Q1) Short note on circuit switched network

- Circuit switching is a switching technique that establishes a dedicated path b/w sender and reciever.
- Once the connection is ~~made~~ established then the dedicated path will remain to exist untill the connect" is terminated.
- Circuit switching technique operates in a similar way as the telephone works
- It is used in public telephone network. It is used for voice transmission
- Fixed amt of data can be transfered at a time.
- When any user wants to send the data, voice, video, a req signal is sent to the reciever then the reciever sends back the ack to ensure the availablity of the dedicated path.
- After recieving the ack d the dedicated path transfers the data.
- A complete end to end path must exist before comm takes place

Communication through circuit switching has 3 phases
- Circuit establishment
- Data transfer
- Circuit disconnect

Advantage:
- Commited transmission channel is established b/w computers which gives ~~gtr~~ guaranteed data transmi" rate
- There is no delay in dataflow as there is no bcoz of dedicated transmission path

Disadvantage
- It takes more time to establish a connection
- more bandwidth is required in setting up dedicated channels
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Q2) Short note on Packet-switched Network

- In packet switching technique the message is sent in one go, but is divided into smaller pieces and they are send individually.
- The message is split into smaller pieces called packets and packets are given a unique number to identify their order at recieving end.
- Every packet contains some information in it's header such as source and destinat^{n} address and seq number.
- Packets will travel across the network, taking the shortest path possible
- All packets are reassembled at recieving end in correct order.
- If any packet is corrupted/lost then the message is send to resend that packet.
- If the correct order of the packet is reached the ack message is sent.
- Faster then circuit switched

There are two approaches for packet switching

- Used for multipath communication.
- It uses virtual connect^{n} for data transfer,

Advantages

- Cost effective, Minimal transmit^{n} latency,
- More efficient in terms of bandwidth.

Q3) Short note on Guided Media

~~It is defined as the mediam through which the signals are transmitted. It is a.k.a Bounded media.~~

In data communica^n terminology, a transmi^n media is the physical path b/w sender & reciever i.e ~~challe~~channel through which data is transfered.

Guided $ media is also reffered to as Wired or Bounded transmi^n media. Signals being transmitted are directed and confin$ in narrow pathway by using physical links

features :• High speed • Secure • Used for short distance

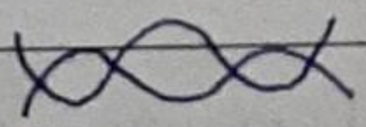
Three major types of Guided Media:

i> Twisted Pair Cable

It consists of two saperatly insulated conductor wires wound about each other. They are most widely used transm^n media.

*Unshielded Twisted Pair (UTP)

It consist of two insulated copper wires twisted around one another. This type of cable can block interference and does not depend on physical shield for this purpose

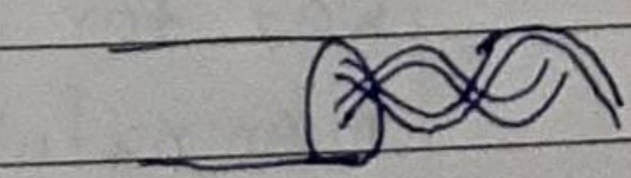


Adv:

- least expensive • easy to install
- high speed capacity

*Shielded Twisted Pair

This type of cable consists of special jacket (a copper braid or a foil shield) to block external interference. It is used in fast data rate ethernet and in voice and data channels of telepho~~ne~~ lin~~s~~



Adv

- Better perfor at higher data rate
- Crosstalk elimina^n • faster • expensive

ii) Coaxial Cable

It has an outer plastic covering containing an insulaⁿ layer made of PVC oor teflor and the two // conductors each having a saperate insulated protectⁿ cover. Used in cable and analog TV.

Adv

- High bandwidth
- Better noise immunity
- Inexpensive

Disadv

- single cable failure can disrupt entire network.

iii) Optic fiber

It uses the concept of total internal reflection of light. The core is made up of optic fiber/plastic. The core is surrounded by less optically dense glass/plastic covering called cladding. It is used for data transmⁿ in large vol.

Adv

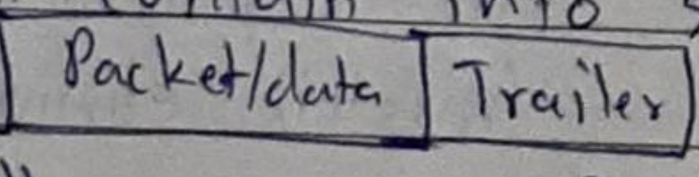
- increased capacity and bandwidth
- lightweight
- less signal attenuat°
- resistance to electromagnetic interferemre

Disadv

- difficult to install
- high cost

Q4) Framing in DLL with types.

Frames are units of digital transmiⁿ. Framing is a point to point connectⁿ b/w two computers or devices consists of a wire in which data is transmitted as a stream of bits. However these bits must be framed into discrernible blocks of info. Framing is a functⁿ of DLL. It provides a way for a sender to transmit a set of bits that are meaningful. Frames have headers that contain info such as error-checking codes.



At data link layer it extracts the message from the sender and provides it to the reciever's addresses. The advantage of using frames is that data is broken

up into recoverable chunks that can he easily checked for currupt^{n}.

Two types of framing

i> Fixed size.

The frame is of fixed size and there is no need to provide boundries to the frame, the length of the frame itself acts as a delimiter.

disadv: it suffers from inter fragmentat^{n} if data is less then frame size

soln. padding

ii> Variable size