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Lab experiment number 1:-

AIM- Tools required for assemble/disassemble the PC and Laptop:

● Screwdriver:-

A screwdriver is a toll, manual or powered for screwing and unscrewing screws. A typical simple screwdriver has a handle and a shaft ending in the tip user puts into the screws head before turning the handle a screw driver is classified by its tips, which is shaped to fit the driving surface-slots, grooves ,recesses etc. on the correspondence screw head.



● Hex screwdriver: -

A hex screwdriver is a type of screwdriver that features a hexagonal tip for driving certain nuts, bolts and screws. Hex screwdrivers, like all types of screwdrivers, are available in an extensive range of both standard and metric sizes. These screwdrivers can make the process of loosening and tightening hex nuts, bolts and screws much easier. Tool steel is a specific grade of steel engineered for making manual tools such as pliers, wrenches and hex screwdrivers. Most power drivers can be fitted with hex screwdriver attachments.



- **Tweezer/Needle Nosed Pliers: -**

Needle-nose pliers (also known as pointy-nose pliers, long-nose pliers, pinch-nose pliers or snipe-nose pliers) are both cutting and holding pliers used by pc builders, network engineers and other tradesmen to bend, re-position and snip wire. Their namesake long nose gives excellent control while the cutting edge near the pliers' joint provides "one-tool" convenience. Because of their long shape they are useful for reaching into small areas where cables or other materials have become stuck or unreachable with fingers or other means. Bent nose pliers, also named bent needle-nose pliers, curved nose pliers or curved needle-nose pliers, have a curved beak.



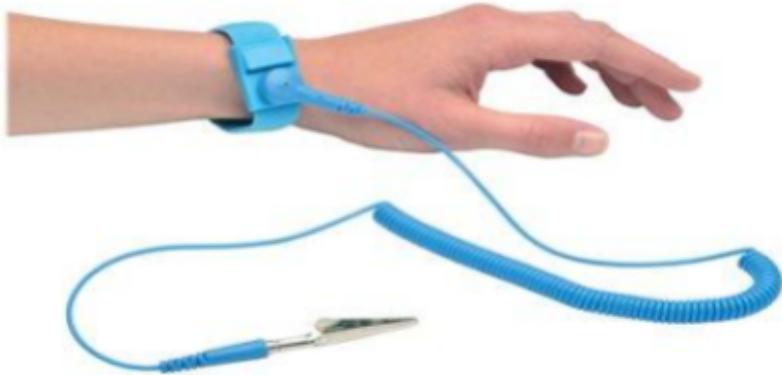
- **Zip Ties: -**

A cable tie (also known as a hose tie, zip tie, or by the brand name Ty-Rap) is a type of fastener, for holding items together, primarily electrical cables or wires. Because of their low cost and ease of use, cable ties are ubiquitous, finding use in a wide range of other applications. The common cable tie, normally made of nylon, has a flexible tape section with teeth that engage with a pawl in the head to form a ratchet so that as the free end of the tape section is pulled the cable tie tightens and does not come undone. Some ties include a tab that can be depressed to release the ratchet so that the tie can be loosened or removed, and possibly reused. Stainless steel versions, either naked or coated with a rugged plastic, cater for exterior applications and hazardous environments.



- **Anti-Static Wristband:** -

An antistatic wrist strap, ESD wrist strap, or ground bracelet is an antistatic device used to safely ground a person working on very sensitive electronic equipment, to prevent the build-up of static electricity on their body, which can result in electrostatic discharge (ESD). It is used in the electronics industry by workers working on electronic devices which can be damaged by ESD, and also sometimes by people working around explosives, to prevent electric sparks which could set off an explosion. It consists of an elastic band of fabric with fine conductive fibres woven into it, attached to a wire with a clip on the end to connect it to a ground conductor. The fibres are usually made of carbon or carbon-filled rubber, and the strap is bound with a stainless steel clasp or plate. They are usually used in conjunction with an antistatic mat on the workbench, or a special static-dissipating plastic laminate on the workbench surface.



- **Heat Sink Compound:** -

Heat sink compound, which is also called thermal grease, thermal paste thermal compound, CPU grease, heat paste, heat sink paste, and thermal interface material, is designed to efficiently transfer heat away from a heat generating component. For electrical applications, heat sink compound is used to thermally bond a component with a mechanical heat sink. The compound fills the gap between the CPU (central processing unit) or other heat generating components. In addition, heatsink paste is used with thermocouple wells, thermistors, or wherever efficient cooling is required. Although heatsink paste does not have the thermal conductivity of metals like copper and silver, the improvement over the air will increase thermal responsiveness



- **Power Supply Tester:** -

A power supply tester is an electronic device used to test how well a computer power supply is functioning. This type of testing is often performed as part of maintenance on a computer, and can be used to try to determine the source of a computer problem. It is typically a handheld device that has a number of different plugs that can be connected to the power supply within a computer, and a digital display screen and indicator lights used during the testing process. A power supply tester is fairly inexpensive, but due to its singular usefulness it may not be an investment most people



- **Cable Tester:** -

A cable tester is a device that is used to test the strength and connectivity of a particular type of cable or other wired assemblies. There are many different types of cable testers, each able to test a specific type of cable or wire (some may be able to test different types of cables or wires). A cable tester can test whether a cable or wire is set up properly, connected correctly, and the communication strength between the source and destination.



- **Crimping Tool: --**

A crimping tool is a device used to conjoin two pieces of metal by deforming one or both of them in a way that causes them to hold each other. The result of the tool's work is called a crimp. A good example of crimping is the process of affixing a connector to the end of a cable. For instance, network cables and phone cables are created using a crimping tool to join the RJ-45 and RJ-11 connectors to both ends of either phone or Cat 5 cable. To use this crimping tool, each wire is first placed into the connector. Once all wires are in the jack, the connector with wires are placed into the crimping tool, and the handles are squeezed together. Crimping punctures the plastic connector and holds each of the wires, allowing for data to be transmitted through the connector.



- **Wire Cutter: -**

A wire cutter is a portable handheld tool used by workers, especially electricians, for removing the protective coating of an electric wire in order to replace or repair the wire. It is also capable of stripping the end portions of an electric wire in order to connect them to other wires or to terminals. A wire stripper is often considered an important tool for professional electricians and other related personnel.



Lab experiment number 2:-

AIM-Assemble and Disassemble the Desktop PC

Disassembling the computer system

- **Detach the Power Cable: -**

The disassembling of the computer system starts with externally connected device detachment. Make sure the computer system is turned off, if not then successfully shut down the system and then start detaching the external devices from the computer system. It includes removing the power cable from electricity switchboard, then remove the cable from SMPS (switch mode power supply) from the back of the CPU Cabinet. Do not start the disassembling without detaching the power cable from the computer system. Now remove the remaining external devices like keyboard, mouse, monitor, printer or scanner from the back of CPU cabinet.



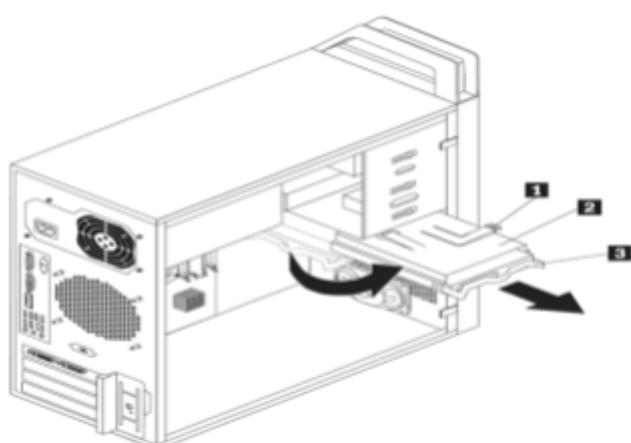
- **Remove the Cover:**

The standard way of removing tower cases used to be to undo the screws on the back of the case, slide the cover back about an inch and lift it off. The screwdrivers as per the type of screw are required to do the task.



Removing drives is easier. There can be possibly three types of drives present in your computer system, Hard disk drive, CD/DVD/Blue-ray drives, floppy disk drives (almost absolute now a day). They usually have a power connector and a data cable attached from the device to a controller card or a connector on the motherboard. CD/DVD/Blue Ray drive may have an analog cable connected to the sound card for direct audio output. The power may be attached using one of two connectors, a Molex connector or a Berg connector for the drive. The Molex connector may require to be wiggled slightly from side to side and apply gentle pressure outwards. The Berg connector may just pull out or it may have a small tab which has to be lifted with a screwdriver. Now Pull data cables off from the drive as well as motherboard connector. The hard disk drive and CD/DVD drives have two types of data cables. IDE and SATA cables. The IDE cables need better care while being removed as it may cause the damage to drive connector pins. Gently wiggle the cable sideways and remove it. The SATA cables can be removed easily by pressing the tab and pulling the connector straight back.

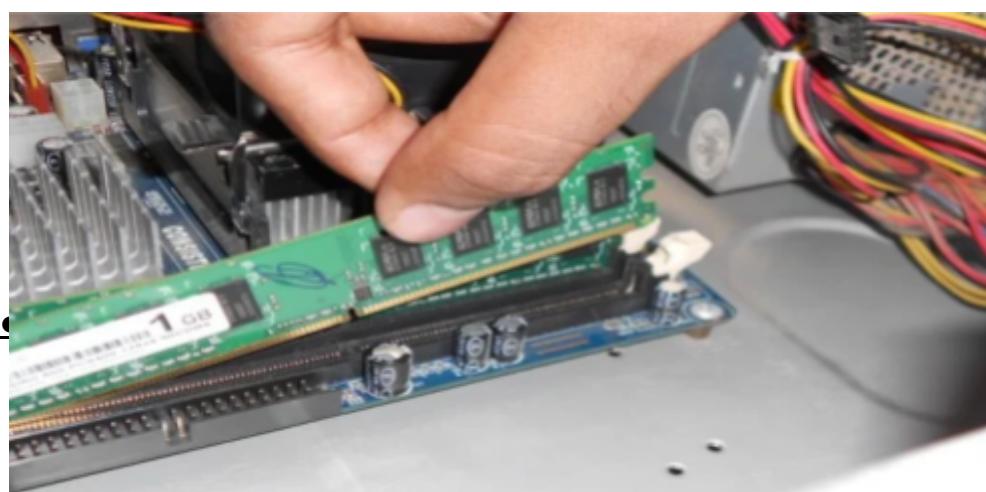
Now remove the screws and slide the drive out the back of the bay.



• Remove the memory module:

Memory modules are mounted on the motherboard as the chips that can be damaged by manual force if applied improperly. Be careful and handle the chip only by the edges. SIMMs and DIMMs are removed in a different way:

- SIMM - gently push back the metal tabs while holding the SIMM chips in the socket. Tilt the SIMM chip away from the tabs until a 45% angle. It will now lift out of the socket. Put SIMM in a safe place.
- DIMM- There are plastic tabs on the end of the DIMM sockets. Press the tabs down and away from the socket. The DIMM will lift slightly. Now grab it by the edges and place it safely. Do not let the chips get dust at all.

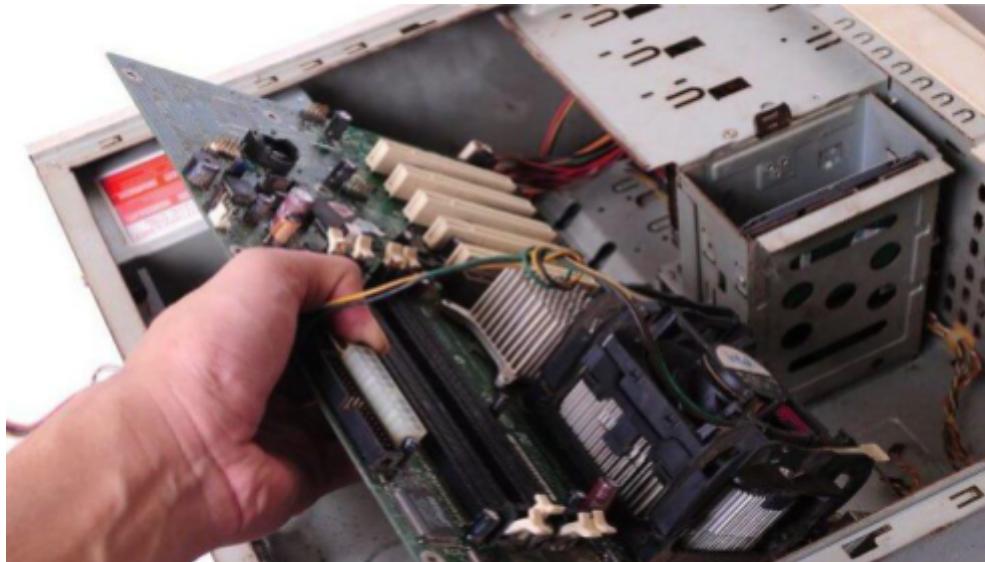


The power supply is attached into tower cabinet at the top back end of the tower. Make sure the power connector is detached from the switchboard. Start removing the power connector connected to motherboard including CPU fan power connector, cabinet fan, the front panel of cabinet power buttons and all the remaining drives if not detached yet. Now remove the screws of SMPS from the back of the cabinet and the SMPS can be detached from the tower cabinet.



- **Remove the motherboard:**

Before removing all the connectors from the motherboard, make sure u memorize the connectors for assembling the computer if required, as that may require connecting the connectors at its place. Remove the screws from the back of the motherboard and you will be able to detach it from the cabinet. Now remove the CPU fan from the motherboard. The heat sink will be visible now which can be removed by the pulling the tab upward. Finally, the processor is visible now, which can be removed by the plastic tab which can be pulled back one stretching it side way.



- **Assembling the computer system**

The assembling of the computer system is exactly the opposite of disassembling operation. Before starting assembling the computer system, make sure you have the screws and a screwdriver for those.

The first step for assembling the computer system starts with mounting the processor on the processor socket of the motherboard. To mount the process, you don't need to apply any force. The special ZIF (zero insertion force) sockets are usually used to prevent any damage to the processor pins. Once the processor is mounted, the heat sink will be attached on top of the processor. The CPU fan is also attached on top of the heat sink.

Now the motherboard is to be fixed vertically in the tower case and the screws are fixed from behind of the motherboard.

Now line up the power supply at the top back end of the cabinet and screw it. The power connectors for motherboard power supply and CPU fan power supply are to be connected. If the cabinet cooling FAN is required then it is to be screwed at the back end grill of the cabinet and its power connector is to be connected from SMPS.

Install the CD/DVD drives at the top front end of the cabinet and screw it. Install the Hard disk drive and floppy disk drive below CD/DVD drive and screw it. Make sure once screwed there is no vibration in either of the CD/DVD, Hard disk or Floppy disk drives.

Now select the appropriate data cable and connect one end of the cable to its drive socket and another end at its appropriate connector on the motherboard. For SATA hard disk drive or CD/DVD drives use SATA cable and its power cable, else use IDE data cable. Do the proper jumper settings as per the usage requirement.

It is time now to mount the memory modules on the motherboard by aligning the RAM to its socket on the motherboard and press it downward. Make sure the side tab are fixed into the RAM notch. If not, you may still have to press a bit.

Install the internal cards to its socket and attach the cables or power cable to it. The selection of right socket or slot is required as per the type of socket.

Cover the tower by placing it and pressing towards front side and screw it.

Connect the external devices with CPU at its appropriate socket. It includes mouse and keyboard at PS2 or USB connectors. Monitor at the video output socket. Connect the power cable to the back of tower in SMPS. Plug in the power cable to the electric board.



Lab experiment number 3:-

AIM- Various Ports, Slots, Cables and Connectors available in Computer System

● DISPLAY PORTS

VGA

Stands for "Video Graphics Array." It is the standard monitor or display interface used in most PCs. Therefore, if a monitor is VGA-compatible, it should work with most new computers. The VGA standard was originally developed by IBM in 1987 and allowed for a display resolution of 640x480 pixels. Since then, many revisions of the standard have been introduced. The most common is Super VGA (SVGA), which allows for resolutions greater than 640x480, such as 800x600 or 1024x768. A standard VGA connection has 15 pins and is shaped like a trapezoid.



● HDMI

High Definition Multimedia Interface, HDMI is a connector and cable capable of transmitting high-quality and high-bandwidth streams of audio and video between devices. The HDMI technology is used with devices such as an HDTV, Projector, DVD player, or Blu-ray player. The picture is an example of an HDMI cable from Media bridge. The HDMI standard was developed by multiple companies, including Hitachi, Philips, Sony, and Toshiba. A single HDMI cable replaces the three composite audio/video cables, making it easier to connect two devices together for transmitting audio and video signals. HDMI is capable of transmitting standard, enhanced, and high-definition video signals, as well as up to 8-channels of digital audio signals.



●

Short for universal serial bus, USB (pronounced yoo-es-bee) is a plug and play interface that allows a computer to communicate with peripheral and other devices. USB-connected devices cover a broad range; anything from keyboards and mice, to music players and flash drives. For more information on these devices, see our USB devices section. USB may also be used to send power to certain devices, such as smartphones and tablets, as well as charge their batteries. The first commercial release of the Universal Serial Bus (version 1.0) was in January 1996. This industry standard was then quickly adopted by Intel, Compaq, Microsoft, and other companies.

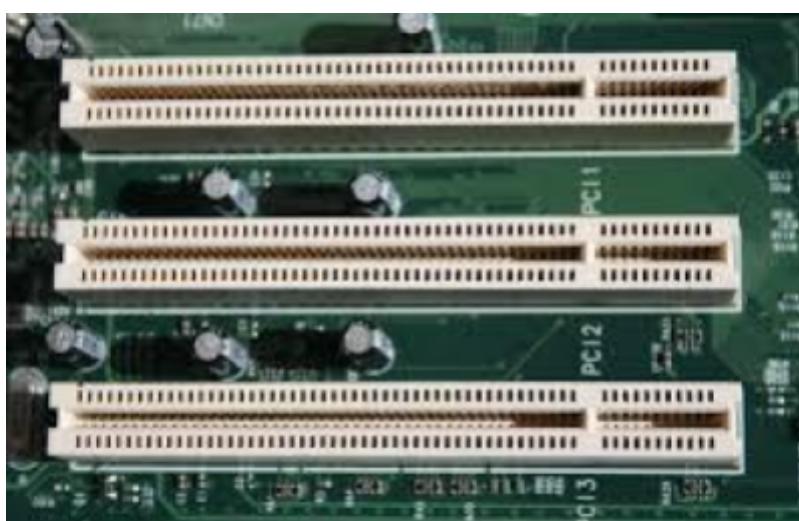


● PCI SLOTS

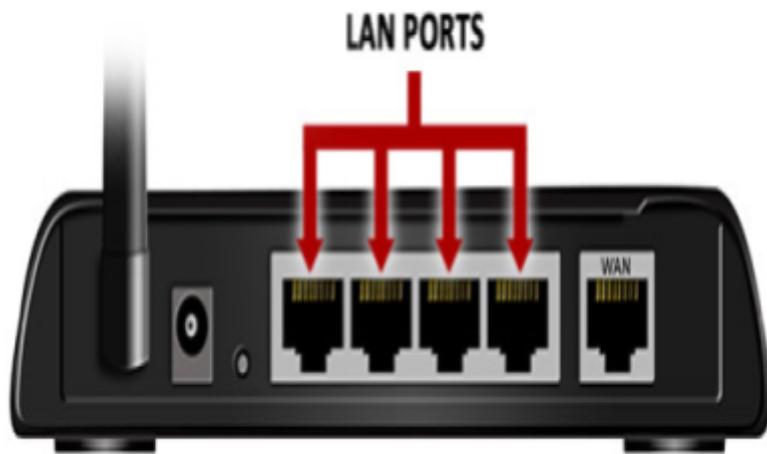
Stands for "Peripheral Component Interconnect." PCI is a hardware bus used for adding internal components to a desktop computer. For example, a PCI card can be inserted into a PCI slot on a motherboard, providing additional I/O ports on the back of a computer.

The PCI architecture, also known as "conventional PCI," was designed by Intel and introduced in 1992. Many desktop PCs from the early 1990s to the mid-2000s had room for two to five PCI cards. Each card required an open slot on the motherboard and a removable panel on the back of the system unit. Adding PCI cards was an easy way to upgrade a computer, since you could add a better video card, faster wired or wireless networking, or add new ports, like USB 2.0.

The original 32-bit, 33 MHz PCI standard supported data transfer rates of 133 megabytes per second. An upgraded 64-bit, 66 MHz standard was created a few years later and allowed for much faster data transfer rates up to 533 MHz. In 1998, IBM, HP, and Compaq introduced PCI-X (or "PCI Extended"), which was backwards compatible with PCI. The 133 MHz PCI-X interface supported data transfer rates up to 1064 MHz.



A local-area network (LAN) is a computer network that spans a relatively small area. Most often, a LAN is confined to a single room, building or group of buildings, however, one LAN can be connected to other LANs over any distance via telephone lines and radio waves. A system of LANs connected in this way is called a wide-area network (WAN). The difference between a LAN and WAN is that the wide-area network spans a relatively large geographical area. Typically, a WAN consists of two or more local-area networks (LANs) and are often connected through public networks.



- **AGP PORT /SLOT**

Short for accelerated graphics port, AGP is an advanced port designed for video cards and 3D accelerators.

Developed by Intel and introduced in August 1997, AGP introduces a dedicated point-to-point channel that allows the graphics controller direct access to the system memory. Below is an illustration of what the AGP slot may look like on your motherboard. The AGP channel is 32-bits wide and runs at 66 MHz, which is a total bandwidth of 266 MBps and much greater than the PCI bandwidth of up to 133 MBps. AGP also supports two optional faster modes, with a throughput of 533 MBps and 1.07 GBps. It also allows 3-D textures to be stored in main memory rather than video memory. AGP is available in three different versions, the original AGP version mentioned above, AGP 2.0 that was introduced in May 1998, and AGP 3.0 (AGP 8x) that was introduced in November 2000. AGP 2.0 added 4x signaling and was capable of operating at 1.5V, and AGP 3.0 was capable of double the transfer speeds.

AGP Slot



ComputerHope.com

Lab experiment number 4:-

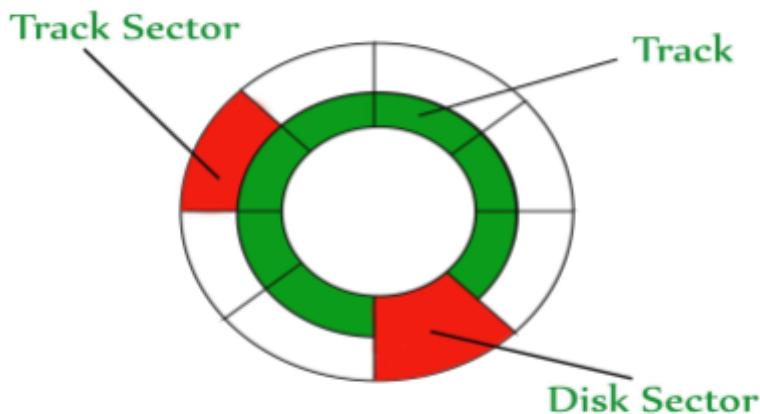
AIM- Disk Partitioning & Formatting

DISK STRUCTURE

- Track
- Sector
- Cylinder
- Storage-capacity

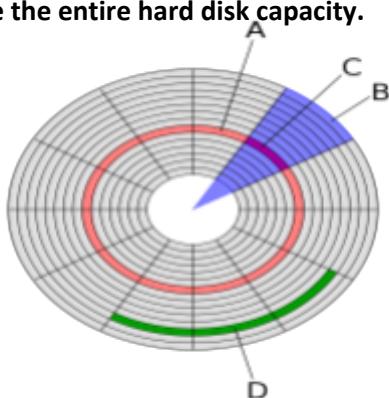
TRACK: -

The HDD is divided into number of concentric circles cutter tracks circular path is sector is called track.



Sector

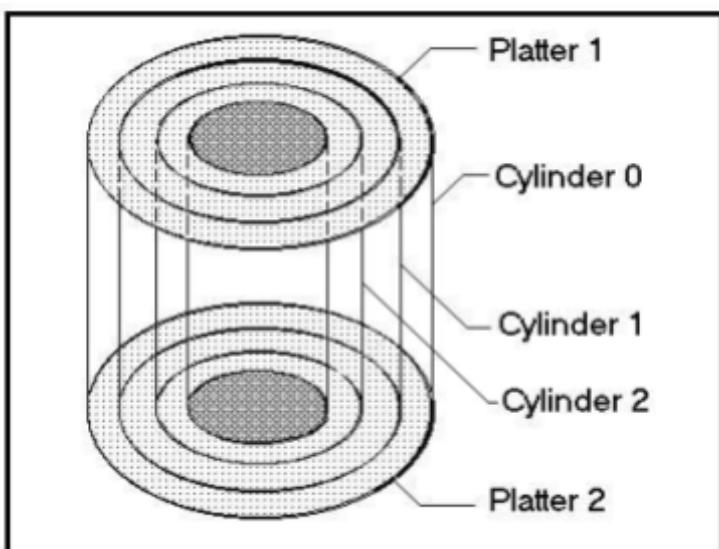
A sector is the basic unit of data storage on a hard disk. The term "sector" emanates from a mathematical term referring to that pie shaped angular section of a circle, bounded on two sides by radii and the third by the perimeter of the circle - See Figure 1. An explanation in its simplest form, a hard disk is comprised of a group of predefined sectors that form a circle. That circle of predefined sectors is defined as a single track. A group of concentric circles (tracks) define a single surface of a disks platter. Early hard disks had just a single one-sided platter, while today's hard disks are comprised of several platters with tracks on both sides, all of which comprise the entire hard disk capacity.



● Cylinder

A cylinder is any set of all of tracks of equal diameter in a hard disk drive (HDD). It can be visualized as a single, imaginary, circle that cuts through all of the platters (and both sides of each platter) in the drive.

A platter is a thin, high-precision aluminium or glass disk that is coated on both sides with a high-sensitivity magnetic material and which is used by a HDD to store data. Modern HDDs contain multiple platters, all of which are mounted on a single shaft, in order to maximize the data storage surface in a given volume of space. The magnetic media on each side of each platter is divided into a series of tracks. A track is any of the concentric circles over which one magnetic head passes while it is stationary but the platter is rotating at high speed. A magnetic head, also commonly referred to as just a head, is a small, high-sensitivity electromagnet that is used for reading and writing data on the magnetic media. Each platter requires two heads, one for each side. All heads in a HDD are mechanically linked and move in unison, and consequently they are always in a common cylinder.



● Storage-capacity

The amount of storage on a hard disk, measured in gigabytes and terabytes. Hard drive capacity is measured by the amount of data users need to store, which is often much greater than the space applications take up. For example, a single video can take four gigabytes of space.

We've Come a Long Way!

In 1957, the cost of one megabyte of storage on the first hard drive would be the equivalent of USD \$200,000 in today's dollars. However, in 2017, one megabyte of hard drive storage costs less than 1/3000th of one cent! See hard disk, byte, SSD and space/time.



HARD DISK DRIVE

- It's a data storage device in computer
- It is secondary storage device
- It stores 0 and 1
- It is invented by IBM in 1945

MAIN components for HARD DISK DRIVE

- Disk platter
- Stepper motor
- Spindle motor
- Read and write head

DISK-PLATTER

A hard disk drive platter (or disk) is the circular disk on which magnetic data is stored in a hard disk drive. The rigid nature of the platters in a hard drive is what gives them their name (as opposed to the flexible materials which are used to make floppy disks). Hard drives typically have several platters which are mounted on the same spindle. A platter can store information on both sides, requiring two heads per platter.



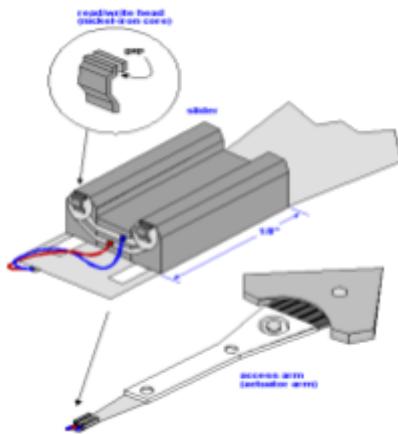
Stepper Motor

Stepper motors are DC motors that move in discrete steps. They have multiple coils that are organized in groups called "phases". By energizing each phase in sequence, the motor will rotate, one step at a time. With a computer controlled stepping you can achieve very precise positioning and/or speed control.



- **READ AND WRITE HEAD**

A read/write head is a specific physical part of a hard disk that is responsible for reading data from, and writing data to, the disk. Read/write heads are typically made up of a thin horizontal magnetic blade attached to an actuator arm. By changing the electrical polarity of bits on a magnetic disk, the read/write arm effectively records data to a disk drive.



- **Disk -Portion for HDD**

Primary portion-

Windows os must be located in a primary portion

Only primary portion can be subdivided in multiple logical portion.

- **Extended portion**

A hard disk may contain only one extended portion

The extended can be subdivided to boot the operating system

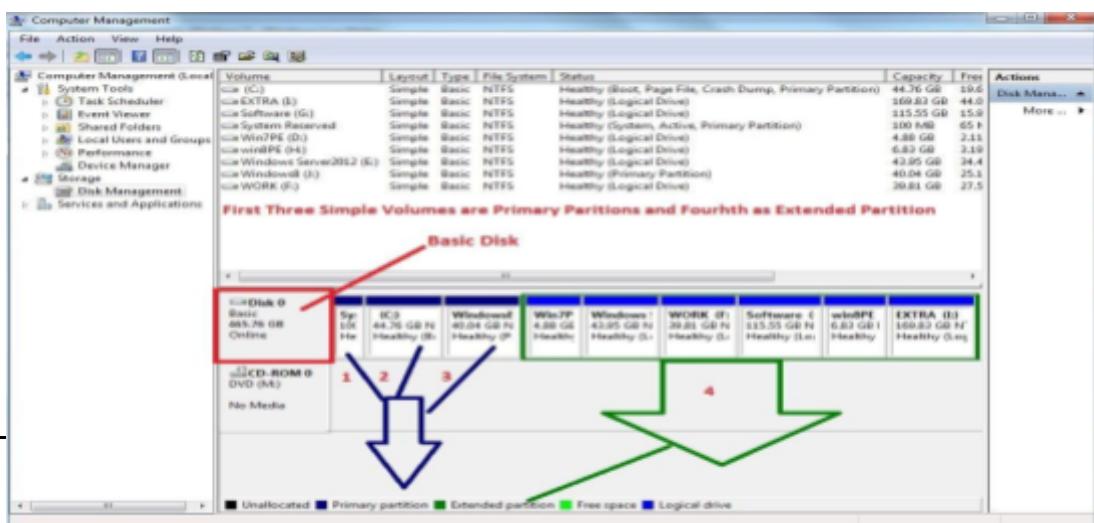
- **Logical portion-**

Linux os can be installed into logical form portion

A single computer can have multiple logical particles, each with its own operating system and hardware resources to utilize

- **Active portion**

Only one portion on a computer can be set all on active portion or bootable portion. For example- if your are using Microsoft windows the portion that contains windows in the active portion.

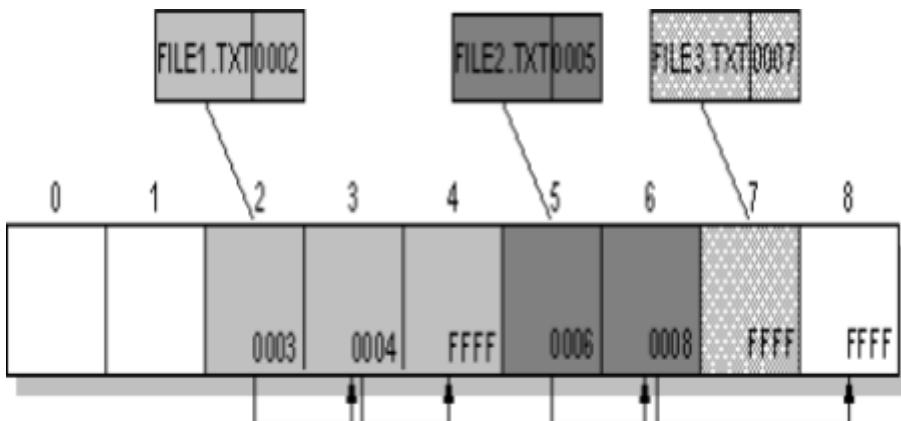


FAT

NTFS

FAT(file allocation table)-

- It does not provide security
- Portion size is max 32 gb
- Does not support data compression
- Does not support dish quarter



NTFS(new technology file system)

- It's a secure
- Partition size its 1 tb
- It supports data compression
- Its support dish quator

AIM:- INTRODUCTION TO BOOTING DEVICE

INTRODUCTION

Booting is a start-up sequence that starts the operating system of a computer when it is turned on. A boot sequence is the initial set of operations that the computer performs when it is switched on. Every computer has a boot sequence. The average computer doesn't understand the boot sequence but is important to know for customizing and troubleshooting your computer

Boot Devices

The boot device is the device from which the operating system is loaded. A modern PC BIOS (Basic Input/output System) supports booting from various devices. These include the local

hard disk drive, optical drive, floppy drive, a network interface card, and a USB device. Typically, the BIOS will allow the user to configure a boot order. If the boot order is set to:

1. CD Drive
2. Hard Disk Drive
3. Network

then the BIOS will try to boot from the CD drive first, and if that fails then it will try to boot from the hard disk drive, and if that fails then it will try to boot from the network, and if that fails then it won't boot at all.

DIFFERENT TYPE OF BOOTING DEVICES:-

HARD DRIVE

A **hard disk drive (HDD)**, **hard disk**, **hard drive**, or **fixed disk** is an electro-mechanical data storage device that uses magnetic storage to store and retrieve digital data using one or more rigid rapidly rotating platters coated with magnetic material. The platters are paired with magnetic heads, usually arranged on a moving actuator arm, which read and write data to the platter surfaces. Data is accessed in a random-access manner, meaning that individual blocks of data can be stored and retrieved in any order. HDDs are a type of nonvolatile storage, retaining stored data even when powered off.

Introduced by IBM in 1956, HDDs were the dominant secondary storage device for generalpurpose computers beginning in the early 1960s. HDDs maintained this position into the modern era of servers and personal computers, though personal computing devices produced in large volume, like cell phones and tablets, rely on flash products. More than 224 companies have produced HDDs historically, though after extensive industry consolidation most units are manufactured by Seagate, Toshiba, and Western Digital. HDDs dominate the volume of storage produced (exabytes per year) for servers

CD DRIVE

A **CD-ROM**, **compact disc read-only memory** is a pre-pressed optical compact disc that contains data. Computers can read—but not write to or erase—CD-ROMs, i.e. it is a type of read-only memory. During the 1990s, CD-ROMs were popularly used to distribute software and data for computers and fifth generation video game consoles. Some CDs, called enhanced CDs, hold both computer data and audio with the latter capable of being played on a CD player, while data (such as software or digital video) is only usable on a computer (such as ISO 9660 format PC CD-ROMs). The CD-ROM format was developed by Japanese company Denon in 1982. It was an extension of Compact Disc Digital Audio, and adapted the format to hold any form of digital data, with a storage capacity of 650 MiB. Sony and Philips created the technical standard that defines the format of a CD-ROM in 1983, in what came to be called the *Yellow Book*. One of a set of colour-bound books that contain the technical specifications for all CD formats, the *Yellow Book* specifies a format for discs

with a maximum capacity of 650 MiG. The CD-ROM was introduced by Denon and Sony at the first Japanese COMDEX computer show in 1985

USB DRIVE

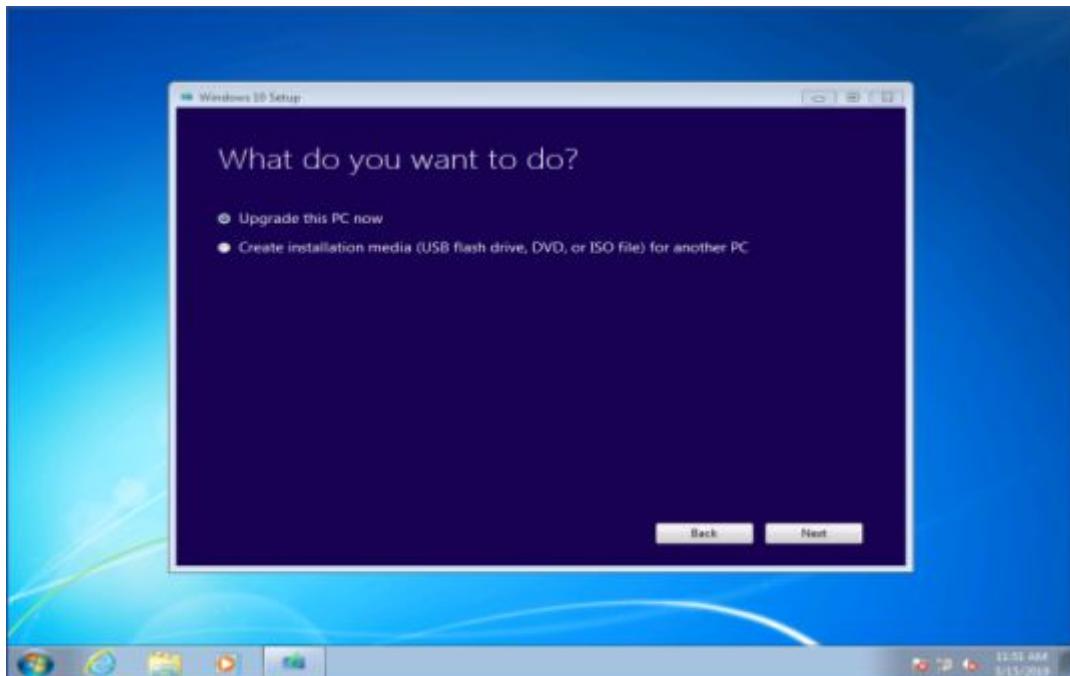
A USB flash drive -- also known as a USB stick, USB thumb drive or pen drive -- is a plug-and-play portable storage device that uses flash memory and is lightweight enough to attach to a keychain. A USB flash drive can be used in place of a compact disc. When a user plugs the flash memory device into the USB port, the computer's operating system (OS) recognizes the device as a removable drive and assigns it a drive letter. A USB flash drive can store important files and data backups, carry favorite settings or applications, run diagnostics to troubleshoot computer problems or launch an OS from a bootable USB. The drives support Microsoft Windows, Linux, MacOS, different flavours of Linux and many BIOS boot ROMs. The first USB flash drive came on the market in 2000 with a storage capacity of 8 megabytes (MB). Drives now come in capacities ranging between 8 gigabytes (GB) and 1 terabyte (TB), depending on manufacturer, and future capacity levels are expected to reach 2 TB. The memory within most USB flash drives is multi-level cell (MLC), which is good for 3,000 to 5,000 program-erase cycles. However, some drives are designed with single-level cell (SLC) memory that supports approximately 100,000 writes.



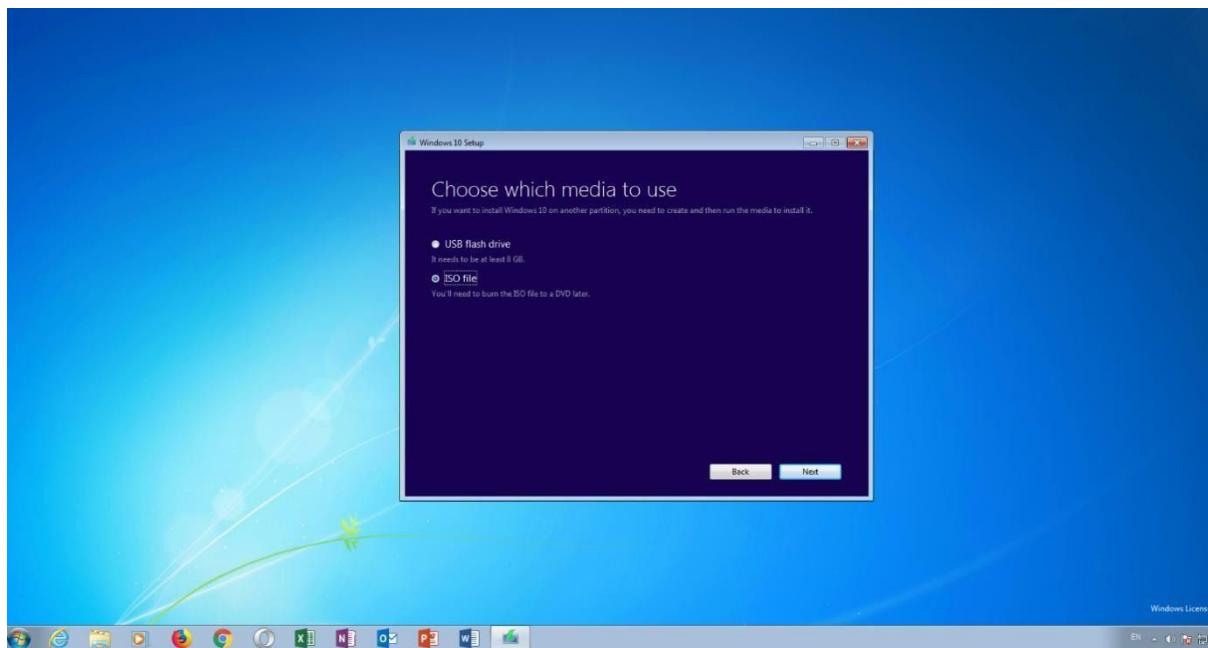
- ~~Install another operating system into your hard disk. You don't have to deal with partitioning and it doesn't slow a bit your **boot** time by showing the grub menu.~~
- Portable. You can **boot** from that **USB** from any PC that supports **booting from USB**.
- You can use boot your system on any supported machine without installing it; .
On any machine, the Live system doesn't alter the existing files unless you ask;
- The Live system can be copied and reproduced easier.

STEPS TO CREATE A USB DRIVE BOOTABLE

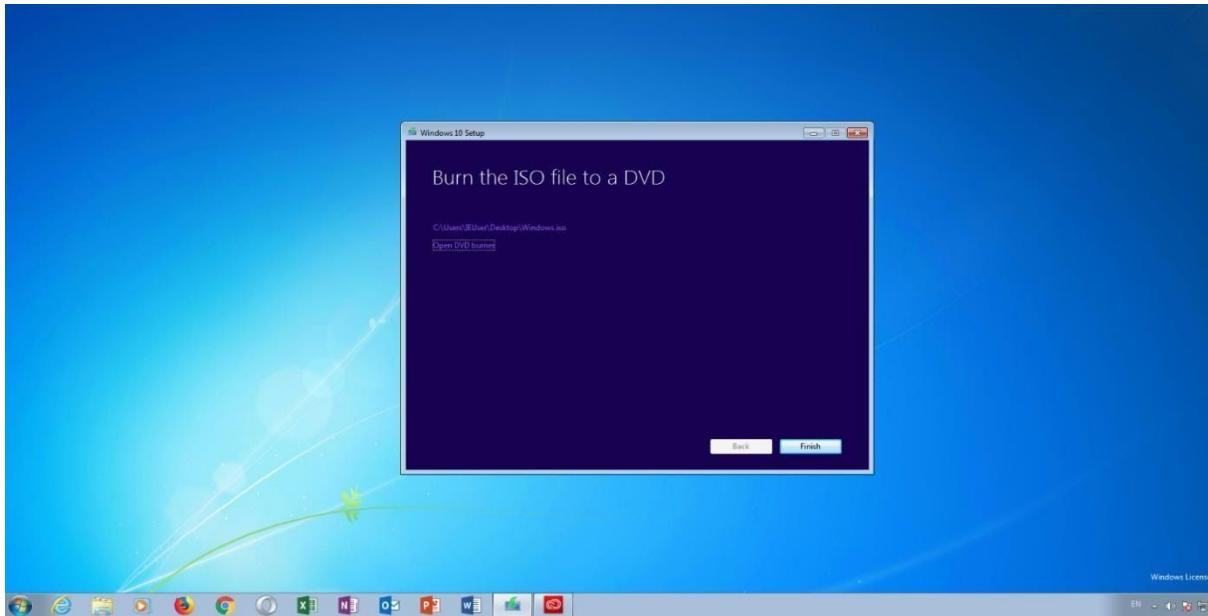
1. The Windows utility program **Disk Part** or an **external tool with the same functions**.
2. A **USB drive with at least 4GB of storage (for a 32-bit operating system) or at least 8GB (for a 64-bit system)**. To obtain a high working speed (or enable the creation of a portable operating system), the selected drive should **support the standard USB 3.0**. If the drive is already being used, make sure that it doesn't contain any important or indispensable data.
3. An **ISO file for the desired operating system** that contains all setup files that you need for installation. These files used to be found on a CD- or DVD-ROM, which came with a new computer or could be acquired separately. Today, Windows is generally preinstalled **on a system partition of a matching PC or laptop**. You can **create such an ISO file yourself**, though, for example with the use of tools like WinISO, UltraISO, or the burn program InfraRecorder. But it's simpler to just **download the required operating system from the internet**. In the case of Windows 10, this can be done completely legally via the media creation tool from Microsoft. Downloading directly from the company's website is also possible for Windows 7 and Windows 8, for example.



Start the Microsoft media creation tool after the download, and select the option “Create installation media for another PC”



The tool automatically downloads an ISO file from Windows 10. This process can take a while, since the image is several gigabytes large.



You then have the option to burn the downloaded ISO file to a DVD. But you could simply click the "Finish" button instead.

LAB EXPERIMENT NUMBER 6:-

AIM-: Installation of Windows Operating System

Basic requirements of installing OS in Computer System-:

System requirements

To be used efficiently, all computer software needs certain hardware components or other software resources to be present on a computer. These prerequisites are known as **(computer) system requirements** and are often used as a guideline as opposed to an absolute rule. Most software defines two sets of system requirements: minimum and recommended. With increasing demand for higher processing power and resources in newer versions of software, system requirements tend to increase over time. Industry analysts suggest that this trend plays a bigger part in driving upgrades to existing computer systems than technological advancements. A second meaning of the term of system requirements, is a generalization of this first definition, giving the requirements to be met in the design of a system or sub-system.

Hardware requirements

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware. A hardware requirements list is often accompanied by a hardware compatibility list (HCL), especially in case of operating systems. An HCL lists tested, compatible, and sometimes incompatible hardware devices for a particular operating system or application. The following subsections discuss the various aspects of hardware requirements.

Architecture

All computer operating systems are designed for a particular computer architecture. Most software applications are limited to particular operating systems running on particular architectures. Although architecture-independent operating systems and applications exist, most need to be recompiled to run on a new architecture. See also a list of common operating systems and their supporting architectures. **Processing power**

The power of the central processing unit (CPU) is a fundamental system requirement for any software. Most software running on x86 architecture define processing power as the model and the clock speed of the CPU. Many other features of a CPU that influence its speed and power, like bus speed, cache, and MIPS are often ignored. This definition of power is often erroneous, as AMD Athlon and [Intel](#) Pentium CPUs at similar clock speed often have different throughput speeds. Intel Pentium CPUs have enjoyed a considerable degree of popularity, and are often mentioned in this category.

Memory

All software, when run, resides in the random access memory (RAM) of a computer. Memory requirements are defined after considering demands of the application, operating system, supporting software and files, and other running processes. Optimal performance of other unrelated software running on a multi-tasking computer system is also considered when defining this requirement. **Secondary storage**

Data storage device requirements vary, depending on the size of software installation, temporary files created and maintained while installing or running the software, and possible use of swap space (if RAM is insufficient). **Display adapter**

Software requiring a better than average computer graphics display, like graphics editors and high-end games, often define high-end display adapters in the system requirements. **Peripherals**

Some software applications need to make extensive and/or special use of some peripherals, demanding the higher performance or functionality of such peripherals. Such peripherals include CD-ROM drives, keyboards, pointing devices, network devices, etc.

Software requirements

Software requirements deal with defining software resource requirements and prerequisites that need to be installed on a computer to provide optimal functioning of an application. These requirements or prerequisites are generally not included in the software installation package and need to be installed separately before the software is installed. **Platform**

A computing platform describes some sort of framework, either in hardware or software, which allows software to run. Typical platforms include a computer's architecture, operating system, or programming languages and their runtime libraries.

Operating system is one of the requirements mentioned when defining system requirements (software). Software may not be compatible with different versions of same line of operating systems, although some measure of backward compatibility is often maintained. For example, most software designed for Microsoft Windows XP does not run on Microsoft Windows 98, although the converse is not always true. Similarly, software designed using newer features of Linux Kernel v2.6 generally does not run or compile properly (or at all) on Linux distributions using Kernel v2.2 or v2.4. **APIs and drivers**

Software making extensive use of special hardware devices, like high-end display adapters, needs special API or newer device drivers. A good example is DirectX, which is a collection of APIs for handling tasks related to multimedia, especially game programming, on Microsoft platforms.

Web browser

Most web applications and software depending heavily on web technologies make use of the default browser installed on system. Microsoft Internet Explorer is a frequent choice of software running on Microsoft Windows, which makes use of ActiveX controls, despite their vulnerabilities.

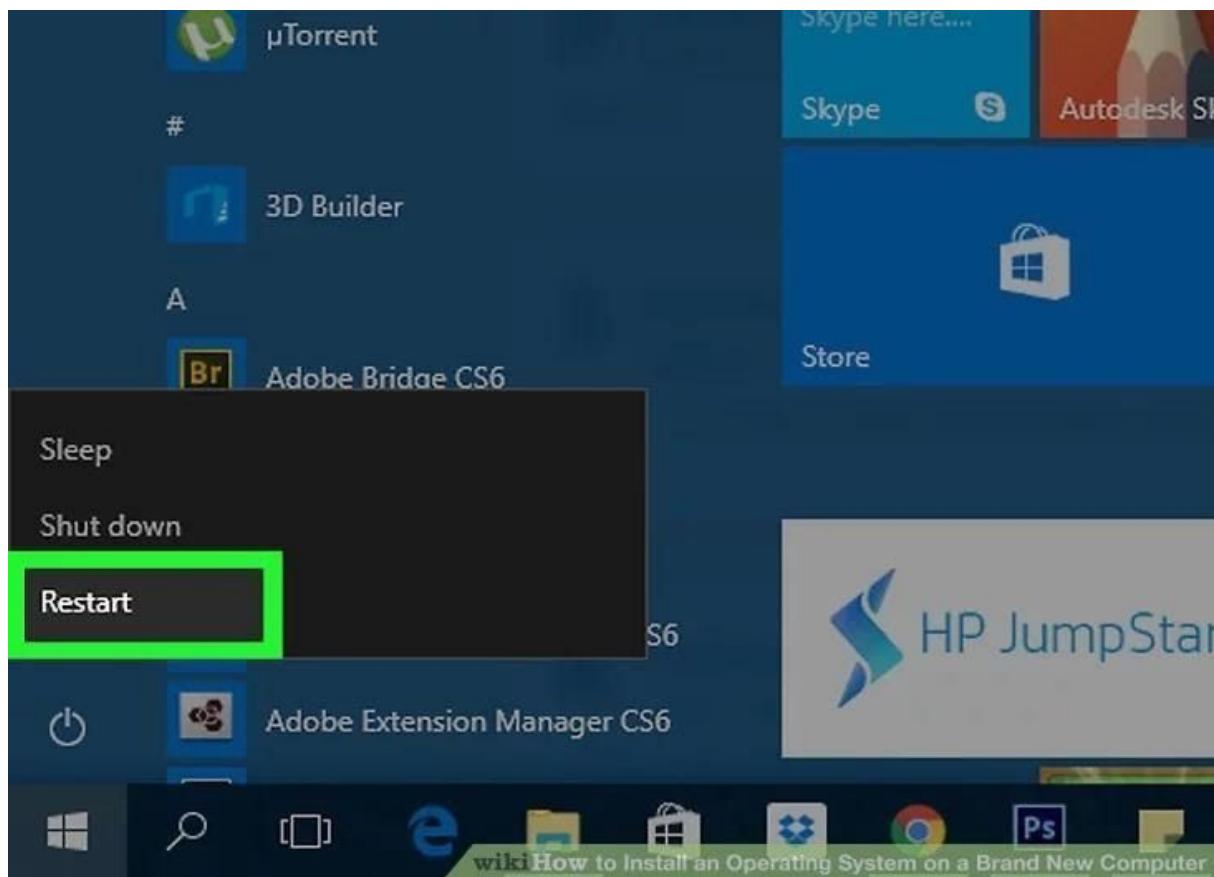
Instalation of Windows Operating System-:



wikiHow to Install an Operating System on a Brand New Computer

Insert the installation disk or flash drive. To install a new operating system on Windows, you must have the operating system's install tool on a DVD or flash drive, and the disk or flash drive must be inserted into your computer. If you don't have a version of the operating system you want to download, you can download one for the following operating systems:

- Windows 10
- Windows 8
- Windows 7

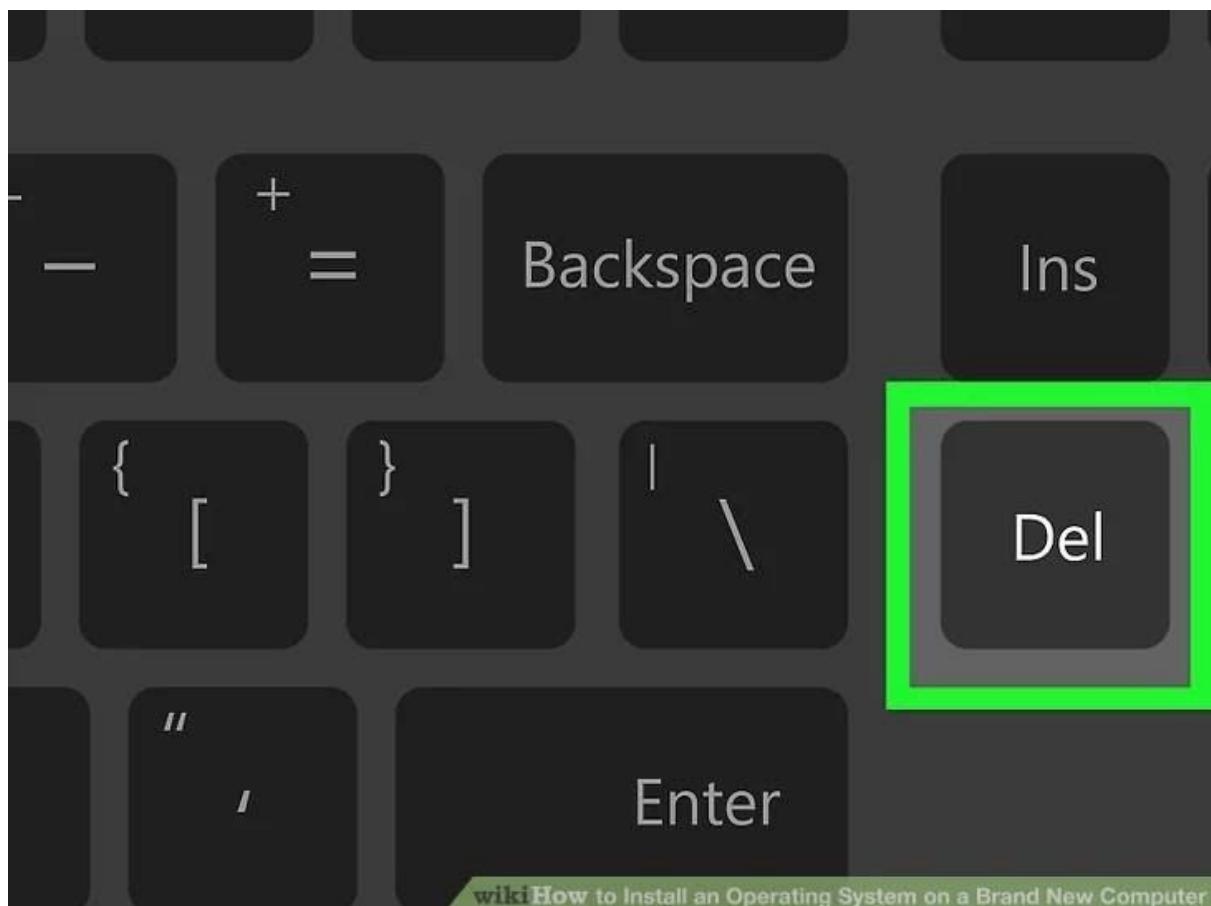


Restart your computer. Press and hold your computer's Power button to turn it off, wait for a few seconds, and then press the Power button again to turn the computer back on.



Wait for the computer's first startup screen to appear. Once the startup screen appears, you'll have a very limited window in which you can press the setup key.

It's best to start pressing the setup key as soon as the computer begins to restart.



Del F2
o
r

Press and hold to enter the BIOS page. The key you're prompted to press might also be different; if so, use that key instead. This will load your computer's BIOS page, from which point you can select your installation disk or drive.

Fn

- You'll typically use the "F" keys to access the BIOS. These are at the top of your keyboard, though you may have to locate and hold the `Fn` key while pressing the proper "F" key.
- You can look at your computer model's manual or online support page to confirm your computer's BIOS key.



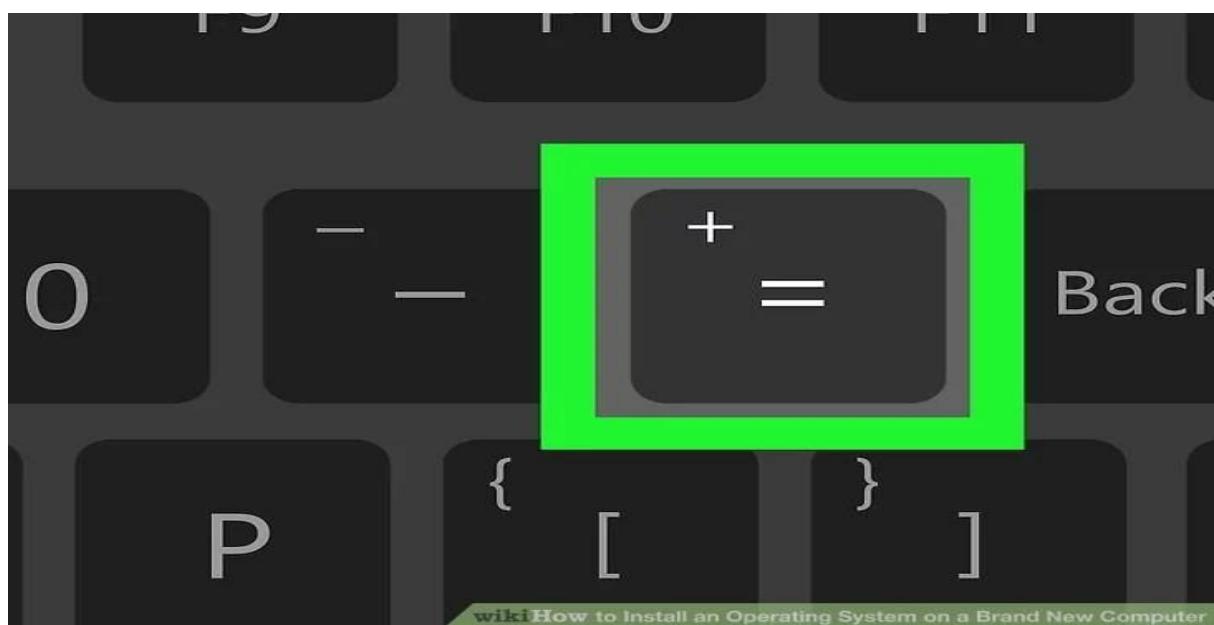
Locate the "Boot Order" section. This section is normally on the main page of the BIOS, though you may need to use the arrow keys to navigate over to the "Boot" or "Advanced" tab.

- The "Boot Order" section varies from BIOS to BIOS. If you can't find your BIOS' "Boot Order" page, consult your motherboard's manual or look up your computer model online to find direct instruction for your specific BIOS page.



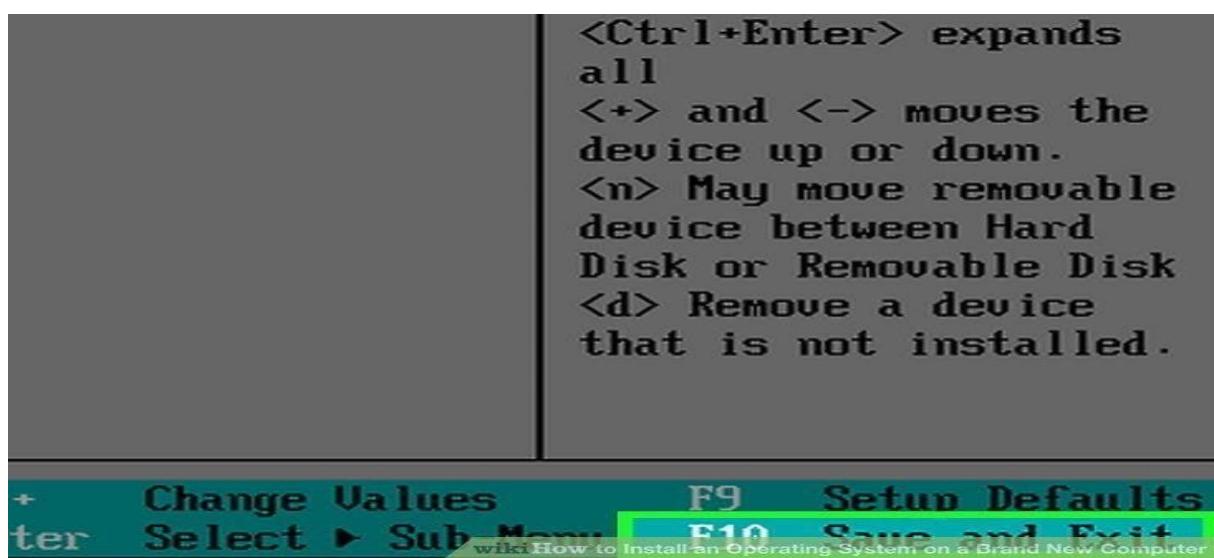
Select the location from which you want to start your computer. In this case, you'll be starting your computer either from the disk drive or from an external drive, such as a flash drive.

- The disk drive option is usually labelled **CD-ROM Drive**, while external drives will show up as **Removable Devices**.



Move your selected location to the top of the list. Typically, you'll press the + key with the boot location you want to use selected until it's at the top of the "Boot Order" list.

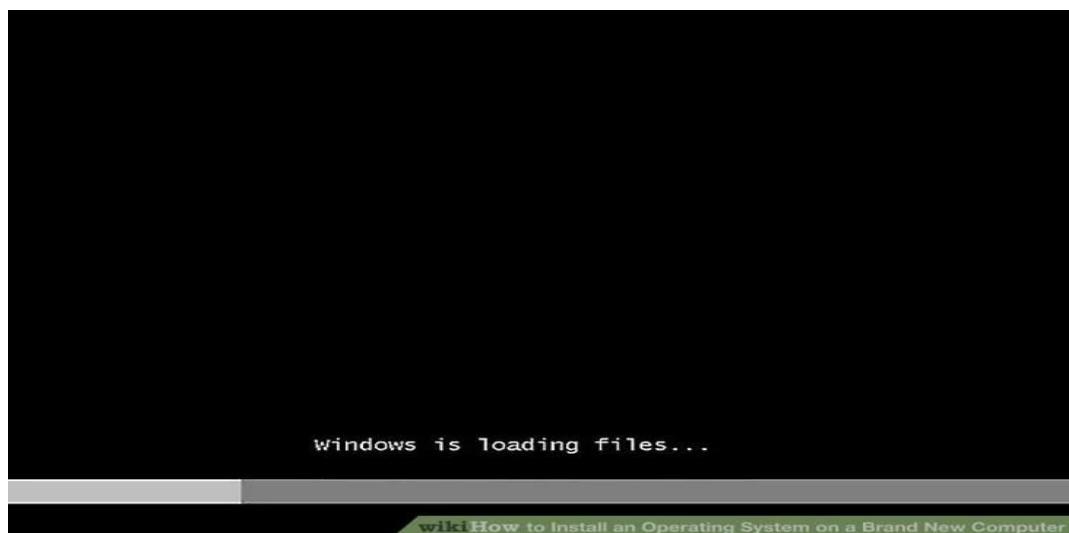
- You can double-check the key that you're supposed to use in the legend that's usually on the right side or the bottom of the BIOS page



Save your settings and exit the BIOS. There should be a "Save and Exit" key listed in the BIOS' key legend; press the key listed there to save your settings and exit the BIOS.

Enter

- You may have to confirm this decision by pressing ↵ with Yes selected.



Restart your computer. Once your computer begins to start up again, it will select your disk or flash drive as the boot location, which means that it will begin installing the operating system



Follow the on-screen prompts. Each operating system will have different steps to take when installing it, so just follow the on-screen directions to complete the installation.

LAB EXPERIMENT NUMBER 7-:

AIM:- Installation of Dual Boot Operating System

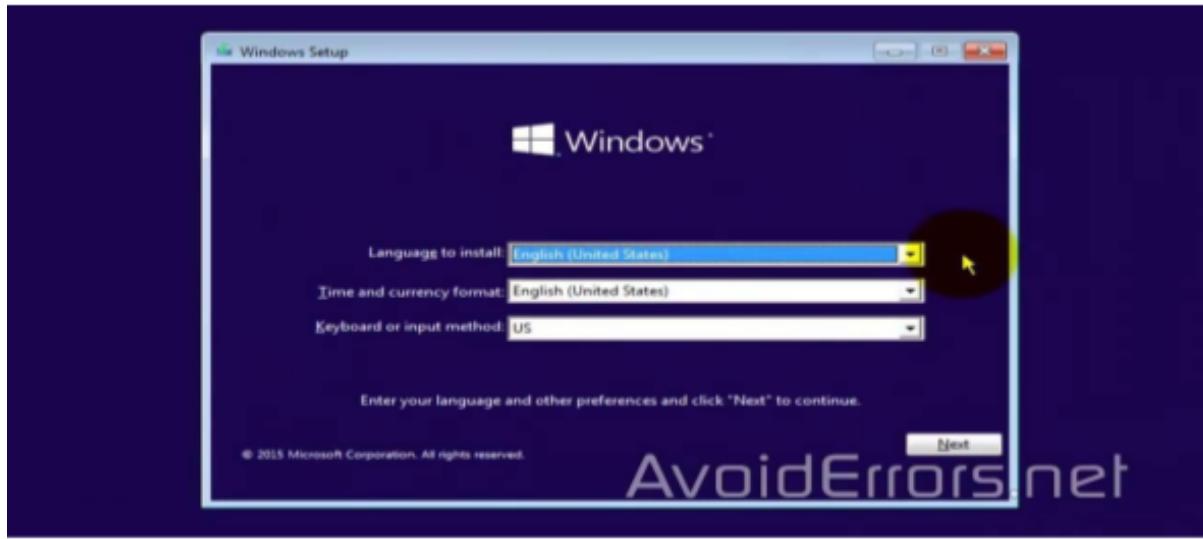
Basic requirements of installing Dual OS in Computer System-:

REQUIREMENT:-

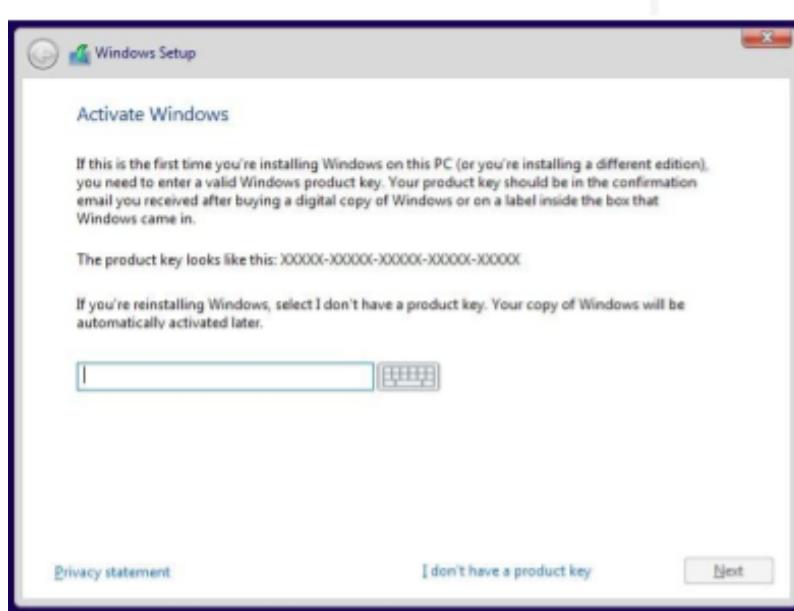
1. Two USB flash drives
2. A Windows 10 license
3. Windows 10 Media Creation Tool
4. Ubuntu 18.04 installation media
5. Etcher software

Install Windows

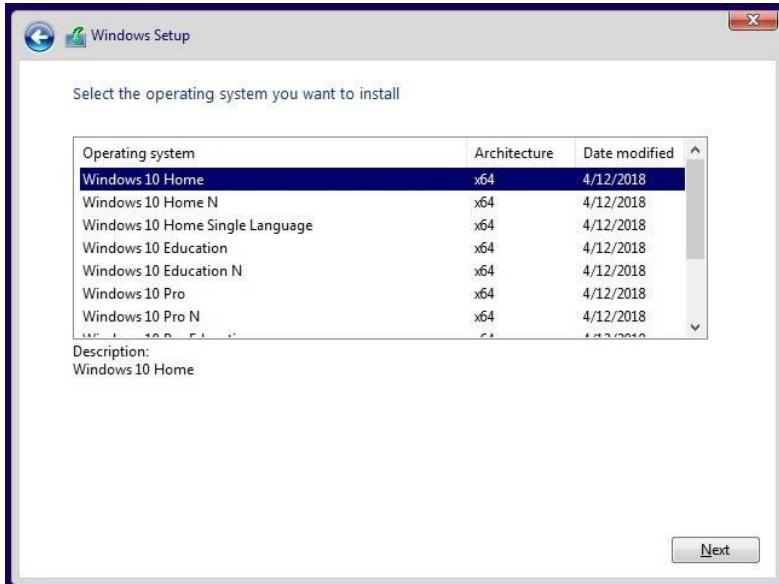
1. Insert the Windows installation media you created into your computer and boot from it. How you do this depends on your computer, but most have a key you can press to initiate the boot menu. On a Dell PC for example, that key is F12. If the flash drive doesn't show up as an option, you may need to restart the computer. Sometimes it will show up only if you've inserted the media before turning on the computer. If you see a message like, "press any key to boot from the installation media," press a key.



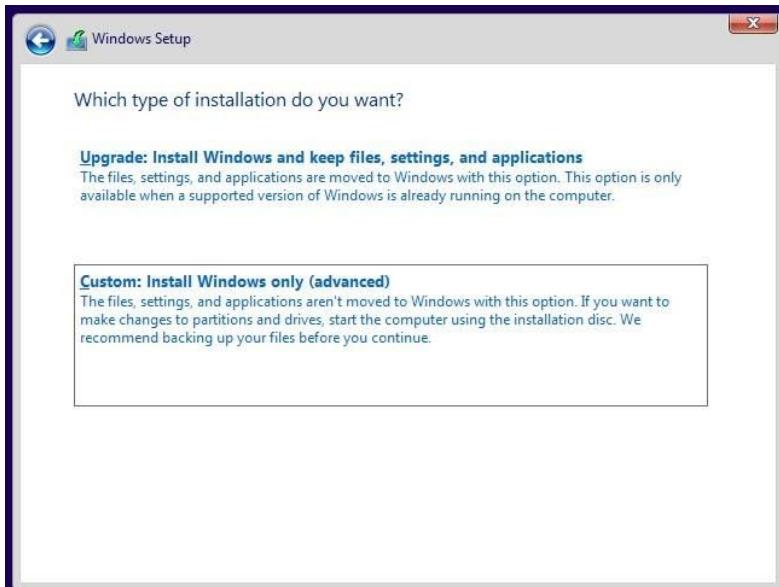
1. Click on *Install now* to start the Windows installer.
2. On the next screen, it will ask for your product key. If you don't have one because Windows 10 came with your PC, select "I don't have a product key." It should automatically activate after the installation once it catches up with updates. If you



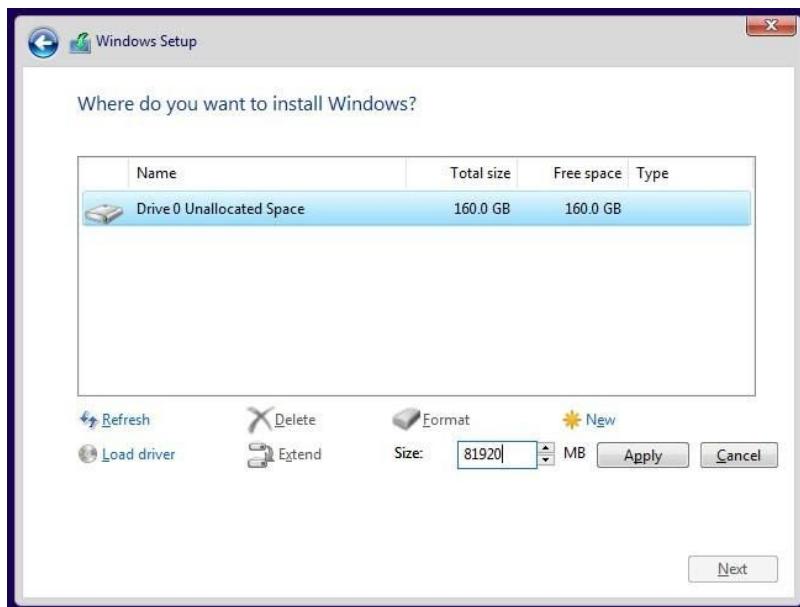
- do have a product key, type that in and click Next.
3. Select which version of Windows you want to install. If you have a retail copy, the label will tell you what version you have. Otherwise, it is typically located with the documentation that came with your computer. In most cases, it's going to be either Windows 10 Home or Windows 10 Pro. Most PCs that come with the Home edition have a label that simply reads "Windows 10," while Pro is clearly marked.



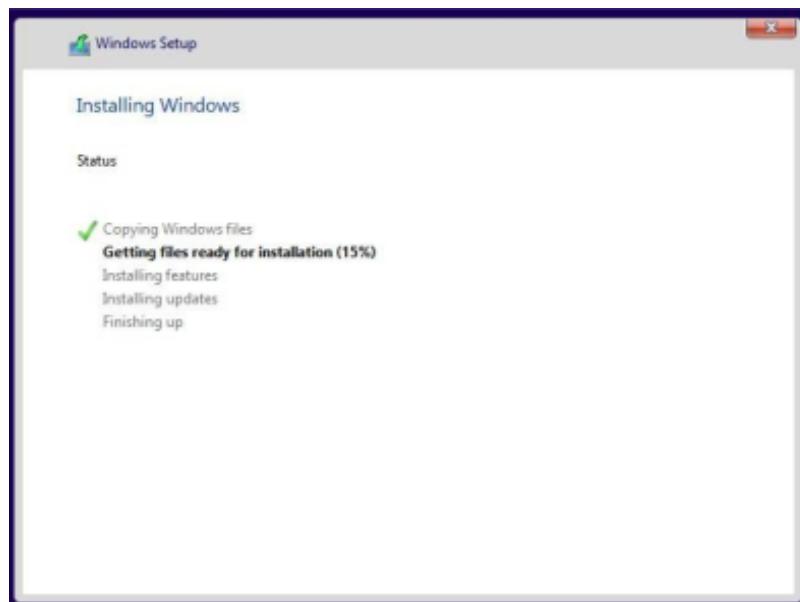
4. Accept the license agreement by checking the box, then click Next.
5. After accepting the agreement, you have two installation options available. Choose the second option, Custom: Install Windows only



6. Your results will probably look different than mine. I have never used this hard disk before, so it's completely unallocated. You will probably see one or more partitions for your current operating system. Highlight each partition and remove it. At this point, your screen will show your entire disk as unallocated. To continue, create a new partition.



7. Confirm the partitioning looks good to you and click Next. Windows will begin installing.

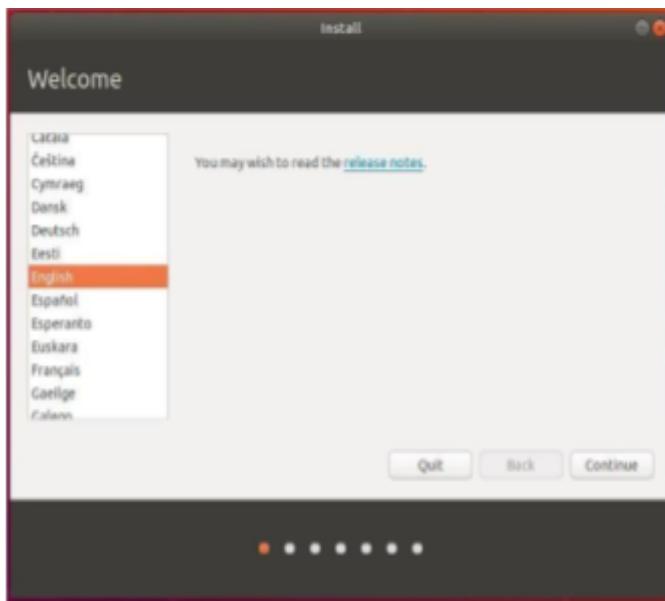


Installing Ubuntu

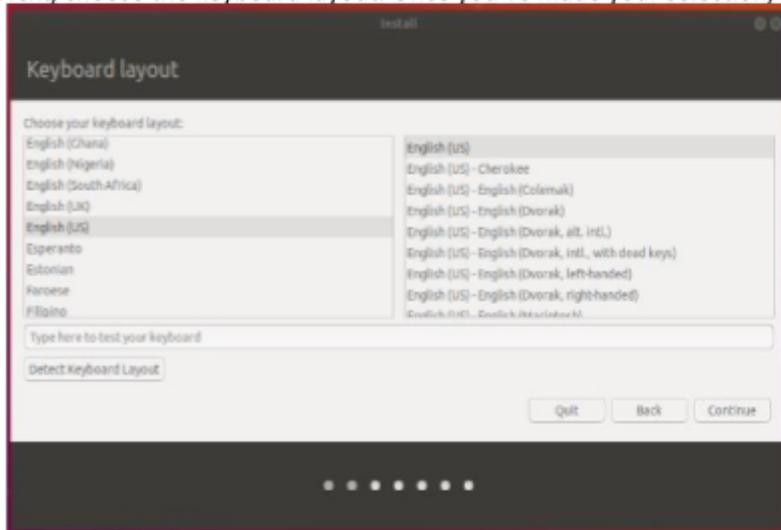
The Ubuntu installation media you created earlier to boot into Ubuntu. Go ahead and insert the media and boot your computer from it. Again, the exact sequence of keys to access the boot menu varies from one computer to another



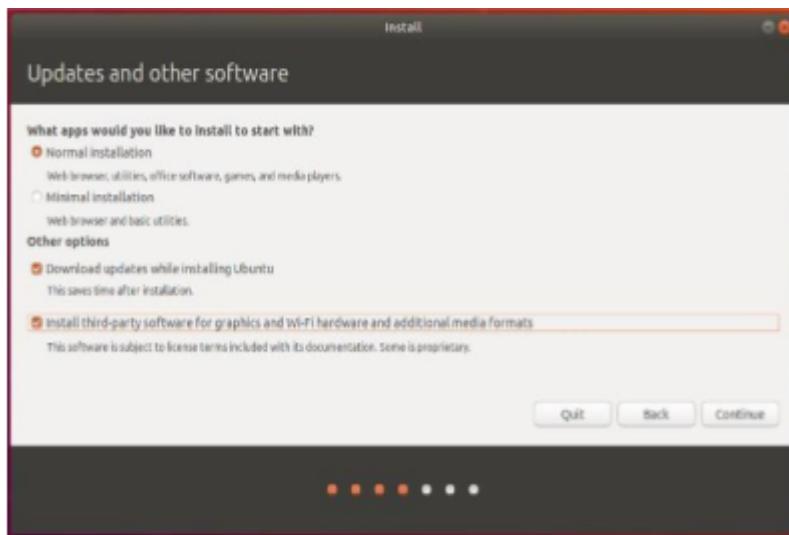
1. Here, you can select between Try Ubuntu or Install Ubuntu. Don't install just yet; instead, click Try Ubuntu. After it finishes loading, you should see the Ubuntu desktop. Once you're ready to go, double-click on the Install Ubuntu 18.04 LTS icon on the desktop to launch the installer.



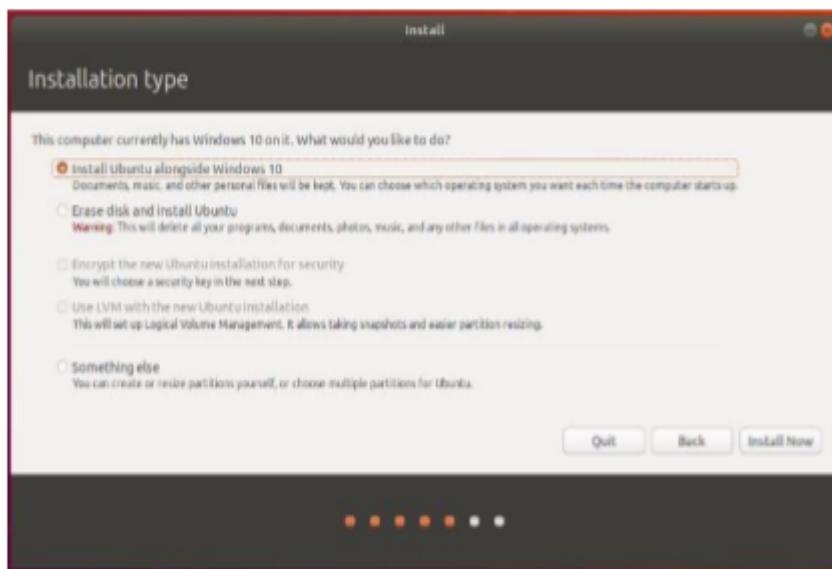
2. Next, choose the keyboard layout. Once you've made your selection, click Continue.



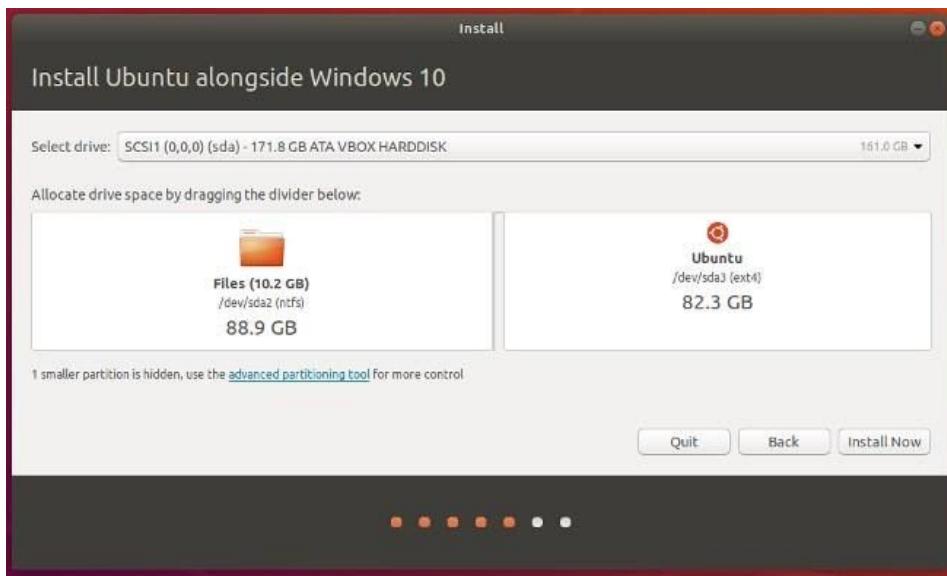
3. You have a few options on the screen below. One, you can choose a Normal or a Minimal installation. For most people, the Normal installation is ideal. Advanced users may want to do a Minimal install instead, which has fewer software applications installed by default. In addition, you can choose to download updates and whether or not to include third-party software and drivers. I recommend checking both of those boxes. When done, click *Continue*.



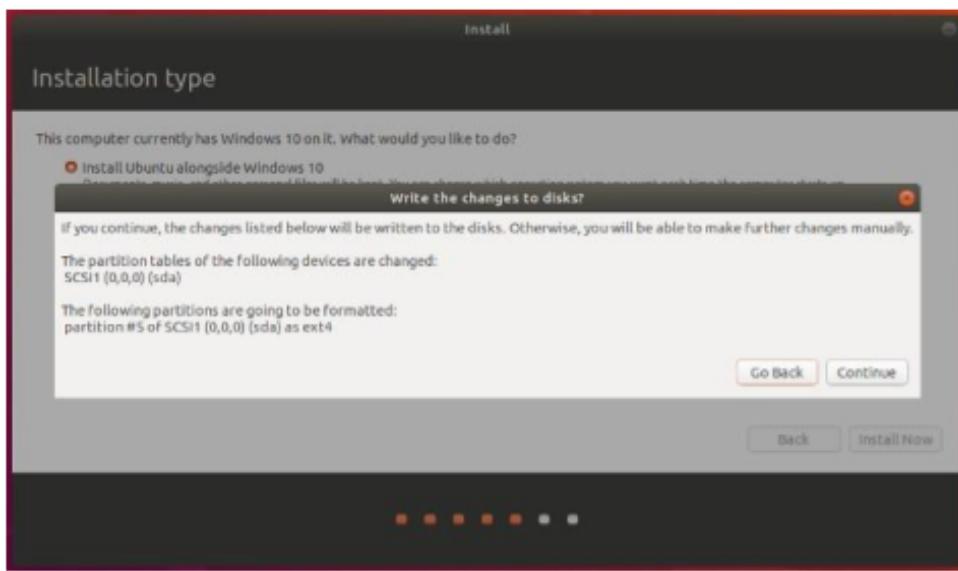
4. The next screen asks whether you want to erase the disk or set up a dual-boot. Since you're dual-booting, choose *Install Ubuntu alongside Windows 10*. Click *Install Now*.



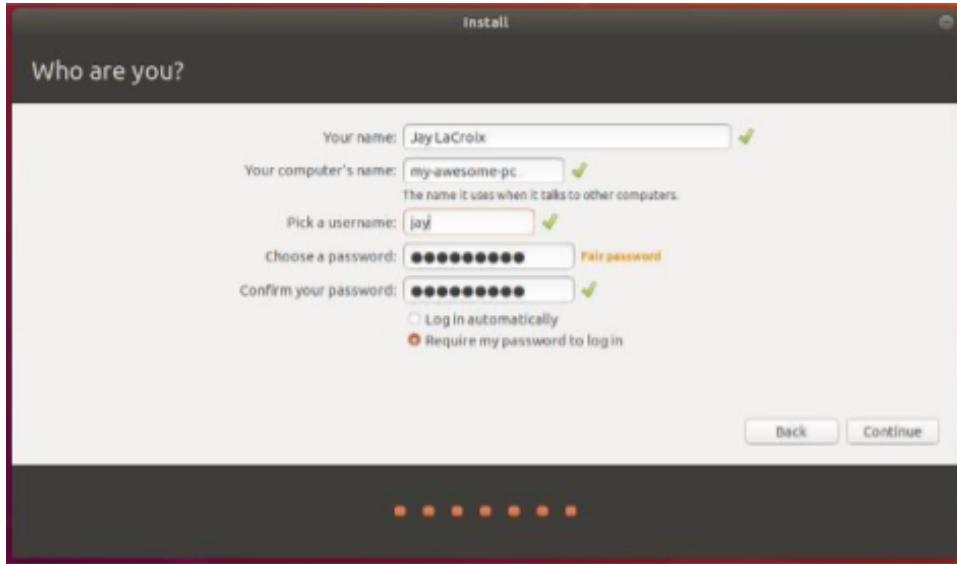
5. The following screen may appear. If you installed Windows from scratch and left unallocated space on the disk, Ubuntu will automatically set itself up in the empty space, so you won't see this screen. If you already had Windows 10 installed and it's taking up the entire drive, this screen will appear and give you an option to select a disk at the top. If you have just one disk, you can choose how much space to steal from Windows and apply to Ubuntu. You can drag the vertical line in the middle left and right with your mouse to take space away from one and give it to the other. Adjust this exactly the way you want it, then click *Install Now*.



6. You should see a confirmation screen indicating what Ubuntu plans on doing. If everything looks right, click Continue.



7. Next, fill in the user account information: your name, computer name, username, and password. Click Continue.



8. Try booting into both Ubuntu and Windows to test them out and make sure everything works as expected. If it does, you now have both Windows and Ubuntu installed on your computer.

LAB EXPERIMENT NUMBER 8-:

AIM:- Virtualization

INTRODUCTION TO VIRTUALIZATION:

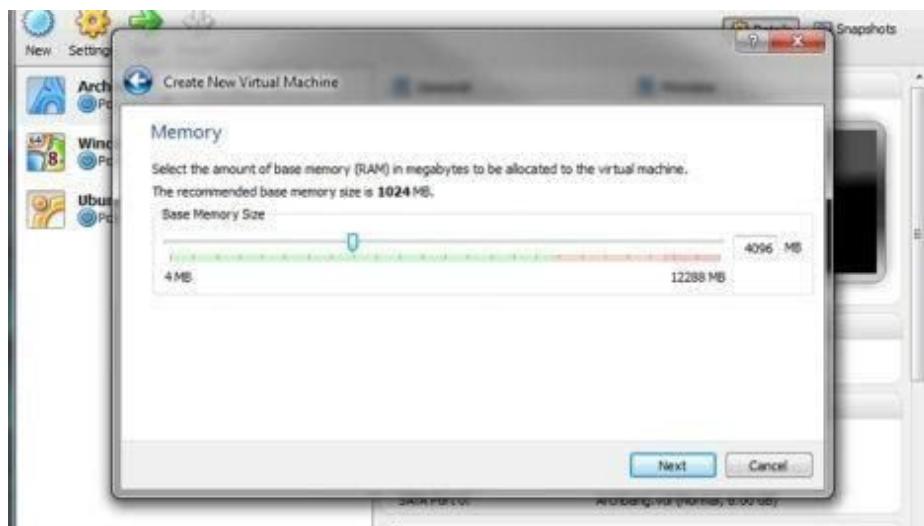
Virtualization is the creation of a simulated version of something else. Computers can create virtual networks, storage, disk drives, operating systems, and other forms of hardware. Physical machines are referred to as "Host" machines while simulated machines are referred to as virtual machines. While also providing physical services, virtual hardware gives the user extended services by providing more functionality than was first installed on their device. Virtual machines usually have more configuration properties than actual hardware machines, which is a reason why many have developed more virtual devices to extend the range of their current computer. In computing, virtualization is a broad term that refers to the abstraction of computer resources. Virtualization hides the physical characteristics of computing resources from their users, be they applications, or end users. This includes making a single physical resource (such as a server, an operating system, an application, or storage device) appear to function as multiple virtual resources; it can also include making multiple physical resources (such as storage devices or servers) appear as a single virtual resource.

- Need of virtualization:
- **Virtualize if you rely on technology** – Companies that rely on technology often use several servers and technology from hardware like laptops and networks.

Basically, if your company needs technology to operate, virtualization can help you reduce the overall operation costs.

- **Virtualize if your company exceeds 20 employees** – Many tech experts agree that there is no need for virtualization if you have a business with less than 10-20 employees. With that number, traditional servers are usually more than enough to cater to your needs.
- **Virtualize if you can cover the costs** – While virtualization is meant to reduce costs, like any modern technology it requires an initial investment. The cost of virtualization can be high for smaller businesses to implement; however you do have an option of working with an IT partner like us. We can help you realize cost-savings or even a Return On Investment (ROI). For companies with servers in place, virtualization can be as simple as installing a free program.
- **Virtualize if you want space** – Certain business operators throw away a big chunk of their money on an extra room to house large server racks, wires or even IT personnel to maintain them. The issue here is the cost of maintenance, as well as limited office space. In this situation, virtualization can help make better use of space while reducing hardware costs. Steps to install OS in VM(Virtual memory):

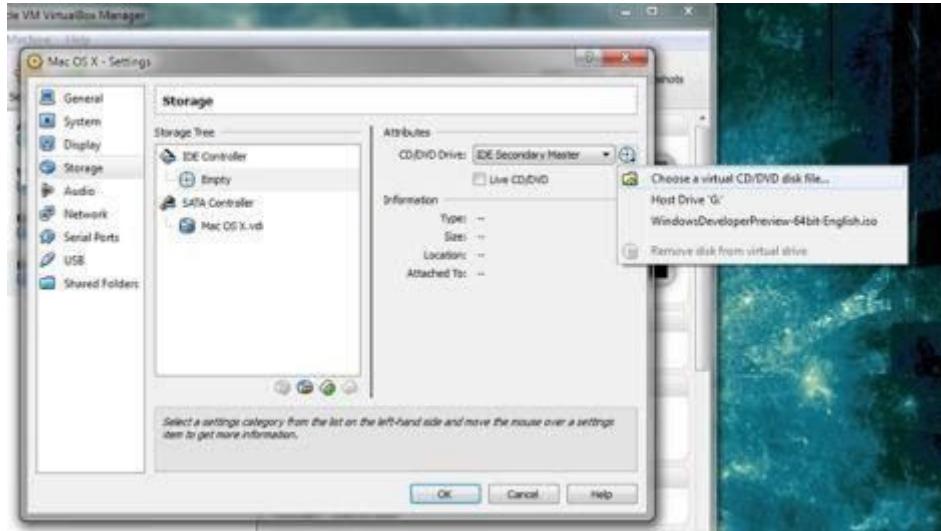
- Start-up VirtualBox and click the New button. Give your new virtual machine a name (I just called it “Mac OS X”) and set the operating system to “Mac OS X Server (64-bit)
- Click next and choose how much RAM to give your virtual machine. This depends on how much RAM is in your system—you can get away with 2GB, but if you have more, give it more. 4GB of RAM should be a good amount, though I gave mine 6GB since I had RAM to spare



- Click Next and choose how much RAM to give your virtual machine. This depends on how much RAM is in your system—you can get away with 2GB, but if you have more, give it more. 4GB of RAM should be a good amount, though I gave mine 6GB since I had RAM to spare.

From here, right-click on your OS X machine in the left sidebar and click Settings. Go to the “System” section and uncheck “Enable EFI”.

- Click on the Storage section of the settings and click on the CD icon that says “Empty” under Storage Type. Then, click the CD icon next to the “CD/DVD Drive” dropdown, and select “Choose a Virtual CD/DVD Disk File”. Choose the Hack Boot 1 ISO and click OK.



- Click on the CD icon at the bottom of the VirtualBox window and select “Choose a Virtual CD/DVD Disk File”. This time, choose your hacked Mountain Lion ISO.

- Select your OS X machine in Virtual Box’s left sidebar and click the Start button in the toolbar. It’ll bring you to the Hack Boot boot screen, with one icon in the middle labeled Hack Boot.

Click on the CD icon at the bottom of the VirtualBox window and select “Choose a Virtual CD/DVD Disk File”. This time, choose your hacked Mountain Lion ISO.

- Go back to the Hack Boot boot screen and press F5. It should reload the boot menu, this time showing you an “OS X Install DVD”. Select this option and press Enter. After a moment, it’ll take you to the OS X Installation screen.
- After you choose your language and agree to the terms and conditions, you’ll see that OS X doesn’t detect any valid hard drives. To fix this problem, head up to the menu bar and go to Utilities > Disk Utility.
- Click on your VirtualBox hard drive in the left sidebar, then click the Erase tab in Disk Utility’s main pane. Give your drive a name (like “Macintosh HD”) and click “Erase”



➤ Once Disk Utility has finished formatting your drive, you should see it show up in the left sidebar. When you do, exit Disk Utility and continue with the OS X installation as normal.

- Open up VirtualBox and right-click on your OS X virtual machine in the left sidebar. Head back to its Settings and go to the Storage section. Once again, click on the disc icon on the right side of the window, this time choosing the Hack Boot 2 ISO.
- Click the Start button to reboot your virtual machine. You should see the Hack Boot menu again, this time with an option to boot into your new virtual machine. Select that option and press Enter.
- After a minute, you should see the Mountain Lion desktop with the familiar galaxy wallpaper. Open up Safari, head to Tonymacx86.com, and download MultiBeast as described in the “What You’ll Need” section.
- Open up System Preferences > Security. Click the lock in the bottom left-hand corner, enter your password, and set the “Allow Applications” preference to “Anywhere”. This will let you run apps from untrusted developers, which includes Multibeast.
- Launch Multiboot. When you get to the Installation Type section, Choose the options pictured below:
- Open up the Finder and select Go > Go to Folder from the menu bar. Type in /System/Library/Extensions and press Enter.
- In this folder, find the AppleGraphicsControl.kext file and delete it. This will allow your virtual machine to boot up without the Hack Boot ISO



- Click continue and finish the Multibeast installation. It may take a few minutes. Your audio won't work just yet, but we have a few other things we need to do before we restart.
- Click on the disc icon at the bottom of Virtual Box's window and uncheck the Hack Boot 2 ISO, since you won't need it anymore

/Extra/ . Double-click on org.
the

- Head back to Go > Go to Folder and go to

Chameleon.boot.plist

file and add the following to the bottom of the file, above the line: Graphics Mode

1920x1080

1920x1080x32Save the file and close Text Edit. This allows OS X to start up with a higher resolution. Note that you can set whatever resolution you want; just replace with the resolution you want.

- If the resolution you picked is bigger than 1280x1024 and/or is widescreen, you'll need to do one last thing to get it working properly. Shut down your virtual machine and open Windows' Command Prompt. Type the following commands, hitting enter after each one:



➤ You can now continue to install your favorite apps, set up your keyboard and mouse, and do anything else you like. You've got a fully working virtual Mac on your Windows desktop.

MyVirtualMachine

1920x1080x32

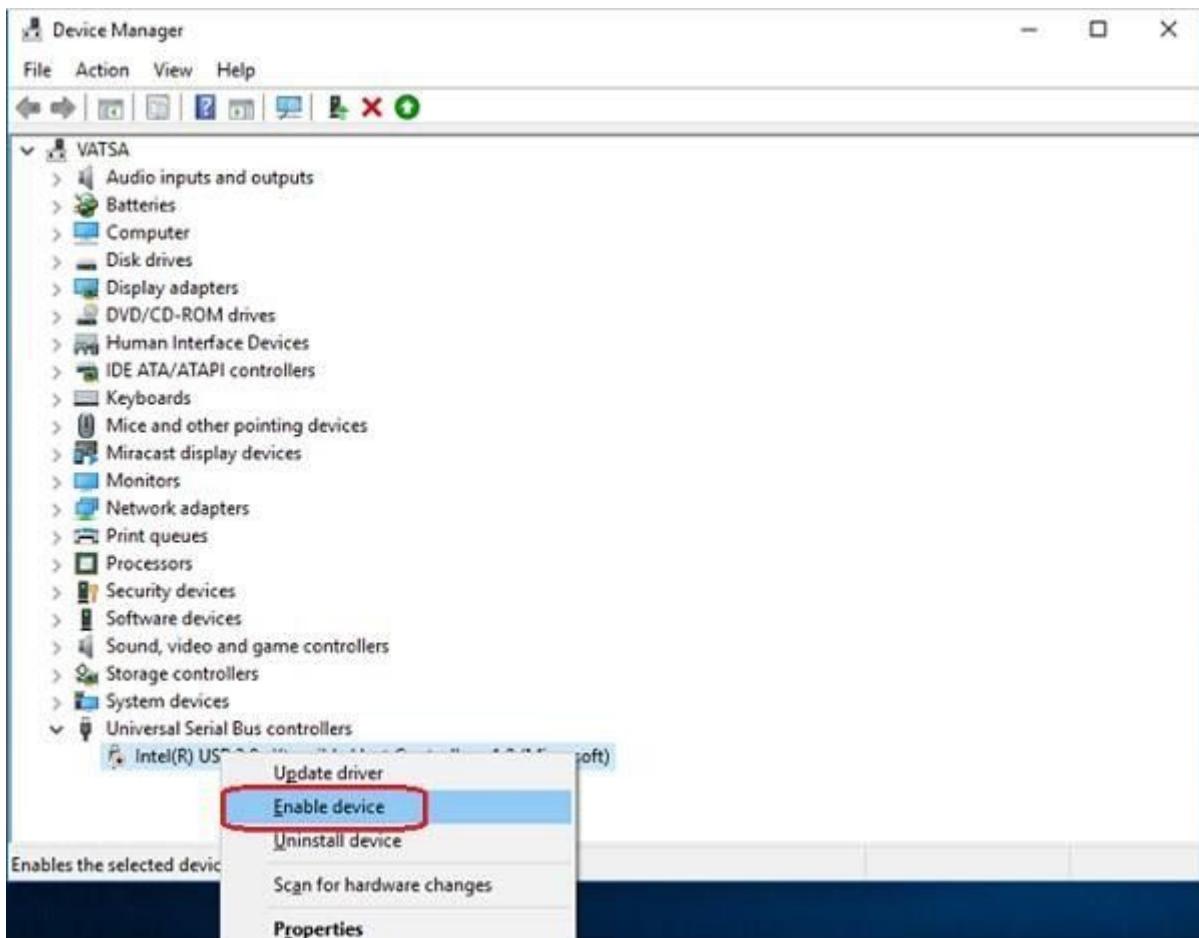
- Replace the first line with the path to your VirtualBox program folder. In the second line, replace `Mac OS X` with the name of your machine (in our case, “Mac OS X”), and `1920x1080x32` with the same resolution you added to your Chameleon plist.

LAB EXPERIMENT NUMBER 9-:

AIM:- Enabling/Disabling USB port and various ways to increase the system performance

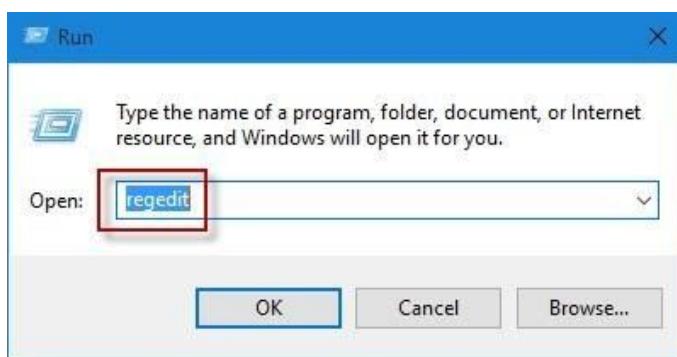
Enabling USB Write Protection Using the Registry

- Use Windows key + R keyboard shortcut to open the RUN command.
- Type `regedit` and click OK.
- Go to the following path
`HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control` • Right-click the Control (folder) key, selects New, and click Key.
- Name the new key `StorageDevicePolicies` and press Enter.
- Select this new key, right-click on the right side, select New and click DWORD (32-bit) value.
- Name the new word as `WriteProtect` and press Enter.
- Double click the newly created DWORD and change its value from 0 to 1.
- Click OK and close the registry.

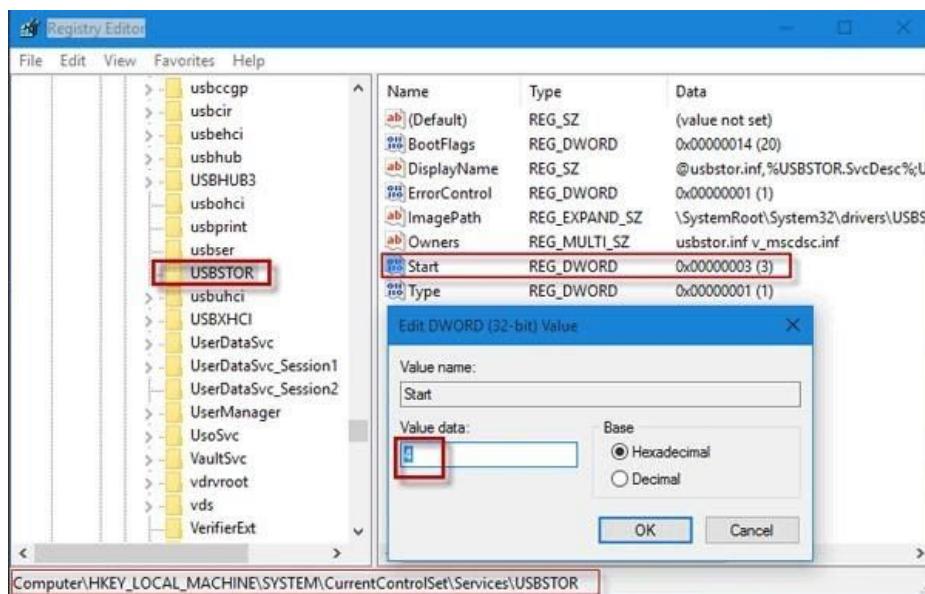


Disabling USB Write Protection Using the Registry

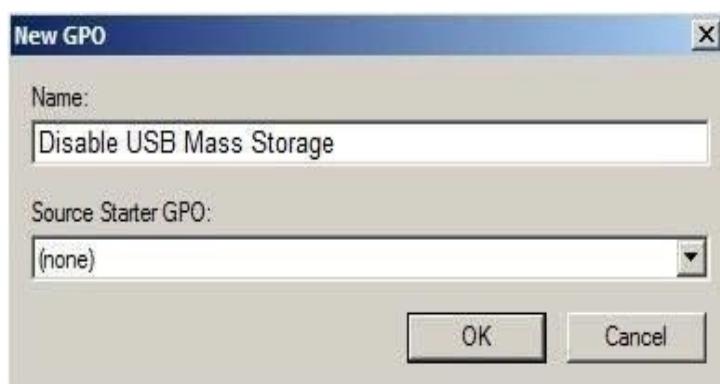
- Open Registry Editor in Windows 10 by running **regedit** in the Run dialog box.



- Go to **Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\USBSTOR**, and then locate the DWORD value named "**Start**" on the right-side pane. The default value data of Start is "**3**". Double-click on **Start**, and set its value data to "**4**".



- Restart Windows 10 for the changes to take effect. This will prevent any USB storage device from connecting to the computer, and thus disable the use of USB storage devices on the computer.
- Open up **Server Manager**.
In the left pane, expand **Features**, then expand **Group Policy Management**, and continue to drill down until you get to your target domain.
Under that domain, right click **Group Policy Objects**.
Name your new Group Policy Object (GPO) "Disable USB Mass Storage", leave **Source Starter GPO as (none)**.



Step 4 - Creating a new GPO

- Right click on the newly created "Disable USB Mass Storage" GPO, and select **Edit GPO**

Navigate to **Computer Configuration > Preferences > Windows Settings > Registry**
 Right click on **Registry**, and select **New > Registry Item**.



➤ Click on new than on register item to continue

- Use the following settings for this entry:

Action: Update

Hive: HKEY_LOCAL_MACHINE

Key Path: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services

Value name: start

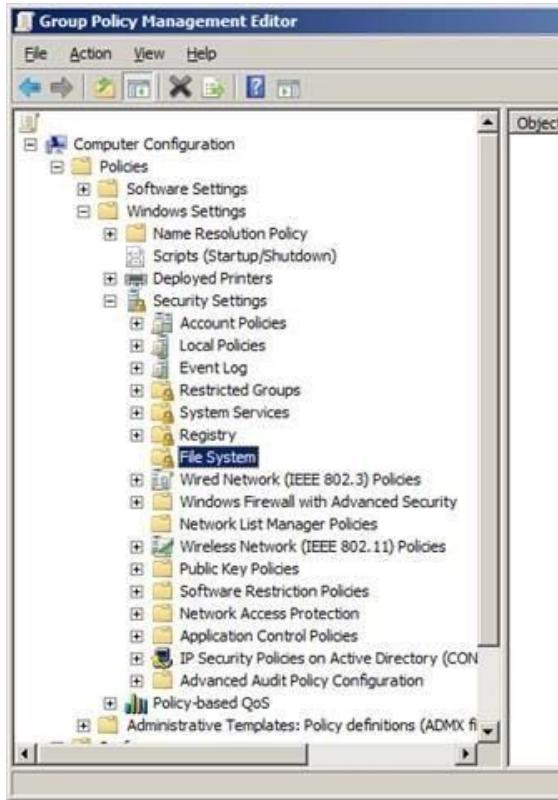
Value type: REG_DWORD

Value data: 4

Base: Decimal 9)

Click **OK**.

10) Navigate to **Computer Configuration > Policies > Windows Settings > Security Settings > File System**.



- Right click in the left pane and select **Add File...**

Expand to **C:\Windows\Inf** and select **usbstor** (it is an .inf file, but in this view will it not show the .inf).

Remove all users and groups except **SYSTEM**. Click adds, type in **everyone** and click **OK**.

For both **SYSTEM** and **everyone**, click on the **Full Control** checkbox under **Deny**.

Click **OK**.

A window will come up telling you that nobody will be able to access the file. Click **Yes**.

The **Add Object** window will appear. Select **Configure this file or folder then - Propagate inheritable permissions to all subfolders and files**, click **OK**.

Repeat steps 11-16, except replace **usbstor.inf** with **usbstor.pnf** on step 12.

Close out the **Group Policy Management Editor** window.

) Head back to the **Server Manager** window, right click on the domain you want to apply this GPO to, and select **Link an Existing GPO...**

Select your new **Disable USB Mass Storage** GPO, then click **OK**.

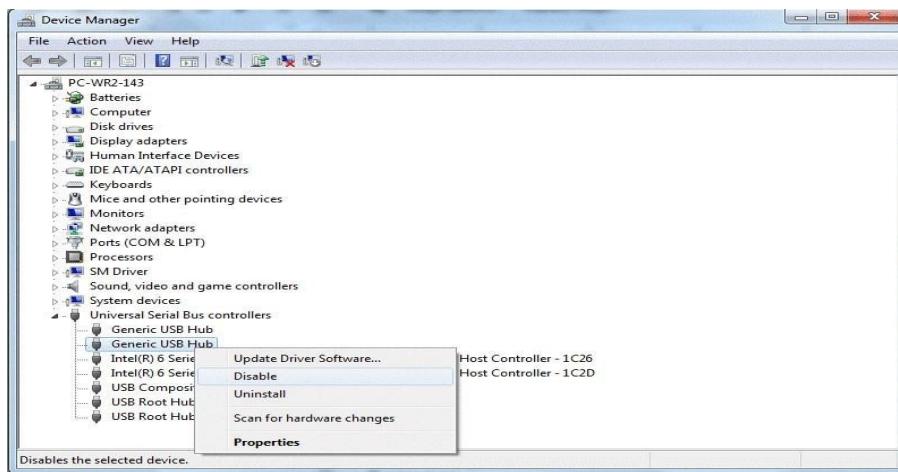
In the right pane, select the **Linked Group Policy Objects** tab, right click on **Disable USB Mass Storage**, and select **Enforced**.

Disable USB from device manager:

- Go to Start Menu, type “devmgmt.msc” in the Search box to open Device Manager.



- Click on the Universal Serial Bus Controllers.
- You will get the list of USB ports.
- Right click on the USB port and disable/enable the port.



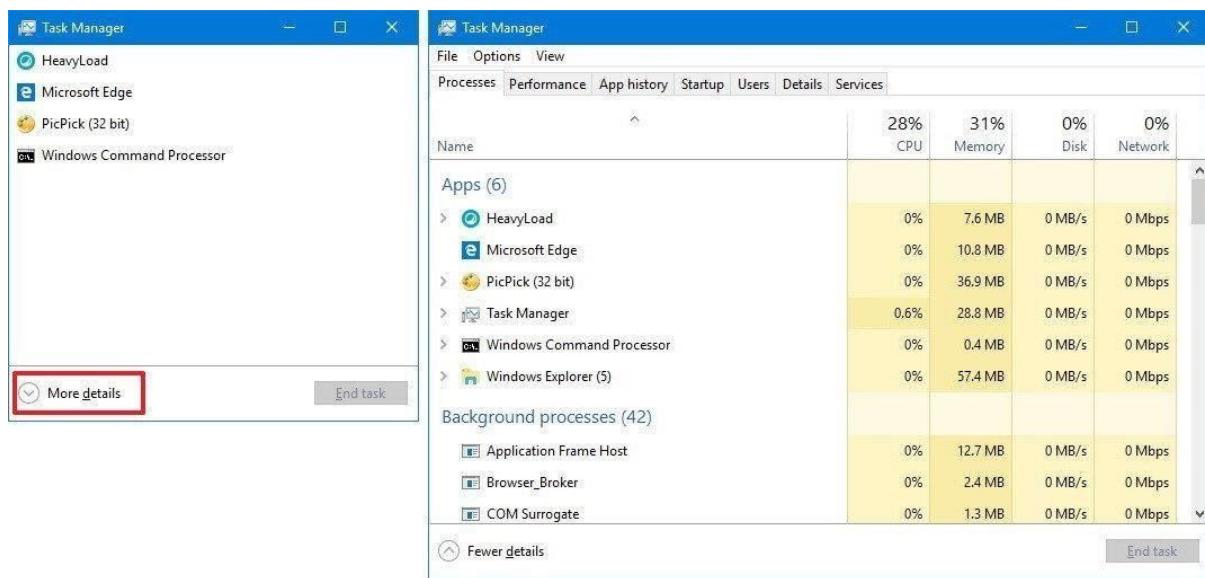
Click the More details button to access Task Manager in advanced mode.

Delete temporary file in computer system

- Close any open applications.
- Open My Computer.
- Right-click the system drives and then selects Properties.
- On the General tab, click Disk Cleanup.
- Scroll down in the Files to Delete list, and then select Temporary Files.
- Click OK, and then click yes to confirm deletion.
- Close the system drive Properties dialog box.

End the various running task which is not required

- Right-click the **Taskbar** and click on **Task Manager**.
- Open **Start**, do a search for **Task Manager** and click the result.
- Use the **Ctrl + Shift + Esc** keyboard shortcut.
- Use the **Ctrl + Alt + Del** keyboard shortcut and click on **Task Manager**.
- Use the **Windows key + X** keyboard shortcut to open the power-user menu and click on **Task Manager**.
- If this is your first time opening Task Manager, the tool will probably open in compact mode, which only lists running applications. Click the **More details** button to access Task Manager in advanced mode.



Click the More details button to access Task Manager in advanced mode.

Identifying processes with high-resource usage

- If an application is not responding, a website is taking a long time to load, or your system fan starts getting loud, you can quickly use Task Manager to troubleshoot the problem. In the Processes tab, the first thing you want to look at is the percentage of the total resource use for the processor, memory, hard drive and network. You can click the column names to sort the list and bring to the top the ones using the most resources. If you see any of these resources running high (90 percent or higher), you might have found the problem.
- You can always expand a group to see all the processes by clicking the **chevron-right icon** or by right-clicking the item and selecting **Expand**. Usually, you'll see groups for Windows processes when opening multiple tabs on your web browser or multiple File Explorer windows, for example.

The screenshot shows the Windows Task Manager window with the 'Processes' tab selected. The main area displays a list of processes with their resource usage metrics. A process named 'HeavyLoad' is highlighted with a red border, indicating it is the focus. The columns represent CPU, Memory, Disk, and Network usage. The 'CPU' column is sorted, with 'HeavyLoad' at 99% and other processes like 'WMI Provider Host (8)' and 'System' following. The 'Memory' column shows values ranging from 0.1 MB to 33.1 MB. The 'Disk' and 'Network' columns show values mostly at 0% or 0 Mbps.

Name	99% CPU	26% Memory	1% Disk	0% Network
> HeavyLoad	81.2%	10.8 MB	0.1 MB/s	0 Mbps
> WMI Provider Host (8)	14.1%	12.5 MB	0 MB/s	0 Mbps
System	2.0%	0.1 MB	0.1 MB/s	0 Mbps
Desktop Window Manager	0.9%	63.7 MB	0 MB/s	0 Mbps
> Task Manager	0.8%	28.0 MB	0 MB/s	0 Mbps
> PicPick (32 bit)	0.4%	37.3 MB	0 MB/s	0 Mbps
> Windows Explorer (5)	0.3%	33.1 MB	0 MB/s	0 Mbps
> Service Host: Local Service (No Network) (5)	0.2%	11.0 MB	0 MB/s	0 Mbps
System interrupts	0.1%	0 MB	0 MB/s	0 Mbps
WMI Provider Host	0%	8.4 MB	0 MB/s	0 Mbps
> VMware Tools Core Service	0%	3.5 MB	0 MB/s	0 Mbps
> Service Host: Local System (18)	0%	27.9 MB	0.2 MB/s	0 Mbps
> Service Host: Remote Procedure Call (2)	0%	6.5 MB	0 MB/s	0 Mbps
> Local Security Authority Process (3)	0%	6.5 MB	0 MB/s	0 Mbps
Windows Driver Foundation - User-mode Driver Framework	0%	2.2 MB	0 MB/s	0 Mbps

If you see any of these resources running high (90 percent or higher), you might have found the problem.

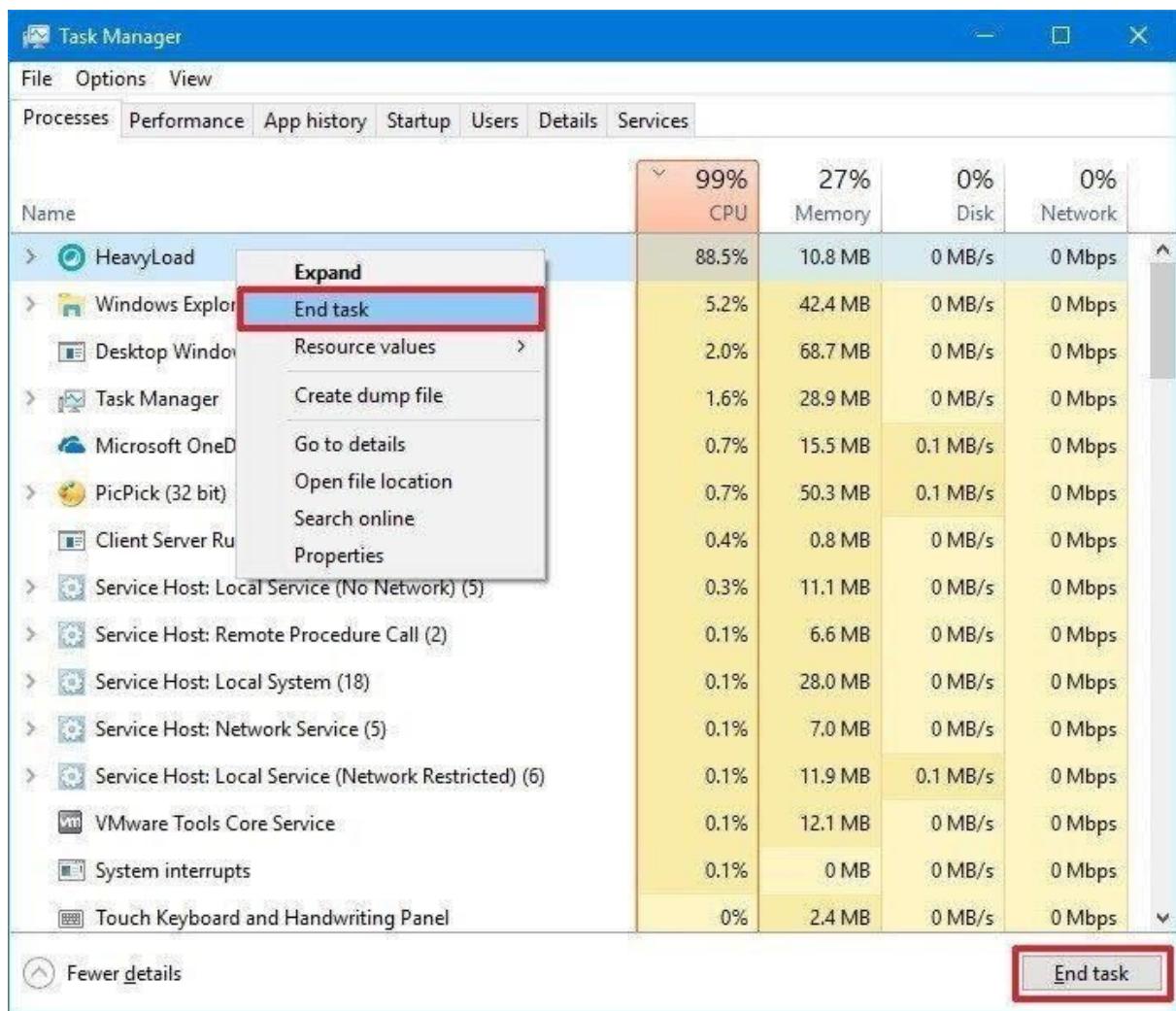
- Task Manager also uses colors to highlight processes that use the most resources. You'll notice that as a process starts to consume more resources, the color begins to

change from a light- to a dark-shade of orange, making it easier to tell which one is causing the problem.

- Typically, when you're not actively using applications and your computer isn't working on anything specific, such as maintenance, your total CPU usage should be less than **30 percent**. Applications that are running, even if you're not using them, and processes use part of your computer's memory, and that usage will increase as you use or launch more applications. Memory usually won't be an issue unless you run out of it, in which case your computer will start using virtual memory, and that can cause your PC to slow down. Generally speaking, depending on your system configuration, your total memory usage should be below **60 percent**. If you're not copying files or rendering videos, disk usage should be below **5 percent**.
- Network connectivity is almost never the reason your system is slow, but there could be a problem in the network causing web content to take a long time to load. If you're having problems downloading files, and you see "Network" stuck at **0 percent**, you may have an idea of what's going on.

Stopping processes with high-resource usage

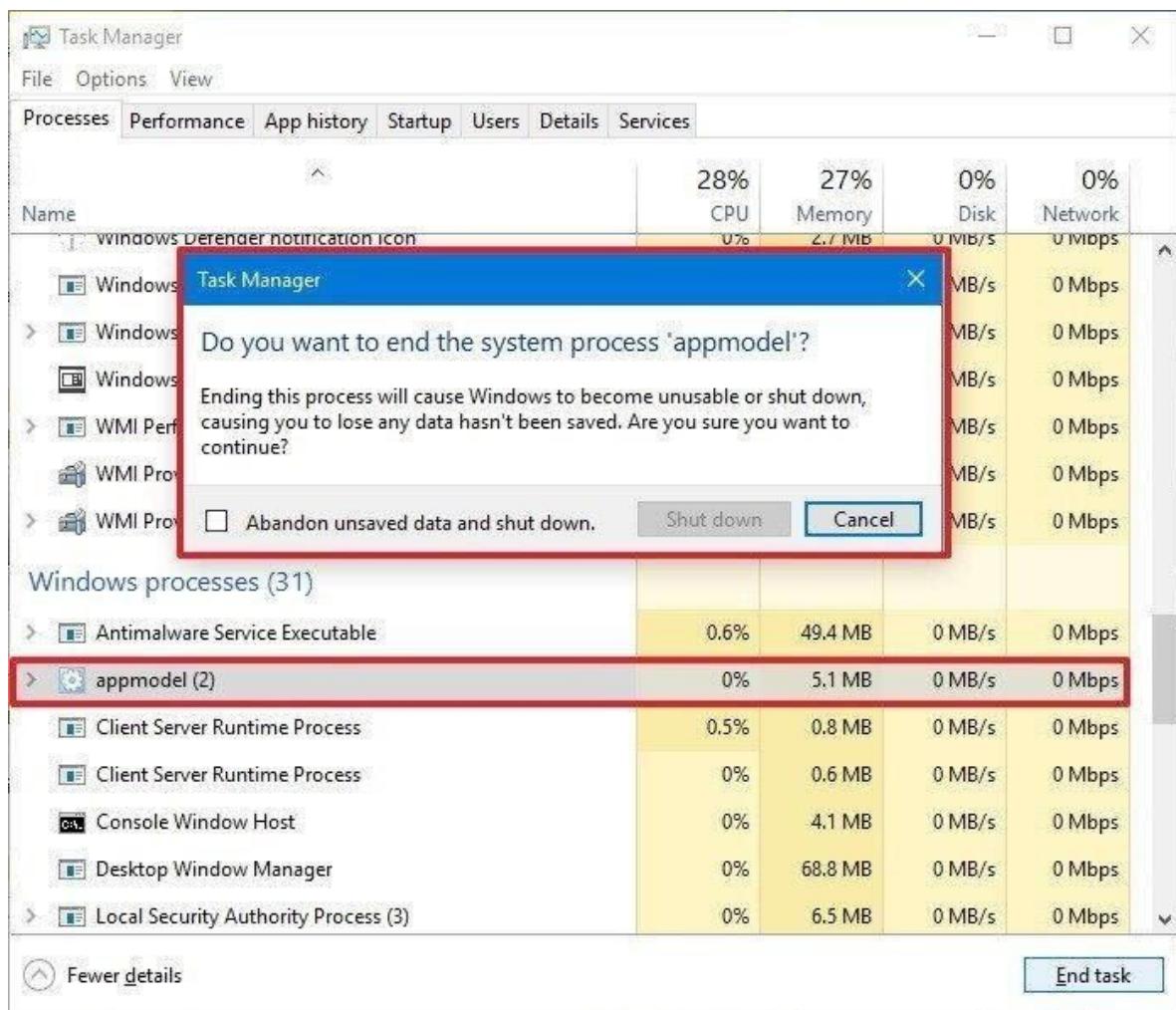
After you identify the problem, right-click the process, and select **End task** to terminate it. Alternatively, you can simply select the item and click the **End task** button in the bottomright corner.



click the End task button in the bottom-right corner.

While stopping a process using the Task Manager will most likely stabilize your computer, ending a process can completely close an application or crash your computer and you could lose any unsaved data. It's always recommended to save your data before killing a process, if possible.

If you're not sure about how the process you're trying to terminate affects your PC, you can right-click it, and select the **Search online** option. This action opens your web browser and displays a search result with more information about the process. Windows 10 is also smart enough to let you know if you're about to end an essential system process that can crash your computer.



- Windows 10 is also smart enough to let you know if you're about to end an essential system process that can crash your computer.

- Although there are many other ways to troubleshoot system performance, Task Manager Gives you an easy way to find out at a glance why your computer is slow or if an app is not responding, and then quickly act on it. You can end an application that isn't responding using Task Manager in compact mode, but the advanced view gives you more information about processes that are acting up in Windows 10.

LAB EXPERIMENT NUMBER 10-:

AIM:- Identifying the source of a problem Define the Problem

Sometimes referred to as an issue, a problem is any situation that occurs that is unexpected or prevents something from occurring.

When dealing with computer problems, you must first understand the source of the problem and then find a solution to fix the problem. Locating the source of a problem is known as troubleshooting.

When dealing with software problems where bugs exist with a program, you need to download a patch that resolves the issue. Other software problems may be solved by changing a setting with the program or computer or closing other programs that may be conflicting with the program.

When hardware problems or physical defects occur, the only solution may be to replace the malfunctioning device.

Power On Self-Test (POST)

When power is turned on, POST (Power-On Self-Test) is the diagnostic testing sequence that a computer's basic input/output system (or "starting program") runs to determine if the computer keyboard, random access memory, disk drives, and other hardware are working correctly.

If the necessary hardware is detected and found to be operating properly, the computer begins to boot. If the hardware is not detected or is found not to be operating properly, the BIOS issues an error message which may be text on the display screen and/or a series of coded beeps, depending on the nature of the problem. Since POST runs before the computer's video card is activated, it may not be possible to progress to the display screen. The pattern of beeps may be a variable numbers of short beeps or a mixture of long and short beeps, depending on what type of BIOS is installed.

The patterns of beeps contain messages about the nature of the problem detected. For example, if the keyboard is not detected, a particular pattern of beeps will inform you of that fact. An error found in the POST is usually fatal (that is, it causes current program to stop running) and will halt the boot process, since the hardware checked is absolutely essential for the computer's functions.

286 Modular BIOS Version 3.03HL Copyright Award Software Inc.

TESTING INTERRUPT CONTROLLER #1 ...OK
TESTING INTERRUPT CONTROLLER #2 ...OK
TESTING CMOS BATTERY ...FAILED
TESTING CMOS CHECKSUM ...FAILED
SIZING SYSTEM MEMORY ...640K FOUND
TESTING SYSTEM MEMORY ...640K OK
CHECKING UNEXPECTED INTERRUPTS AND STUCK NMI...OK
TESTING PROTECTED MODE ...OK
SIZING EXPANSION MEMORY ...03456K FOUND
TESTING MEMORY IN PROTECTED MODE ...04096K OK
TESTING PROCESSOR EXCEPTION INTERRUPTS ...OK

BIOS



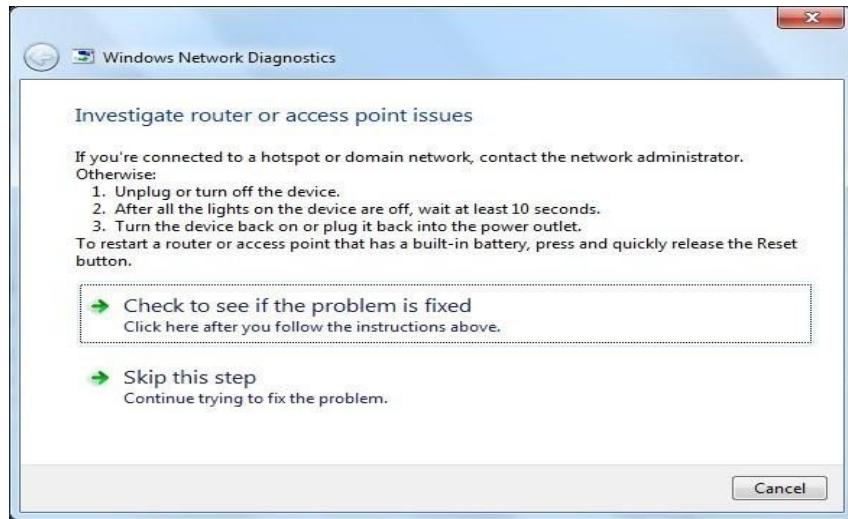
[Pc bios home page](#)

BIOS (basic input/output system) is the program a personal computer's microprocessor uses to get the computer system started after you turn it on. It also manages data flow between the

computer's operating system and attached devices such as the hard disk, video adapter, keyboard, mouse and printer.

N/W Diagnosis

The Network Diagnostic Tool (NDT) is a client/server program that provides network configuration and performance testing to a user's desktop or laptop computer. ... The NDT is designed to quickly and easily identify a specific set of conditions that are known to impact network performance.



Process of n\w diagnostics

➤ Device Manager

Device Manager is a Control Panel applet in Microsoft Windows operating systems. It allows users to view and control the hardware attached to the computer. When a piece of hardware is not working, the offending hardware is highlighted for the user to deal with. The list of hardware can be sorted by various criteria.[1] For each device, users can:

Supply device drivers in accordance with the Windows Driver Model

Enable or disable devices

Tell Windows to ignore malfunctioning devices

View other technical properties

