Tutorial 2 (Even question’s Answers)

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1. Ad
2. Va
3. Ad
4. NRZ encoding has worst-case one transition per bit-time (assuming the bit-time interval is closed at the start and open at the end). An NRZ encoding of the worst-case bit stream ...010101... generates a signal of frequency B/2 Hz; a smaller bandwidth would be unable to carry the signal.

Manchester encoding has worst-case two transitions per bit-time (under the same assumption as NRZ). A Manchester encoding of the worst-case bit stream ...000... (or ...111...) generates a signal of frequency B Hz, the minimum required bandwidth.

MLT-3 encoding has worst-case one transition per bit-time (under the NRZ assumption). An MLT-3 encoding of the worst-case bit stream ...111... generates a signal of frequency B/4 Hz, the minimum required bandwidth.

1. All transmissions are prone to noise, interferences, and crosstalk’s. When the wires are twisted, some part of the noise signals is in the direction of data signals while the other parts are in the opposite directions. Thus, the external waves cancel out due to the different twists. The receiver calculates the difference in the voltages of the two wires for retrieving data. Thus, a much better immunity against noise is obtained.
2. A packet switch has four components:

* Input ports: An input port performs the physical and data link functions of the packet switch.
* Output ports: The output port performs the same functions as the input port, but in the reverse order.
* Routing processor: The routing processor performs the function of table lookup in the network layer.
* Switching fabric: The switching fabric is responsible for moving the packet from the input queue to the output queue.