

NAME : UMAIR KHAN

I.D : 14596

SECTION : A

SEMESTER : 4th BS (SE)

SUBJECT : INTRODUCTION TO ICT

INSTRUCTOR : Dr-Arif Ishtiaq

EXAMINATION : FINAL TERM

Q. 1) MULTIMEDIA:

Multimedia is a form of communication that combines different content forms such as text, audio, images, animations, or videos into a single presentation. Multimedia can be recorded for playback on computers, laptops, smartphones and other electronic devices.

Multimedia presentation can be live or recorded:

- A recorded presentation may allow interactivity via a navigation system.
- A live multimedia presentation may allow interactivity via an interaction with the presenter or performer.

TYPES OF MULTIMEDIA:

TEXT:

The form in which the text can be stored can vary greatly. In addition to ASCII based files, text is typically stored in processor files, spreadsheets, databases and annotations on more general multimedia objects.

GRAPHICS:

There is great variance in the quality and size of storage for still images. Digitalized images are sequence of pixels that represents a region in the user's graphical display.

AUDIO:

An increasingly popular

datatype being integrated in most of applications is audio. Its quite space intensive. One of the minute of sound can take upto 2-3 Mbs of space. Several techniques are used to compress it in suitable format.

ANIMATION:

It involves the appearance of motion caused by displaying still images one after another. Often, animation is used for entertainment purpose.

VIDEO:

One of the most space consuming multimedia data type is digitilized video. The digitilized videos are stored as sequence of frames. Depending

upon its resolution and size a single frame can consume upto 1MB. Also to have realistic video playback, the transmission, compression and decompression of digitized require continuous transfer rate.

GRAPHIC GRAPHICS:

These consist of special data structures used to define 2D and 3D shapes through which we can define multimedia objects. These includes various formats used by image, video editing applications.

2) RELATION B/W HARDWARE AND SOFTWARE :

Essentially, computer software controls computer hardware. These two components are complementary and cannot act independently of one another. In order for a computer to effectively manipulate data, and produce useful output, its hardware and software must work together. Without software, computer hardware is useless. Conversely, computer software has to first cannot be used without supporting hardware. Similarly, computer software has to be first be loaded into the computer's hardware and then executed. There are several categories of software, with

the two main categories of software, which makes the hardware useable and application software which does something useful.

TYPES OF SOFTWARE ARCHITECTURE:

Black-board

Client-server (2-tier, 3-tier, n-tier, cloud computing exhibit this style)

Component based

Data-centric

Event-driven

Layered

Microservices architecture

Monolithic application

Model-view-controller

Peer-to-peer

Pipes and filters

plug-ins

Reactive architecture

REST

Service-oriented

Shared nothing architecture

space-based architecture



3) MODULATION TECHNIQUES:

a) Modulation is the process of converting data into electrical signals optimized for transmission. Modulation techniques are roughly divided into four types.

i) ANALOG MODULATION:

Analog modulation refers to the process of transferring an analog baseband signal like an audio or TV signal, like an audio or TV signal over a higher frequency signal such as a radio frequency band.

ii) DIGITAL MODULATION:

Digital modulation is the process of encoding a digital information signal into

the amplitude, phase or frequency of the transmitted signal. The encoding process affects the bandwidth of the transmitted signal and its robustness to channel impairments.

iii) PULSE MODULATION:

It is a form of signal modulation where the message information is encoded in the amplitude of a series of signal pulses.

SPREAD - SPECTRUM METHOD:

It is a method by which a signal generated with a particular bandwidth is deliberately spread in the frequency domain, resulting in a signal with a wider bandwidth.

3) b) MULTIPLEXING AND DEMULTIPLEXING:

The multiplexing is used to combine and send the multiple data streams over a single medium. The process of combining the data stream is known as multiplexing and the hardware used for multiplexing is called multiplexer. There are three types of multiplexing:

• Frequency Division Multiplexing (FDM)

• Wavelength Division multiplexing (WDM)

• Time Division multiplexing (TDM)

Demultiplexing refers to the step in processing where you'd use the barcode information in order to know which sequences came from which sampler after they had all be sequenced together. Delivering received segments at receiver side to the correct app layer processes is called demultiplexing.

CONCLUSION:

Multiplexing and demultiplexing are the services facilitated by the transport layer of OSI model.

3) SWITCHING TECHNIQUES:

In large networks there may be more than one path for transmitting data.

Selecting a path that must take out of the available options is called switching. There are two switching techniques.

• CIRCUIT SWITCHING:

When a dedicated path is established for data transmission between sender and receiver, it is called circuit switching. When a network node wants to send data,

be any type of information, a call request signal is sent to the receiver and acknowledge back to ensure availability of dedicated path. This dedicated

path is then used circuit switching for communication over the network.

PACKET SWITCHING:

The major problem with circuit switching is that it needs a dedicated line for transmission. In packet switching, data is broken down into small packets with each packet having source and destination addresses, traveling from one router to the next router.

3)
d) OPTICAL FIBER COMMUNICATION
SYSTEM:

It is a system of transmitting information from one place to another by sending pulses of infrared light through optical fiber.

Optical fiber is used by telecommunication companies to transmit telephone signals, internet communication and cable television signals.

Modern optical-fiber communication systems generally include an optical instrument to convert an electrical signal to send through the optical fiber, a cable containing bundles of multiple optical fibers.

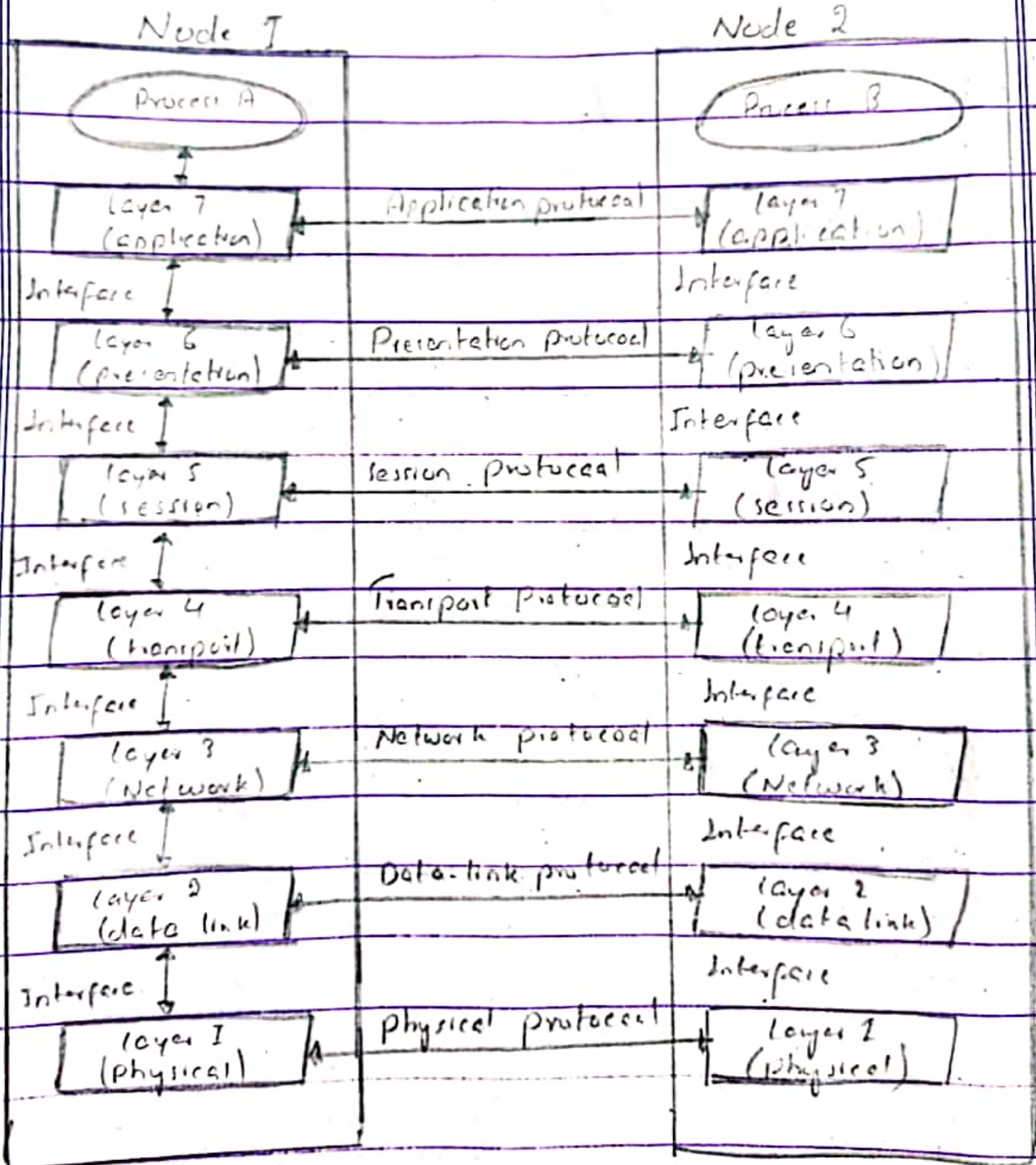
4) THE OSI MODEL:

The open system intercommunication or interconnection model is framework for defining standards for linking heterogeneous computers in a packet switched network.

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

Separate set of protocols is defined for each layer in its seven-layer architecture. Each layer has an independent function.

LAYERS, INTERFACE, PROTOCOLS IN OSI MODEL:



EXAMPLE:

