COMPUTER NETWORKS

ASSIGNMENT NO-02

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Question:

1. Explain the following Transmission.
    a. Parallel Transmission.
    b. Serial Transmission
    c. Synchronous Transmission.
    d. Asynchronous Transmission.

A. Parallel Transmission

- In parallel transmission, multiple bits (usually 8 bits or a byte/character) are sent simultaneously on different channels (wires, frequency channels) within the same cable or radio path and synchronized to a clock. Parallel devices have a wider data bus than serial devices and can therefore transfer data in words of one or more bytes at a time. As a result, there is a speedup in parallel transmission bit rate over serial transmission bit rate. However this speedup is a tradeoff verses cost since multiple wires cost more than a single wire. And as a parallel cables gets longer, the synchronization timing between multiple channels become more sensitive to distance. The timing for parallel transmission is provided by a constant clocking signal sent over a separate wire within the parallel cable. Thus parallel transmission is considered synchronous.

B. Serial Transmission

- In serial transmission, bits are sent sequentially on the same channel (wire) which reduces cost for wire but also slows the speed of transmission. Also, for serial transmission, some overhead time is needed since bits must be assembled and sent as a unit and then disassembled at the receiver.
- Serial transmission can be either synchronous or asynchronous. In synchronous transmission, groups of bits are combined into frames and frames are sent continuously with or without data to be transmitted.

C. Synchronous Transmission

- In synchronous Transmission, data moves in a completely paired approach in the form of frames. Synchronization between the source and target is required so that the source knows where the new byte begins, since there are no spaces included between the data
- Synchronous Transmission is effective, dependable and often utilized for transmitting the large amount of data. It offers real time communication between linked devices

D. Asynchronous Transmission.

- In asynchronous transmission, data moves in half paired approach, 1 byte or 1 character at a time. It sends the data in constant current of bytes. The size of character transmitted is 8 bits with a parity bit added both at the beginning and at the end making it a total of 10 bits. It does not need a clock for integration
- It is straight forward, quick, cost-effective and does not need two way communication to function.