**Batch: A3**                                          **Experiment Number:7**

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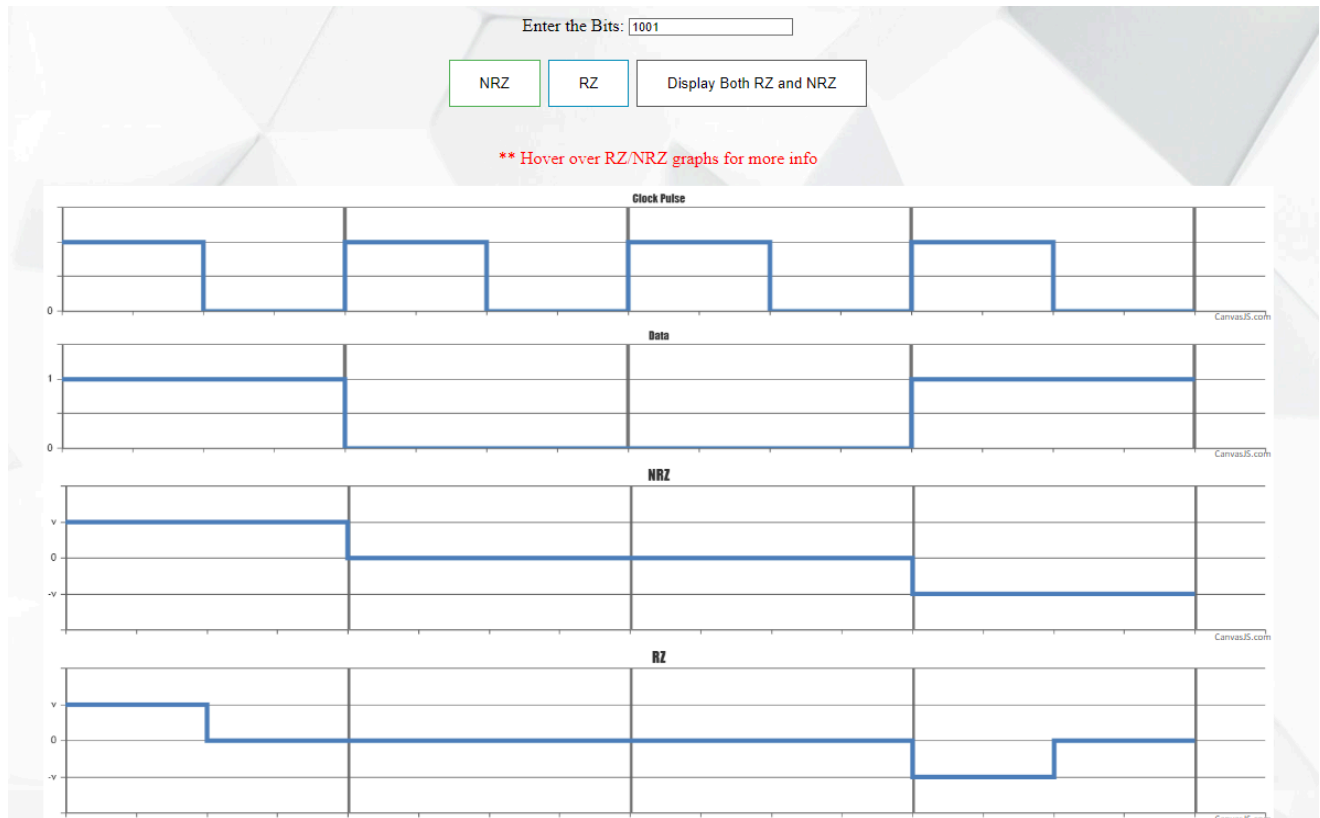
**Aim of the Experiment:** To Study the generation of Bipolar RZ and NRZ line codes.

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**Program/ Steps:**
In this experiment the simulator starts with the window asking the user to click on the tab of Introduction or experiment.

1.  Clicking on Introduction the simulator will provide the conceptual knowledge of Bipolar RZ and NRZ line codes after that user will reach to the experiment part where user is asked to enter the length of the sequence and the bits of the sequence.
2.  In any how, if the user does not enter binary digits or enter mismatch information the simulator will prompt an error showing "enter valid information", after clicking the submit button, so the user needs to enter the information carefully.
3.  After that user can choose between RZ and NRZ or both and click on submit. Also if the user click on submit button without entering the information, the simulator will again prompt an error.
4.  After submitting the information the simulator will convert the given binary sequence into the Bipolar RZ/NRZ as asked and will generate the graph showing BiPolar RZ/NRZ line codes.

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## Output/Result:

Enter the Bits: 1001

[ NRZ ]  [ RZ ]  [ Display Both RZ and NRZ ]

** Hover over RZ/NRZ graphs for more info



## Post Lab Question-Answers:

**Why do we need Line Coding Techniques?**

⦿ a : Transmission of a digital signal over a transmission line

○ b : Digital to Analog

○ c : Analog to Digital

○ d : None of the options

**What is the scheme of Bipolar Line Coding?**

⦿ a : Bi-polar encoding is a type of return-to-zero (RZ) line code, where two nonzero values are used, so that the three values are +, −, and zero.

○ b : Positive voltage represent '0' and Zero voltage represent negative

○ c : Positive voltage represent '1' and Zero voltage represent '0'.

○ d : None of the options.

**What is Bipolar NRZ also called as?**

⦿ a : Duobinary signal

○ b : Doubly signal

○ c : Both (a) and (b)

○ d : None of the above

[ Submit Quiz ]

3 out of 3

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Why do we need Line Coding Techniques?

Ans:- Line coding techniques convert digital data for efficient transmission, minimize errors, maintain synchronization, and prevent DC bias.

What is the scheme of Bipolar Line coding?

Ans:-Bipolar line coding uses three voltage levels: positive, negative, and zero. A '1' is represented by alternating positive and negative voltages, while a '0' is zero voltage.

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**Outcomes:**

**CO1 & 4:** Understand the data communication systems, network topologies and network devices. Execute their knowledge of computer communication principles, including Error detection and correction, multiplexing, flow control, and error control.

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**Conclusion (based on the Results and outcomes achieved):**

Successfully executed virtual lab.

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**References:**

**Books/ Journals/ Websites:**

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