKterm: By this software the manual input was given which was read by the receiver.

Final Outcome:

The 8 bits read after this process are given as input to the register which gives the output which is assigned to the 8 LEDs present on the Basys 3 board AND then the output is read by us.

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CONCLUSION:

We provided input on the PC using gtkterm which is received and read by the receiver then the receiver provides its output to the register. The register then converts this serial input given by the receiver into parallel 8 digit binary output and then displays it on the 8 LED s.

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