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Program : BS (CS)

Q 1)

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

Answer:

Multimedia:

Multimedia means that computer information can be represented through audio, video, and animation in addition to traditional media (i.e., text, graphics/drawings, images).

OR

Multimedia is the field concerned with the computer controlled integration of text, graphics, drawings, still and moving images (Video), animation, audio, and any other media where every type of information can be represented, stored, transmitted and processed digitally.

Multimedia:

Multimedia is a media that uses multiple form of information content and information processing.

History of Multimedia:- Multimedia is a media that uses multiple form of information content and information processing.

The Basic Elements of Multimedia

Text

Graphic

Animation

Video

Audio

The Basic Elements of Multimedia

ω TEXT

characters that are used to create words, sentences, and paragraphs.

The Basic Elements of Multimedia

ω Graphics

v A digital representation of non-text information, such as a drawing, chart, or photograph.

The Basic Elements of Multimedia

ω Animation

Flipping through a series of still images. It is a series of graphics that create an illusion of motion.

The Basic Elements of Multimedia

ω Video

v photographic images that are played back at speeds of 15 to 30 frames a second and they provide the appearance of full motion.

The Basic Elements of Multimedia

ω Audio

music, speech, or any other sound.

Hypertext and Hypermedia

Information is linked and cross-referenced in many different ways and is widely available to end users.

Hypertext means a database in which information (text) has been organized nonlinearly. The database consists of pages and links between pages.

Hypertext and Hypermedia

⊖ A link is defined by source and destination nodes, and by an anchor in the source node. ⊖

Q 2)

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

Answer:

Relationship between Hardware and Software:

Both hardware and software are necessary for 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 type 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 are designed to control the operation and extend the processing capability of a computer system

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

System software:

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

Programs included in a system software package are called system programs and programmers who prepare them are called system programmers

Examples of system software are operating systems, programming language translators, utility programs, and communications software

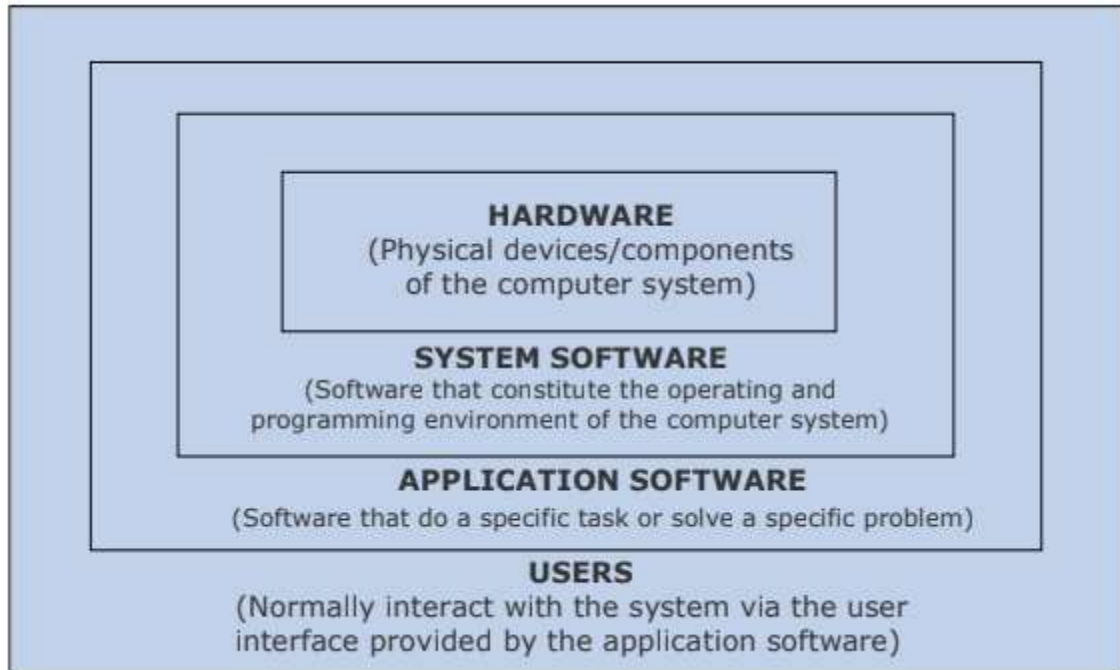
Application software:

Solve a specific problem or do a specific task

Programs included in an application software package are called application programs and the programmers who prepare them are called application programmers

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

Logical system Architecture:



Relationship among hardware, system software, application software, and users of a computer system.

Q3)

Write a note on each of the following in details.?

Answer :

Modulation Techniques:-

Digital-to-Analog signals is the next conversion we will discuss in this chapter. These techniques are also called as Digital Modulation techniques.

Digital Modulation:-

provides more information capacity, high data security, quicker system availability with great quality communication. Hence, digital modulation

techniques have a greater demand, for their capacity to convey larger amounts of data than analog modulation techniques.

There are many types of digital modulation techniques and also their combinations, depending upon the need. Of them all, we will discuss the prominent ones.

ASK – Amplitude Shift Keying

The amplitude of the resultant output depends upon the input data whether it should be a zero level or a variation of positive and negative, depending upon the carrier frequency.

FSK – Frequency Shift Keying

The frequency of the output signal will be either high or low, depending upon the input data applied.

PSK – Phase Shift Keying

The phase of the output signal gets shifted depending upon the input. These are mainly of two types, namely Binary Phase Shift Keying BPSKBPSK and Quadrature Phase Shift Keying QPSKQPSK, according to the number of phase shifts. The other one is Differential Phase Shift Keying DPSKDPSK which changes the phase according to the previous value.

M-ary Encoding

M-ary Encoding techniques are the methods where more than two bits are made to transmit simultaneously on a single signal. This helps in the reduction of bandwidth.

The types of M-ary techniques are –

- M-ary ASK
- M-ary FSK
- M-ary PSK

(b) Multiplexing & De Multiplexing :-

Multiplexing and Demultiplexing in Transport Layer

Prerequisite – Layers of OSI Model

Multiplexing and Demultiplexing services are provided in almost every protocol architecture ever designed. UDP and TCP perform the demultiplexing and multiplexing jobs by including two special fields in the segment headers: the source port number field and the destination port number field.

Multiplexing –

Gathering data from multiple application processes of sender, enveloping that data with header and sending them as a whole to the intended receiver is called as multiplexing.

Demultiplexing –

Delivering received segments at receiver side to the correct app layer processes is called as demultiplexing.

(c) Switching Techniques:-

In large networks, there can be multiple paths from sender to receiver. The switching technique will decide the best route for data transmission.

Switching technique is used to connect the systems for making one-to-one communication.

Circuit Switching:-

When a dedicated path is established for data transmission between sender and receiver, it is called circuit switching. When any network node wants to send data, be it audio, video, text or any other type of information, a call request signal is sent to the receiver and acknowledged back to ensure availability of dedicated path. This dedicated path is then used to send data. ARPANET used circuit switching for communication over the network.

Advantages of Circuit Switching

Circuit switching provides these advantages over other switching techniques –

- Once path is set up, the only delay is in data transmission speed
- No problem of congestion or garbled message

Disadvantages of Circuit Switching

Circuit switching has its disadvantages too –

- Long set up time is required
- A request token must travel to the receiver and then acknowledged before any transmission can happen
- Line may be held up for a long time

Packet Switching:-

As we discussed, 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, travelling from one router to the next router.

(d) Optical Fiber Communication System :-

Fiber optics is a major building block in the telecommunication infrastructure. Its high bandwidth capabilities and low attenuation characteristics make it ideal for gigabit transmission and beyond. In this module, you will be introduced to the building blocks that make up a fiber optic communication system. You will learn about the different types of fiber and their applications, light sources and detectors, couplers, splitters, wavelength-division multiplexers, and state-of-the-art devices used in the latest high-bandwidth communication systems. Attention will also be given to system performance criteria such as power and rise-time budgets.

Q 4

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

Answer:

- The open system interconnection OSI model is framework for defining standards For linking heterogeneous computer 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
- Separate set of protocols is defined for each layers in its seven layer architecture each layer has an independent function

Layers interfaces and protocols in the OSI model

