#### Module 2 {Installation Maintenance of Hardware and Its components}

**Topic: User Management**

##### Assignment Level Basic

1. What is user management?

User management is a system to handle activities related to individuals' access to devices, software, and services. It focuses on managing permissions for access and actions as well as monitoring usage. Functions of user management include: Providing users with authenticated access

1. Why is user management needed?

User management offers a solution that helps IT keep control of users' activities and bolster other security measures to protect files, applications, systems, and devices on-premises and in the cloud from unauthorized access by internal and external users.

##### Assignment level intermediate:

1. Where can we access the user management?

Windows, macOS, and Linux provide user management capabilities. On Windows, user management can be accessed through the "Control Panel" or "Settings" menu. On macOS, you can find user management options in the "System Preferences" under the "Users & Groups" or "Accounts" section. On Linux, user management can vary depending on the distribution but is often accessible through the command line or system administration tools specific to the distribution.

1. What are the features of user management?
   * 1. Preventing unauthorized access to infrastructure, applications, and data.
     2. Storing user details and credentials.
     3. Providing a convenient login mechanism for end-users.
     4. Allowing users to set and reset passwords.
     5. Enabling multi-factor authentication (MFA)

##### Assignment level Advance:

1. Do a practical to create a user from user management.

DONE

1. Do a practical to change the password of the administrator from the user management tool.

DONE

#### Topic: File and Folder Permission

##### Assignment Level Basic:

1. What is file folder permission?

When you set permissions, you specify what users are allowed to do within that folder, such as save and delete files or create a new folder. You are not limited to choosing one of the standard permissions settings (Full Control, Modify, Read & Execute, List Folder Contents, Read, or Write)

1. What is the use of file and folder permission?

File permissions control what user is permitted to perform which actions on a file. File permissions form a crucial part of a resistance strategy. On public systems, only part of the system is public. The system files, at least, need to be protected from wanton modification by attackers.

##### Assignment level Intermediate:

1. wirte down the steps to give a folder read only permission.
2. Access the folder properties
3. Edit permissions
4. Add or modify user/group permissions
5. Set read-only permission
6. Apply the changes
7. Write a step to give a file only admin permission.
8. Right-click on the file
9. Edit permissions
10. Add or modify admin permissions
11. Set admin-only permission
12. Remove other permissions
13. Apply the changes

##### Assignment level Advance:

1. Do a practical to give the folder permission of read only in network.

DONE

1. Do a practical to change the ownership of the folder and the sub folders in it.

DONE

#### Topic: Install OS

##### Assignment Level Basic

1. What is OS?

An operating system (OS) is the program that, after being initially loaded into the computer by a boot program, manages all of the other application programs in a computer

1. What are the types of OS?
2. Batch OS. The batch operating system does not have a direct link with the computer. ...
3. Time-sharing or multitasking OS. ...
4. Distributed OS. ...
5. Network OS. ...
6. Real-time OS. ...
7. Mobile OS.

##### Assignment Level Intermediate

1. Do a practical to create bootable pendrive for kali Linux

DONE

1. Do a practical to create a bootable pendrive for windows 7

DONE

1. Do pendrive for creating a pendrive for mac os Mojave with unibeast.

DONE

##### Assignment level Advance:

1. Do a practical to install Kali Linux

DONE

1. Do a practical to install windows 10

DONE

1. Do a practical to install Mac os X

DONE

#### Topic: Clean Install

##### Assignment Level Basic

* 1. What is clean install?

A clean install is an installation of an operating system on a computer where the hard drive is formatted and completely erased. With a clean install, you can start over with a new Windows OS.

##### Assignment Level Intermediate

1. What is the process for clean install?
2. Open Settings.
3. Click on Update & Security.
4. Click on Recovery.
5. Under the “Reset this PC” section, click the Get started button.
6. Click the “Remove everything” option.
7. Click the “Cloud Download” option.
8. (Optional) Click the Change settings option.
9. what are the benefits of clean install?

A clean install can improve computer performance and speed, which may not be possible with an in-place upgrade, especially on an old system that's been running the same version for a long time. A clean install can give your Windows registry a fresh start.

##### Assignment level Advance:

1. Do a clean installation of windows XP

DONE

1. Do a clean installation of windows 8

DONE

#### Topic: Upgrade installation

##### Assignment level basic

1. What is upgrade installation?

Upgrade or in-place installation is a common way and it means moving from an older version of the Windows operating system to a newer version. All the settings, files, programs, etc. are kept, no formatting. That is, the new operating system only replaces the old system. Almost any technical skills are not required.

1. What is the benefit of upgrade installation?

Upgrading to a newer version often introduces enhancements, new features, and improved functionality. You can benefit from new capabilities, bug fixes, security patches, and performance optimizations that are part of the upgraded version. This can enhance your overall user experience and productivity.

##### Assignment level intermediate:

1.Write down the steps of upgrade installation.

1. Plan. Before you upgrade software, make a plan. ...

2. Do your research. Once you have a plan, research the available upgrades. ...

3.Obtain the necessary permissions. Before you upgrade software, make sure you have

4.Backup your data. ...

5.Test the upgrade.

##### Assignment level advance.

* 1. Do a practical to upgrade from windows 8 to windows 10.

DONE

#### Topic: Partition & Formatting

##### Assignment level Basic

1. What is partitioning?

Partitioning is a way of splitting numbers into smaller parts to make them easier to work with. Partitioning links closely to place value: a child will be taught to recognise that the number 54 represents 5 tens and 4 ones, which shows how the number can be partitioned into 50 and 4.

1. What is partition?

In number theory and combinatorics, a partition of a positive integer n, also called an integer partition, is a way of writing n as a sum of positive integers. Two sums that differ only in the order of their summands are considered the same partition.

1. What is format?

In the context of computing, "format" refers to the process of preparing a storage device, such as a hard drive, solid-state drive (SSD), USB drive, or memory card, for use by creating a file system on it. Formatting involves organizing the storage space, setting up necessary data structures, and allocating sectors or blocks for storing files and directories.

##### Assignment level Intermediate:

1. Do a Practical of mbr partition.

DONE

1. Do a Practical of gpt partition

DONE

##### Assignment level Advance:

1. Do a practical using cmd.

DONE

1. covert a partition to gpt by cmd.
2. press Win + R, type "cmd," and press Enter to open Command Prompt.
3. type "diskpart" and press Enter.
4. select disk [disk number]" and press Enter.
5. Type "list partition" and press Enter
6. Identify the partition you want to convert to GPT. Type "select partition” and press Enter.
7. Exit Diskpart
8. Format a partition using cmd.
9. Open Command Prompt
10. Launch Diskpart
11. List Disks
12. Select the Disk
13. List Partitions
14. Format the Partition
15. Exit Diskpart

#### Topic: Transferring Files

##### Assignment level Basic

1. What is transferring Files?

File transfer refers to the exchange of data files between computer systems. According to Techopedia: “File transfer is the process of copying or moving a file from one computer to another over a network or internet connection.

1. What are the ways of transferring files?
2. USB Flash Drive
3. Network File Sharing
4. Cloud Storage
5. Email Attachments
6. File Transfer Protocol (FTP)
7. Bluetooth
8. QR Code or Barcode Scanning

##### Assignment level Intermediate:

1. How do we transfer files from one system to another?
2. Cloud storage or web data transfers. ...
3. SSD and HDD drives via SATA cables. ...
4. Basic cable transfer. ...
5. Use software to speed up your data transfer. ...
6. Transfer your data over WiFi or LAN. ...
7. Using an external storage device or flash drives.
8. Types of file transferring media.

1. FTP is an older cross-platform file transfer protocol.

2. SSH File Transfer Protocol a file transfer protocol secured by the Secure Shell protocol.

3. Secure copy (scp) is based on the Secure Shell (SSH) protocol.

4. HTTP can support file transfer.

##### Assignment level Advanced:

1. Do a practical to transfer files from one system to another via network.

DONE

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##### Assignment level Advanced:

* 1. Do a practical to transfer files from one system to another via network.

DONE

1. DO a practical to transfer data from one hard disk to another.

DONE

#### Topic: Administrative tools

##### Assignment Level Basic

1. What are administrative tools?

Administrative Tools is a folder in the Windows 10 Control Panel. These folders contain tools for system administrators and advanced users.

1. What is the use of administrative tools?

The programs can be used to schedule a test of your computer's memory, manage advanced aspects of users and groups, format hard drives, configure Windows services, change how the operating system starts, and much, much more

##### Assignment level Intermediate:

1. List out the administrative tools.
2. Component Services.
3. Computer Management.
4. Defragment and Optimize Drives.
5. Disk Cleanup.
6. Event Viewer.
7. iSCSI Initiator.
8. Local Security Policy.
9. ODBC Data Sources.
10. What is disk management tools.

Disk management tools are utility software that is used to manage data on disk by performing various functions on it.

##### Assignment Level Advanced

1. Do a practical to delete a driver and reinstall it from administrative tools.

DONE

1. Do a practical to delete a partition and again create it with administrative tool

DONE

1. Do a practical to create user with administrative tool.

DONE

#### Topic: Windows Feature.

##### Assignment Level Base

* 1. What is windows features?

Controls the storage of data (images, files, music). Controls hardware attached to the computer such as webcams, scanners and printers. Helps to open and close programs (word processors, games, photo editors, etc.), and gives them part of the computer's memory to allow them to work.

##### Assignment level Intermediate

1. List out the windows features.
2. Start Menu
3. File Explorer
4. Cortana
5. Microsoft Store
6. Windows Security
7. BitLocker
8. Windows Update
9. What is the use of IIS?

Internet Information Services, also known as IIS, is a Microsoft web server that runs on Windows operating system and is used to exchange static and dynamic web content with internet users.

##### Assignment level Advance:

1. Do a practical to re install IIS with windows feature.

DONE

1. Do a practical to install dotnet framework 3.5 with Windows feature.

DONE

1. Do a practical to disable internet explorer in windows feature.

DONE

#### Topic: Backup & Restore

##### Assignment level Basic:

1. What is backup?

Backup is the process of creating a copy of the data on your system that you use for recovery in case your original data is lost or corrupted. You can also use backup to recover copies of older files if you have deleted them from your system.

1. What is Restore?

Data restore is the process of copying backup data from secondary storage and restoring it to its original location or a new location. A restore is performed to return data that has been lost, stolen or damaged to its original condition or to move data to a new location

1. What is the need of backup?

To save your data if the original files would be deleted or corrupted

##### Assignment level Intermediate.

1. What are the tools of backup?
2. File History (Windows)
3. Time Machine (macOS)
4. Backup and Restore (Windows)
5. Carbon Copy Cloner
6. Acronis True Image
7. EaseUS Todo Backup
8. Clonezilla
9. Cloud Backup Services
10. How do we restore?

Determine the Backup Source:

Identify the backup location or medium where your data is stored. This could be an external hard drive, network storage, cloud backup service, or another backup solution.

Access the Backup:

Connect the backup device or access the backup location where your data is stored.

Navigate to the Backup:

Use File Explorer (Windows) or Finder (macOS) to browse the backup location and locate the files, folders, or system image you want to restore.

Restore Files and Folders:

For individual files or folders:

Copy and paste the files or folders from the backup location to their original location on your computer.

Alternatively, you can right-click on the files or folders and select "Restore" or "Copy" options.

Restore System Image or Full System:

If you want to restore the entire system from a system image or backup:

Follow the specific instructions provided by the backup tool or software you used to create the system image or backup.

This often involves booting the computer from a bootable rescue media or installation media and selecting the option to restore from the backup source.

Follow the Restore Process:

Depending on the backup tool and operating system, you may be prompted to choose the backup source, destination, restoration options, and confirm the restore operation.

Read and follow the on-screen instructions carefully.

Wait for Restoration:

Allow the restoration process to complete. This can take some time, especially for large backups or full system restores.

Verify Restored Data:

Once the restore process finishes, check the restored files, folders, or the system to ensure everything is as expected.

1. How to create a restore point?

1.In the search box on the taskbar, type Create a restore point, and select it from the list

results.

2.On the System Protection tab in System Properties, select Create.

3.Type a description for the restore point, and then select Create > OK.

##### Assignment level Advance:

1. Do a practical to create restore point.

DONE

1. Do a practical to restore from restore point.

DONE

1. Do a practical to take backup from another system.

DONE

1. Do a practical to take backup backup with a recuva backup tool.

DONE

#### Topic: Disk Management

##### Assignment level Basic:

1. What is Disk management?

Disk Management is a tool in an operating system that helps users to manage and organize the hard disk and other storage devices

1. What is the use of disk management?

Disk management tools are utility software that is used to manage data on disk by performing various functions on it.

1. What are the merits of Disk management tool?
   * 1. Increased Efficiency.
     2. Improved Performance. ...
     3. Better Security. ...
     4. Easier Backup. ...
     5. Primary Partitions.
     6. Extended Partitions.
     7. Spanned Partitions.
     8. RAID Partitions.

##### Assignment level Intermediate:

1. Where can we find the disk management tool?

To start Disk Management:

Click Start -> Run -> type compmgmt. msc -> click OK. Alternatively, right-click on the My Computer icon and select 'Manage'. In the console tree, click Disk Management.

1. List out the operations we can do with disk management tool
2. Partitioning of the disk.
3. Formatting the disk.
4. Changing disk's name.
5. Shrinking a disk partition.
6. Extending a disk partition.
7. Deleting a disk partition.
8. Changing the file system of a driver.

##### Assignment level Advance:

1. Do a practical to create a new partition with disk management tool.

DONE

1. Do a practical to convert from MBR to gpt from disk management tool

DONE

1. Do a practical to create new partition from existing partition.

DONE

#### Topic: Device Management

##### Assignment level Basic:

1. What is Device Management?

Device management enables organizations to administer and maintain devices, including virtual machines, physical computers, mobile devices, and IoT devices. Device management is a critical component of any organization's security strategy

1. What is the need of device management?

An essential part of an operating system is device management, which controls how software applications interact with the hardware attached to the computer system. It entails the process of locating, setting up, allocating, and managing access to devices like printers, scanners, storage units, and network interfaces

1. What are the benefits of Device management?
2. Enhanced security. ...
3. Decreased downtime and deployment times. ...
4. Improved productivity. ...
5. Application control. ...
6. Optimized data collection. ...
7. Risk management. ...
8. Cost saving.

##### Assignment level Intermediate:

1. Where can we access device management?

1.Start Menu/Search Bar:

* + Click on the Start button or press the Windows key on your keyboard to open the Start Menu.
  + Type "Device Manager" in the search bar.
  + From the search results, click on "Device Manager" or press Enter.

2.Control Panel:

* + Right-click on the Start button or press Windows key + X on your keyboard to open the Power User Menu.
  + Select "Control Panel" from the menu.
  + In the Control Panel, set the view to "Large icons" or "Small icons" for easier navigation.
  + Locate and click on "Device Manager" to open it.

3.Run Command:

* + Press the Windows key + R on your keyboard to open the Run dialog box.
  + Type "devmgmt.msc" in the Run box.
  + Click "OK" or press Enter to open Device Manager.

1. List out the devices connected to the device management.

1. Display Adapters: Graphics cards or video adapters.

2. Network Adapters: Ethernet adapters, Wi-Fi adapters, and other network-related devices.

3. Sound, Video, and Game Controllers: Audio devices, video capture devices, and game controllers.

4. Human Interface Devices: Keyboards, mice, touchpads, and other input devices.

5. Keyboards: Keyboard devices, including external keyboards.

6. Mice and other pointing devices: Mouse devices, touchpads, and pointing devices.

7. Printers: Installed printers and print queues.

8. Disk Drives: Internal and external hard drives, solid-state drives, and other storage devices.

9. DVD/CD-ROM Drives: Optical drives for reading CDs and DVDs.

10. Processors: CPUs (Central Processing Units) installed on the computer.

11. System Devices: System-related devices such as system timers, interrupt controllers, and system firmware.

12. Universal Serial Bus controllers: USB ports and devices.

##### Assignment level Advance:

1. Do a practical to add a device with device management tool.

DONE

1. Do a practical to delete a driver from the device management tool.

DONE

#### Topic: Physical security

##### Assignment Level Basic

1. Why physical security needed?

Physical security keeps your employees, facilities, and assets safe from real-world threats. These threats can arise from internal or external intruders that question data security. Physical attacks can cause a safe area to break into or the invasion of a restricted area part.

1. what is physical security?

Physical security is the protection of personnel, hardware, software, networks and data from physical actions and events that could cause serious loss or damage to an enterprise, agency or institution. This includes protection from fire, flood, natural disasters, burglary, theft, vandalism and terrorism.

##### Assignment Level Intermediate

1. list out the ways of physical security.

Physical security involves the use of multiple layers of interdependent systems that can include CCTV surveillance, security guards, protective barriers, locks, access control, perimeter intrusion detection, deterrent systems, fire protection, and other systems designed to protect persons and property.

1. How to protect system from malfunctioning due to electrical fluctuation?
   1. Uninterruptible Power Supply (UPS): Invest in a good-quality UPS that provides battery backup and surge protection. A UPS acts as a buffer between your computer and the electrical supply, ensuring a stable and clean power flow during fluctuations and providing temporary power during outages.

* Surge Protectors: Use surge protectors or power strips with built-in surge protection for your computer and other sensitive electronic devices. These devices help absorb and divert excess voltage spikes and surges, safeguarding your system from potential damage.
* Voltage Regulators/Stabilizers: Consider using voltage regulators or stabilizers, especially if you live in an area with frequent voltage fluctuations. These devices regulate the voltage supplied to your computer, ensuring a consistent and stable power level.

Grounding: Ensure that your electrical outlets and wiring are properly grounded. Proper grounding helps dissipate excess electrical energy and reduces the risk of electrical damage to your computer.

Avoid Overloading Circuits: Do not overload electrical circuits by plugging in too many devices into a single outlet or power strip. Overloading can lead to voltage drops and increased risks of electrical issues. Distribute the load evenly across multiple outlets or use a separate circuit for your computer.

Regular Maintenance: Keep your computer and its components clean and free of dust. Dust buildup can cause overheating and potentially lead to system malfunctions. Clean the internal components, fans, and vents regularly to ensure proper airflow and cooling.

* Backup Important Data: Create regular backups of your important files and data. In case of any unforeseen electrical issues or system malfunctions, having a backup ensures that you can recover your data even if the hardware is damaged.
* Professional Assistance: If you experience frequent electrical fluctuations or suspect issues with your electrical wiring, consult a qualified electrician to assess and address the problem. They can provide guidance on proper grounding, circuit protection, and electrical system maintenance.

#### Topic: Firewall settings

##### Assignment level basic:

1. What is firewall?

A Firewall is a network security device that monitors and filters incoming and outgoing network traffic based on an organization's previously established security policies. At its most basic, a firewall is essentially the barrier that sits between a private internal network and the public Internet.

1. Why is firewall needed?

 Firewalls serve as the first line of defense against external threats, such as hackers and malware attacks. In particular, firewalls combined with an intrusion prevention system (IPS) are crucial in preventing malware and certain application layer attacks.

##### Assignment level Intermediate:

1. What are the features of firewall?

Firewalls are network security systems that prevent unauthorized access to a network. It can be a hardware or software unit that filters the incoming and outgoing traffic within a private network, according to a set of rules to spot and prevent cyberattacks. Firewalls are used in enterprise and personal settings.

1. Describe types of firewall
2. packet filtering firewall.
3. circuit-level gateway.
4. application-level gateway (aka proxy firewall)
5. stateful inspection firewall.
6. next-generation firewall (NGFW)

##### Assignment level advance:

1. Do a practical to allow anydesk through firewall.

DONE

1. do a practical to turn off the services of firewall.

DONE

1. Do a practical to block ip messenger to access the network.

DONE