**Module 2 {Installation and Maintenance of**

**Hardware and Its components}**

**Topic: User Management**

* Assignment Level Basic:

1. **What is user management?**

* User management (UM) is defined as the effective management of users and their accounts, giving them access to various IT resources like devices, applications, systems, networks, SaaS services, storage systems, and more.

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?**

* A solution commonly used to implement user management is identity and access management (IAM). IAM enables administrators to define access to IT resources, both for internal and external users. IAM either includes or integrates with a user directory service, which contains credentials and other details of all users.

1. **What are the features of user management?**

* **User management is an organizational function that enables users to access and control digital assets, such as applications, devices, networks, and cloud services. Organizations are now exploring even more advanced solutions. Modern user management services provide end-to-end management of user accounts, including user registration, login and authentication, single sign-on (SSO), and permissions management.**
* 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.

**2. What is the use of file and folder permission?**

* You are not limited to choosing one of the standard permissions settings (Full Control, Modify, Read & Execute, List Folder Contents, Read, or Write).
* Assignment level Intermediate:

1. **Write down the steps to give a folder read only permission.**

* 1. Locate the folder: Navigate to the folder for which you want to set read-only permission using File Explorer.

2. Right-click the folder: Right-click on the folder you want to modify to open the context menu.

3. Select "Properties": Click on the "Properties" option from the context menu. A new window will open.

4. Go to the "Security" tab: In the Properties window, click on the "Security" tab.

5. Edit permissions: Click on the "Edit" button. Another window will appear, showing the folder's current permissions.

6. Add "Read" permission: In the "Permissions for [folder name]" window, click on "Add." Enter "Everyone" in the "Enter the object names to select" field and click "Check Names" to validate. Then click "OK."

7. Set permission level: In the same window, locate the entry for "Everyone" in the "Group or user names" list. Check the box for "Read" under the "Allow" column. Ensure that all other permissions under "Allow" are unchecked. Click "OK" to apply the changes. Apply changes: Back in the "Properties" window, click "OK" to apply the read-only permission to the folder.

1. **Write a step to give a file only admin permission.**

* Setting Permissions:
  1. Access the Properties dialog box.
  2. Select the Security tab.
  3. Click Edit.
  4. In the Group or user name section, select the user(s) you wish to set permissions for.
  5. In the Permissions section, use the checkboxes to select the appropriate permission level.
  6. Click Apply.
  7. Click Okay.
* 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. The application programs make use of the operating system by making requests for services through a defined application program interface (API).

1. **What are the types of OS?**

* There are several types of Operating Systems which are mentioned below.
* Batch Operating System
* Multi-Programming System
* Multi-Processing System
* Multi-Tasking Operating System
* Time-Sharing Operating System
* Distributed Operating System
* Network Operating System
* Real-Time Operating System
* 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?**

* 1. A clean install is a software installation in which any previous version is eradicated. The alternative to a clean install is an [upgrade](https://searchmobilecomputing.techtarget.com/definition/upgrade), in which elements of a previous version remain. The terms are often heard in reference to operating systems ([OS](https://www.techtarget.com/whatis/definition/operating-system-OS)es) and software applications.

1. Whenever an OS is installed on a new computer, or an application is installed for the first time, the installation is considered a "clean" install. With a clean install, the [hard disk](https://www.techtarget.com/searchstorage/definition/hard-disk-drive) contains only the new OS. Any existing OS and user files are removed during installation because the hard disk is formatted and completely erased.
2. Since existing data will be lost after the clean install, the user should [back up](https://www.techtarget.com/searchdatabackup/definition/backup) all data and files beforehand to an [external hard drive](https://www.techtarget.com/whatis/definition/external-hard-drive), another computer or to an online/[cloud](https://www.techtarget.com/searchdatabackup/definition/cloud-backup) location to prevent inadvertent loss. It is also a good idea to check the backup to ensure that it contains all the data and files that the user wants to retain and potentially access at a later time.
3. A clean install differs from an upgrade -- also known as in-place upgrade or [in-place install](https://www.techtarget.com/searchenterprisedesktop/photostory/252449288/Get-to-know-the-Windows-upgrade-paths-for-different-OSes/2/Windows-10-clean-install-vs-in-place-upgrade) --in which the existing version of the OS or application is retained but updated with the addition of new elements. In an upgrade, user data, files and settings are retained.
4. If the clean install is for a newer [version](https://www.techtarget.com/searchsoftwarequality/feature/Words-to-go-Version-control-process) of an existing software that's already running on the computer, it is known as a clean upgrade.
5. Both [Windows](https://www.techtarget.com/searchwindowsserver/definition/Windows) and Mac [OS X](https://www.techtarget.com/whatis/definition/OS-X) systems allow a clean install for the OS. Usually, the installation [wizard](https://www.techtarget.com/searchwindowsserver/definition/wizard) provides the user with a choice at the beginning of the installation process to select either a standard upgrade (the [default](https://www.techtarget.com/whatis/definition/default) option) or a clean install.
6. **What are the benefits of clean install?**

* A clean install enables users to regain control over the system by eliminating programs and files that have not been used for a long time, if ever. It paves the way for a fresh start with a clean Windows registry and a decluttered system that includes only has the apps the user needs.
* 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?**

* In an upgrade installation, a work system is installed as a second-level guest of the system or member that you want to upgrade. The new level of code from the work system is then moved to the system that is being upgraded.

1. **What is the benefit of upgrade installation?**

* Here are certain advantages to it:
* Latest Security Patch. New software tackles/prevents the latest security vulnerabilities of operation.
* Improve Stability.
* Being trustworthy.
* Well Structured.
* Enjoy new features.
* Benefits of pricing.
* Keep hardware healthy.
* Enhanced user interface.
* Assignment level intermediate:

1. **Write down the steps of upgrade installation.**

* **Steps:**

**1**

[**Back up any important files and data**](https://www.wikihow.com/Back-Up-Data)**.** While it's always good to perform periodic backups, it's notably important if you're upgrading. In case an error occurs throughout the upgrade process, retain a copy of any important data that's on the computer.

* + Fancy paid backup software or paying for an expensive cloud storage service isn't required. Copying your files and folders to an external hard drive is sufficient.
  + Having a backup plan set before you upgrade will eliminate stress if you do happen to lose any data, as you'll be able to restore from your backup—thus, not really losing anything important at all.
  + Never store the backup on the same computer you're upgrading. This could spell bad news if the entire hard drive crashed or was formatted (erased).

**2**

**Download the Windows 10 Media Creation Tool.** Go to [microsoft.com/software-download/windows10](https://www.microsoft.com/software-download/windows10), click Download tool now, and save the tool to your computer. The button is right under the "Create Windows 10 installation media" header.

**3**

**Open the Media Creation Tool.** Run/launch the exe file you just downloaded.

* + Confirm the User Account Control window if prompted. Select Yes from the popup window. You might need to enter the password to an admin account.

**4**

**Wait as the tool opens.** The Windows logo surrounded by a rectangular purple background will appear for about five seconds. Afterwards, the tool will load.

**5**

**Read and accept the legal agreement to continue.** Browse the legal conditions provided and click the Accept button to continue with the upgrade process.

* + If you disagree, click Decline to close the tool and discontinue the upgrade process.

**6**

**Wait for the next part to load.** You'll view a message reading "Getting a few things ready" accompanying circular ajax loader circling right underneath. This should be swift.

**7**

**Choose to upgrade your PC.** You'll be brought to the next page that asks you if you want to upgrade or create installation media. Click the radio button alongside "Upgrade this PC now", which is the selection at the top.

**8**

**Continue to begin the upgrade process.** Click the Next button at the bottom-right to begin downloading Windows 10 on your device.

**9**

**Wait as Windows 10 is downloaded onto your device.** The time this part takes is variable, but if your internet speed is high, then it shouldn't take too long as Windows 10 will be downloaded faster.

* + Windows 10 is multiple gigabytes big.

**10**

**Change what to keep (optional).** Click "Change what to keep" below the list of what's being kept (saved). By default, all of your apps compatible with Windows 10 and your personal files will be moved over to Windows 10.

* + **Keep personal files and apps**: Keeps all your personal files and apps that are compatible with Windows 10.
  + **Keep personal files only**: Keeps all your personal files but removes all apps from your computer.
  + **Nothing**: Removes everything from your computer.

**11**

**Initiate the installation.** Click Install at the bottom-right. Windows 10 will install on your computer. Your PC may restart a few times, and this process can take up to a few hours. Ensure your PC has a continuous supply of power (laptops and tablets should be plugged in), otherwise, your whole hard drive might get corrupted if it loses power.

* + Once the upgrade completes, you'll be brought to the Windows 10 OOBE (Out-of-box-experience). You'll be able to configure your computer's settings.
* 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?**

* Disk partitioning or disk slicing is the creation of one or more regions on secondary storage, so that each region can be managed separately. These regions are called partitions. It is typically the first step of preparing a newly installed disk, before any file system is created.

1. **What is partition?**

* A partition is a logical division of a hard disk that is treated as a separate unit by operating systems (OSes) and file systems. The OSes and file systems can manage information on each partition as if it were a distinct hard drive.

1. **What is format?**

* Format is a command that prepares a blank diskette, hard drive, or another drive to hold data. If the disk or drive already contains information, all information on it would be erased. For example, if you wanted to wipe everything on your hard drive, typing "format C:" would effectively erase all data on your computer, including the operating system.
* 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. **Convert a partition to gpt by cmd.**

* Done.

1. **Format a partition using cmd.**

* Done.

**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. It enables sharing, transferring or transmitting a file or a logical data object between different users and/or computers both locally and remotely.”

1. **What are the ways of transferring files?**

* Here are the five most common methods you can try for yourself.
* Cloud storage or web data transfers.
* SSD and HDD drives via SATA cables.
* Basic cable transfer.
* Use software to speed up your data transfer.
* Transfer your data over WiFi or LAN.
* Using an external storage device or flash drives.
* Assignment level Intermediate:

1. **How do we transfer files from one system to another?**

* 5 ways to transfer files from one computer to another:

1. Use external storage media.
2. This is the way most people do it.
3. Share via LAN or Wi-Fi.
4. Use a transmission cable.
5. Manually connect HDD or SSD.
6. Use cloud storage or web transfer.
7. **Types of file transferring media.**

* We've also added some brief descriptions on these data transfer types to make your choice easier.
* FTP (File Transfer Protocol).
* HTTP (Hypertext Transfer Protocol).
* FTPS (FTP over SSL).
* HTTPS (HTTP over SSL).
* SFTP (SSH File Transfer Protocol).
* SCP (Secure Copy).
* WebDAV (Web Distributed Authoring and Versioning).
* WebDAVS.
* 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?**

* Windows Administrative Tools are a set of features that system administrators and advanced users can access for critical tasks. They are accessed via the control panel under the Administrative Tools folder. The folder contains icons to access each feature. The number and name of the tools might vary depending on the edition of Windows.
* Assignment level Intermediate:

1. **List out the administrative tools.**

* These tools were included in previous versions of Windows. The associated documentation for each tool can help you use them. The following list provides links to documentation for each tool.
* Component Services
* Computer Management
* Defragment and Optimize Drives
* Disk Cleanup
* Event Viewer
* iSCSI Initiator
* Local Security Policy
* ODBC Data Sources
* Performance Monitor
* Print Management
* Recovery Drive
* Registry Editor
* Resource Monitor
* Services
* System Configuration
* System Information
* Task Scheduler
* Windows Firewall with Advanced Security
* Windows Memory Diagnostic

1. **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. Moreover, they perform functions like partitioning devices, manage drives, disk checking, disk formatting, etc.
* 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?**

* Major features include- start menu, task manager, taskbar, Cortana, file explorer, MS Paint, Browser, control panel etc. The advantages of the windows Operating system are- the majority of the users use windows, it has programming and gaming support, clean and lucid GUI and Microsoft office support.
* Assignment level Intermediate

1. **List out the windows features.**

* The various features of Windows operating system include-

1. Start Menu- As the name suggests, this is the part where the user starts his actions, after turning on the computer. The start menu contains a list of all the applications, pinned applications, and recently used applications. We can search various files and applications using the search bar. There is also an option of switching the user and turning off/restart/sleep mode options. So start basically is a place where user can begin their work by choosing the desired place to start their task.
2. File Explorer- In real life, we keep all our documents in one place and segregate them according to their use and need. In windows, the same work is done by the file explorer. It saves all our files in one place, according to the location that we provide. All the locations are displayed here along with the removable disks and pen drives that we insert. We can also manage various files and perform operations on them like- inserting, creating shortcuts, renaming, deleting, grouping files, etc. It makes searching for files easier using the search function. We can also find the recent files that we have used in file explorer.
3. Control Panel- As the name suggests, it controls and configures the resources and apps on our computer. There are a lot of functions that can be performed according to the user's needs. Right from system administration to set the time, everything can be done here. If we want to interface our computer with hardware, the settings can be changed here and various network-related settings can be changed too. In this way, the user can use and change system settings according to his discretion.
4. Cortana- In windows, we have been provided with a voice assistant who helps us with things that we are unable to do and are stuck at. It is an important feature of the windows operating system which is an AI-operated voice assistant that acts according to our commands and helps us to perform actions like opening a document, playing music, etc. Its concept resembles that of Google Assistant, Siri, etc.
5. Browser (Edge)- The default browser of windows is Microsoft Edge. We can search for information and surf the internet using the browser. Windows come in with a pre-installed browser. Earlier the default browser was Internet Explorer but later it was changed to Edge. It renders results of search faster and has security features like malware protection, phishing protection, and detection of insecure websites.
6. MS Paint- This is a feature from the 1st version of Windows itself. As the name suggests, it is used to paint, i.e., create drawings, paintings, colourings, etc. A blank canvas along with various inks, pens, and shapes. Now an improvised version of MS Paint that is known as Paint-3D comes with more and improved features.
7. Task Manager- The task manager is used to manage all the currently running tasks. We can force stop tasks that are currently running and also get information that which tasks are running in the background. The 'End Task' option enables the user to force stop the background and foreground running application. We also get information on how much CPU, RAM, and memory is used by various system resources.
8. Task bar- The task bar is one of the features of windows operating system. The element of the graphical user interface which shows the tasks or applications that are open right now. It also contains pinned applications which is done by the user, date and time. We can customise the taskbar. The taskbar varies according to the operating system but it is usually a small strip located at the bottom of the screen.
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. IIS can be used to host, deploy, and manage web applications using technologies such as ASP.NET and PHP.
* 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.

**3. Do a practical to disable internet explorer in windows feature.**

* Done.

**Topic: Backup & Restore**

* Assignment level Basic:

1. **What is backup?**

* Backup refers to the copying of physical or virtual files or databases to a secondary location for preservation in case of equipment failure or catastrophe.

1. **What is Restore?**

* System Restore is a feature in Microsoft Windows that allows the user to revert their computer's state (including system files, installed applications, Windows Registry, and system settings) to that of a previous point in time, which can be used to recover from system malfunctions or other problems.

1. **What is the need of backup?**

* The purpose of the backup is to create a copy of data that can be recovered in the event of a primary data failure. Primary data failures can be the result of hardware or software failure, data corruption, or a human-caused event, such as a malicious attack (virus or malware), or accidental deletion of data.
* Assignment level Intermediate.

1. **What are the tools of backup?**

* 1. Ashampoo · 2. Cobian Backup · 3. FileFort Backup · 4. BackUp Maker · 5. Comodo Backup

1. **How do we restore?**

* System Restore is a feature in Windows that allows you to revert your computer's system files and settings to an earlier point in time, without affecting personal files. To use System Restore in Windows, follow these steps:

a. Type "Create a restore point" in the Windows search bar and open the corresponding settings.

b. Click on the "System Restore" button and follow the on-screen instructions to choose a restore point and initiate the restoration process.

1. **How to create a restore point?**

* Create a system restore point

1. In the search box on the taskbar, type Create a restore point, and select it from the list of 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 system utility in Windows for advanced storage operations.

1. **What is the use of disk management?**

* Disk Management is an important functionality provided by the Operating System which can be used to create, delete, format disk partitions, and much more. It enables users to manage and view the different disks and functions like viewing, creating, deleting, and shrinking the partitions associated with the disk drives.

1. **What are the merits of Disk management tool?**

* Advantages of disk management include:

1. Improved organization and management of data.
2. Efficient use of available storage space.
3. Improved data integrity and security.
4. Improved performance through techniques such as defragmentation.

* Assignment level Intermediate:

1. **Where can we find the disk management tool?**

* To open Disk Management, right-click (or long-press) the Start button and select Disk Management. If you need help freeing up space on your PC, see Disk cleanup in Windows or Free up drive space in Windows.

1. **List out the operations we can do with disk management tool.**

* Disk Management is an important functionality provided by the Operating System which can be used to create, delete, format disk partitions, and much more. It enables users to manage and view the different disks and functions like viewing, creating, deleting, and shrinking the partitions associated with the disk drives.
* 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 is the process of managing the implementation, operation and maintenance of a physical and/or virtual device. It is a broad term that includes various administrative tools and processes for the maintenance and upkeep of a computing, network, mobile and/or virtual device.

1. **What is the need of 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 are the benefits of Device management?**

* Computer device management refers to the process of monitoring, configuring, securing, and maintaining an organization's or individual's devices (such as computers, laptops, smartphones, tablets, etc.) to ensure their optimal performance, security, and efficiency.
* Assignment level Intermediate:

1. **Where can we access device management?**

* Right-click the Start button or press the Windows Logo + X key combination on the keyboard and, from the list, click Control Panel. In the Control Panel window, click Device Manager.

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

* A general list of devices that are typically managed by device management systems:

1. Desktop Computers
2. Laptops
3. Smartphones
4. Tablets
5. Servers
6. Printers and Scanners
7. Network Devices
8. Internet of Things (IoT) Devices
9. Virtual Machines (VMs)
10. BYOD 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 aims to protect people, property, and physical assets from any action or event that could lead to loss or damage. Physical security is crucial, and security teams must work together to ensure the security of digital assets.

1. **What is physical security?**

* Physical security describes security measures that are designed to deny unauthorized access to facilities, equipment, and resources and to protect personnel and property from damage or harm.
* Assignment Level Intermediate

1. **List out the ways of physical security.**

* Physical security controls examples include CCTV cameras, motion sensors, intruder alarms and smart alerting technology like AI analytics.

1. **How to protect system from malfunctioning due to electrical fluctuation?**

* The best protection from power surge damage is high-quality surge protectors (also known as suppressors). Connect all programmable devices and appliances through a surge protector. This includes computer equipment, home entertainment systems, fax machines, telephones, and other digital electronic devices.

**Topic: Firewall settings**

* Assignment level basic:

1. **What is firewall?**

* A firewall is a network security device that monitors traffic to or from your network. It allows or blocks traffic based on a defined set of security rules.

1. **Why is firewall needed?**

* What do firewalls do? Firewalls provide protection against outside cyber attackers by shielding your computer or network from malicious or unnecessary network traffic. Firewalls can also prevent malicious software from accessing a computer or network via the internet.
* Assignment level Intermediate:

1. **What are the features of firewall?**

* Top Firewall Features

1. Unified Security Management. Organizations must cope with rapidly increasing network security complexity.

2. Threat Prevention.

3. Application and Identity-Based Inspection.

4. Hybrid Cloud Support.

5. Scalable Performance.

1. **Describe types of firewall.**

* The 5 different types of firewalls explained

1. Packet filtering firewall.
2. Circuit-level gateway.
3. application-level gateway (aka proxy firewall)
4. Stateful inspection firewall.
5. 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.