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Submitted to

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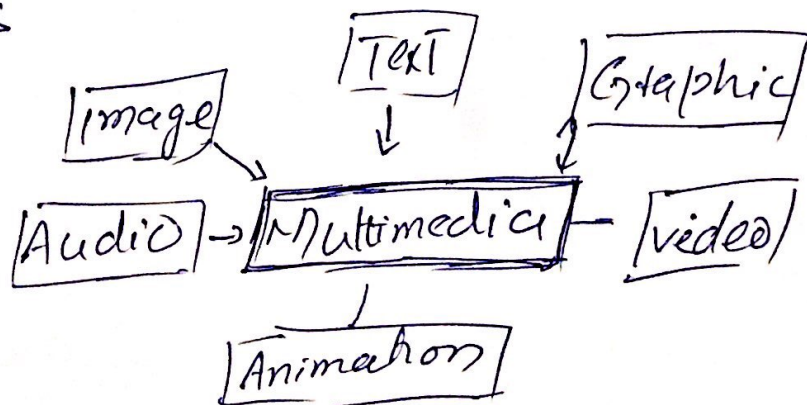
Q1) write a note on multimedia and its types with common media for storage access and transmission in details.

~~Ans~~

(Ans) Multimedia

Multimedia is simply multiple forms of media integrated together. An example of multimedia is web page with an animation. Besides multiple types of media being integrated with one another, multimedia can also stand for interactive types of media such as video games, CD ROMs that teach foreign language or in an information kiosk at a subway terminal. Other terms that are sometimes used for multimedia include hypermedia and rich media.

\* Types



(1) Text

⇒ The form in which the text can be stored can vary greatly. In addition of ASCII based files. Text is typically stored in processor.

(2) Graphic

There is a great variance in the quality and size of storage (Image file format) for still image (Bitmap - gif, jpg, bmp) vector - svg, pdf, psd

(3) Audio

An increasingly popular datatype (audio file format) being integrated in most of applications is Audio its space intensive, one minute of sound can take up to 2-3 MBs of space. Several techniques are used to compress it in suitable format.

(4) Animation :-

It involves the appearance of motion caused by displaying still image one after another. Often, animation is used for entertainment purpose. In addition to its use for entertainment.

(5) Video

one of the most space consuming data type is digitalized video. The digitalized video are stored as sequence of frames. Depending upon its resolution and size a single frame can consume upto 1 Mb.

(Q2) What are the relations between hardware and software. And types of software with logical system architecture.

(Ans) Relation between Hardware and software :-

- ⇒ Both hardware and software are necessary for a computer to do each useful job. They are complementary to each other.
- ⇒ Same hardware can be loaded with different software to make a computer system perform different types of job.
- ⇒ Except for upgrades, hardware is normally a one time expense where as software continuing expense.
- ⇒ Upgrades refer to renewing or changing component like increasing the main speakers, modems, etc.

## \* Types of software

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Most software can be divided into two major categories:

⇒ System software:

are designed to control the operations and extend the processing capability of a computer system

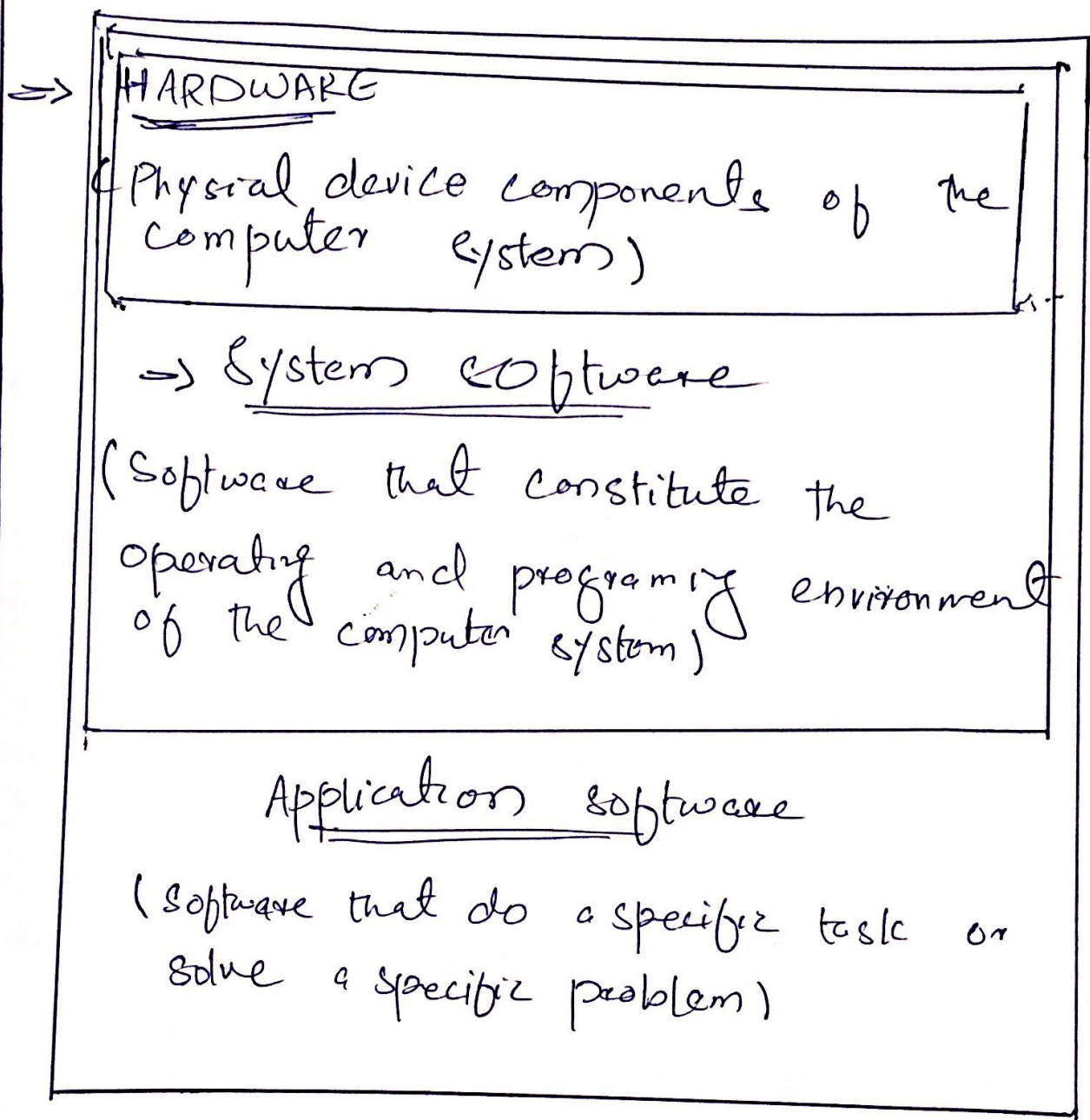
⇒ Application software: - are designed

to solve a specific problem or to do specific tasks

⇒ Example of application software are word processing, inventory management, preparation of tax returns, banking etc.

# Logical System Architecture.

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## Users

(normally interact with the system via the user interface provided by the application application software)

(Q3) Write a note on each of the following in details.

(Ans)

(a) Modulation Techniques:-

⇒ Amplitude Modulation (AM)

Two binary values (0 and 1) of ~~any~~ digital data are represented by two different amplitudes of the carrier signal, keeping frequency and phase constant

⇒ Frequency Modulation (FM)

Two binary values of digital data are represented by two different frequencies, while amplitude and phase are kept constant

⇒ Phase Modulation (PM) Two binary values of digital data are represented by shift in phase of carrier signal



## (b) Multiplexing and De Multiplexing

⇒ Multiplexing :-

→ Method of dividing physical into many logical channels so that a number of independent signals may be simultaneously transmitted.

→ Electrical device that performs multiplexing is known as a multiplexer

→ Multiplexing enables a single transmission medium to concurrently transmit data between several transmitters and receivers.

\* There are two basic methods of multiplexing.

(1) Time Division Multiplexing (TDM).

(2) Frequency Division Multiplexing (FDM)

## \* De Multiplexing

A demultiplexer (or demux) is a device that takes a single input line and routes it to one of several digital output lines. A demultiplexer of  $2^n$  outputs has  $n$  select lines, which are used to select which output line to send the input. A demultiplexer is also called a data distributor.



## (C) Switching Techniques

- Data is often transmitted from source to destinations through a network of intermediate nodes.
- Switching techniques deal with the methods of establishing communication links between the sender and receiver in a communication network.

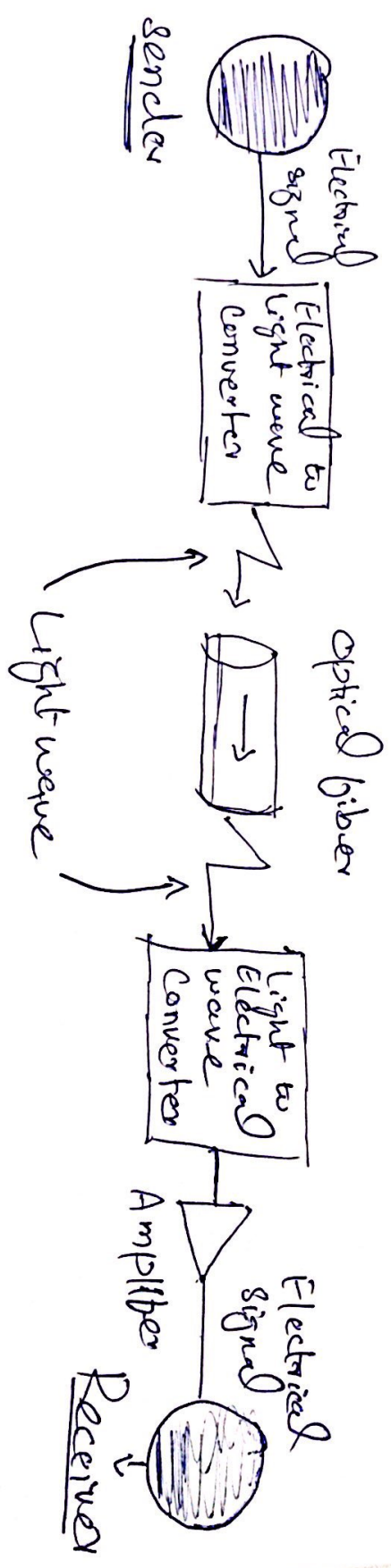
\* Three commonly used switching techniques are,

→ Circuit switching Dedicated physical path is established between sending and receiving stations through nodes of the network for the duration of communication.

→ Message switching :- sender appends receiver's destination address to the message and it is transmitted from source to destination either by store and forward method or broadcast method.

→ Packet switching :- Message is split into fixed size packets and each packet is transmitted independently from source to destination node. Either store and forward or broadcast method is used for transmitting the packets. All packets of a message are assembled into original message at the destination.

(d) Optical Fiber Communication System :-



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(Q4) what is an OSI model  
Explain each layer in details.

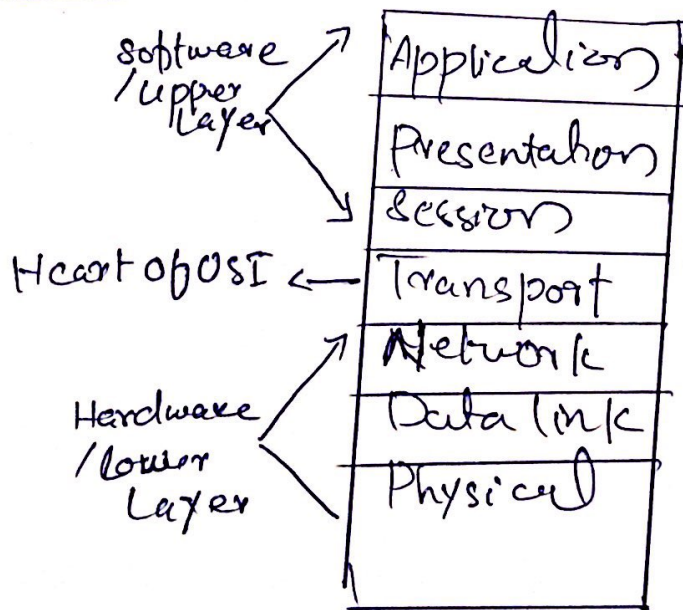
(Ans) OSI Model:-

→ The open system interconnection

(OSI) model is framework for defining standards linking heterogeneous computers in a packet switched network.

→ Standardized OSI protocol makes it possible for any two heterogeneous computer systems located anywhere in the world, to easily communicate with each other.

\* Layers



## (1) Physical Layer:-

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The physical layer helps you to define the physical and electrical specifications of the data connection. The level establishes the relationship between a device and physical transmission medium. The physical layer is not concerned with protocol or other such higher layer items. e.g hardware, network adaptor, networking hub etc

## (2) Data Link Layer:-

Data link layer correct the errors which can occur in physical layer. The layer, allows you to define the protocol to establish and terminates a connection between two connected network devices.

→ The data link layer is subdivided in two types of sublayers.

(a) Media access control (MAC)

(b) Logical link control layer.

### (3) Network Layer :-

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The network layer provide the functional and procedural means of transferring variable length data sequences from one node to another connected in different networks.

→ Message delivery at the network layer does not give any guarantee to be reliable network layer protocol.

→ Layer management protocol are.

- (a) routing protocol
- (b) Multicast group management
- (c) Network layer address assignment.

### (4) Transport Layer :-

The transport layer build on the network layer to provide data transport from a process on a source machine to a process on a destination machine. It hosted using single or multiple networks.

#### \*Important functions of transport layer

→ It divide the message received from the session layer into segments and numbers them to make a sequence.

→ Transport layer make sure that the message is delivered to the correct process on the destination machine.

### (5) Session Layer

Session layer control the dialogues between computers. It helps you to establish the starting and transmitting the connections between the local and remote applications.

#### \* Important functions

- It establishes, maintains and end a session
- Session layer enables two systems to enter into a dialog
- It also allows a process to add a checkpoint to a stream of data.



## (6) Presentation Layer

Presentation Layer allows

you to define the form in which the data is to exchange between the two communicating entities. It also help you to handles data compression and data encryption.

### \* Functions

→ Character code translation from ASCII to EBCDIC

→ Data compression: Allow to reduce the number of bit that needs to be transmitted on the network

→ It provide a user interface and support for services like email and file transfer.

## (7) Application Layer

- Application layer helps you to identify communication.
- ~~Application~~ layer interacts with an application program, which is the highest level of OSI model. The application layer is the OSI layer, which is closest to the end user. It means OSI application layer allows users to interact software applications.

\* The functions are

- It allow user to remote host.
- The layer provides various email services.
- The application offers distributed database source and access for global information about various objects and services.