Course: Computer applications/Skills/ITC/CAB   **Program:** BS
Semester: 1st   **Major Assignment**
Total Marks: 50   **Instructor:** Zakir Rahim
Due Date: 25th Sep,2020
Name: Mahnoor Ali   **ID: 15984**

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)

Ans:Differences:

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.

Application 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, application 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.

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 application 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.

Application 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 application software usability is one of the merits. Documentation is usually well-written.

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

Ans:

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

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

Ans:**Functions of operating system:**

Security –

The operating system uses password protection to protect user data and similar other techniques. it also prevents unauthorized access to programs and user data.

Control over system performance –

Monitors overall system health to help improve performance. records the response time between service requests and system response to have a complete view of the system health. This can help improve performance by providing important information needed to troubleshoot problems.

Job accounting –

Operating system Keeps track of time and resources used by various tasks and users, this information can be used to track resource usage for a particular user or group of user.

Error detecting aids –

Operating system constantly monitors the system to detect errors and avoid the malfunctioning of computer system.

Coordination between other software and users –

Operating systems also coordinate and assign interpreters, compilers, assemblers and other software to the various users of the computer systems.

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

(8)

Ans: **Uses of 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. FTP was one of the first technologies developed to solve this common need, and it remains, with several generations of enhancements, the second most popular protocol used today (after HTTP or the "World Wide Web").

FTP finds application in many day-to-day business operations that span business-to-business and peer-to-peer data transfer use cases, including:

Organizations use FTP to allow employees to share files across different locations and branch offices.

Employees use FTP to securely share files with coworkers and external business partners.

IT teams use FTP to transfer data back to DR (disaster recovery) sites.

Webmaster teams use FTP to transfer Web pages, Web application files, and images to their Web server.

Uses of telnet service:

Telnet is a network protocol used to virtually access a computer and to provide a two-way, collaborative and text-based communication channel between two machines.

It follows a user command Transmission Control Protocol/Internet Protocol (TCP/IP) networking protocol for creating remote sessions. On the web, Hypertext Transfer Protocol (HTTP) and File Transfer Protocol (FTP) simply enable users to request specific files from remote computers, while, through Telnet, users can log on as a regular user with the privileges they are granted to the specific applications and data on that computer.

Q3. (a) Explain Metropolitan Area Network (MAN) with a suitable example? (7)

Ans:**metropolitan area network (MAN)**

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.

(b) Define topology? Which topology would you chose to setup a local area network and why? (7)

Ans: **Topology**:

topology is the arrangement of the elements of a communication network. Network topology can be used to define or describe the arrangement of various types of telecommunication

networks, including command and control radio networks, industrial fieldbusses and computer networks.

I will chose star topology due to the following reasons:

Reasons:

Isolation of devices: each device is isolated by the link that connects it to the hub. By so doing it makes the isolation of the individual devices simple. This isolation nature also prevents any non centralized failure from affecting the network.

Simplicity: The topology is easy to understand, establish, and navigate. The simple topology obviates the need for complex routing or message passing protocols.

Centralization: the star topologies ease the chance of a network failure by linking all of the computers to a central node. All computers may therefore communicate with all others by transmitting to and receiving from the central node only.

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:common media used for storage, access and transmission of information:

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.

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.

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.

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.