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# QNO1(a)

## Application Software

### Definition

One of the first things to understand about the term “application software” is that it is exceedingly broad.

Application software is commonly defined as any program or number of programs designed for end-users. That’s it, in a nutshell.

In that sense, any end user program can be called an “application.” Hence the age-old saying: “there's an app for that.”

People often use the term “application software” to talk about bundles or groups of individual software applications, using a different term, “application program,” to refer to individual applications.

That’s because the word “program” correlates to a discrete, countable single unit, while the word “software” is often used to refer to more than one individual program.

### open source software

Open source software is software with source code that anyone can inspect, modify, and enhance.

"Source code" is the part of software that most computer users don't ever see; it's the code computer programmers can manipulate to change how a piece of software—a "program" or "application"—works. Programmers who have access to a computer program's source code can improve that program by adding features to it or fixing parts that don't always work correctly. Open source licenses affect the way people can use, study, modify, and distribute software. In general, open source licenses grant computer users permission to use open source software for any purpose they wish. Some open source licenses—what some people call "copy left" licenses—stipulate that anyone who releases a modified open source program must also release the source code for that program alongside it. Moreover, some open source licenses stipulate that anyone who alters and shares a program with others must also share that program's source code without charging a licensing fee for it.

Open source software licenses promote collaboration and sharing because they permit other people to make modifications to source code and incorporate those changes into their own projects. They encourage computer programmers to access, view, and modify open source software whenever they like, as long as they let others do the same when they share their work.

# QNO1 (b).

## Features of System Software

An important feature of System Software are:

System Software is closer to the system

Generally written in a low-level language

The system software is difficult to design and understand

Fast in speed

Less interactive

Smaller in size

Hard to manipulate

# QNO2 (a)

## Operating system

Operating system is an integrated set of program that controls the resources cpu memory I)O device etc .of a computer system and provide it's users with an interface that is easier to use

= The two primary objective of an operation system are

1) make a computer system easier to use

2= manage the resources of a computer system.

Functions of an operating system.

### Process management

Process management module take care of creation and deletion of processess scheduling of system resources to different process requesting them. That providing mechanism for synchronization and communication among processes.

### Memory management

Memory management module take care of allocation and de allocation of memory space to program in need of this resource .

### File management

File management module take care of file related activities such as organizations storage retrieval naming sharing and protection of files.

### Device management

The device management module of an operating system controls all 1/O device .it keeps track of 1/O request from processes. Issues commands to 1/O device .and ensures correct data transmission to from an 1/O device.

### Security

Security module protects the resources and information of computer system against destruction and unauthorized access.

## QNO2 (b).

Both of these applications allow two different computers to communicate with each other. Telnet allows the user to log on to an account on a remote computer and work as if you were there. This is useful if you are traveling or are going to be away from your own computer and your local account but need to have access to the latter. You might be at a conference in another state and suddenly remember that you need some information that is stored on a file in your account back at your home institution. You can log on remotely, telnet to your account, get into your files that are on that server, and retrieve the information. For example, let's say you are at ACTFL and you are supposed to meet some people but you forgot the time and the place. They sent you this information in an e-mail message, and you have that message in your account on the server at your institution. If you can use a computer with Internet access where you are, you can telnet to your account, call up the message, and read the information off the screen. Voilá--you won't miss your dinner date.

FTP (File Transfer Protocol) is used when you need to move files from one computer to another, whether it is between the computer at the office or school and home or even from a computer in another city. An FTP client and server are required in order to do this. Once again, you can either type "ftp" at the command prompt or click on the FTP icon to see if the client is present. To move your own files, you also need to have accounts on both computers.

FTP can help you out in circumstances when you are away from your computer and account but need to move files back and forth between the two. For example, you are still at ACTFL and are preparing for your presentation tomorrow. You discover that you left several handouts at home, but you know you also have them in a file in your account there. You gain access to a local computer, telnet to your account and find the files. Telneting to your account will let you see the files, but it will not let you get them. You need to FTP the files to the computer where you are. You can then print out your handouts for your presentation the next day. If your handouts include graphics or something other than text, you can still FTP them. You just need to pay attention to the transfer mode settings: ascii or binary. Basically, the former is for text only while the latter will transfer graphics, sound, moving pictures, and non-Roman character sets. When in doubt, try it and see if it works. If not, go back and change the settings and try again.

## QNO3 (a).

A metropolitan area network (MAN) is a network that interconnects users with computer resources in a geographic area or region larger than that covered by even a large local area network (LAN) but smaller than the area covered by a wide area network (WAN). The term is applied to the

interconnection of networks in a city into a single larger network (which may then also offer efficient connection to a wide area network). It is also used to mean the interconnection of several local area networks by bridging them with backbone lines. The latter usage is also sometimes referred to as a campus network.

Examples of metropolitan area networks of various sizes can be found in the metropolitan areas of London, England; Lodz, Poland; and Geneva, Switzerland. Large universities also sometimes use the term to describe their networks. A recent trend is the installation of wireless MANs.

**Examples;**

A LAN is used in office buildings, schools, and rooms, a MAN is used primarily in cities, and a WAN is used over a state, province or country. Metropolitan area networks typically connect businesses to businesses and businesses to wide area networks.

# QNO3 (b).

## Topology

## definition :

Network topology is the interconnected pattern of network elements. A network topology may be physical, mapping hardware configuration, or logical, mapping the path that the data must take in order to travel around the network.

A Star Network Topology is best suited for smaller networks and works efficiently when there is limited number of nodes. One has to ensure that the hub or the central node is always working and extra security features should be added to the hub because it s the heart of the network.

**Star topology** is best topology because…
Every host of star topology is directly connected to central device(hub). if central device transmitted message than every one received directly.
A Star Network Topology is best suited for small networks and works efficiently when there is limited number of receiver(node). One has to ensure that the central device or the central node is always working and extra security features should be added to the central device because it s the best part of network.
if you have got no financial issues at all then you better could go for Hybrid or Full Mesh topology, but these two also have their problems too as everyone know nothing is perfect. But if the financial is issue is the major problem then as both bus and ring topology have a major disadvantage: if the main cable is damaged communication around the network is not possible. An alternative is that every device is separately connected to a central node that receives data and re-transmits them to all of the other devices-STAR NETWORK but it also has its disadvantages but as I see it comparatively lower then the others.

# QNO4.

ANS:

In computers, a storage medium is any technology -- including devices and materials -- used to place, keep and retrieve electronic data.

In computers, a storage medium is any technology -- including devices and materials -- used to place, keep and retrieve electronic data. It refers to a physical device or component in a computing system that receives and retains information relating to applications and users. The plural form of this term is storage media.

Early forms of storage media included computer paper tape. Holes punched in the paper corresponded to a single bit of data. A paper tape reader would interpret each punched hole and convert it to a number. Paper tape was supplanted by magnetic tape, which eventually evolved to magnetic floppy disk.

How storage media works

Media used in computer storage receive messages in the form of data, via software commands from the computer system. The commands determine the type of storage media needed to hold the data, based on its business value, compliance implications or other factors. In tiered storage, data is moved among disk, flash and cloud storage based on automated software policies.

A storage medium may be internal to a computing device, such as a computer's hard drive, or a removable device such as an external hard drive or universal serial bus (USB) flash drive. There are various types of storage media, including magnetic tape, nonvolatile memory cards, rotating fixed disk and solid-state drives (SSDs), which are based on nonvolatile flash memory.

The term storage encompasses all data, and can be either primary or secondary storage. Primary storage refers to data that is kept in memory for fast retrieval by a computer's processor. Secondary storage is data placed on hard disk or tape to ensure backup and long-term retention.

A storage device may be a type of storage media, or a piece of storage hardware outfitted with storage media. For example, storage arrays decouple storage media from servers. Storage arrays incorporate electromechanical hard disk drives (HDDs), SSDs or a combination of each, attached to separate servers and networking.

Storage media can be arranged for access in many ways. Some well-known arrangements include:

redundant array of independent disks (RAID);

network-attached storage (NAS); and

storage area network (SAN).

SAN arrays initially were designed with HDDs, until the advent of all-flash arrays outfitted solely with SSDs. Hybrid flash arrays blend the two storage media in an integrated system, with disk providing a capacity tier alongside a faster tier of flash.

Examples of storage media, and the pros and cons of each, are as follows.

**Hard disk**

A hard disk provides a high-capacity alternative to magnetic storage media. It contains metal platters coated with a magnetic layer. The platters usually spin continuously when a computer is on, storing data in different sectors on the magnetic disk.

Magnetic disk remains the dominant media for backup storage appliances, active archives and long-term retention. A disk-based backup appliance includes interfaces to replicate data copies, such as clones and snapshots, to tertiary devices or a hybrid cloud.

**Hard drive components**

**HDD components**

HDDs remain popular in enterprise disk arrays due to their increasing capacities and the ability to rewrite data on the disk. In 2017, Western Digital Corp. introduced a 14 TB HDD, making it the largest on the market at that time. Seagate Technology has said it plans to unveil a 16 TB HDD in 2018. A downside to HDDs is the reliance on moving internal mechanisms such as actuators, motors and spindles that can fail and corrupt the drive.

Some HDDs use shingled magnetic recording (SMR) as an alternative to conventional magnetic recording. An SMR method allows for greater areal density by allowing data to be written in partially overlapping tracks on the disk. SMR drives work optimally with data that is continuously written, such as with disk-based archiving and backup. Seagate and Western Digital are among the leading manufacturers of SMR-based disks.

**RAID**

RAID works by placing data on multiple disks and allowing input/output (I/O) operations to overlap in a balanced way, improving performance. In the event a drive fails, the data is protected from companion drives.

**Optical disk**

Optical disk technology uses lasers for write once, read many (WORM) data. The use of lasers allows high-density optical disk to store more data than magnetic HDDs. Types of optical storage media include Blu-ray, DVDs and CD-ROMs for read-only data.

**Flash memory**

Flash memory does not depend on moving mechanical parts. This gives flash devices advantages in speed over traditional disks. In flash memory, blocks of data must be erased to allow new data to be written to the microchip.

The two main types of flash are NAND and NOR. The names are defined by their respective logic gates. These memory types are used as the storage media in SSDs.

**SSD**

An SSD is installed in x86 computers to allow companies to user server-side flash as an alternative or adjunct to networked storage arrays. Form factors include:

Add-in cards that utilize a Peripheral Component Interconnect Express (PCIe) serial port.

Disk-on-module flash boot drives that mount to a computer's motherboard.

Dual inline memory modules (DIMMs) place flash close to the motherboard in dynamic random-access memory (DRAM) slots as a performance cache.

MiniSATA drives and their eventual replacement m.2 SSDs, used in thin laptops.

Storage-class memory, including nonvolatile DIMMs with DRAM as addressable storage and flash as backup media. 3D XPoint technology -- developed by Intel and Micron -- is an example of storage-class memory.

SSDs initially were designed to take advantage of existing Serial-Attached SCSI (SAS) and Serial-Advanced Technology Attachment (SATA) protocols.

**USB flash drives**

USB flash drives are also known as nearline storage, a storage medium that is not continuously connected to network servers or the internet. Generally, this makes most removable media, such as encrypted cartridges or SATA drives, safe from infection by Trojan horses, viruses or worms.

A USB flash drive specifically refers to the housing for the device; the storage media is internal flash designed as an integrated memory circuit, similar to the design of SSDs but on a smaller scale. These thumb-shaped devices slide into any USB to transfer or copy data, and are variously called gum sticks, keychain drives and jump drives.

**Tape**

Tape was a dominant backup storage medium until the 1990s but was gradually pushed aside by magnetic disk. Tape systems remain in use, but the use case now centers on high-capacity archiving for preserving data. Tape systems have continued to improve in density and endurance, largely due to advances in the Linear Tape-Open (LTO) format. LTO-8 pushes compressed capacity per tape to 32 TB and nearly 13 TB of uncompressed data.

Tape libraries are composed of hundreds and hundreds of physical tapes, presented in a system that allows users to add or remove tapes, track a tape's location and set mount points for accessing the data on tape.