Batch: SY-IT(B3) **Experiment Number: 7**

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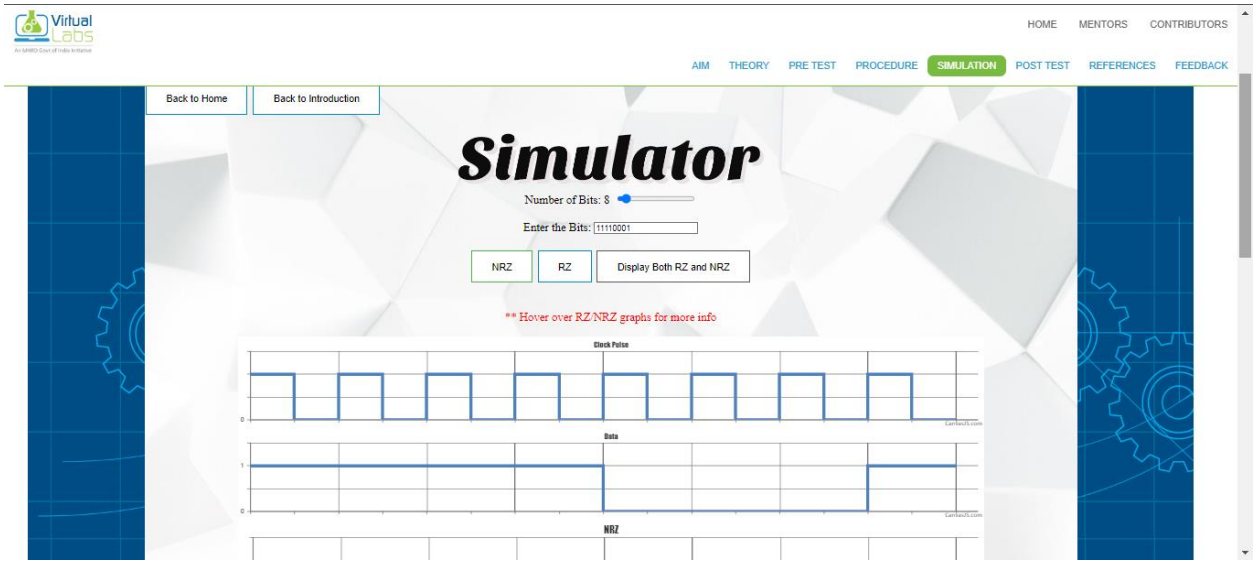
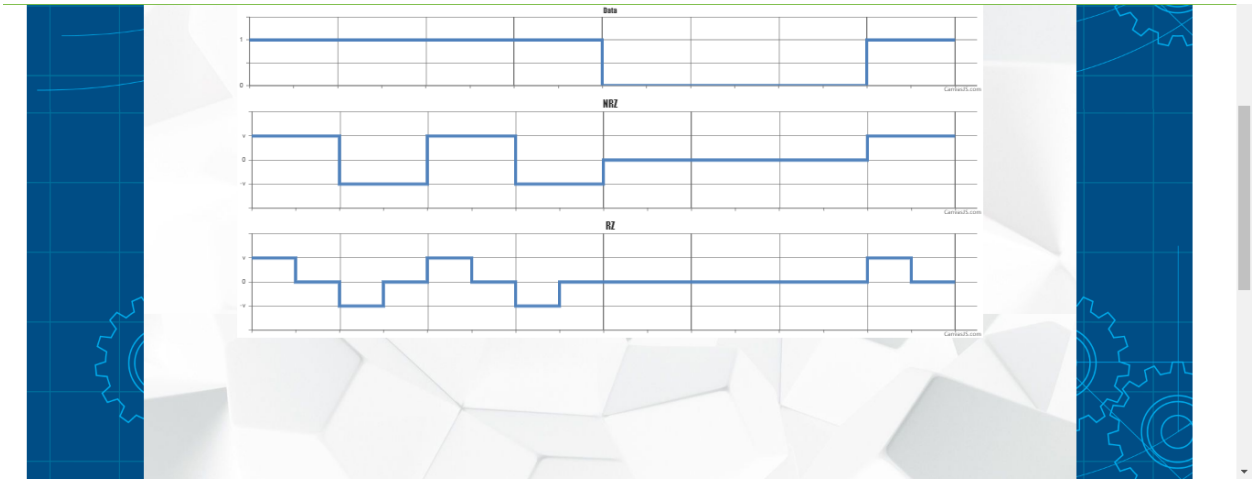
Aim of the Experiment: Explore the virtual lab on generation of bipolar RZ and NRZ line codes.

Program/ Steps:

1. The aim of this experiment is to study the generation of Bipolar RZ and NRZ line codes.
2. Navigate to the website of ebootathon and read the theory related to this experiment.
3. Then go to the simulation page to actually perform the v-lab.
4. Set the number of bits for which you want to generate the Bipolar RZ or NRZ lines.
5. Enter the actual bits for the selected number.
6. Generate the line code.

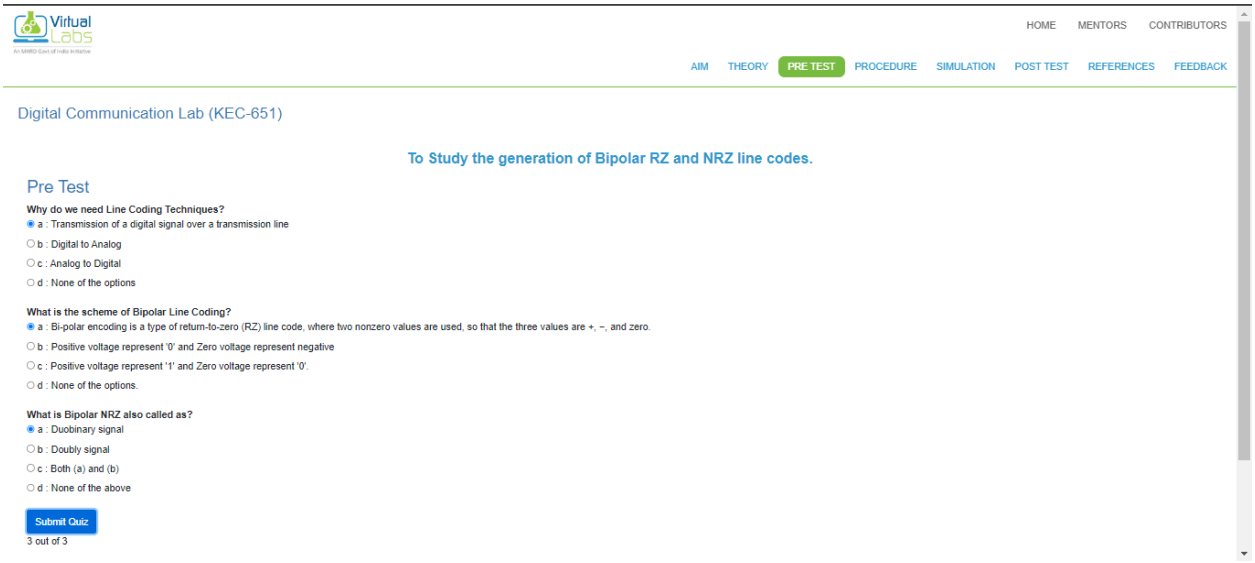
Output/Result:



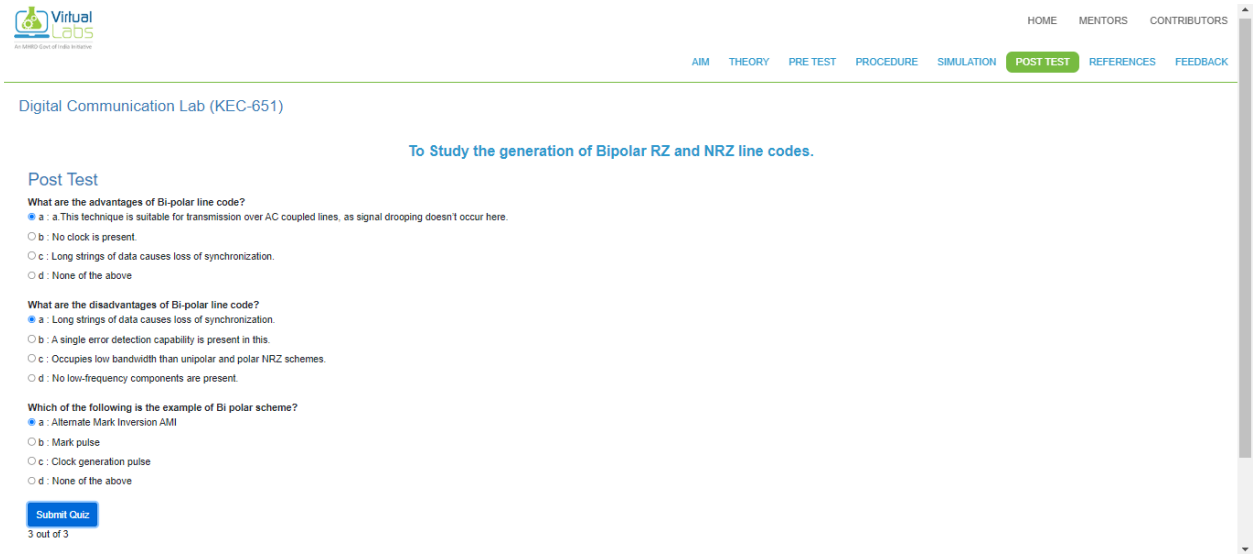


Quiz :

Pre-test



Post-test



Post Lab Question-Answers:

1. Why do we need Line Coding Techniques?

Ans : Line coding converts **digital data** into a **digital signal format** that can be transmitted over physical media. This is essential for effectively communicating binary data. Certain line coding schemes include timing information, which helps the receiver maintain synchronization with the transmitter. This is crucial for accurately interpreting the signal. Overall, line coding is a critical aspect of digital communication systems that helps ensure effective data transmission while addressing various technical challenges.

2. What is the scheme of Bipolar Line coding?

Ans: Bipolar line coding is a line coding scheme that uses **three voltage levels, positive, negative, and zero**, to represent logic states: One bit of data is represented by a zero voltage level. The other bit alternates between positive and negative voltage levels

Outcomes:

CO4. Execute their knowledge of computer communication principles, including Error detection and correction, multiplexing, flow control, and error control

Conclusion (based on the Results and outcomes achieved):

In this experiment, I learned about RZ (Returns to zero in the middle of the bit) and NRZ (Non-return to zero) line codes. We generated the RZ and NRZ codes from the virtual lab link. I did that by entering the number of bits and then the bit values. Later in the experiment, I also understood the theory related to line coding techniques.

References:

Books/ Journals/ Websites

- https://ebootathon.com/labs/beta/ec/DigitalCommunicationLab/exp3/pretest.html