Course: Computer applications/Skills/ITC/CAB   **Program:** BS

Semester: 4 th   **Major Assignment**

Total Marks: 50   **Instructor:** Zakir Rahim

Due Date: 25ᵗʰ Sep,2020

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Instructions:

- Students are required to solve the provided assignment and upload it on SIC in due time.
- The solutions can be type-written or hand-written.
- In case of handwritten solutions, you are required to copy pictures of the solved assignment in Ms-Word and upload it.
- The solutions must be uploaded either in Ms-Word format or pdf format.
- Students are required to save the file with their name and student id. For example ahmad_12345.

Q1. (a) Differentiate between open source software and applications software?   (6)

(b) Write different features of system software?   (6)

Q2. (a) Discuss different functions of operating system?   (6)

(b) Explain the use of File Transfer Protocol and TelNet services ?   (8)

Q3. (a) Explain Metropolitan Area Network (MAN) with a suitable example?   (7)
(b) Define topology? Which topology would you chose to setup a local area network and why?   (7)

Q4. In your opinion, what are the different types of common media used for storage, access and transmission of information? Explain each type in detail? (10)

ANS ₁ Open source software (OSS) refers to the software which uses the code freely available on the Internet. The code can be copied, modified or deleted

by other users and organizations. As the software is open to the public, the result is that it constantly updates, improves and expands as more people can work on its improvement.

Closed source software (CSS) is opposite to OSS and means the software which uses the proprietary and closely guarded code. Only the original authors of software can access, copy, and alter that software. In a case with closed source software, you are not purchasing the software, but only pay to use it.

#1 Price Policy

Open source often referred as free of cost software. It can, however, have costs for extras like assistance, additional services or added functionality. Thus, you may still pay for a service with OSS.

Closed source software is usually a paid software. The costs can vary depending on the complexity of the software. While the price can be higher, what you get is a better product, full support, functionality and innovation. However, most companies provide free

trials to convince the purchaser that their software is the right fit.

#2 Security

The question of security is very controversial as each software has two sides of the coin. The code of open source software can be viewed, shared and modified by the community, which means anyone can fix, upgrade and test the broken code. The bugs are fixed quickly, and the code is checked thoroughly after each release. However, because of availability, the source code is open for hackers to practice on.

On the contrary, closed source software can be fixed only by a vendor. If something goes wrong with the software, you send a request and wait for the answer from the support team. Solving the problem can take much longer than compared to OSC.

When it comes to choosing the most secure software, the answer is that each of them has its pros and cons. Thus, it is often a challenge for firms that work in a particular industry.

#3 Quality of Support

Comparing open source and closed source software support, it is obvious that CSS is predominant in this case. The costs for it include an option to contact support and get it in one business day in most cases. The response is well organized and documented.

For open source software, such an option is not provided. The only support options are forums, useful articles, and a hired expert. However, it is not surprising that using such kind of service you will not receive a high level of response.

#4 Source Code Availability

Open source software provides an ability to change the source code without any restrictions. Individual users can develop what they want and get benefits from innovation developed by others within the user community. As the source code is easily accessible, it enables the software developers to improve the already existing programs.

Closed source software is more restricted than open source software because the source code cannot be changed or viewed. However, such limitation is what may contribute to CSS security and reliability.

#5 Usability

Usability is a painful subject of open source software. User guides are written for developers rather than to layperson users. Also, these manuals are failing to conform to the standards and structure.

For closed source software usability is one of the merits. Documentation is usually well-written and contains detailed instructions.

Best Examples of OSS and CSS Shopping Carts

The market is full of open source and closed source shopping carts. The basic difference lies in the price. Open source shopping cart systems are free, whereas for closed source programs you will have to pay. With payment, you get customer support and confidence. Because open source shopping carts are free, they don't have such an option. However, their

community on different forums is very active and always ready to help.

The benefits of open source solutions are primarily flexibility and scalability. You have full control over every aspect of your site's design, thanks to the open source code. When your business expands, and your monthly sales increase, you can embrace it without being charged more for increased sales volume.

Closed source software is easier to work with for beginners or those who don't know how to code. Also, closed source websites are easier and faster to set up out of the box.

The top open source shopping carts are Magento and OpenCart, and BigCommerce and Shopify are popular closed source platforms.

Each of the platform types has its own philosophy, methodology, advantages, and disadvantages. There

is no univocal option as it depends on business needs. We hope this article will come in handy for you to make the right choice for your business.

ANS 1(b)..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.

- The Five Types of Systems Software
- Operating system: Harnesses communication between hardware, system programs, and other applications.
- Device driver: Enables device communication with the OS and other programs.
- .Firmware: Enables device control and identification.

- .Translator: Translates high-level languages to low-level machine codes.

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Ans 2(A)..Definition

An operating system is a program that acts as an interface between the user and the computer hardware and controls the execution of all kinds of programs.

Conceptual view of an Operating System

Following are some of important functions of an operating System.

Memory Management

Processor Management

Device Management

File Management

Security

Control over system performance

Job accounting

Error detecting aids

Coordination between other software and users

- Memory Management

Memory management refers to management of Primary Memory or Main Memory. Main memory is a large array of words or bytes where each word or byte has its own address.

Main memory provides a fast storage that can be accessed directly by the CPU. For a program to be executed, it must in the main memory. An Operating System does the following activities for memory management −

Keeps tracks of primary memory, i.e., what part of it are in use by whom, what part are not in use.

In multiprogramming, the OS decides which process will get memory when and how much.

Allocates the memory when a process requests it to do so.

De-allocates the memory when a process no longer needs it or has been terminated.

- Processor Management

    In multiprogramming environment, the OS decides which process gets the processor when and for how much time. This function is called process scheduling. An

    Operating System does the following activities for processor management −

Keeps tracks of processor and status of process. The program responsible for this task is known as traffic controller.

- Allocates the processor (CPU) to a process.

- De-allocates processor when a process is no longer required.

- Device Management

An Operating System manages device communication via their respective drivers. It does the following activities for device management −

Keeps tracks of all devices. Program responsible for this task is known as the I/O controller.

Decides which process gets the device when and for how much time.

Allocates the device in the efficient way.

De-allocates devices.

- File Management

A file system is normally organized into directories for easy navigation and usage. These directories may contain files and other directions.

An Operating System does the following activities for file management −

Keeps track of information, location, uses, status etc. The collective facilities are often known as file system.

Decides who gets the resources.

Allocates the resources.

De-allocates the resources.

Other Important Activities

Following are some of the important activities that an Operating System performs −

- Security − By means of password and similar other techniques, it prevents unauthorized access to programs and data.

- Control over system performance − Recording delays between request for a service and response from the system.

- Job accounting − Keeping track of time and resources used by various jobs and users.

- Error detecting aids − Production of dumps, traces, error messages, and other debugging and error detecting aids.

Coordination between other softwares and users − Coordination and assignment of compilers, interpreters, assemblers and other software to the various users of the computer systems.

ANS 2(B)

. TELNET (TELecommunication NETwork) and FTP (File Transfer Protocol) both are the application layer protocol. They are connection oriented protocols as they create a connection between remote host and a server. AS name File Transfer Protocol, FTP is used for transferring the files from one system to another system.

File Transfer Protocol uses..

What is FTP (File Transfer Protocol)? FTP is a widely used network protocol for transferring files between computers over a TCP/IP-based network, such as the Internet. FTP lets people and applications exchange and share data within their offices and across the Internet

File transfer protocol (FTP) is a set of rules that computers follow for the transferring of files from one system to another over the internet. It may be used by a business to transfer files from one computer system to another, or websites may use FTP to upload or download files from a website's server.

FTP is an acronym for File Transfer Protocol. As the name suggests, FTP is used to transfer files between computers on a network. You can use FTP to exchange files between computer accounts, transfer files between

an account and a desktop computer, or access online software archives.

Telent Protocol uses...

What is Telnet? Telnet, developed in 1969, is a protocol that provides a command line interface for communication with a remote device or server, sometimes employed for remote management but also for initial device setup like network hardware.

For example, typing telnet hostname would connect a user to a hostname named hostname. Telnet enables a user to manage an account or device remotely. For example, a user may telnet into a computer that hosts their website to manage his or her files remotely. ... As shown, a telnet session is a command line interface.

Telnet is an application protocol used on the Internet or local area network to provide a bidirectional interactive text-oriented communication facility using a virtual terminal connection. ... The name stands for "teletype network".

Ans 3(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).

... A recent trend is the installation of wireless MANs.

A metropolitan area network (MAN) is a computer network that interconnects users with computer resources in a geographic region of the size of a metropolitan area.

Advantages of a MAN Network......

1: Less Expensive: It is less expensive to attach MAN with WAN Network. ...

2: Sending Local Emails: You can send local emails fast and free on MAN.

3: High Speed than WAN: ...

4: Sharing of the Internet: ...

5: Conversion of LAN to MAN is Easy: ...

6: High Security:

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.

For example :

A bunch of students playing Counter Strike in the same room (without internet). MAN or Metropolitan area Network covers a larger area than that of a LAN and smaller area as compared to WAN. It connects two or more computers that are apart but resides in the same or different cities.

A metropolitan area network (MAN) is similar to a local area network (LAN) but spans an entire city or campus. MANs are formed by connecting multiple LANs. ... MANs are extremely efficient and provide fast communication via high-speed carriers, such as fiber optic cables..

Ans 3(b)..

A branch of geometry describing the properties of a figure that are unaffected by continuous distortion, such as stretching or knottingFormer name: analysis situs. maths a family of subsets of a given set S, such that S is a topological space. the arrangement and interlinking of computers in a computer network.

The mapping of a LAN design is called Topology. There are four categories: Star topology, Bus topology,

Ring topology and Mesh topology. Hybrid combinations of these topologies also exist. Star topology – all computers and devices are connected to a main hub or switch.

Network topology is the layout of a network. ... It consists of two parts; physical and logical. The physical part describes the physical layout of a network while the logical part describes how the data flows in that 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.

In local area networks where the star topology is used, each machine is connected to a central hub. In contrast to the bus topology, the star topology allows each machine on the network to have a point to point connection to the central hub and there is no single point of failure.

Star topology has become the dominant physical topology for LANs. The star was first popularized by ARCNET, and later adopted by Ethernet. Each node is

connected directly to a central device such as a hub or a switch.

ANS 4..

Common media.

Common media for storage, access and transmission of information are:

- Text(Alphanumeric characters)
- Graphics(line drawing and images)
- Animation (moving images)
- Audio(sound)
- Vedio(Vediographed real life events)

Multimedia in information technology refers to use of more than one of these media for information presentation to users.

Text media...

Alphanumeric characters are used to present information in text form. Computer are widely used for text processing

Keyboards, ocrs, computer screens and printers are some common used hardware devices for processing text media.

Text editing, text searching, hypertext, and text importing /exporting are some highly desirable features of a multimedia computer system for better presentation and use of text information.

Graphics media..

Computer graphics deals with generation, representation, mainupulation, and display of pictures (line drawings and images) with a computer

Locating devices (such as a mouse a joystick, or a stylus), digitizers, scanners, digital camers, computer screens with graphics display capability, laser printers, and plotters are some common hardware devices for processing graphics media

Some desirable features of a multimedia computer system are painting or drawing software, screen capture software clip art, graphics importing and software support for high resolution.

Animation media...

Computer animation deals with generation, sequenceing, and display (at a specified rate) of a set of

images (called frames) to create an effect of visual change or motion, similar to a movie film (vedio).

Animation is commonly used in those instances where vediography is not possible or animation cN better illustrate the concept than vedio.

Audio media..

Computer audio deals with synthesized, recording, and playback of audio or sound with a computer.

Sound board, microphone, speaker, MIDI devices, sound synthesizer, sound editor and audio mixer are some sommonly used hardware devices for processing audio media.

Vedio media.

Computer vedio deals with recording and display of a sequence of images at a reasonable speed to create an impression of movement. Each individual image of such a sequence is called a frame.

Vedio camera, vedio monitor, vedio board, and vedio editor are some of commonly used hardware devices for processing vedio media.

Some desirable features of a multimedia computer system with vedio facility are vedio clips and recording and playback capabilities..