ICT FINNAL TERM ASSIGMENT

NAME: **FAIZULLAH KHAN**

ID: **14840**

Section: **B**

DEPARTMENT: **BS (SE)**

SUMITTED: **Dr.Atif Ishtiq**

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Question No # 01

Write a note on multimedia and its type with common media for storage access and transmission in details.

Answer:

MULTIMEDIA:

Media is something that can be used for presentation of information.

Two basic ways to present some information are..

Unimedia Presentation:

Single media is used to present information.

Multimedia Presentation:

More than one media is used to present information.

Multimedia presentation of many information greatly enhances the comprehension capability of the user as it involves use of more of our senses.

Common Media For Storage Access, And Transmission Of Information And Its Types: which are given below:

- Text (alphanumeric characters)
- Graphics (line drawings and images)
- Animation (moving images)
- Audio (Sound)
- Vedio (Videographed real-life events)
- Multimedia in information technology refers to use of more than ~~of~~ one of these media for information presentation to users.

Multimedia Computer System:

Multimedia computer system is a computer having capability to integrate two or more types of media ('text, graphics, animation, audio and video). In general, size for multimedia information is much larger than plain text

information.

Multimedia computer system requires:

- Faster CPU.
- Larger storage device (for storing large data files).
- Larger main memory (for large data size)
- Good graphics terminals).
- I/O devices to play any multimedia.

Question No #02:

What are the relation between hardware and software. And types of software with logical system architecture.

Answer:

HARDWARE: Hardware refers to the physical device of a computer system.

SOFTWARE: Software refers to a collection of programs.

RELATION BETWEEN HARDWARE AND SOFTWARE:

- Both software and hardware are necessary for a computer to do 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 jobs.
- Except for upgrades, hardware is

normally a one-time expense, whereas software is a continuing expense.

- Upgrades refer to renewing or changing components like increasing the main memory, or hard disk, capacities, or adding speakers, modems, etc.

TYPES OF SOFTWARE:

Most software can be divided into two major categories:

- **System Software:**

System software are designed to control the operation and extend the processing capabilites of a computer system.

Application Software:

Application software are designed to solve a specific problem or to do a specific task.

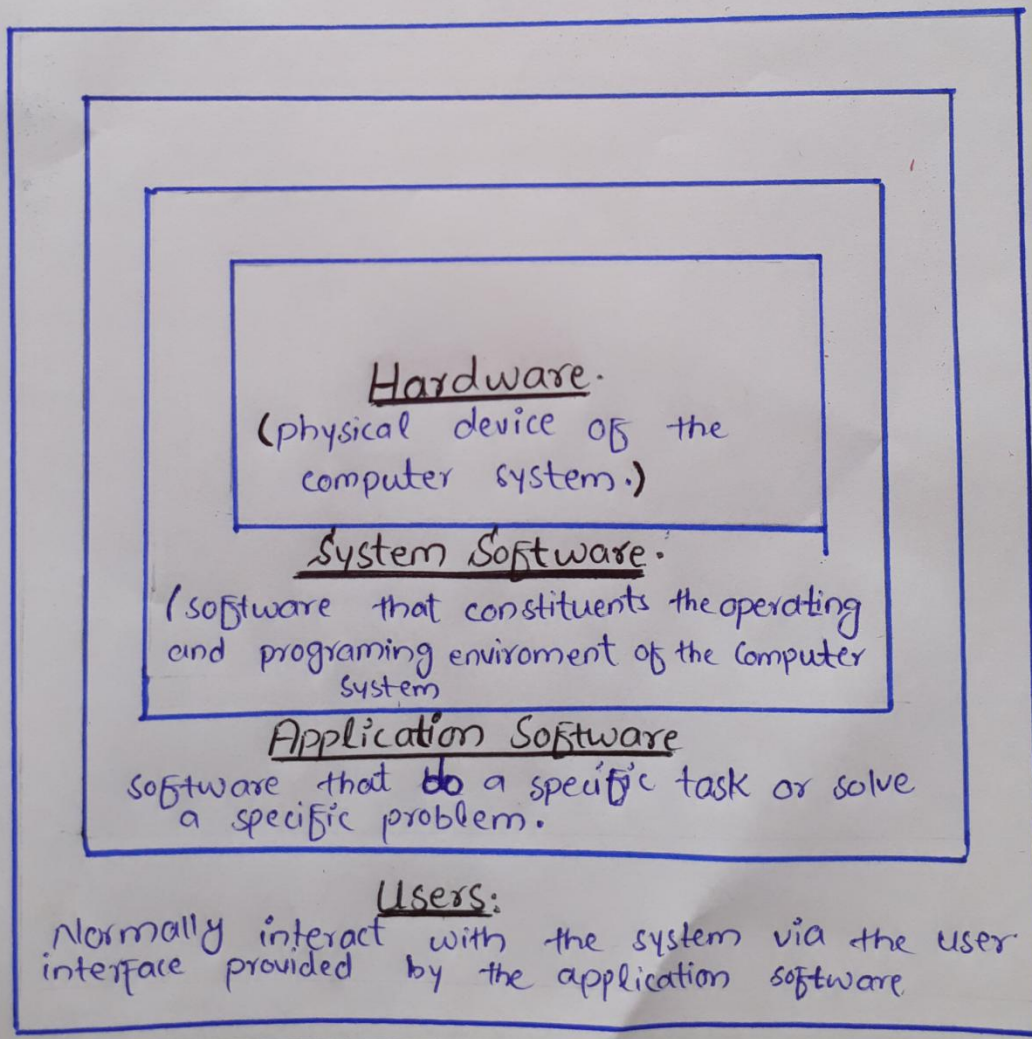
- Make the operation of a computer system more effective and efficient.
- Help hardware components work together and provide support for the development

and execution of application software.

Example:

System software are operating systems, programming language translators, utility programs, and communications software.

LOGICAL SYSTEM ARCHITECTURE :



Question No # 03

Write a note on each of the following.

(A) MODULATION TECHNIQUES:

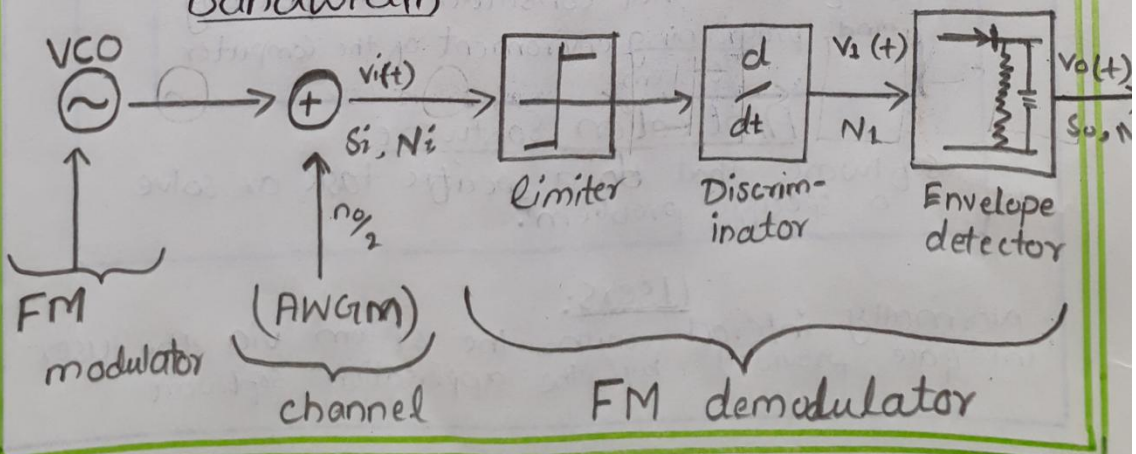
Amplitude Modulation (AM):

Two binary values (0 and 1) of digital data are represented by two different amplitude of the carrier signals, 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.

Better SNR than AM at expense of bandwidth



Phase Modulation (PM)

Two binary values of digital data are represented by shift in phase of carrier signal.

GOAL OF MODULATION TECHNIQUES:

- Modulation is difficult task given the hostile mobile ~~data~~ radio channels.
- The goal of modulation scheme is.
  - Transport the message signal through the radio channel with best possible quality.
  - Occupy least amount of radio (RF) spectrum.

(B): MULTIPLEXING AND DEMULTIPLEXING:

Multiplexing:

Method of diviging physical channel into many logical chamels so that a number of mdependent signals may be simultaneously transmitted. Electronic device that perforns multiplexing is known as amultiplexer. Two basic Method of Multiplexing.

* Frequency Division Multiplexing.

Avaiable bandwidth of a physical medium is divided into several smaller, disjomt logical bandwidth.

* Time-Division Multiplexing.

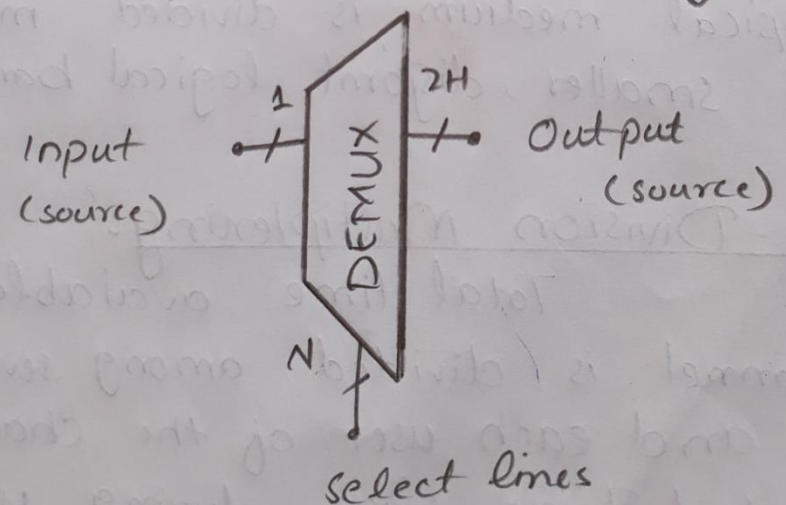
Total time avciable in a channel is divided among several users and each user of the channel is alloted Time slice during which he/she may transmitted a message.

DEMULTIPLEXING:

- A demultiplexing is a digital switch with a singal input (source) and a multiple outputs (destinations).
- The select line determine which output the input is connected to.

* DEMUX Types.
  - → 1-to-2 (1 select line)
  - → 1-to-4 (2 select line)
  - → 1-to-8 (3 select line)
  - → 1-to-16 (4 select line)

Demultiplexer Block Diagram.



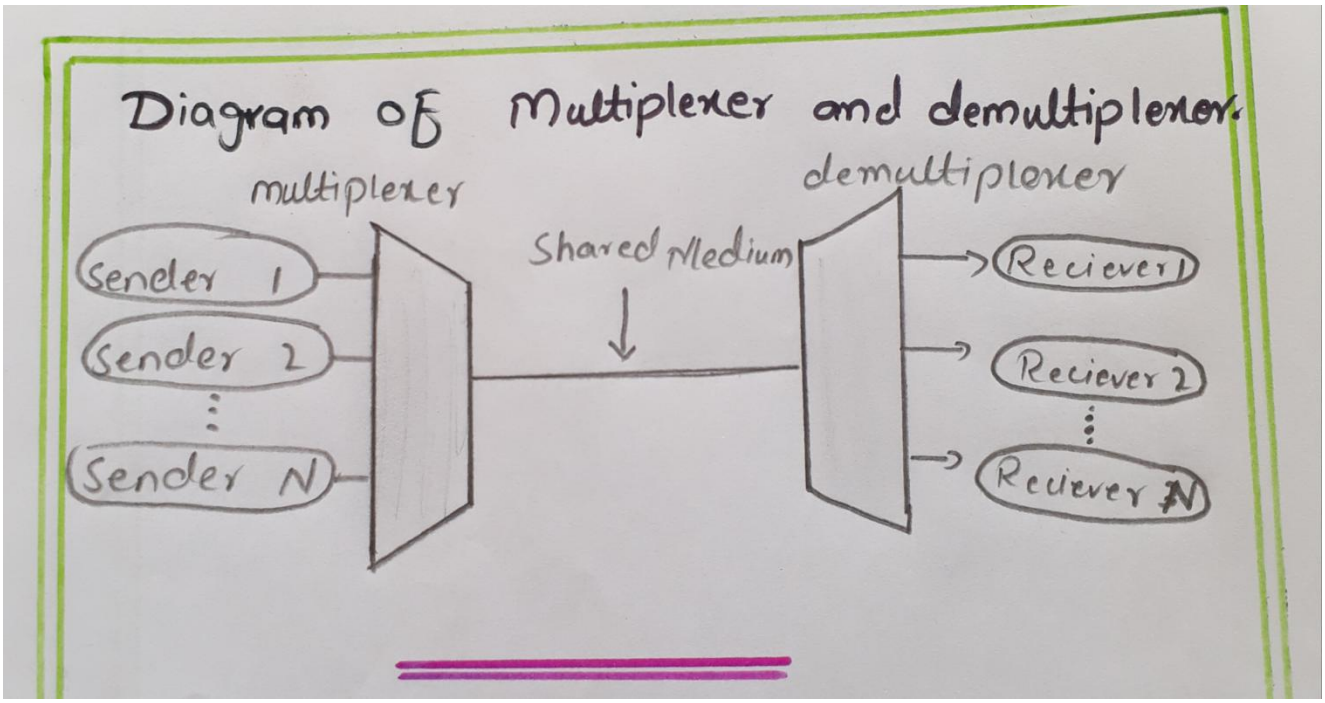


Diagram of Multiplexer and demultiplexer.
multiplexer
demultiplexer
Shared Medium
Sender 1
Sender 2
Sender N
Reciever 1
Reciever 2
Reciever N

(C) SWITCHING TECHNIQUES:

* Data is often transmitted from source to destination through a network of intermediate node.
* switching techniques deals with the method of establishing communication links between the sender and reciever in a communaction network.

Three Commonly Switching techniques are.

(1) Circuit Switching:

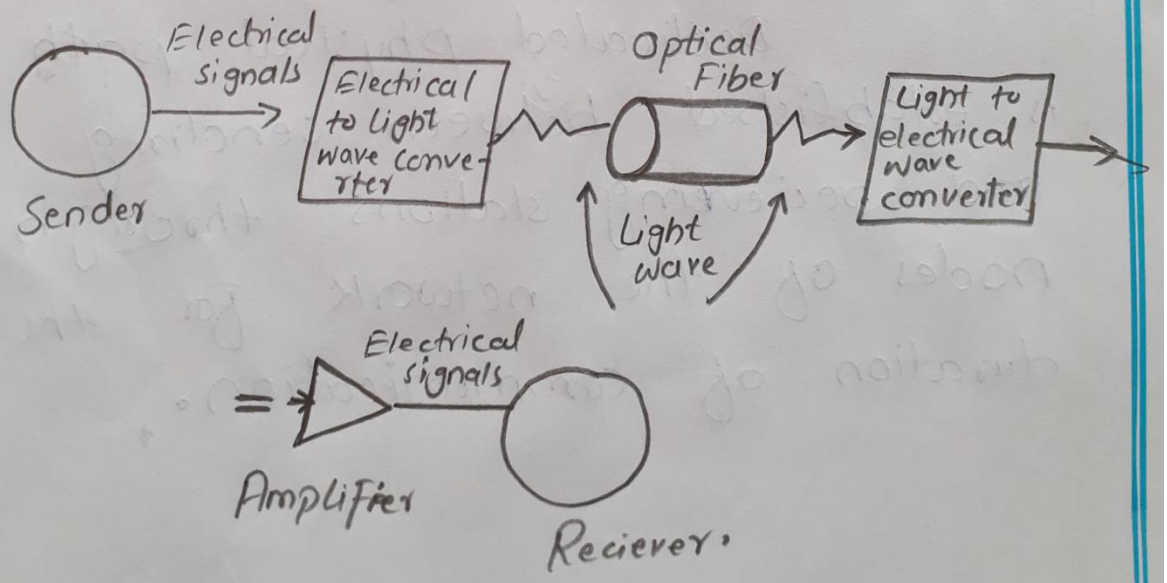
Dedicated physical path is established between sending and recieving stations through nodes of the network for the duration of communication.

② Message switching: sender appends reciever's destination address to the message and it is transmitted from source to distination either by store and forwarad method or broadcast method.

③ Packet Switching. message is split up into fixed size packets and each packets is transmitted independently forward or broadcast method is used for transmitting the packets.

(D) OPTICAL FIBER COMMUNICATION SYSTEM:

Optical Fiber Communication is a method for transmitting information from one place to another by sending pulses of infrared light through an optical fiber ---- Optical Fiber is used by many telecommunication companies to transmit telephone signals, internet communication are ~~capables~~ cable televisions signals.



Question No # 04:

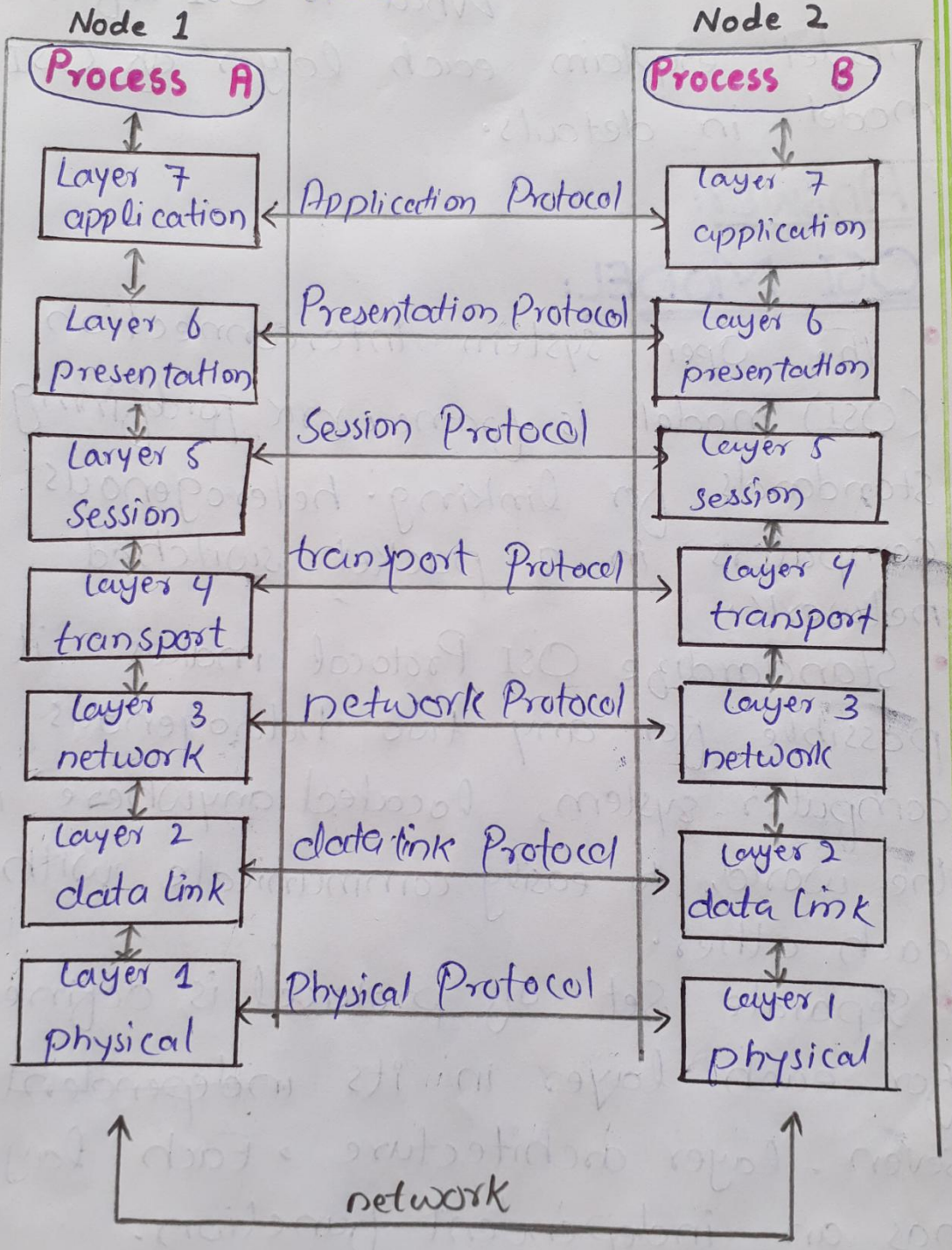
What is OSI reference model explain each layer of OSI model in details.

Answer:

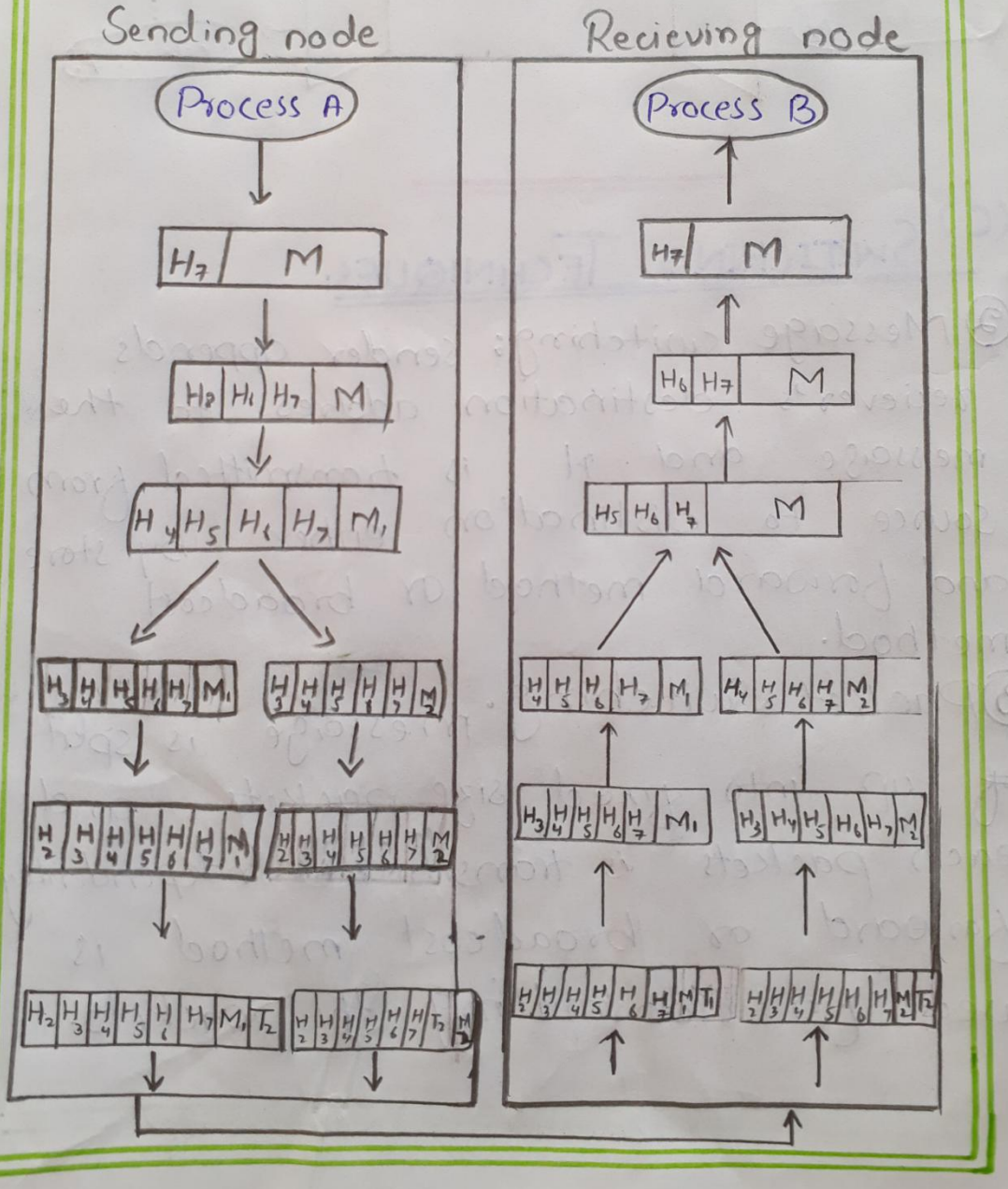
OSI MODEL:

- The Open System Interconnection (OSI) model is frame work for defining standards for linking heterogenous computers in a packet switched network.
- Standardize OSI Protocol makes it possible for any two heterogenous computer system, located anywhere in the world, to easily communicate with each other.
- Separate Set of protocol is defined for each layer in its ~~independent~~ seven - layer architecture. Each layer has an independent function.

Layer Interfaces, and Protocols in the OSI Model:



An example illustating transfer of message M From Sending node to the recieving node in the OSI model, H_n, header added by layer n: T_n, trailer added by layer n:



(i) **Application layer:**

Application layer is an abstraction layer that specifies the shared communication protocols and interface method used by hosts in a communications network.

(ii) **Presentation layer:**

The presentation layer is a layer of 6 of the 7-layer Open Systems Interconnection (OSI) model. It is used to present the data to the application layer (layer 7) in an accurate well defined and standardized format.

(iii) **Session layer:**

The session layer is the layer 5 of 7-layer. The session layer provides the mechanism for opening, closing and managing a session between end-user application process.

(iv) **Transport layer:**

Transport layer is the fourth layer in the open system interconnection (OSI) model and is

responsible for end to end communication over a network.

(v) **Network Layer:** Network layer is the third layer of the OSI model. It handles the service request from the transport layer and further forward the service request to the data link layer.

(vi) **Data link Layer:** Data link layer is the protocol layer in a program that handles the moving of data into and out of a physical link in a network. The data link layer is layer 2 in the Open System Inter Connection (OSI) architecture model.

(vii) **Physical layer:** In the seven-layer OSI model of computer networking the physical layer or layer 1 is the first and lowest layer. This layer may be implemented by a PHY chip.

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