Experiment-1:

Hardware Identification:

Computer Case- Types, Features- Front panel, back panel; A look inside the computer case.

Identify the front and rear panel controls and ports on a PC cabinet.

Identify and understand different cables and connectors: Video cables- VGA, HDMI, Mini-HDMI, Display port, DVI; Peripheral cables- Serial; Harddrive cables- SATA, PATA, IDE, SCSI; Adapters- DVI to HDMI, USB to ethernet, DVI to VGA.

Installation of a localprinter. Shared printer. Installing wireless and cloud printers.

Answer: Computer Case- Types,

1. Full Tower: Full-tower cases are generally big with a height that is about or more than 30 inches (more than 76 cm). The number of internal drive bays inside these cases can be between 6 and 10.

2. Mid Tower: Mid-tower cases are the most widely used computer cases. Mid Tower cases are about 18 to 24 (45 to 60 cm) inches high and they usually contain 2 to 4 internal drive bays and a similar number of external bays (for CD/DVD readers and similar).

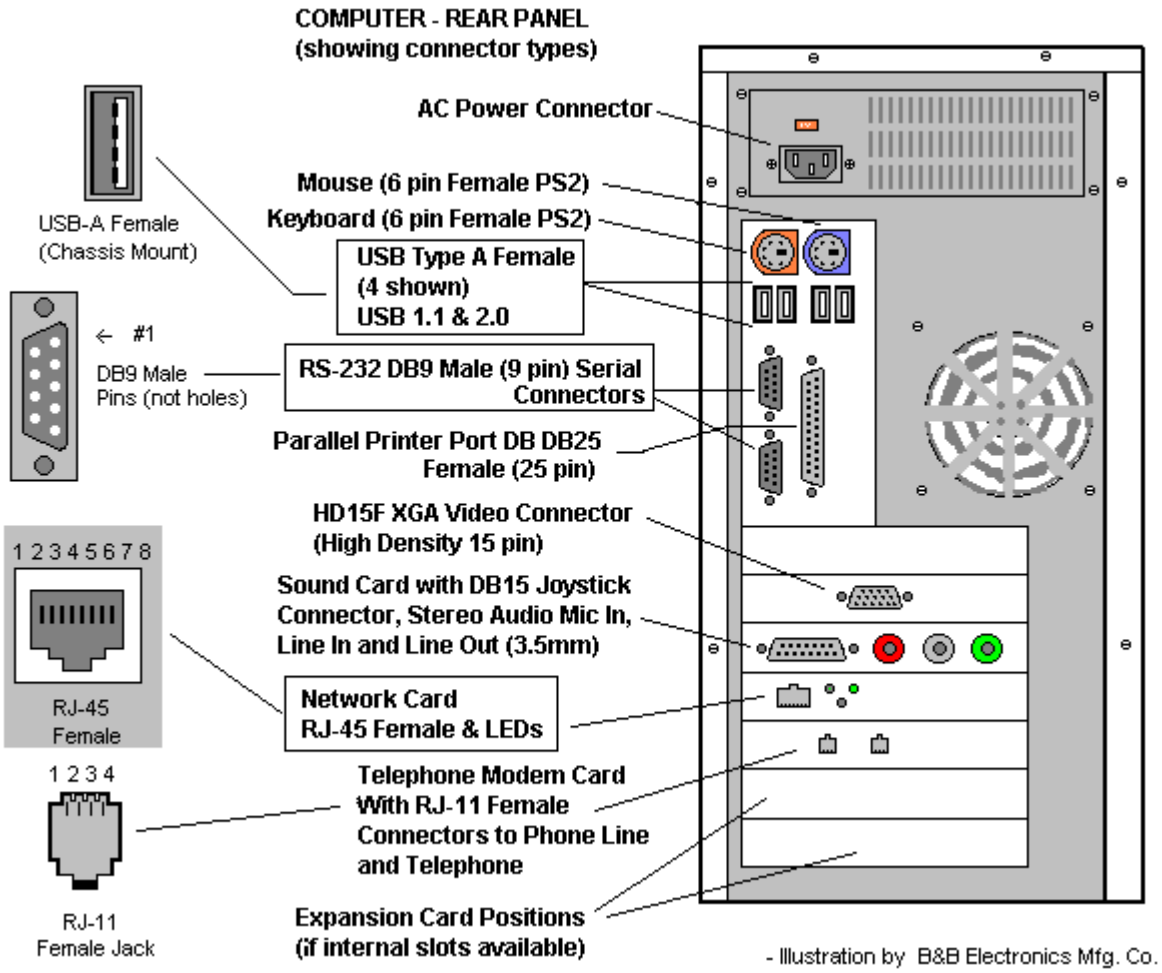
3. Mini Tower: Mini-tower usually have up to 2 or sometimes 3 internal drive bays. Mini-cases normally stand at a height of 12 to 18 inches (30 to 45 cm). Expandability is a problem with these cases.

4. Slim Line Case: Slim line cases are simply tower cases turned on their sideways. They can hold a

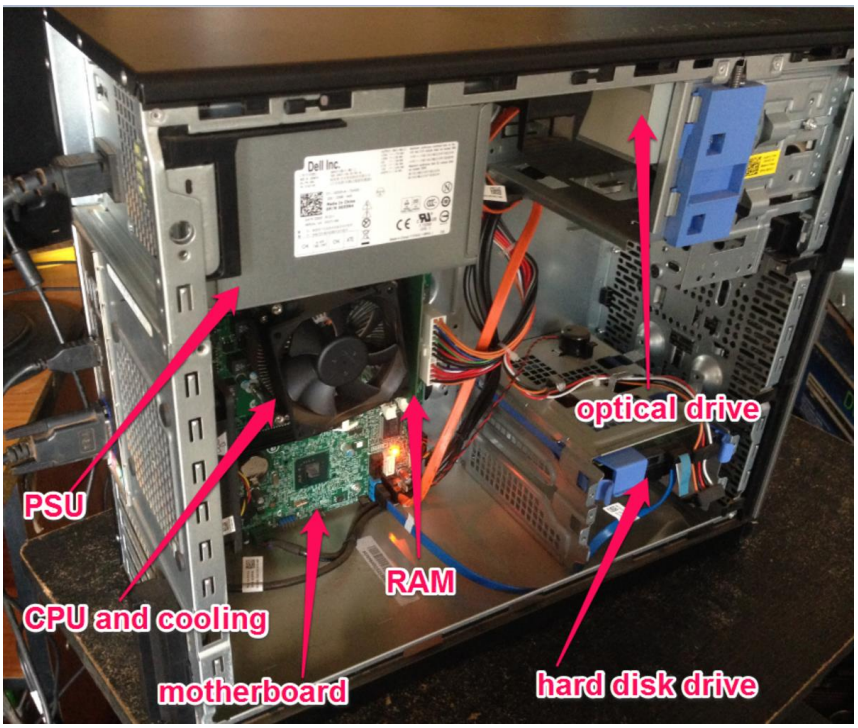
monitor on top of the case.

5. Small Form Factor (SFF) Case: Small form factor or SFF cases are custom cases that are designed to minimize the spatial volume of a desktop computer. SFFs are available in a variety of sizes and shapes, including shoe boxes, cubes, and book-sized PCs.

Features- Front panel Back panel



A look inside the computer:



HDMI cable : HDMI (High definition Media Interface) is a type of computer cable used to transmit high definition video and audio signals.

 HDMI		

VGA cable: video graphics array; a computing standard that has a resolution of 640 × 480 pixels with 16 colours or of 320 × 200 pixels with 256 colours. These are also old types for connecting your laptop with a projector or other monitors.

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VGA</td>
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DVI cable: Digital Visual Interface (DVI) is a video display interface developed by the Digital Display Working Group (DDWG). The digital interface is used to connect a video source, such as a video display controller, to a display device, such as a computer monitor.

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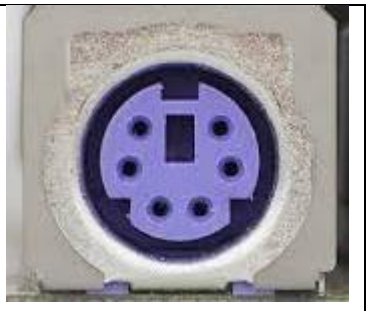
Connect one end to computer monitor. Connect other end to: DVI port on computer (see image below) However there are 2 types of DVI, DVI-I and DVI-D. DVI-D does not have the extra pins around the long pin, this is also a pure digital signal over DVI-I.

Ethernet Cable: An Ethernet cable is the most common type of network cable used on a wired network whether at home or in any other business establishment. This cable connects wired devices together to the local network for file sharing and Internet access.

 RJ 45	 

PS/2 Cable: The PS/2 (Personal System/2) port, also referred to as the mouse port or keyboard port, was developed by IBM. It is used to connect a computer mouse or keyboard to an IBM compatible computer

1. PS/2 Cable

Connect one end to: PS/2 keyboard, PS/2 mouse. Connect other end to: PS/2 ports on computer (see image below), Purple PS/2 port: keyboard, Green PS/2 port: mouse Computer Power Cord (Kettle Plug).

Connect one end to: AC power socket. Connect other end to: power supply unit (see image below),

computer monitor. Note: Always turn off your power supply unit (with the 1-0 switch at the back) before connecting a power cord to it.

Audio Cable: A cable used to transfer analog or digital signals from an audio source to an amplifier or powered speaker. Also known as phone connector (since 3.5mm jacks are often found on mobile phones too)

Connect one end to: computer speakers, 3.5mm headphones, 3.5mm microphone. Connect other end to: audio ports on computer (see image below use Green socket), Green audio port: computer speakers or headphones, Pink audio port: microphone, Blue audio port: MP3 player, CD player, DVD player, electric guitar etc (line-in port to play and record sounds from the above devices)
Thunderbolt: It is a combination of type-C and Display Port and its fastest type of connector for laptops. Use for charging, connection with peripherals or displays.

Thunderbolt

USB cables: The term USB stands for "Universal Serial Bus". USB cable assemblies are some of the most popular cable types available, used mostly to connect computers to peripheral devices such as cameras, camcorders, printers, scanners, and more.

Types of USB (Universal Serial Bus): USB connectors come in three main styles: Type A (rectangular), Type B (square) and Type C (flattened oval), but you can also get Mini and Micro versions of A and B.

There are three USB standards: USB 1.1, USB 2.0, and USB 3.0 which have now reached 3.2.

Each new generation is faster than the one before.

For example:

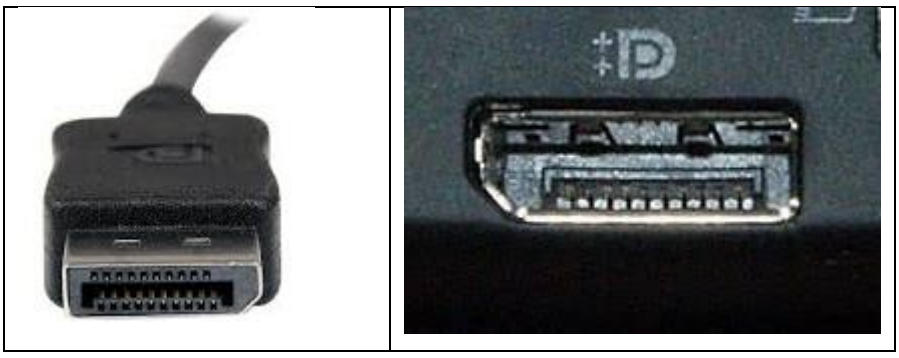
USB 3.0 can transfer a 1GB video in two seconds.

USB 2.0 can transfer a 1GB video in 16 seconds.

USB 1.1 can transfer a 1GB video in 11 minutes.

Card Reader

Display Port



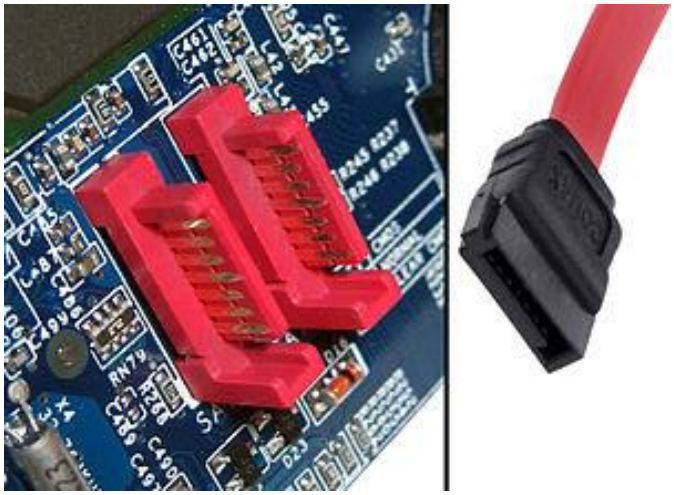
Display Port is the best to use if you require a fast, high-resolution image.

The cable has better quality over HDMI and is the best option if you have this interface.

Cables- Serial: Serial port is a serial communication interface through which information transfers in or out sequentially one bit at a time. This is in contrast to a parallel port, which communicates multiple bits simultaneously in parallel.

Hard drive cables

SATA: serial advanced technology attachment. Serial ATA is a computer bus interface that connects host bus adapters to mass storage devices such as hard disk drives, optical drives, and solid-state drives.



PATA: PATA cables are flat cables with 40-pin connectors (in a 20x2 matrix) on either side of the cable. One end of the cable plugs into a port on the motherboard, usually labeled IDE, and the other into the back of a storage device like a hard drive.

IDE: IDE, an acronym for Integrated Drive Electronics, is a standard type of connection for storage devices in a computer. Generally, IDE refers to the types of cables and ports used to connect some hard drives and optical drives to each other and to the motherboard.

SCSI: Small Computer System Interface A SCSI connector is used to connect computer parts that use a system called SCSI to communicate with each other.

Installation of Printer:

- First install the Printer into the Server
- Click on start button, Select Printer & faxes
- Add a printer, next
- Select printer
- Or Browse for a printer
- Select the printer attached
- Finish

Sharing of Printer

- First install the Printer into the Server
- Then choose any System which is the network
- Click on start button, Select Printer & faxes
- Add a printer, next
- Select network printer or a printer attached to another computer
- Browse for a printer
- Select the server name and printer attached & Finish

Experiment-2

Unmount the power supply from PC cabinet. Identify the types of output connectors.

Identify output voltages using color coding. Measure voltage levels using multi meter.

Mount the power supply into the PC cabinet, connect different components and test PC.

Trouble shoot Power supply through SMPS fan. Diagnose power supply faults using PSU Tester.

Answer:

SMPS stands for **switch-mode power supply**. Its job is to convert wall-voltage AC power to lower voltage DC power

- 20 + 4 Pin ATX / Motherboard Connector: This is the main ATX connector that supplies power to your motherboard and other components like RAM, Low-end graphics card, PCI cards that are connected to your motherboard. Earlier motherboards have 20 pin sockets only but now modern-day motherboards require 24-pin power connectors.
- CPU 4 + 4 Pin Connector: This is the 12 Volt connector that supplies power to your CPU or Processor. Some motherboards have 4 pins 12V CPU socket and some have 8 pins 12V socket, therefore most of the good power supplies come with 8-pin (4 + 4) detachable connectors which can be split into two 4 pin connectors.
- SATA Power Connector: This power connector is used to power up SATA devices that mostly include Hard Disks, DVD Writers / Drives.
- Floppy 4 Pin Connector: This 4 pin power connector is used to power floppy drives. Floppy Drives are not being used commonly, but in some cases they can prove very useful.
- Peripheral 4 Pin Molex Connector: Peripheral 4 Pin Molex Connector is used to provide power to IDE devices and other peripherals like Fans, case lights etc. You can also use this Molex 4 pin connector to power other devices like SATA devices, Graphics cards etc. by the use of converters or adapters e.g. Molex to SATA power connector etc.
- PCI-e 6 Pin / PCI-e 8 Pin Connector. PCI-e 6 Pin or PCI-e 6+2 Pin are 12 Volt Connectors that are used to provide power to mid to high range graphics cards that require extra amount of power for their working.

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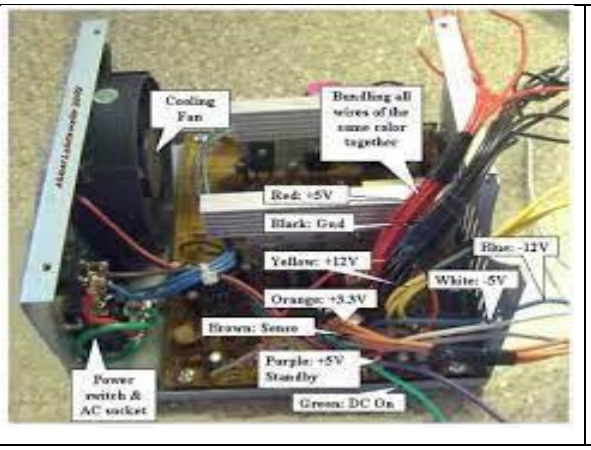
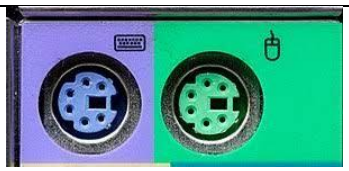


The input/output (I/O) connectors are **for attaching external devices**, such as printers, keyboards, and displays.

Printer port

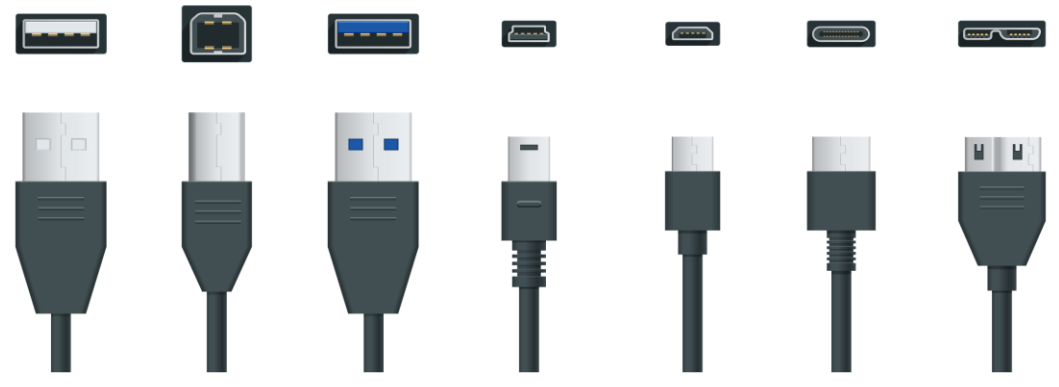


Keyboard/mouse port

Display

Power Supply Unit Tester

Multimeter



Output voltages of SMPS: Red: +5v, Orange: +3.3V, Yellow: +12V, Blue: -12V, White: -5V,

Grey=+5V, Green=+5V, Ground: 0V, Brown: +5V etc

3. Experiment

1. Identify the electrical and electronic components used in a computer and tabulate them as active and passive components.
2. Identify the working and non- working state of basic components and semiconductor devices.
3. Using multi meter- Check Output voltage of basic components and semiconductor devices.
4. Check different voltage levels of opto-coupler, PWM and rectifier.

Answer:

1. **Identify the electrical and electronic components used in a computer and tabulate them as active and passive components.**

Capacitor, Microcontroller, Inductor, Transformer, Battery, Transistors. Integrated Circuit, Relays.

Active components are parts of a circuit that rely on an external power source to control or modify electrical signals. ... **- Passive components l**ike resistors, transformers, and diodes don't need an external power source to function. These components use some other property to control the electrical signal.

Active components include amplifying components such as transistors, triode vacuum tubes (valves), and tunnel diodes. Passive components can't introduce net energy into the circuit. ... Passive components include two-terminal components such as resistors, capacitors, inductors, and transformers.

Active Element Examples: Transistors, Op amps, Logic gates, tunnel diode and zener diode.

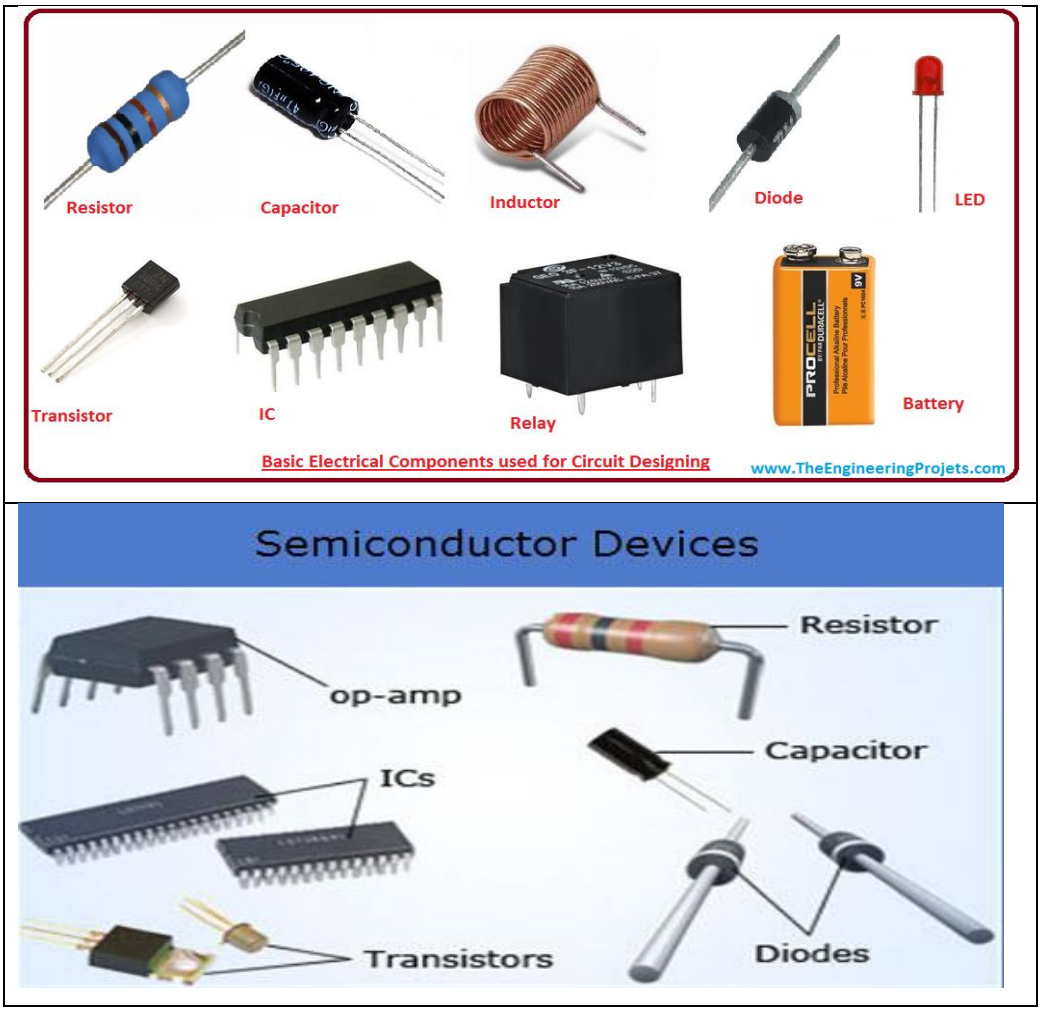
Passive Element Examples: Resistor, Capacitor, Inductor and normal PN junction diode.

2. Identify the working and non- working state of basic components and semiconductor devices.

Basic electronic components when building electronic circuits, including **resistors, capacitors, diodes, transistors, and integrated circuits**.

Semiconductor device: electronic circuit component made from a material that is neither a good conductor nor a good insulator. There two types two terminal and three terminal. The most common semiconductor device in the world is the **MOSFET** (metal–oxide–semiconductor field-effect transistor), also called the MOS transistor.

DIAC, Diode (rectifier diode), Gunn diode, IMPATT diode, Laser diode, Light-emitting diode (LED), Photocell, Phototransistor.



Experiment 4:

1. Precautions to be taken before removing the mother board from PC cabinet.
2. Using the CPUID CPU-Ztool, find different features of CPU.
3. Check the Electric flowpath and data flow path
4. Windows resource monitor.
5. Using the CPUID CPU-Z tool, identify the CPU cache features of your working system.

Answers:

1. Precautions to be taken before removing the mother board from PC cabinet.

Before you begin, make sure you reduce, or eliminate, the risk of electrical charge damaging any of the hardware in the computer. The best way to do this is by wearing an anti-static wrist strap. While inside the computer, make sure it is disconnected from power and you're familiar with ESD (electrostatic discharge) and its potential dangers.

2. Using the CPUID CPU-Ztool, find different features of CPU.

CPU-Z is a freeware that gathers information on some of the main devices of your system :

- Processor name and number, codename, process, package, cache levels.
- Mainboard and chipset.
- Memory type, size, timings, and module specifications (SPD).
- Real time measurement of each core's internal frequency, memory frequency

3. Check the Electric flowpath and data flow path

The path from which data flow in a computer system is known as Bus. It is a pathway for data flowing between components. Most devices are connected to the bus through a controller which coordinates the activities of the device with the bus. The processor is an electronic device about a one inch square, covered in plastic.

In computer architecture, a bus (a contraction of the Latin omnibus) is a communication system that transfers data between components inside a computer, or between computers. This expression covers all related hardware components (wire, optical fiber, etc.) and software, including communication protocols.

The system bus is a pathway composed of cables and connectors used to carry data between a computer microprocessor and the main memory. The bus provides a communication path for the data and control signals moving between the major components of the computer system.

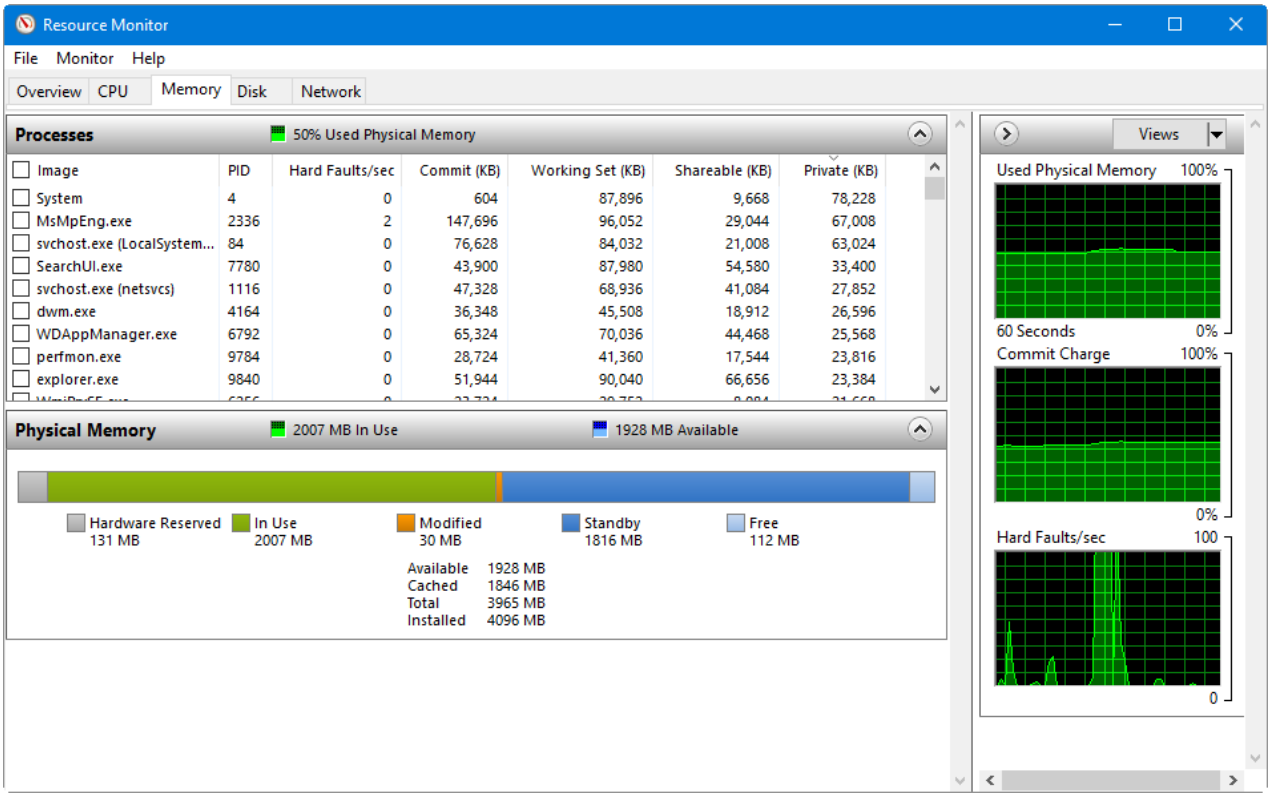
4. Windows resource monitor.

Resource Monitor, a utility in Windows Vista and later, displays information about the use of hardware and software resources in real time. Users can launch Resource Monitor by executing resmon.exe. Press the Ctrl + Alt + Del keys at the same time and select Start Task Manager on the screen that appears. In the Task Manager, click the Performance tab, then click the **Resource Monitor button** or Open Resource Monitor link, depending on your version of Windows.

Getting started

To get started with Resource Monitor, press Windows +R, type *Resmon.exe* in the Open text box, and press Enter. In the Resource Monitor user interface, select the Memory tab, as shown in **Figure A**.

Figure A



The Memory tab shows detailed information about Windows 10's memory use.

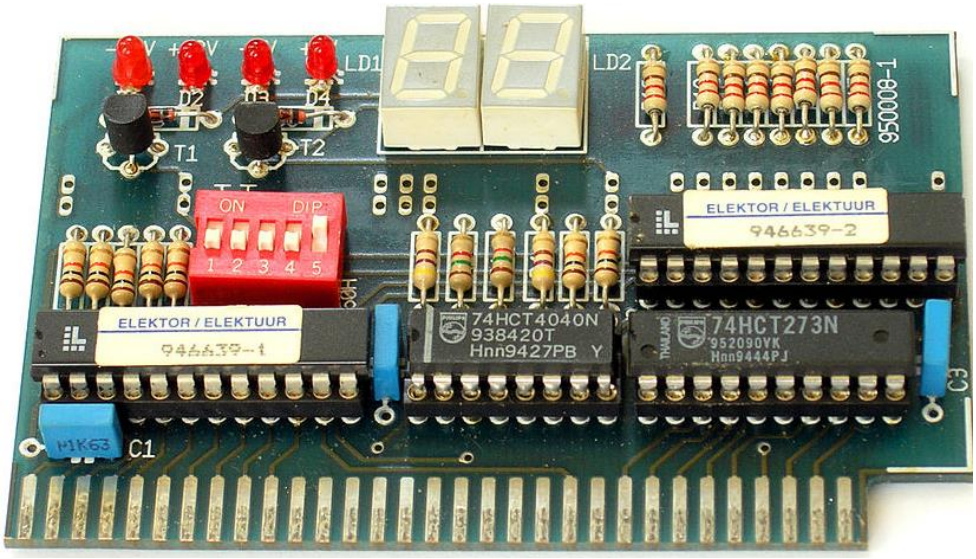
Experiment5:

1. Identify system faults using POST diagnostics card.
2. Understand basic onboard configurations through UEFI.
3. Test different motherboards to determine support for UEFI
4. Replace the CMOS battery in a computer following the procedures.
5. Understand and modify BIOS settings and observe the consequences of CMOS failure.

Answer:

1. **Identify system faults using POST diagnostics card.**

In computing, a POST card is **a plug-in diagnostic interface card that displays progress and error codes generated during power-on self-test** (POST) of a computer. It is used to troubleshoot computers that do not start up.



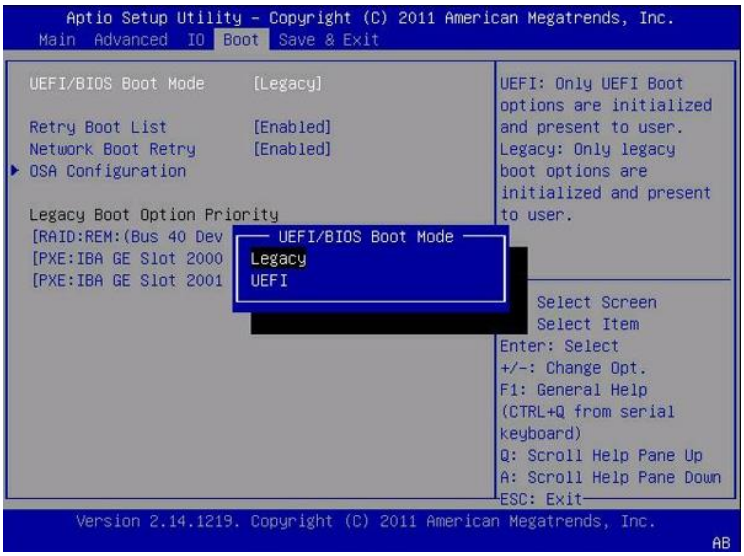
2. Understand basic onboard configurations through UEFI.

The **Unified Extensible Firmware Interface** (UEFI) is a publicly available specification that defines a software interface between an operating system and platform firmware. ... UEFI can support remote diagnostics and repair of computers, even with no operating system installed.

Both BIOS and UEFI are forms of software that kickstart the hardware of your computer before your operating system loads. UEFI is **an update to traditional BIOS** that supports larger hard drives, quicker boot times, more security features, and more graphics and mouse cursor options.

1. **Access the BIOS Setup Utility.**
   a. **Boot the system.**
      Boot messages scroll across the console screen.
   b. **Press the F2 key (or Ctrl +E from a serial terminal) continuously.**
      The BIOS Setup Utility main screen appears.
2. **From the BIOS Main menu screen, select Boot.**
3. **From the Boot screen, select UEFI/BIOS Boot Mode, and press Enter.**
   The UEFI/BIOS Boot Mode dialog box appears.

   Note - You cannot configure the boot order list after switching the boot mode. A system reboot is required to properly populate the boot order list with devices that support the chosen boot mode.



4. **Use the up and down arrows to select Legacy BIOS Boot Mode or UEFI Boot Mode, and then press Enter.**
5. **To save the changes and exit the screen, press F10.**

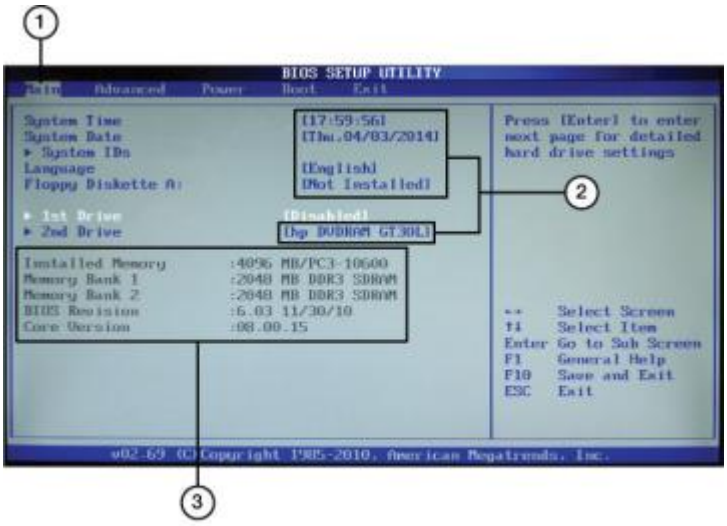
3. Test different motherboards to determine support for UEFI

Accessing the BIOS Setup Program

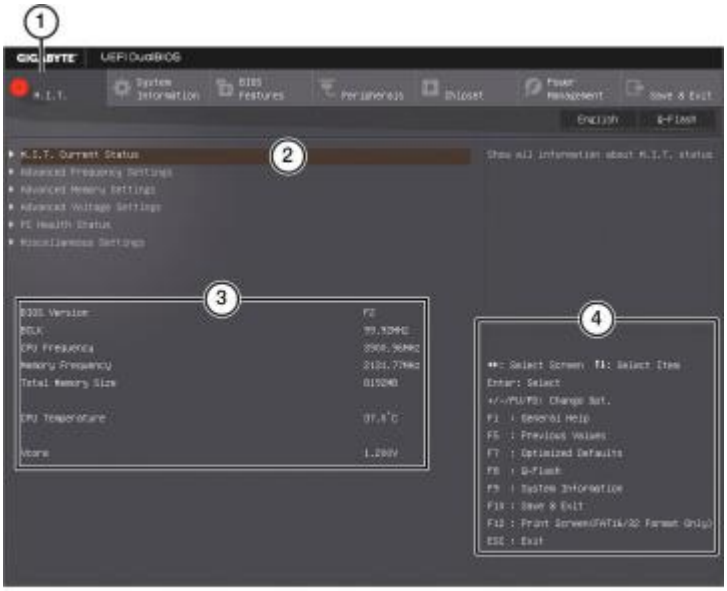
The BIOS configuration program is stored in the BIOS chip itself. Just press the key or key combination displayed onscreen (or described in the manual) to get started.

Although these keystrokes vary from system to system, the most popular keys on current systems include the escape (Esc) key, the Delete (Del) key, the F1 key, the F2 key, or the F10 key. check the system or motherboard manual for the correct key(s).

1. Keystrokes for configuration options at startup



1. Selected menu
2. Editable items
3. Reported by system; not editable



1. Selected menu
2. Current submenu
3. BIOS, Memory, and CPU information
4. Keystroke legend

1. Current menu
2. UEFI BIOS and memory information
3. Keystroke legend

1. Processor and BIOS information
2. Keystroke legend

4. Replace the CMOS battery in a computer following the procedures.

- Disconnect the power cable of the computer.
- Discharge static electricity by pressing and holding the power button for 10-15 seconds.
- Replace the battery with the exact same type of coin cell battery. Dell desktops use CR2032 coin cell battery (see the markings on the battery). See the User Guide for model-specific information.
- Removing the CMOS battery erases the BIOS settings
- Ensure to replace with a brand new battery. Do not install a used battery.
- Properly dispose the used batteries as directed by the local authorities.
- Use an anti-static plastic scribe tool. Do not use any kind of metal object to pry the battery.
- To avoid damage to the battery connector, firmly support the connector while removing the battery.

5. Understand and modify BIOS settings and observe the consequences of CMOS failure.

Press Window Key+R to access the "RUN" command window. Then **type "msinfo32"** to bring up your computer's System Information log. Your current BIOS version will be listed under "BIOS Version/Date". Now you can download your motherboard's latest BIOS update and update utility from the manufacturer's website.

Experiment 6

1. Identify RAM chips and HDD/SSD, study their features and note their technical specifications.
2. Identify SIMM and DIMM memory modules, their number of pins, specs and type.
3. Identify the interface type of a hard drive and connect it to a PC for data recovery.

Answer:

1. Identify RAM chips and HDD/SSD, study their features and note their technical specifications.

RAM is a volatile memory which requires power supply to retain data. When you turn off your PC, the RAM data is lost.

It is further divided into two types, namely, the **Dynamic Random Access Memory** (DRAM) and **Static Random Access Memory** (SRAM).

- DRAM stores and retains memory data by using capacitors. These capacitors lose charge over time due to leakage, even if the supply voltage is maintained. DRAMs are typically used for computer memory modules.
- SRAM uses transistors instead of capacitors in a cross-coupled flip–flop configuration and does not have leakage. It still requires constant power to maintain the state of charge. SRAMs are designed for processor caching.
  - Today, most operating systems require at about 1GB RAM for running the system, which means that the system should have atleast 4GB or more of system RAM. Typical systems commonly have 8-16 GB RAM.

- 32 GB Random Access Memory

The amount of RAM in the system is very critical, even to basic users. Having more RAM enables the system to run more applications simultaneously.
If the system has less ram than required, then it will start using the secondary storage device like hard disks for paging or swap memory which is much slower than ram and will make the system feel very laggy.
Hard drives come in two basic physical sizes: **2.5-inch and 3.5-inch**. These sizes refer to the size of the data platters, not the size of the hard drive mechanism. Traditionally, 2.5-inch drives are used for laptops while 3.5-inch drives are used for desktop computers.

A form factor is the physical form, or physical dimensions, of the drive. SSDs have three form factors: 2.5-inch, **mSATA, and M.2**. The 2.5-inch form factor is used in many desktops and laptops. The mSATA version is commonly used in ultra-thin laptops and compact systems. The M.2 version is commonly used in tablets and ultrabooks.

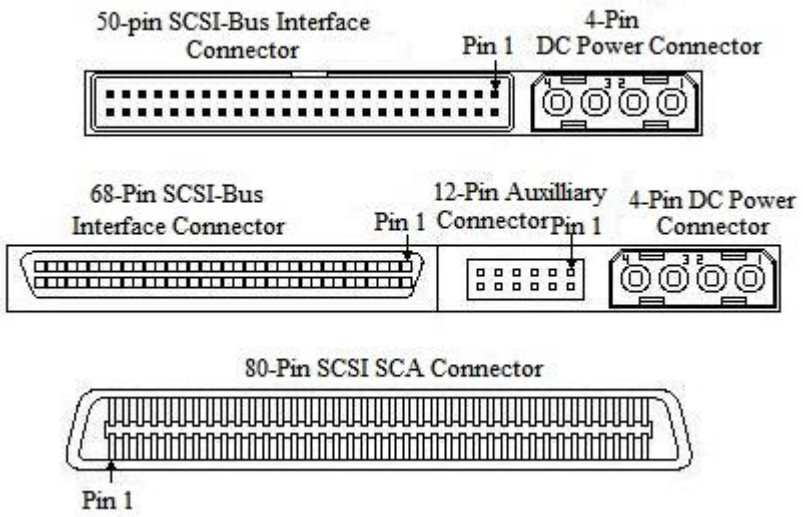
2. Identify SIMM and DIMM memory modules, their number of pins, specs and type.

S.NO	SIMM	DIMM
1.	In SIMM, Pins present in either facet are connected.	DIMM pins are freelance.
2.	SIMM supports 32 bit channel for data transferring.	DIMM supports 64 bit channel for data transferring.
3.	SIMM consumes 5 volts of power.	DIMM consumes 3.3 volts of power.
4.	SIMM provides the storage 4 MB to 64 MB.	DIMM provides the storage 32 MB to 1 GB.
5.	The classic or most common pin configuration of the SIMM module is 72 pins.	The foremost common pin configuration of the DIMM module is 168 pins.
6.	SIMMs are the older technology.	DIMMs are the replacement of the SIMMs.
7.	SIMMs are installed in pairs at a time.	DIMMs are installed one at a time.

S.NO	SIMM	DIMM
8.	SIMMs are used by 486 CPU as well as early Pentium computers.	DIMMs are used by modern Pentium computers.
9.	The length and width of SIMM are respectively 4.25 inches and 1 inch.	The length and width of DIMM are respectively 1.67 to 5.25 inches and 1 to 1.75 inches.
10.	There are single notches in SIMMs.	There are two notches in DIMMs.

3. Identify the interface type of a hard drive and connect it to a PC for data recovery.

Hard disk drives are accessed over one of a number of bus types, including parallel ATA (PATA, also called IDE or EIDE; described before the introduction of SATA as ATA), **Serial ATA (SATA), SCSI, Serial Attached SCSI (SAS), and Fibre Channel**.



Experiment 7:

1. Use CPUID-CPUZ tool to identify capacity, speed, technology, and related features of RAM.
2. Check for RAM and Motherboard compatibility and install additional RAM stick.
3. Find on Windows system properties to check the RAM for correct installation.
4. Query the SPD RAM chip to identify all
5. Possible information using CPUID CPUZ.

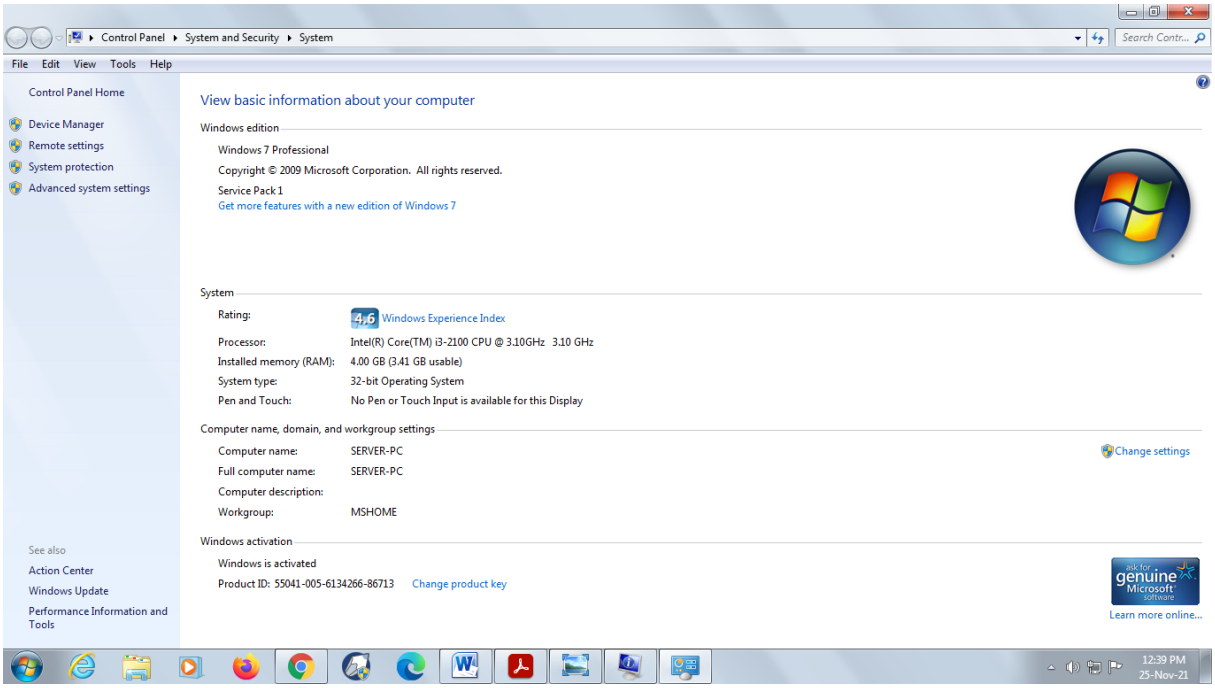
Answer:

2. Check for RAM and Motherboard compatibility and install additional RAM stick.

From the Windows Start menu, search for System Information on your computer and open the app. Under System Summary, you will find your Processor. Using this information, search for your specific processor on the manufacturer website to see what RAM is compatible with your processor.

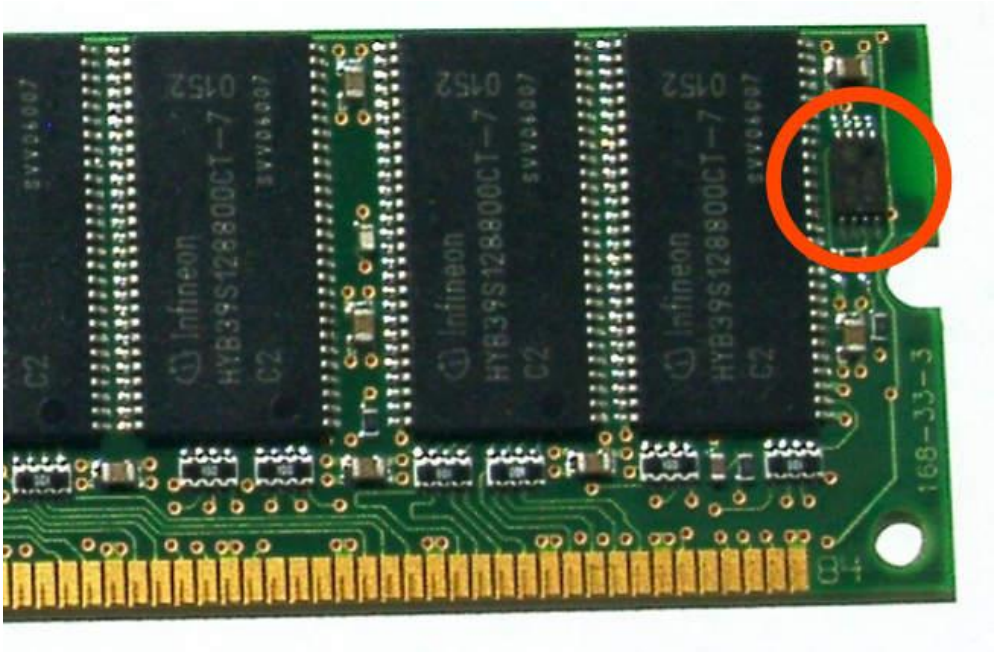
3. Find on Windows system properties to check the RAM for correct installation.

Press the Windows key, type **ram**, and select the **View RAM info** option in the search results.



4. Query the SPD RAM chip to identify all

In computing, **serial presence detect** is a standardized way to automatically access information about a memory module. Earlier 72-pin SIMMs included five pins that provided five bits of parallel presence detect data, but the 168-pin DIMM standard changed to a serial presence detect to encode much more information



Experiment 8:

1. Windows Installation Inspect prerequisites for windows 10 installation on a given computer.
2. Perform clean installation.
3. Upgrade to windows 10.
4. Create dual boot for a given system, learn and rectify errors in dual boot.
5. Practice on recovery partition.
6. Practice 10 registry tweaks.
7. Practice disk management utilities.

Answer:

1. **Windows Installation Inspect prerequisites for windows 10 installation on a given computer.**

Requirements Needed to Install Windows 10

- Processor:1 GHz or faster.
- RAM:1 GB (32-bit) or 2 GB (64-bit)
- Graphics:DirectX 9 or later with WDDM 1.0 driver (the latter is the graphics architecture for video drivers)
- Hard disk space:16 GB (32-bit) or 20 GB (64-bit)
- Display:800×600 resolution.

2. Perform clean installation.

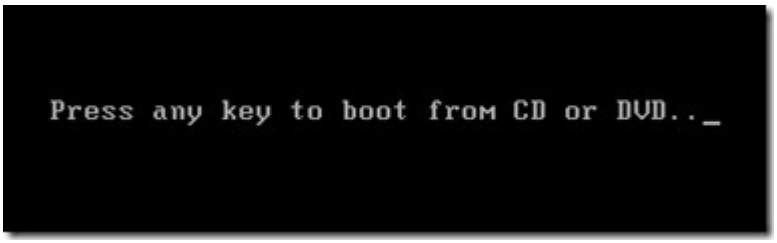
Perform a Clean Install on an Empty Hard Disk/SSD or Reinstall by Booting from Install Media (DVD or USB Thumb Drive)

Once you have your Windows 10 installation media ready, all you need to do is boot from the disc or USB thumb drive to begin setup. If you don't have install media, **see instructions:** How to download official Windows 10 ISO files

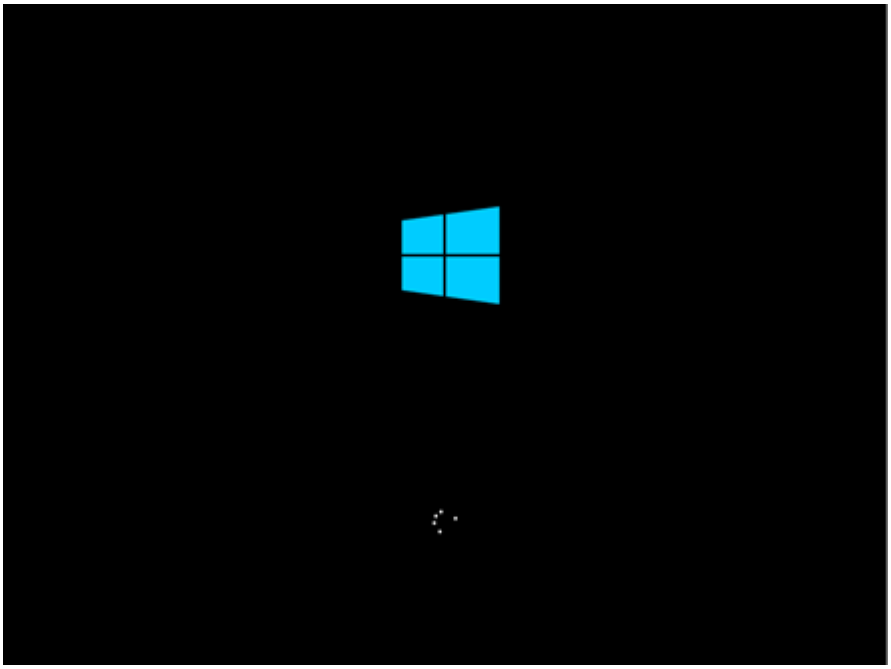
Review the following guide for instructions and details about configuring your BIOS or UEFI boot settings for DVD, CD, USB or SD Card.

BIOS/UEFI Setup Guide: Boot from a CD, DVD, USB Drive or SD Card

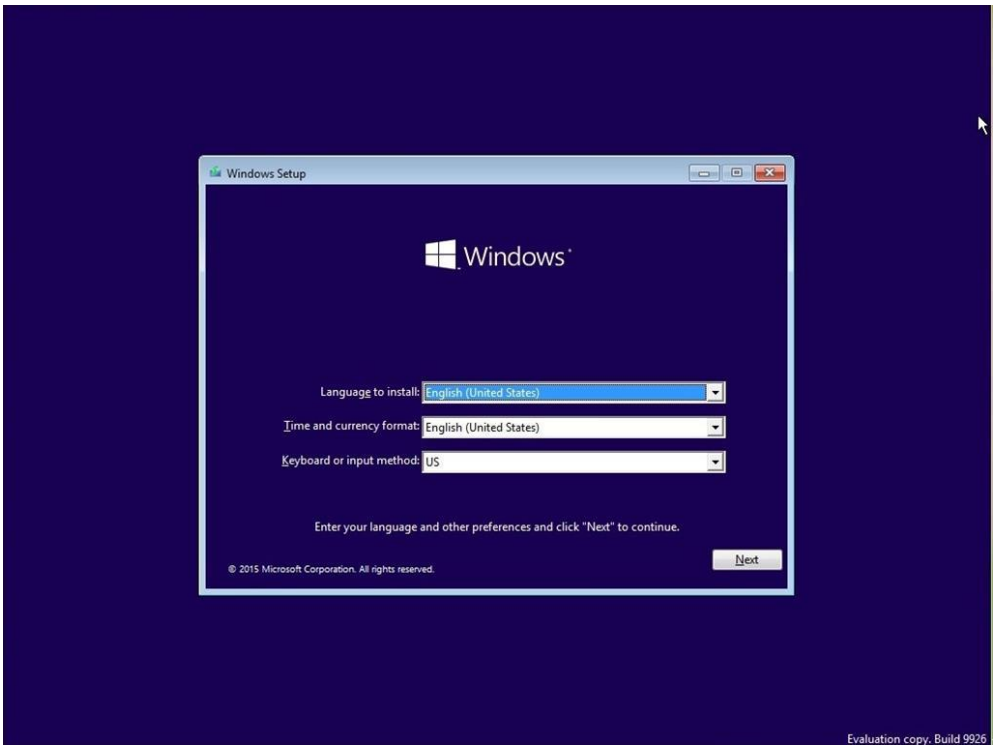
Once your computer is set to boot from the DVD, you should see this option. If you are installing from a retail Windows 10 USB thumb drive, you will be asked to select either 32 or 64 bit Windows 10. Learn more **here**



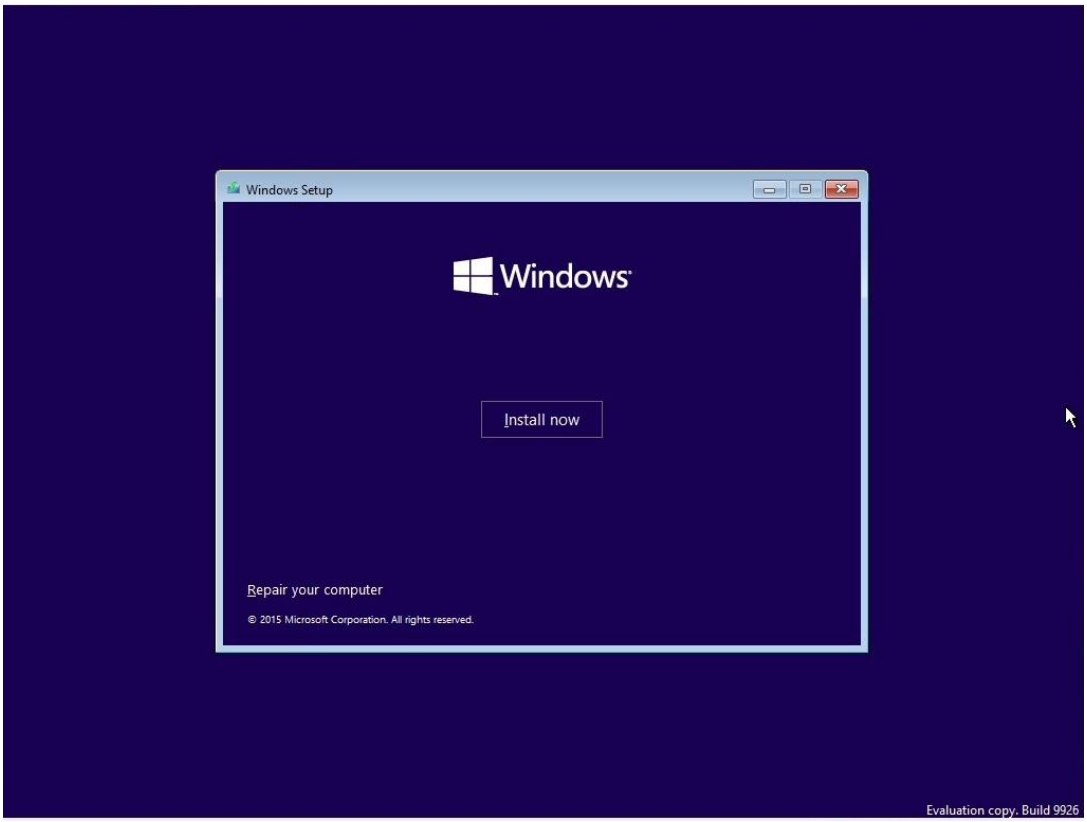
The Windows logo will appear on screen, this might be here for a while, as long as you see the animating dots, everything should be ok.



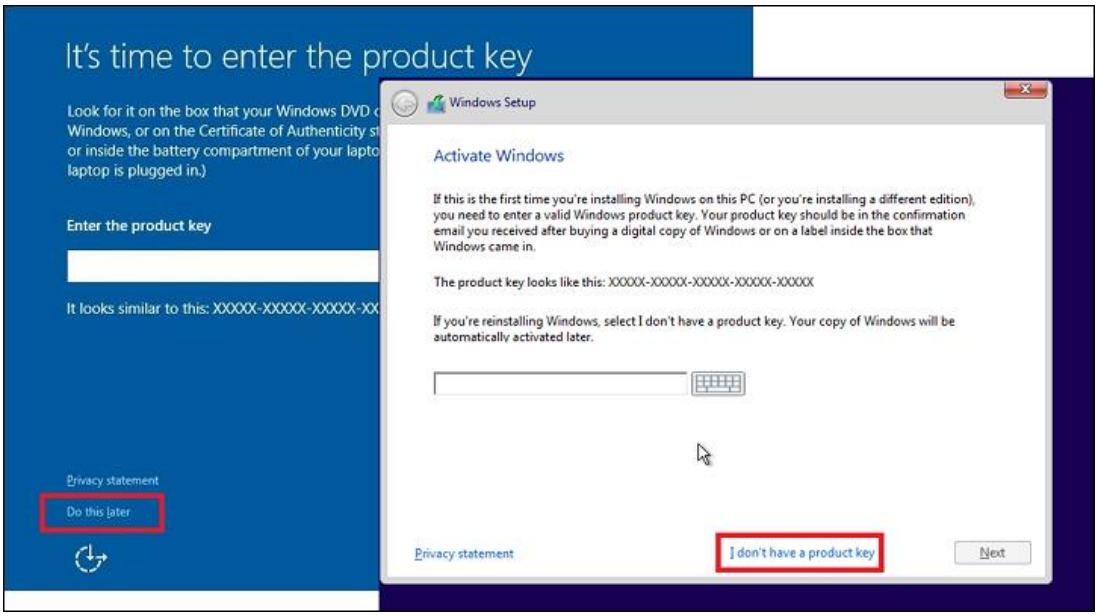
Select your Language, Time and Keyboard method then click Next.



Click **Install now**



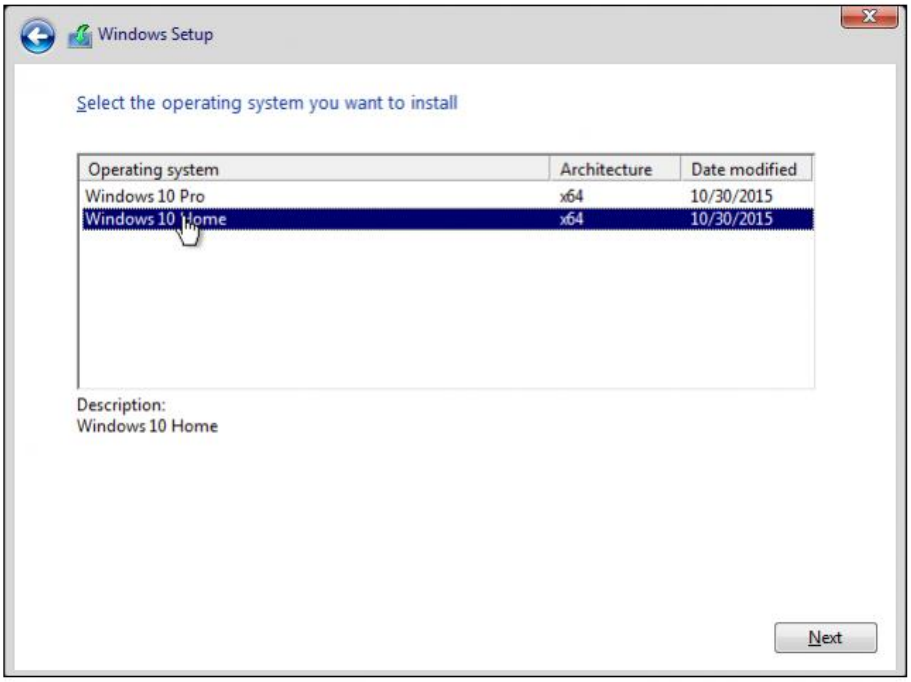
Windows 10 setup will prompt you for a product key during installation a couple times. If you originally upgraded from Windows 7 or Windows 8/8.1 click the option 'I don't have a key' and 'Do this later' . If you have a Windows 10 product key, you can proceed to enter it.



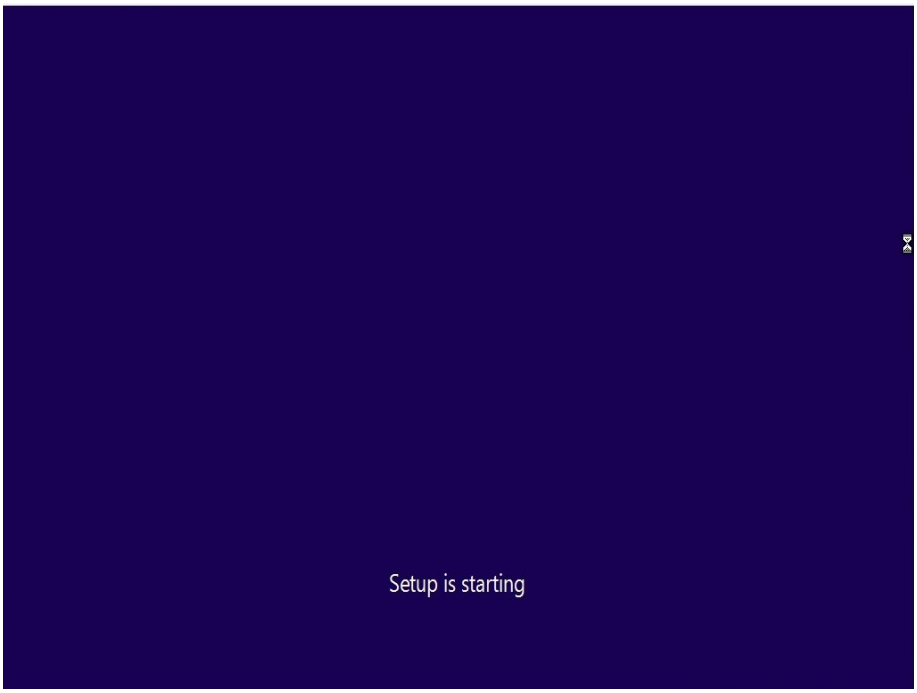
Setup will also prompt you to select the edition you have a license for - **Home** or **Pro**. Please make sure you **choose the right edition**. If you choose the wrong edition, your only option will be to perform a clean install again.

The copy of Windows 10 you download and upgrade from will correspond with the edition of Windows you have installed, if it does not, this is why you might be experiencing problems activating:

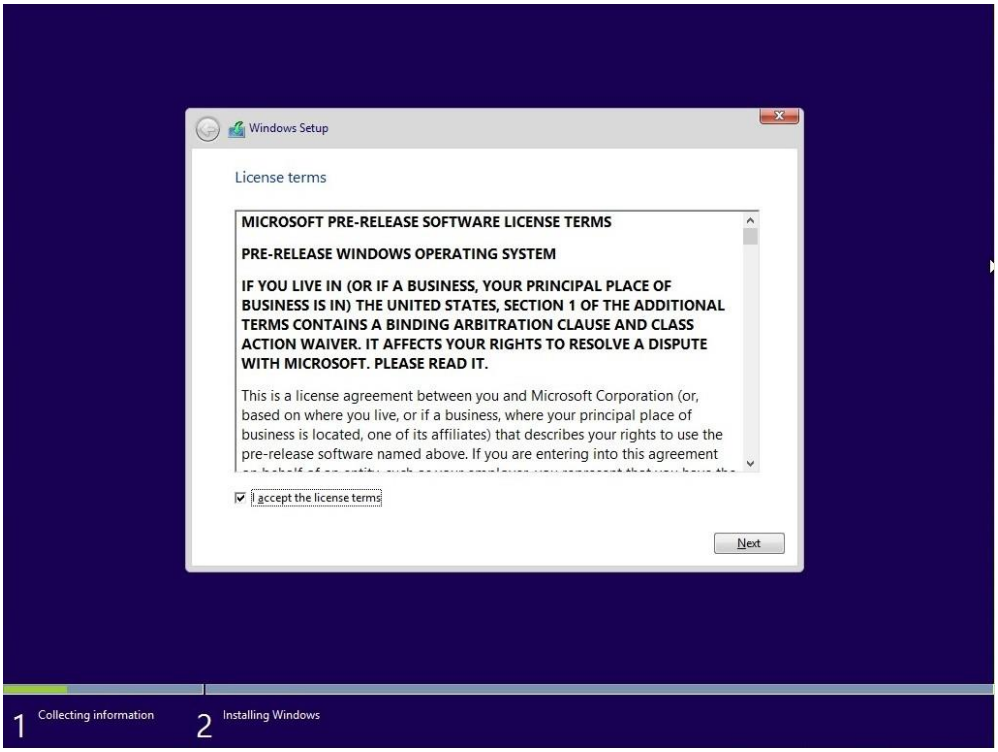
- Windows 7 Starter, Home Basic, Home Premium, Windows 8.0 Core, Windows 8.1 Core should install Windows 10 Home
- Windows 7 Professional, Windows 7 Ultimate, Windows 8.0 Pro, Windows 8.1 Pro should install Windows 10 Pro



Wait while setup prepares to copy files

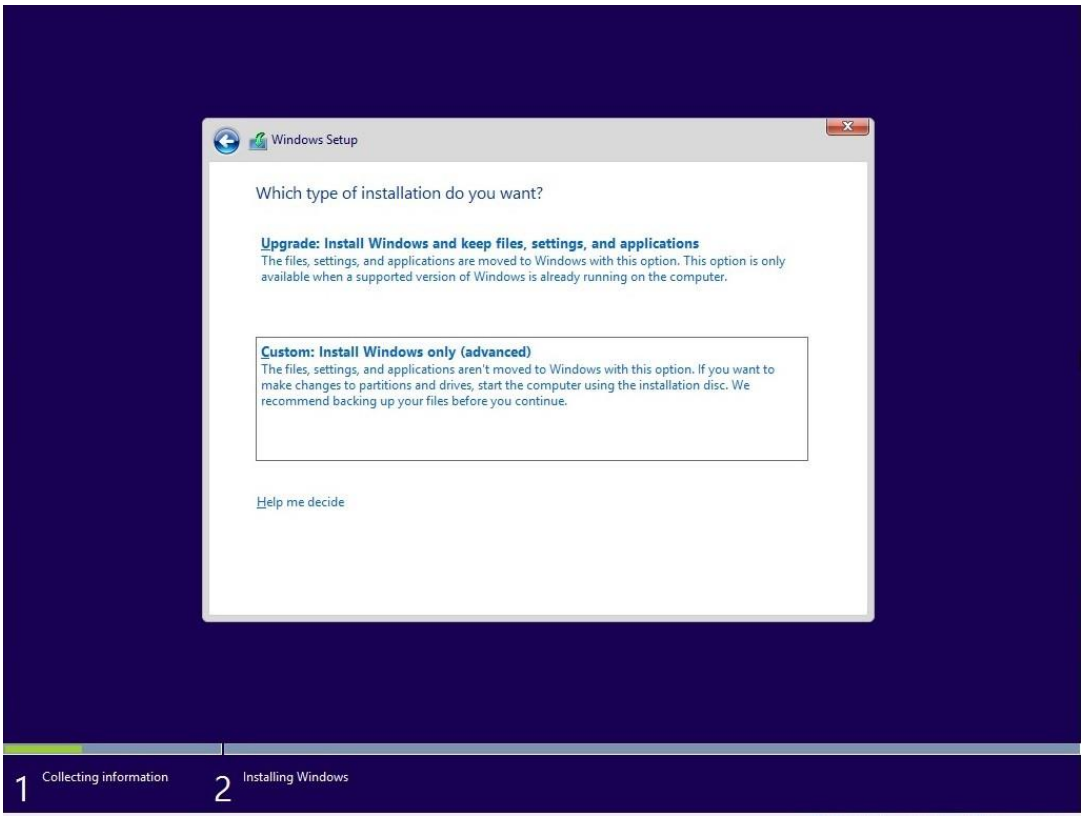


Accept the license terms then click **Next**



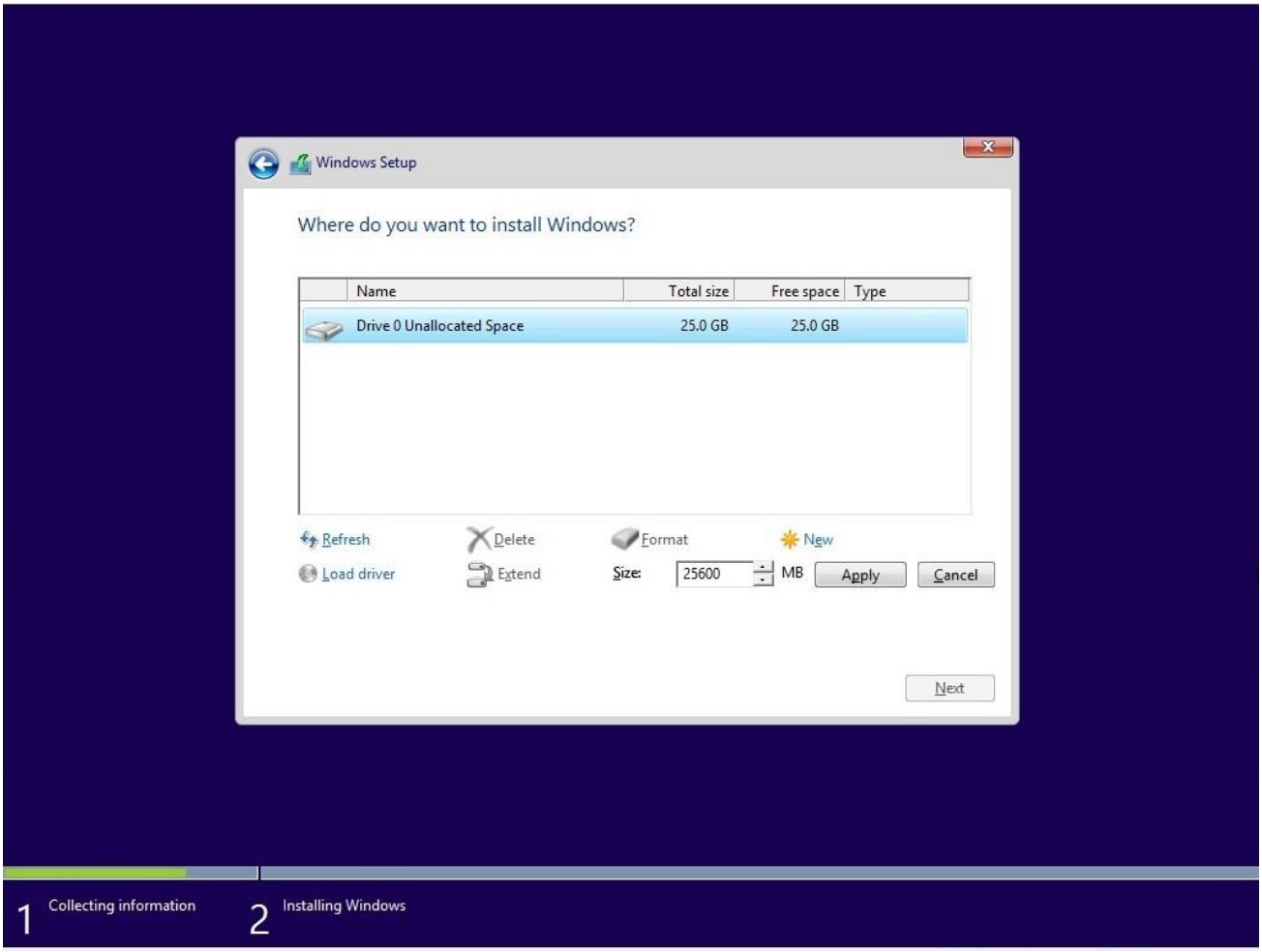
Click **Custom: Install Windows only (advanced)**

NOTE: Sometimes Windows 10 setup can become confused if it see's a thumb drive. You might get a driver missing error or something to that effect. If you do, restart setup, but this time, when you arrive at the following screen, disconnect your thumb drive then go through Custom options. When setup is ready copy files, it will prompt you to reconnect the installation source (your USB).

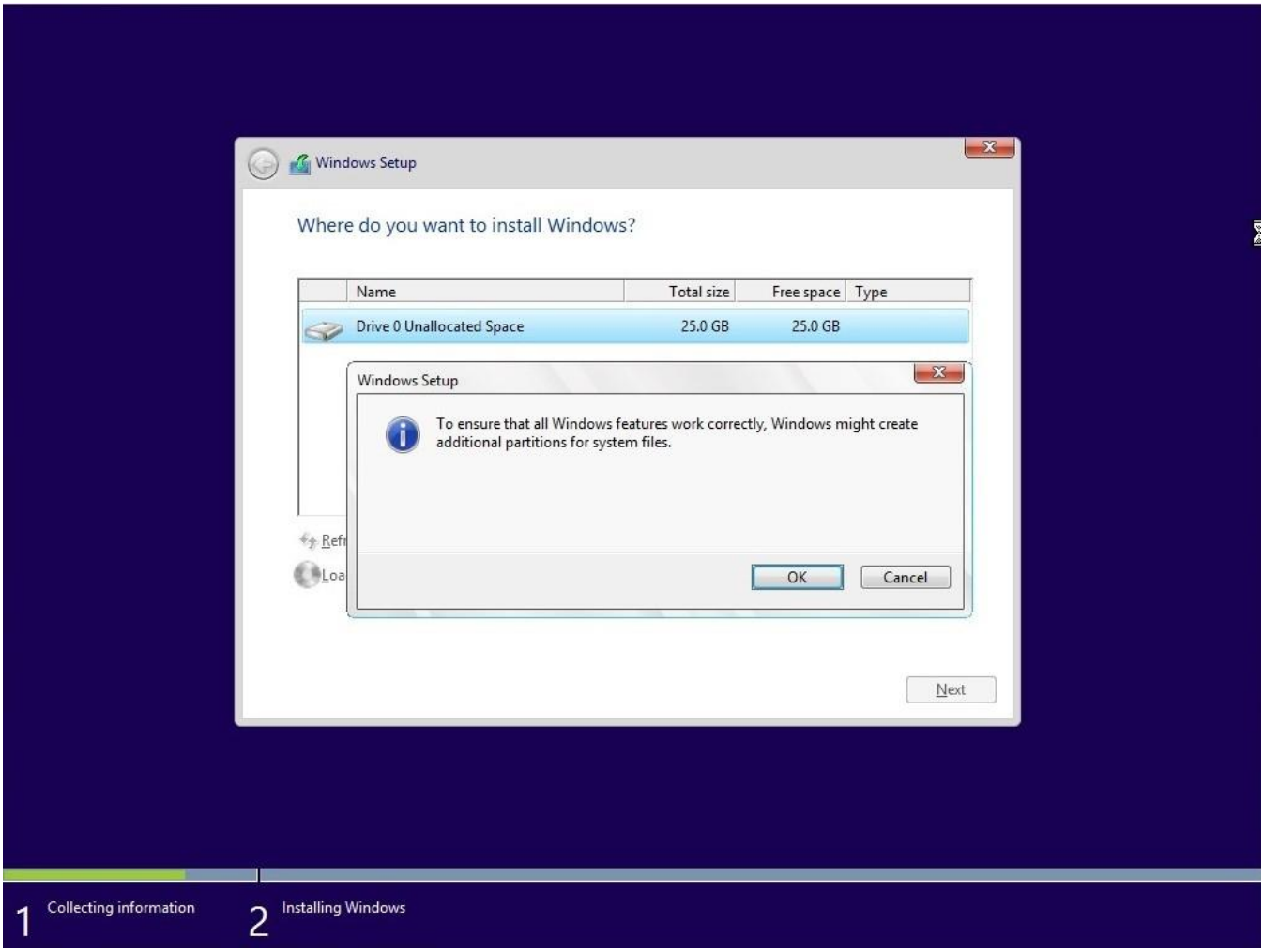


Select the drive then click **New**

NOTE: If you have multiple partitions listed, select each one (starting at the bottom), then click delete until there is only a single (one) unallocated drive displayed in the window.

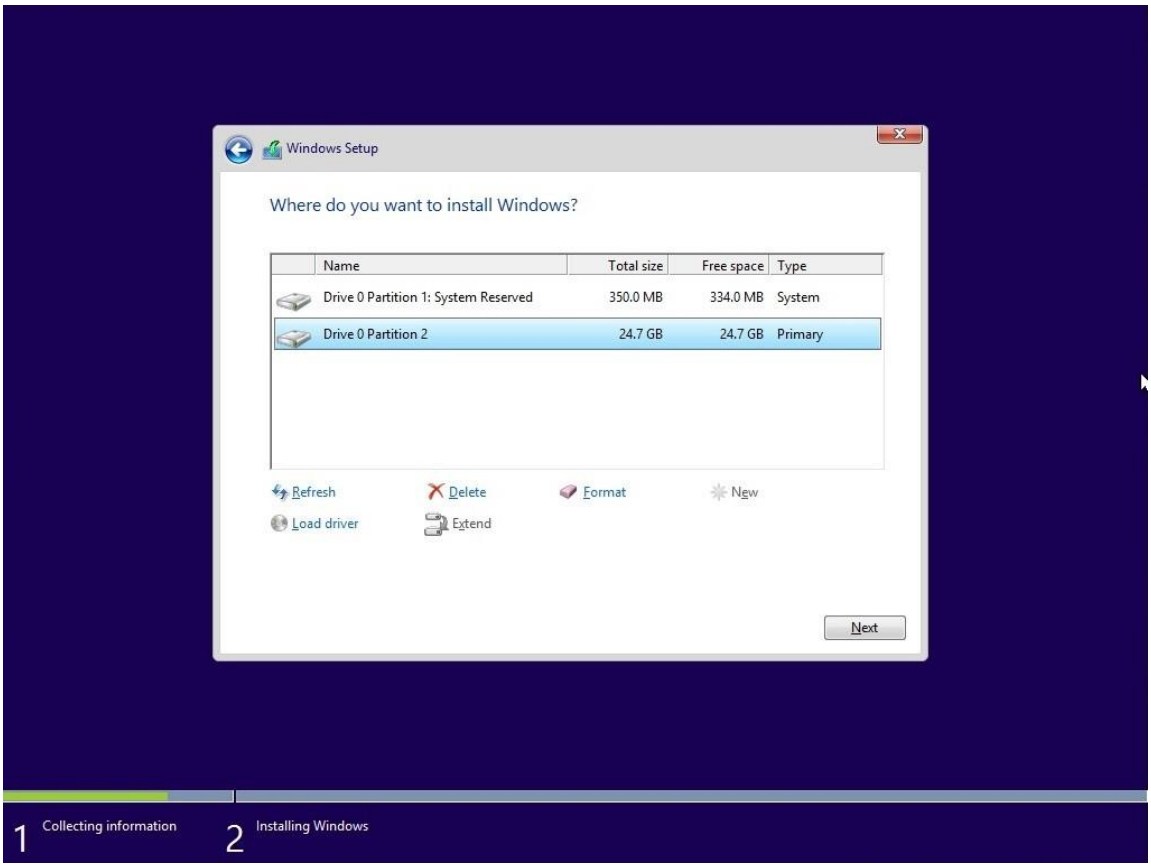


Select the unallocated drive listed, click **New**, click **Apply** then **OK**

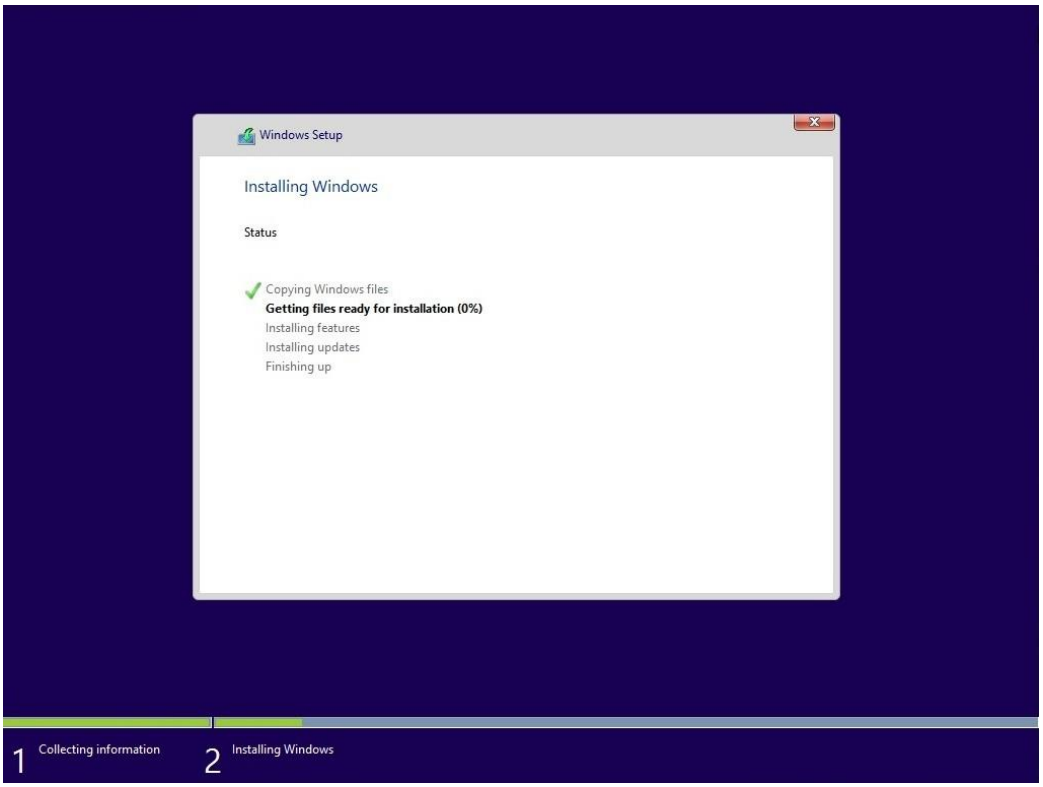


This will split the drive into multiple partitions, select the **Primary** partition then click **Next.**

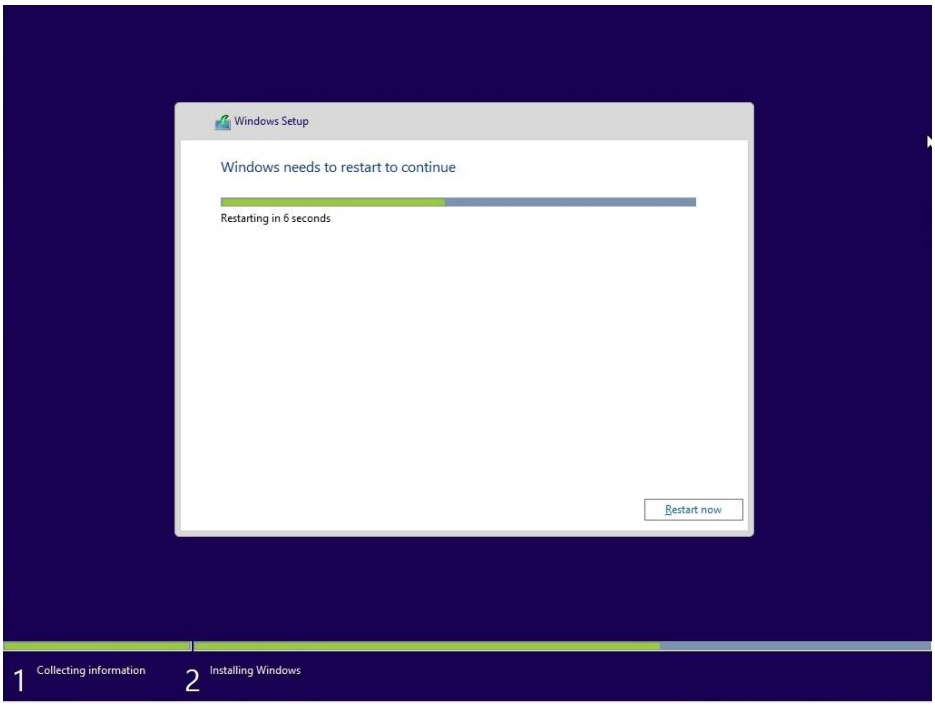
NOTE: The *System Reserved* partition is where recovery files are kept for diagnostics and repairing damaged Windows 10 files; or even reinstall Windows 10.



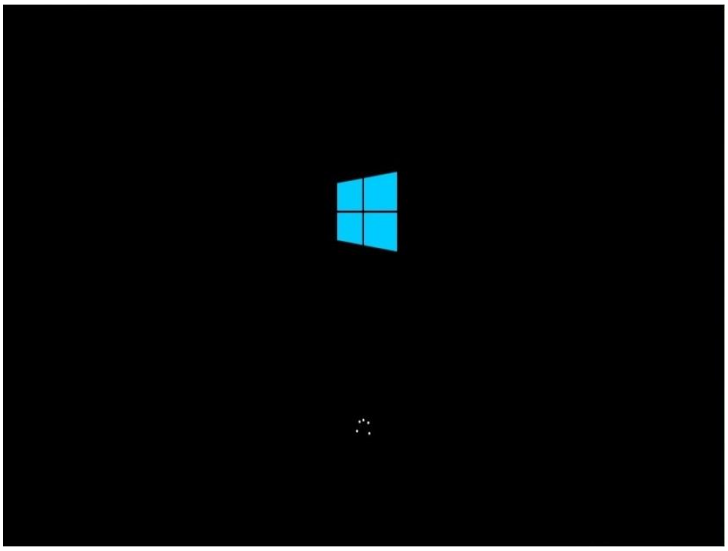
Wait while Windows installs



When this phase of setup is complete, Windows will automatically restart then reboot into setup again.

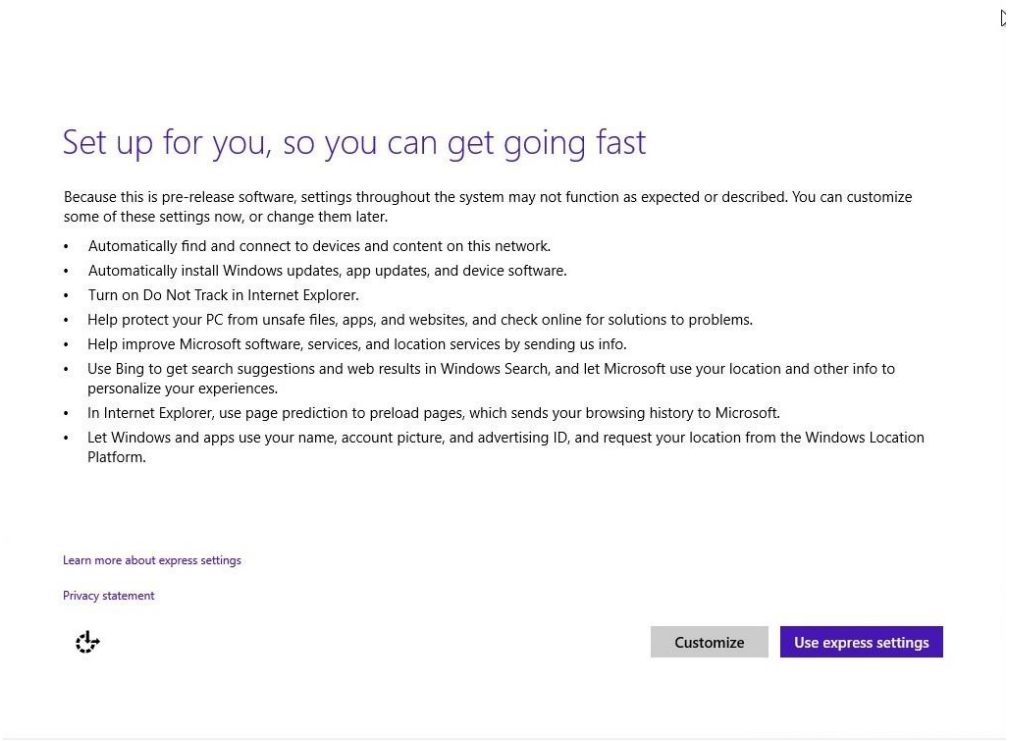


Windows is detecting and installing your hardware. After this is complete, Windows will restart one last time.



Out of Box Experience

The Out of Box Experience page is where you get to configure detailed settings in Windows, which includes creating a user account, configure privacy, sync PC settings and install modern applications.



There you go, Windows 10 has successfully installed!

4. Practice on recovery partition.

To create a recovery drives in Windows 10:

1. In the search box next to the **Start** button, search for **Create a recovery drive** and then select it. You might be asked to enter an admin password or confirm your choice.
2. When the tool opens, make sure **Back up system files to the recovery drive** is selected and then select **Next.**
3. Connect a USB drive to your PC, select it, and then select **Next.**
4. Select **Create.** Many files need to be copied to the recovery drive, so this might take a while.
   If you ever need to use the recovery drive to reinstall Windows 10 on your PC, see Recovery options in Windows for further instructions. It's a good idea to Backup and Restore in Windows frequently because the recovery drive isn't a system image. It doesn't contain your personal files, settings, or programs.

5. Practice 10 registry tweaks.

Accessing the Windows Registry

As all the tweaks require a trip to the Windows Registry, it is important to know how to access the Registry. Press the Win + R keys and type regedit in the “Run” dialog that opens. Click “OK” and the Windows Registry will open.

1. Add Command Prompt to Context Menu

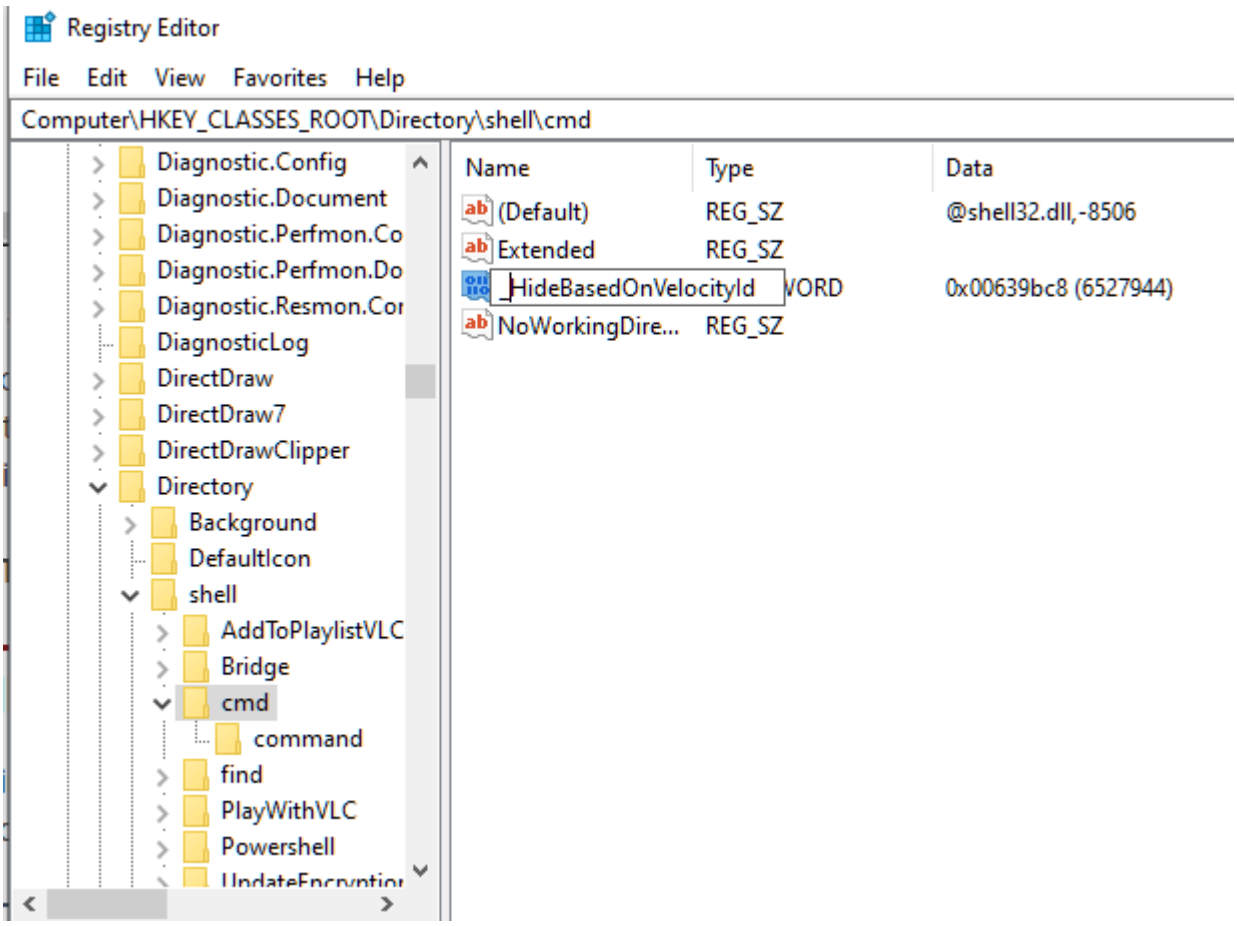
Typing things manually into the command prompt all the time can be a pain. It would be much easier if, say, you could just open the command prompt pointing straight to a location by right-clicking in that location. Well, you can!

In the registry editor, navigate to:

```
HKEY_CLASSES_ROOT\Directory\shell\cmd
```

At this point, you’ll need to take ownership of the “cmd” registry key, as it’s protected by default. Follow our guide on how to take ownership of protected registry keys.

Once that’s done, right-click the entry in the right-hand pane of the cmd folder called “HideBasedOnVelocityId”, click “Rename” then put a “_” at the start of the name so it doesn’t register it any more.



And that’s it. Close the registry editor and the “Open command window here” option should appear in the right-click context menu.

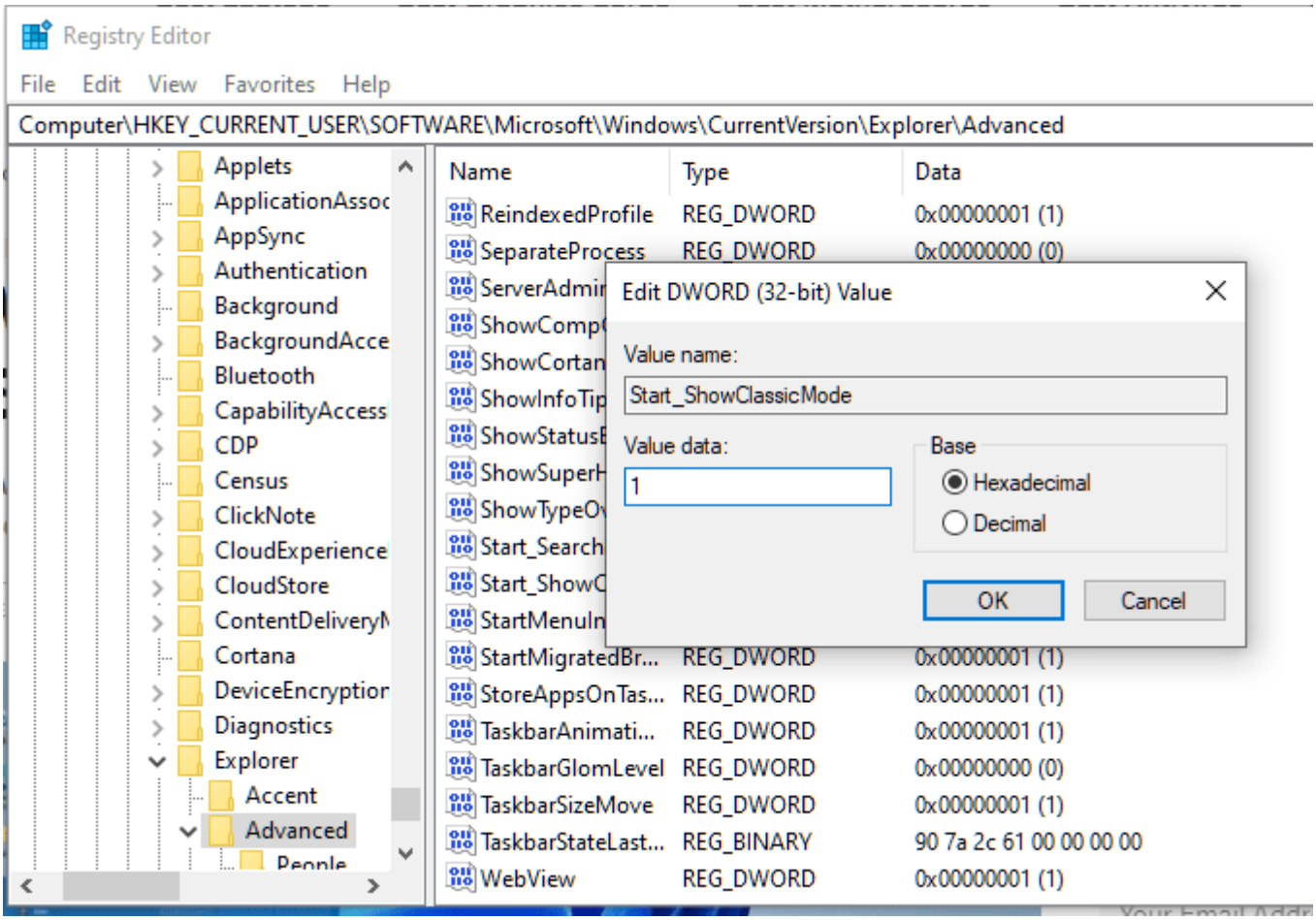
2. Revert to Windows 10-style Start Menu (Windows 11)

One of the hallmark features of Windows 11 is a new-look Start menu. It's a pretty nice look, resembling something you might see in Ubuntu or macOS, but for some the change is a little too drastic and you may want to go back to the old-look Start menu.

Well, with this Windows 11 registry hack you can. Navigate to:

```
HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced\
```

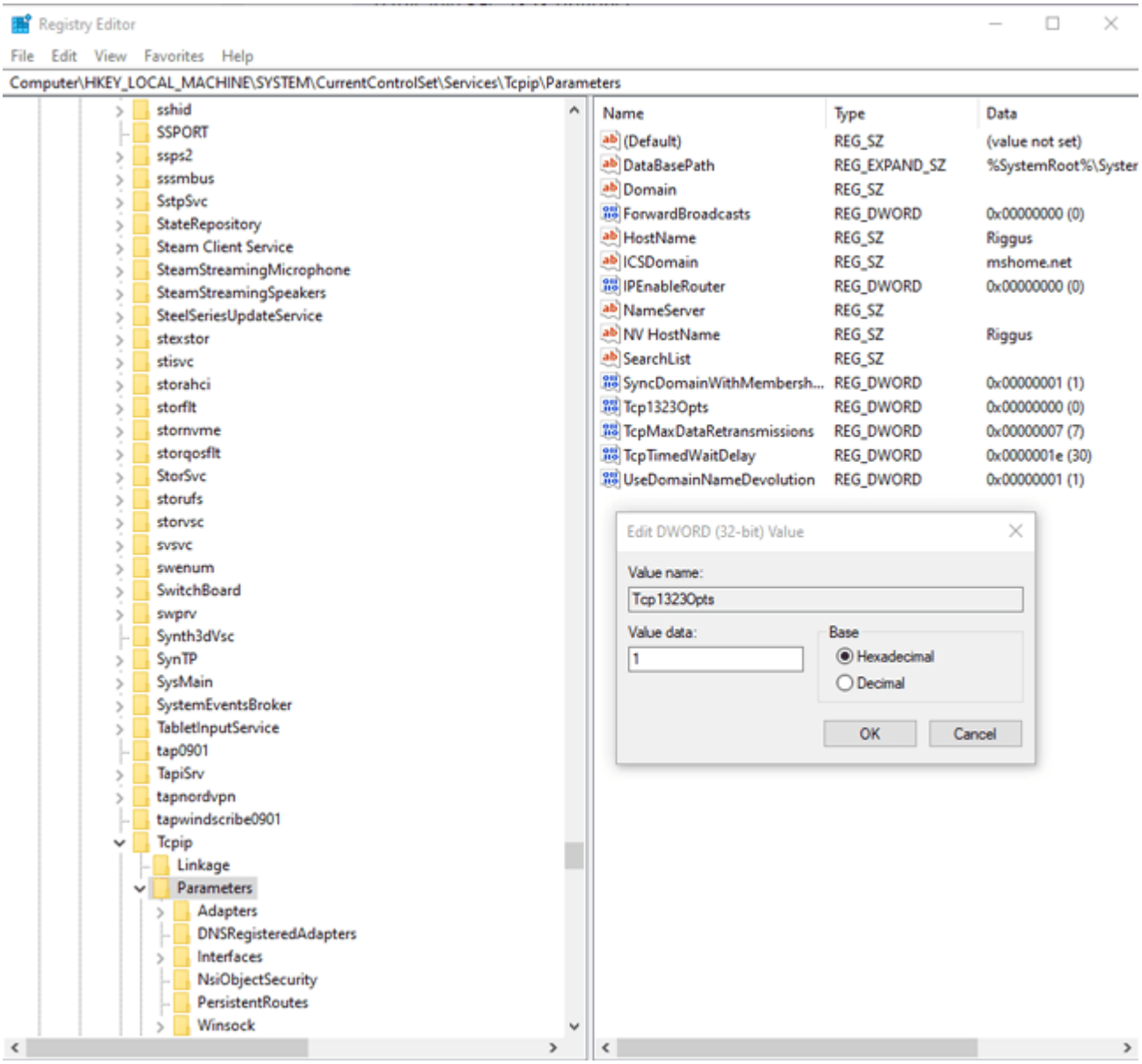
RIght-click an empty space in the right-hand pane, then New -> DWORD 32-bit Value, and call it "Start_ShowClassicMode".



Once it's created, double-click it and change the "Value data" to "1" to enable the Windows 10-style Start menu.

3. Increase Network Speeds

Many of the registry tweaks in the list will involve design or aesthetic changes that may make Windows 10 feel that much slick and better to you. But there's also a whole trove of registry hacks designed to improve your Internet speeds.

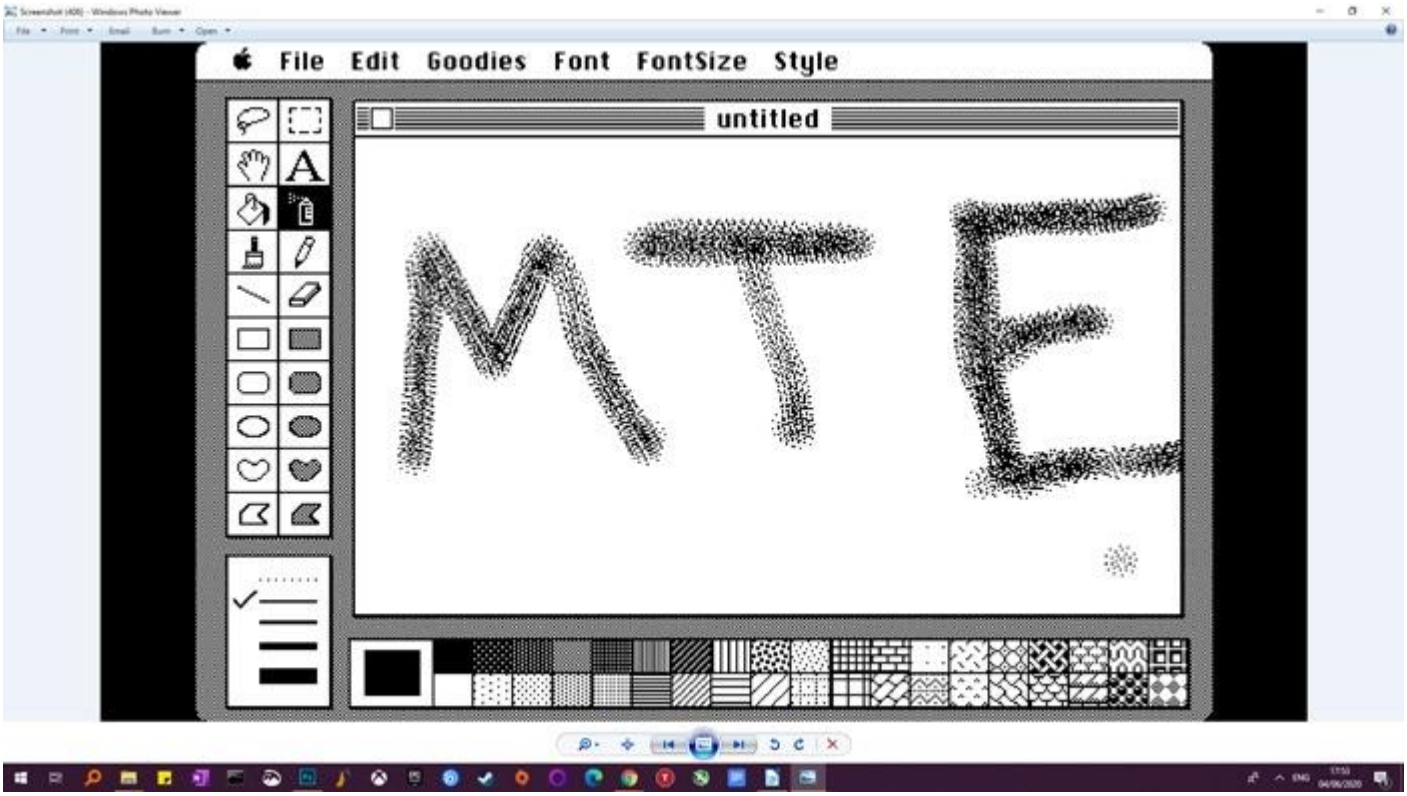


If you're having problems or experiencing packet loss, there are various things you can do, like increase your IRP Stack Size, enable TCP extensions, or increase the maximum number of ports available to various programs trying to connect to your router.

There are enough network speed tweaks in regedit that we have a whole list dedicated to it. If you're mainly in the Registry Editor to improve your Internet speeds, then click on over.

4. Use Windows Photo Viewer Instead of Photos App

Everyone has at some point had problems with the Photos app in Windows 10. It's no big secret. At the same time, the Windows Photo Viewer that we know from back in the Windows 7 days did the job very well, yet it was removed with a Windows 10 update some years ago.

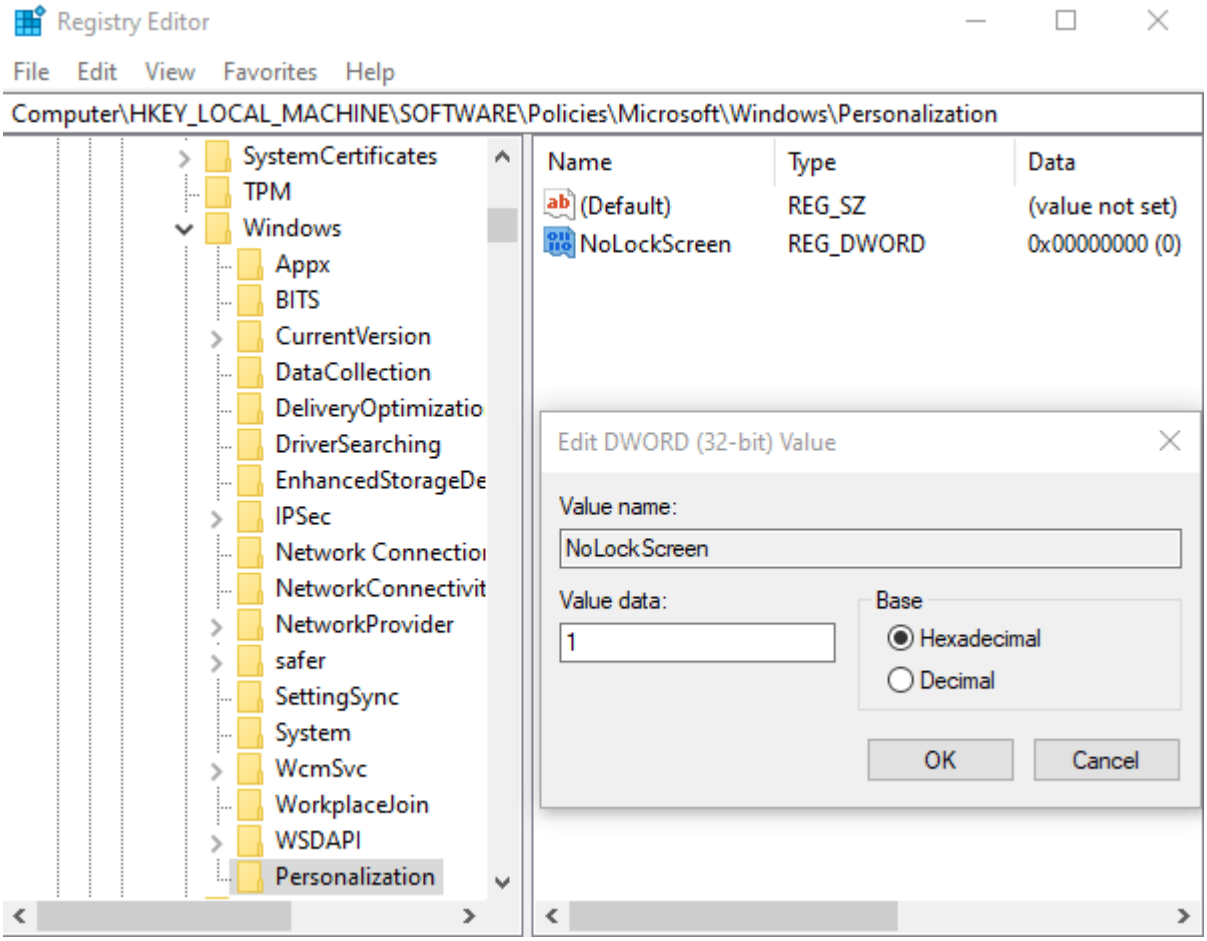


Classic Microsoft.

The code for Photo Viewer is still there in Windows 10. You just need to create a fairly elaborate registry entry to unlock it. It's a little different than your typical registry tweak, and we've created a guide for how to use the registry to make Windows Photo Viewer your default photo app in Windows 10.

5. Disable Windows 10 Lockscreen

The lock screen is a nice added layer of security on your Windows PC, requiring a password or PIN for you to log back in. If you feel secure in the security of your PC, you can turn the lock screen off altogether.



There are a couple of ways you can do this in Windows 10, one of which is through the registry editor. Here's our guide on how to disable your Windows 10 lock screen through the registry.

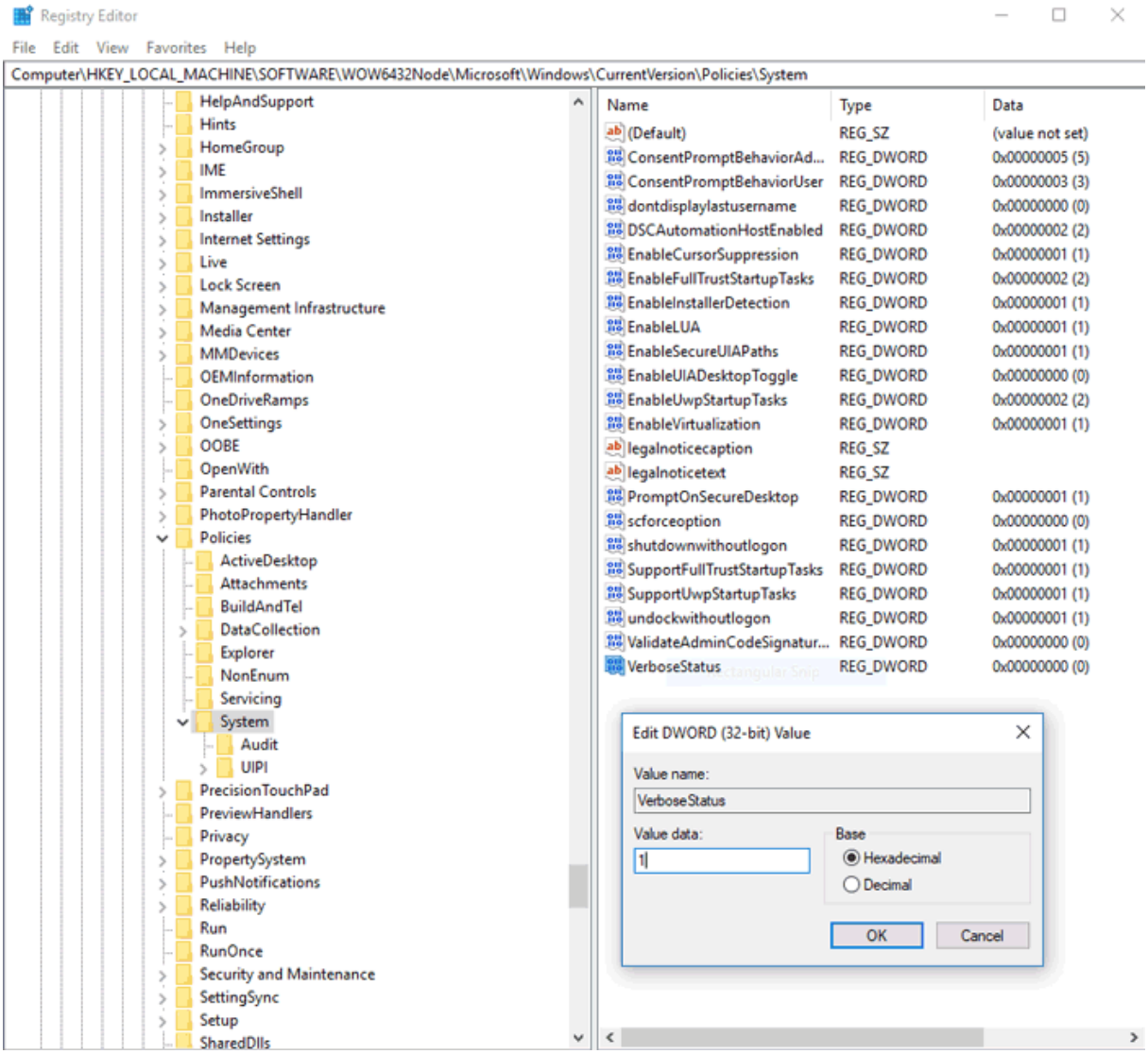
6. Show Detailed Information on Startup

If your PC is experiencing slowdowns or inexplicable crashes, then you should make it your priority to diagnose what's causing those problems. One possible way to do this is to set the Windows 10 startup to "Verbose Mode," which will give you a much more detailed breakdown of the processes happening on your PC as you boot.

To activate this, go to the following registry key:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Microsoft\Windows\CurrentVers
```

Next, right-click an empty space in the pane on the right, then select "New -> DWORD (32-bit) Value."



Name the value “VerboseStatus,” right-click it, select Modify, and in the “Value data” box enter 1.

7. Open Last Active Window in Taskbar

Ever since Windows 7, open apps in the taskbar (or Start bar) have had their own icons, with each open window or instance of that app bundled under that one icon, and visible in thumbnails when you hover your mouse over the icon. This is designed to save space in your taskbar, and generally make things neater.

By default, when you click a taskbar icon for an open app, these thumbnails pop up, but you can make a registry tweak so that when you click a taskbar icon, the last active window of that app opens, which can save some time. Here’s how to do it.

Disable Shake to Minimize

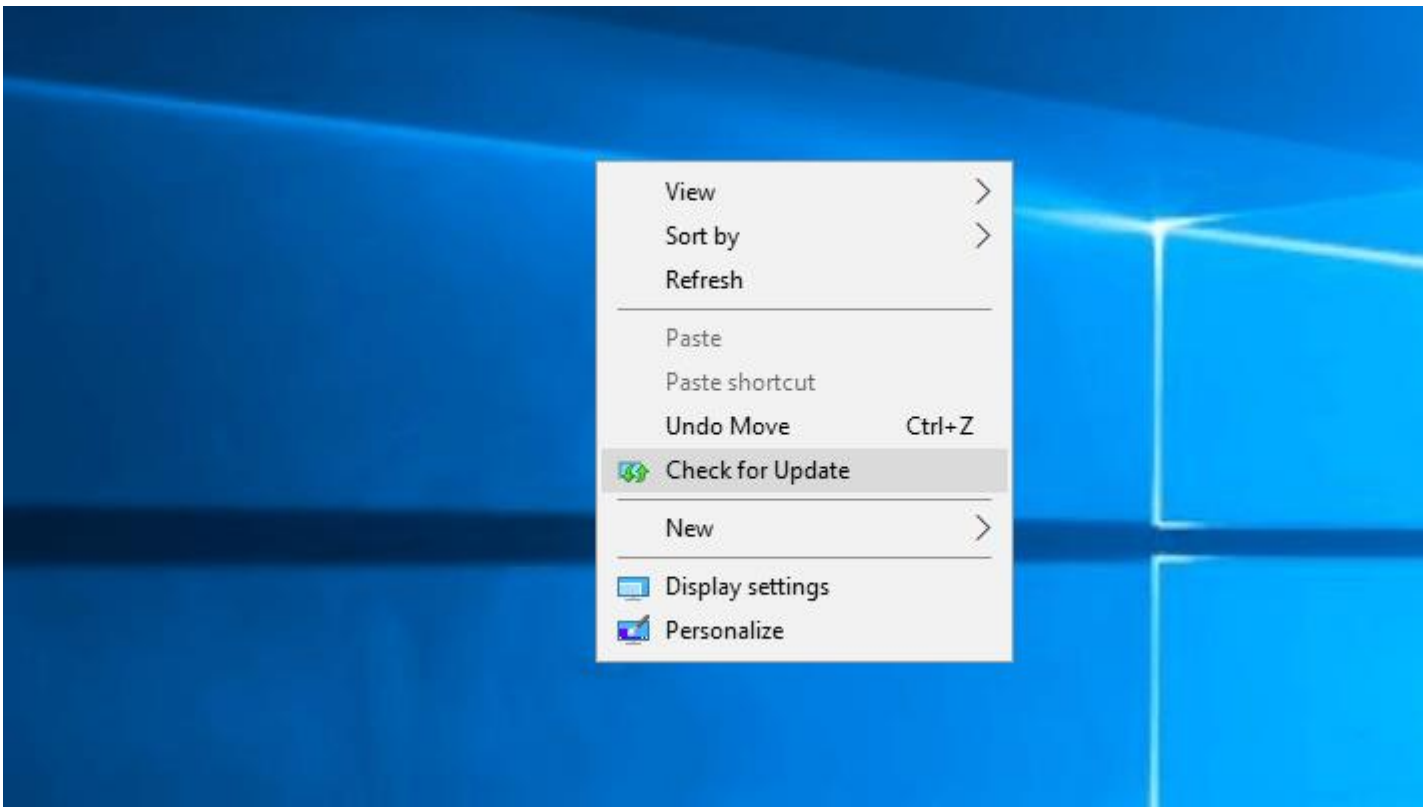
The “Aero Shake” is a feature introduced in Windows 7 that lets you minimize windows by grabbing the one you want to keep open and “shaking” it. You may not have realized you even had this feature,

but now that you know, you might not want it because it can sometimes minimize all your windows without you necessarily wanting that.

Shake to Minimize can also be a problem for people prone to hand tremors due to illness or other causes. If this describes you, click through for our guide on how to remove the "Shake to Minimize" feature.

9. Add Your Own Apps and Options to the Context Menu

The context menu is a fine thing, but to really take control of it, you can create registry keys to add specific apps or Windows features to it. The exact way to do this will depend on what you want to add to the context menu. We have registry hacks for adding "Check for Updates" to the context menu, for example.



We also created a guide showing you how to add an "Open with Notepad" option to the context menu, though really you can replace Notepad in this guide with any other app on your PC.

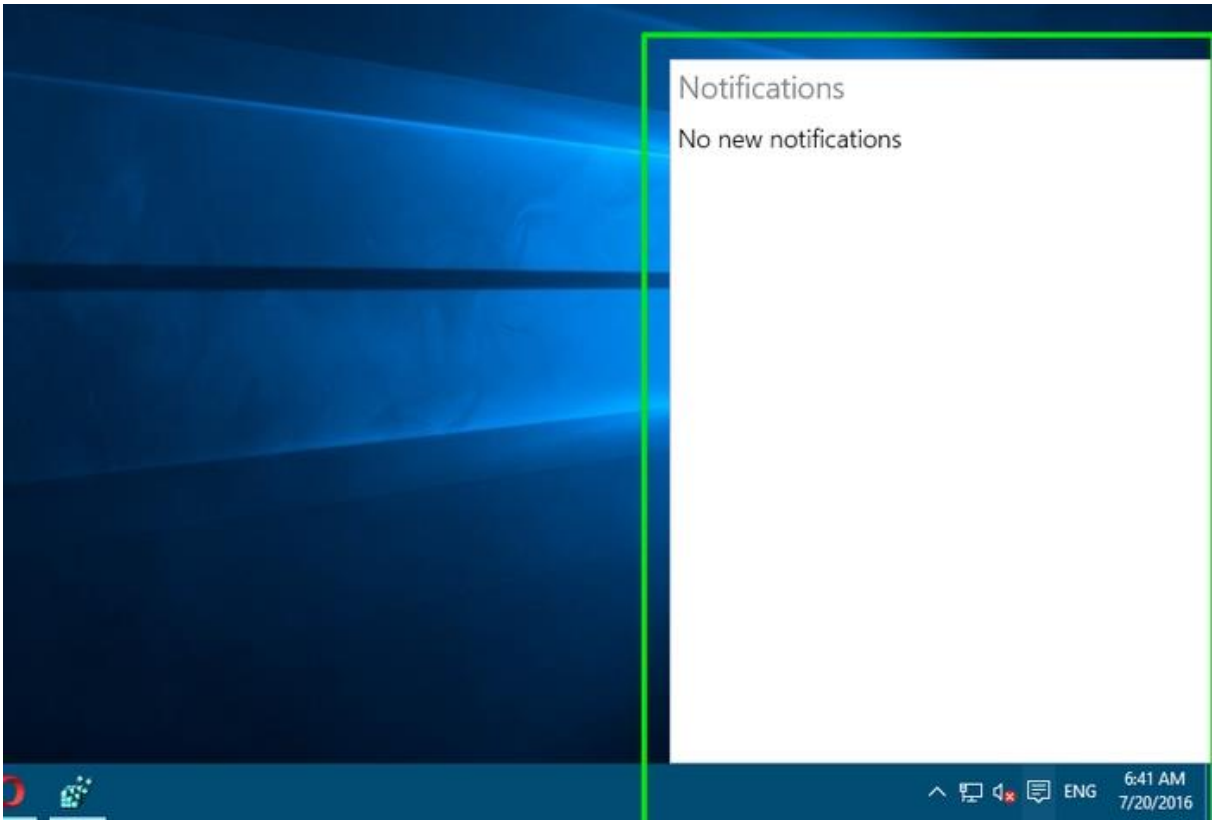
10. Change Windows Apps and Settings to "Dark Mode"

The debate of whether reading white writing on a dark background or dark writing on a light background is healthier rages on, but if you're in the first camp, then you can use the registry to activate Dark Mode across Windows.

Click on through to see our guide on how to switch all the most common apps in Windows 10 into Dark Mode.

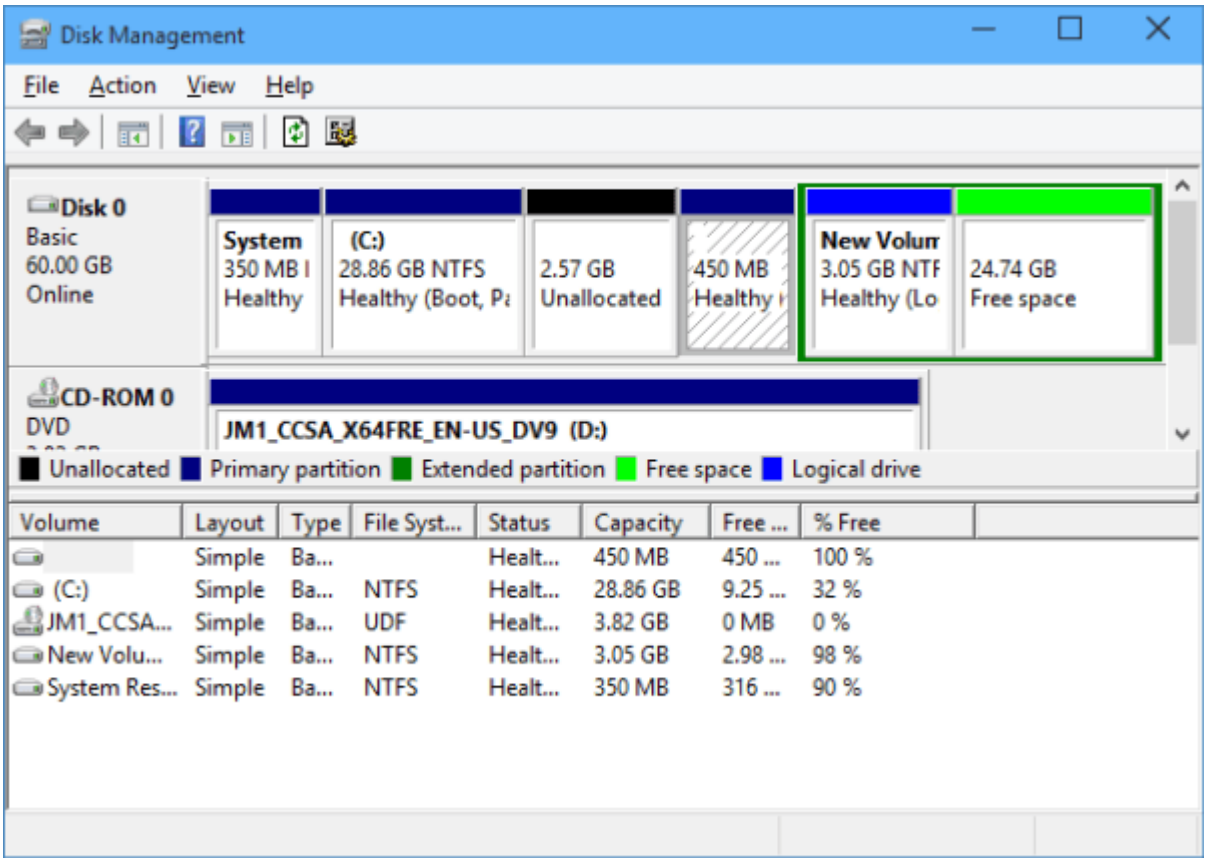
11. Remove the Windows 10 Action Center Sidebar

Windows 10 Action Center Sidebar offers handy quick access buttons and notifications. However, if you find these buttons to be unnecessary and are not comfortable with the sidebar taking up half the screen when you open it, you can simply disable it.



There are a couple of ways to do this, including the trusty registry, so click on through for our guide on how to remove the Windows 10 Action Center altogether.

Way 1: The easiest way to open Disk Management in Windows 10 is from computer Desktop. Right click on Start Menu (or press Windows+X hotkey) and then select "Disk Management". Way 2: Use Windows+R hotkey to open Run window. Then type "**Diskmgmt. msc**" and click "OK" or hit "Enter" key.



Experiment 9:

1. Practice data recovery methods
2. Working with task manager to troubleshoot configuration and other performance related issues.
3. Working with task scheduler. Customizing windows desktop.

Answer:

1. **Practice data recovery methods**

HARD DRIVE RECOVERY

A large percentage of data recovery services comes from hard drive failures and is increasing. Because technology is advancing everyday, hard drives are getting larger and holding more data, which means that data recovery is more important than it used to be because people are worried about losing all of their precious data.

Hard drives are reaching capacity levels of 200 gigabytes or more. This means that the potential for extreme data loss has skyrocketed. Almost everything that is done is put on a hard drive in one form or another and people are neglecting to back up that hard drive and are at risk of losing everything.

RAID RECOVERY

RAID systems are extremely complex and due to the extreme expertise needed to develop, administer, and maintain, there is much more potential for damage and configuration problems. When a RAID system is not backed up correctly, it can lead to complete business failure or extreme financial loss. RAID systems are the most critical part of a company since everything is digital now. If your RAID system fails, do not touch it or try and fix it your self. Call a specialist or things could be lost forever.

TAPE RECOVERY

Tape is primarily used for backup and is used as a sequential storage media. Tape allows for large capacity backup and is good for businesses. Just remember, like the RAID system, it is very complex and you should not take on the recovery yourself. You could end of making things worse. Professionals have unique technology and tools specifically for tape recovery. Chances are, professionals have seen every kind of tape recovery and will be able to help as long as you do not make things worse.

OPTICAL RECOVERY

Optical media is written and read by a laser, such as CDs and DVDs. There are many problems that can cause an optical media to fail. The CD or DVD could become scratched, the player could ruin the media and more. Please do not attempt to fix. This will only make things worse.

REMOVABLE RECOVERY

Removable recovery involves storage media such as floppy disks, zip drives, and other related storage media. Theses storage devices are much smaller, therefore they hold less than the other types of media we have talked about.

There are a number of problems that can arise from these storage devices. These include physical damages and human error. These problems can cause overwritten data, disk reformatting, and virus damage. Every recovery situation is unique and when this happens make sure you call a professional right away.

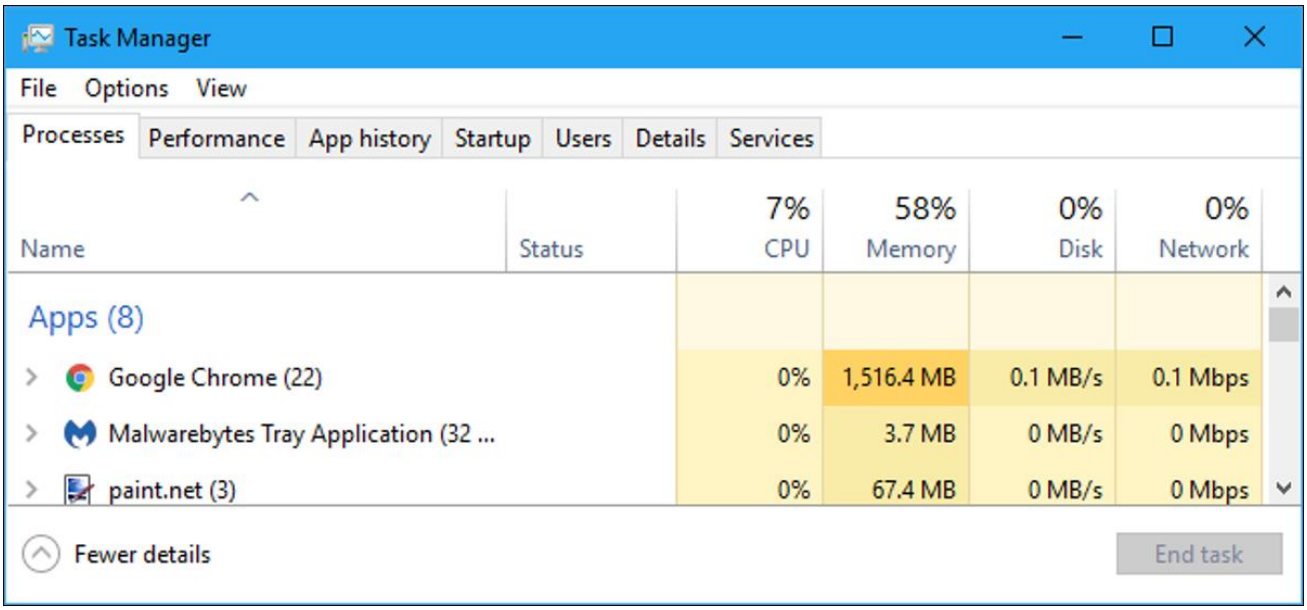
DIGITAL RECOVERY

Digital media devices include cameras, portable storage devices, and other flash media. Since these are becoming more affordable, there is a rising demand for recovery for these types of products. Data recovery companies have developed appropriate digital data loss solutions.

If you do experience a failure of any of these devices, do not panic and call a data recovery specialist right away. Datatech Labs is here to help. Contact us today at 888-288-DATA!

2. Working with task manager to troubleshoot configuration and other performance related

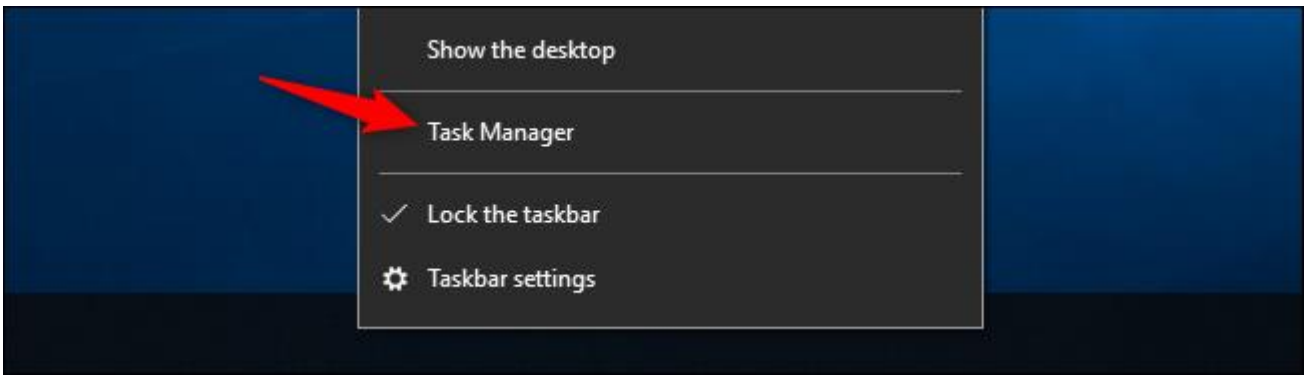
issues.



The Windows Task Manager is a powerful tool packed with useful information, from your system's overall resource usage to detailed statistics about each process. This guide explains every feature and technical term in the Task Manager.

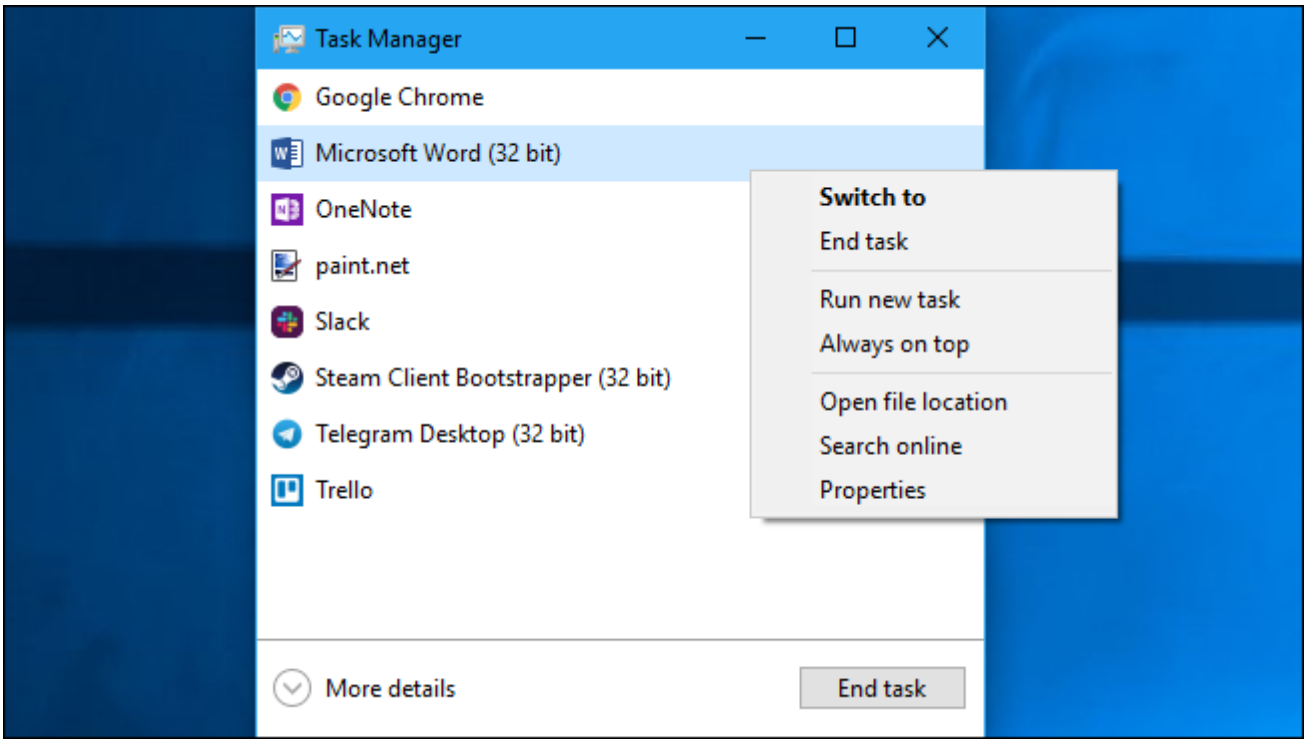
This article focuses on Windows 10's Task Manager, although much of this also applies to Windows 7. Microsoft has dramatically improved the Task Manager since the release of Windows 7.

How to Launch the Task Manager



Windows offers many ways to launch the Task Manager. Press Ctrl+Shift+Esc to open the Task Manager with a keyboard shortcut or right-click the Windows taskbar and select "Task Manager." You can also press Ctrl+Alt+Delete and then click "Task Manager" on the screen that appears or find the Task Manager shortcut in your Start menu.

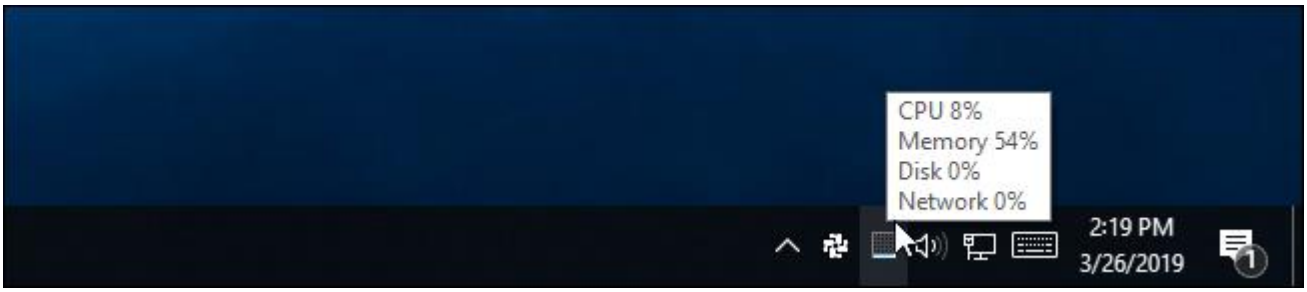
The Simple View



The first time you launch the Task Manager, you'll see a small, simple window. This window lists the visible applications running on your desktop, excluding background applications. You can select an application here and click "End Task" to close it. This is useful if an application isn't responding—in other words, if it's frozen—and you can't close it the usual way.

You can also right-click an application in this window to access more options:

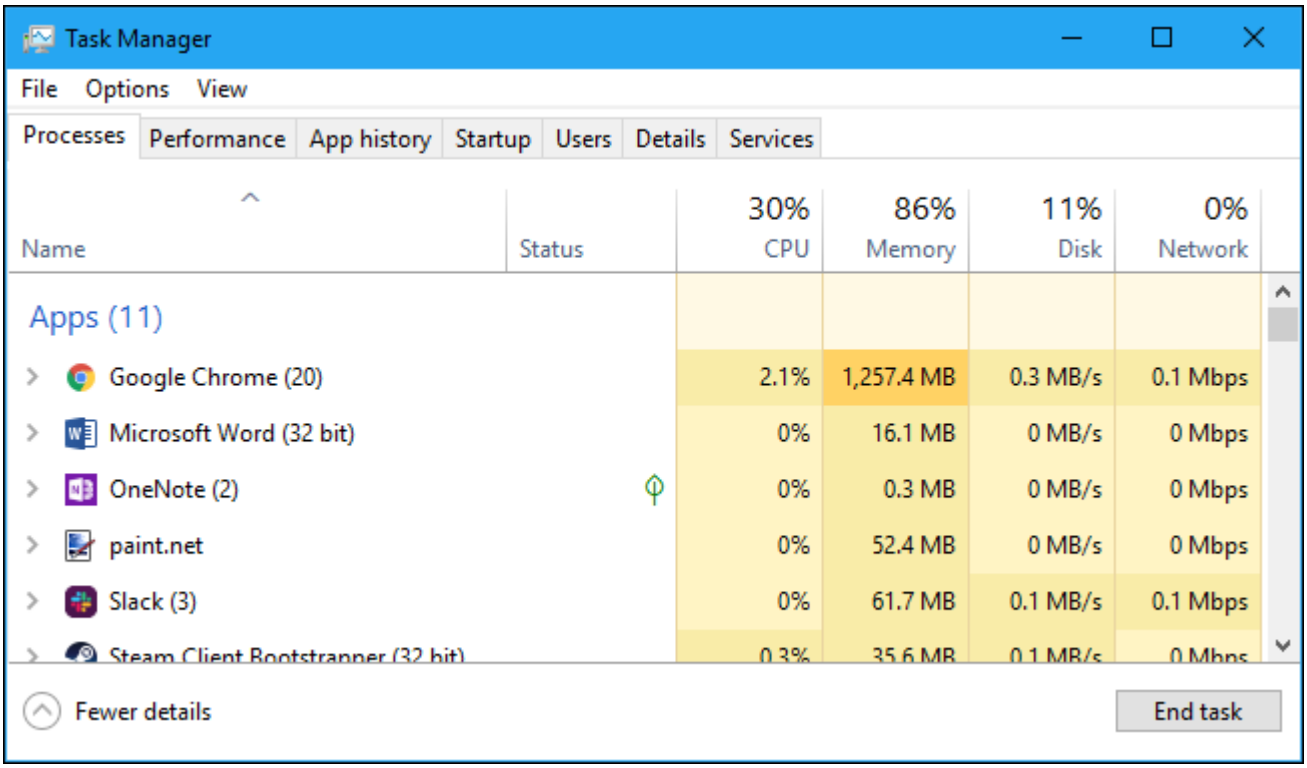
- **Switch To**: Switch to the application's window, bringing it to the front of your desktop and putting it in focus. This is useful if you're not sure which window is associated with which application.
- **End Task**: End the process. This works the same as the "End Task" button.
- **Run New Task**: Open the Create New Task window, where you can specify a program, folder, document, or website address and Windows will open it.
- **Always On Top**: Make the Task Manager window itself "always on top" of other windows on your desktop, letting you see it at all times.
- **Open File Location**: Open a File Explorer window showing the location of the program's .exe file.
- **Search Online**: Perform a Bing search for the program's application name and file name. This will help you see exactly what the program is and what it does.
- **Properties**: Open the Properties window for the program's .exe file. Here you can tweak compatibility options and see the program's version number, for example.



While the Task Manager is open, you'll see a Task Manager icon in your notification area. This shows you how much CPU (central processing unit) resources are currently in use on your system, and you can mouse over it to see memory, disk, and network usage. It's an easy way to keep tabs on your computer's CPU usage.

To see the system tray icon without the Task Manager appearing on your taskbar, click Options > Hide When Minimized in the full Task Manager interface and minimize the Task Manager window.

The Task Manager's Tabs Explained



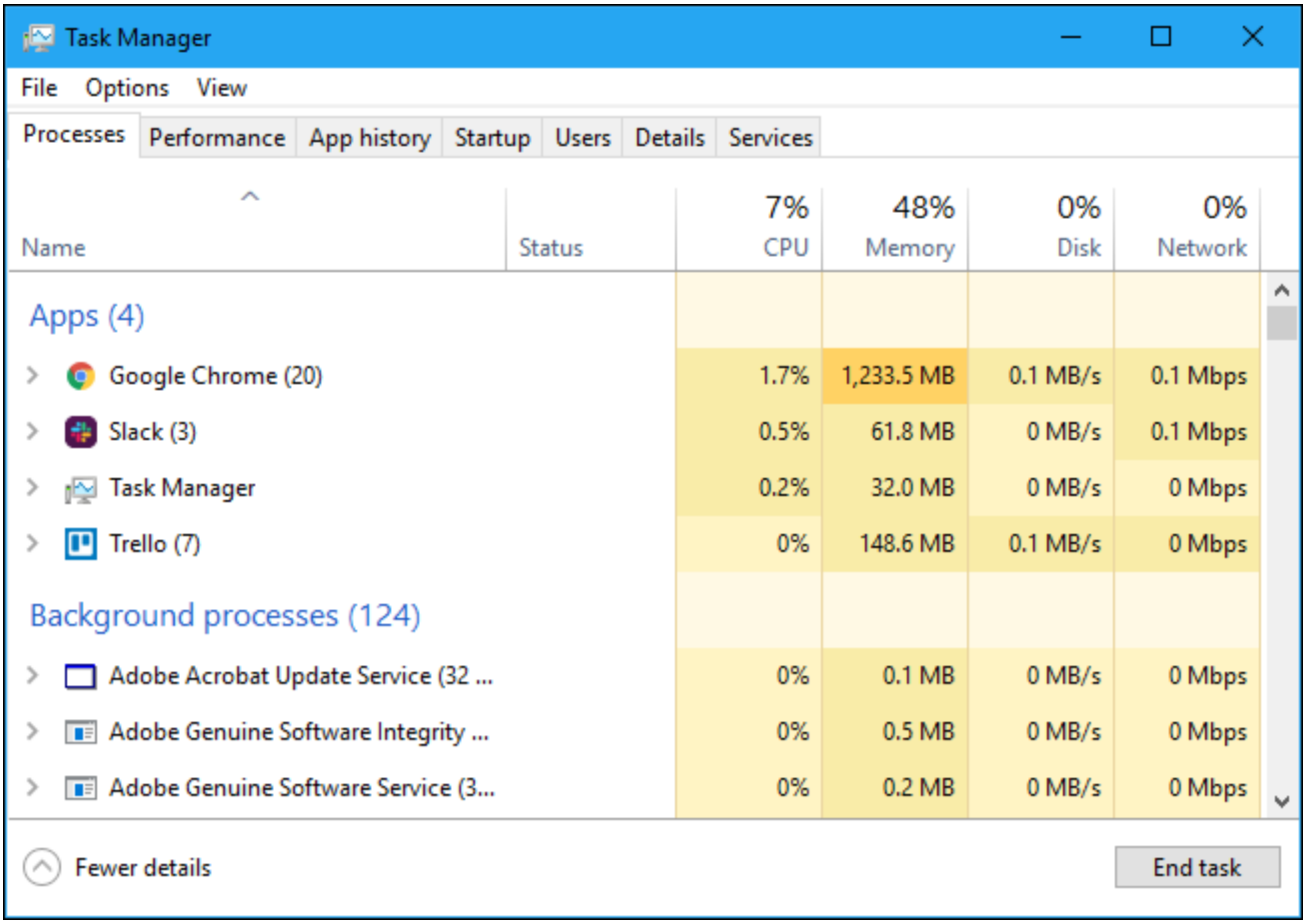
To see the Task Manager's more advanced tools, click "More Details" at the bottom of the simple view window. You'll see the full, tabbed interface appear. The Task Manager will remember your preference and will open to the more advanced view in the future. If you want to get back to the simple view, click "Fewer Details."

With More Details selected, the Task Manager includes the following tabs:

- **Processes**: A list of running applications and background processes on your system along with CPU, memory, disk, network, GPU, and other resource usage information.

- **Performance**: Real-time graphs showing total CPU, memory, disk, network, and GPU resource usage for your system. You'll find many other details here, too, from your computer's IP address to the model names of your computer's CPU and GPU.
- **App History**: Information about how much CPU and network resources apps have used for your current user account. This only applies to new Universal Windows Platform (UWP) apps—in other words, Store apps—and not traditional Windows desktop apps (Win32 applications.)
- **Startup**: A list of your startup programs, which are the applications Windows automatically starts when you sign into your user account. You can disable startup programs from here, although you can also do that from Settings > Apps > Startup.
- **Users**: The user accounts currently signed into your PC, how much resources they're using, and what applications they're running.
- **Details**: More detailed information about the processes running on your system. This is basically the traditional "Processes" tab from the Task Manager on Windows 7.
- **Services**: Management of system services. This is the same information you'll find in services.msc, the Services management console.

Managing Processes



The Processes tab shows you a comprehensive list of processes running on your system. If you sort it by name, the list is broken into three categories. The Apps group shows the same list of running applications you'd see in the "Fewer details" simplified view. The other two categories are

background processes and Windows processes, and they show processes that don't appear in the standard simplified Task Manager view.

3. Working with task scheduler. Customizing windows desktop.

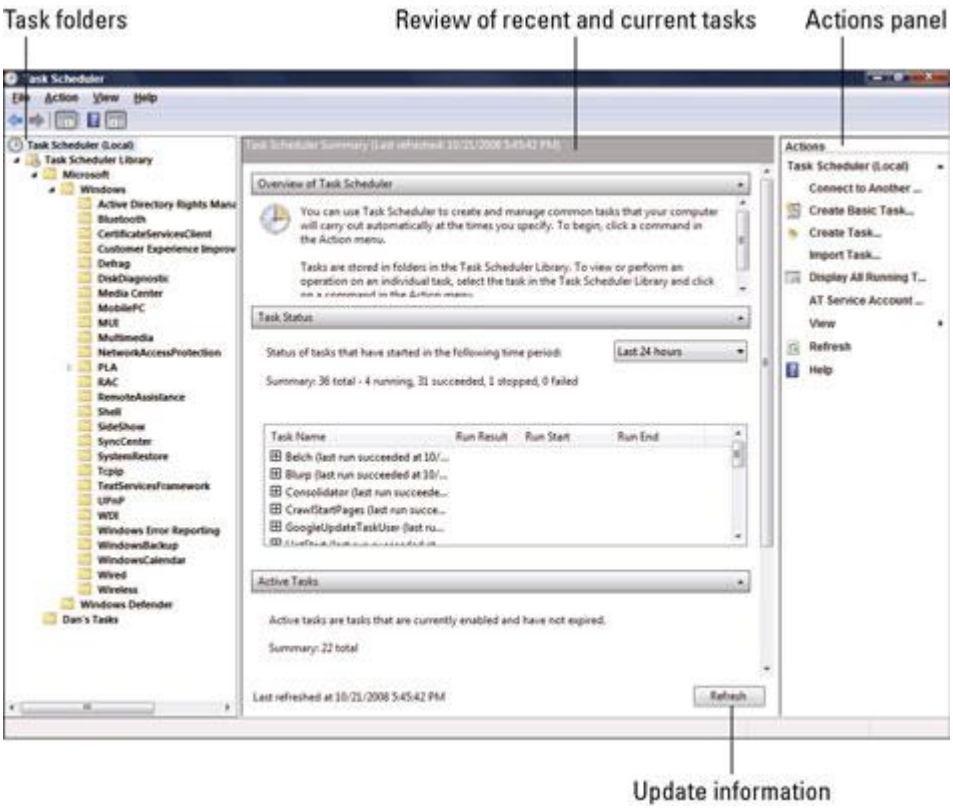
Task Scheduler is a job scheduler in Microsoft Windows that launches computer programs or scripts at pre-defined times or after specified time intervals. Microsoft introduced this component in the Microsoft Plus! for Windows 95 as System Agent. Its core component is an eponymous Windows service.

1. Open the Control Panel.
2. Open the Administrative Tools window.
   - In Windows 7, look under System and Security.
   - In Windows Vista, under System and Maintenance.
3. Open the Task Scheduler icon.
4. If prompted, type the administrator's password or click Continue.

The Task Scheduler window appears.

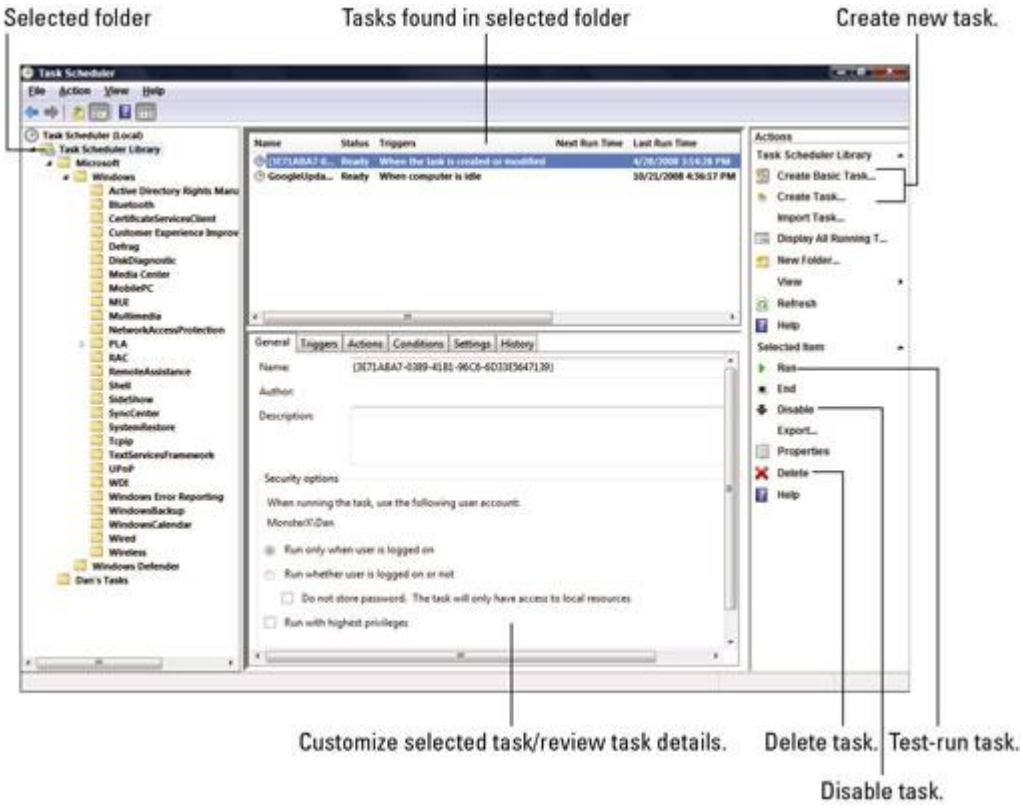
5. On the left side, select the top item, Task Scheduler (Local).

You see the Task Scheduler Summary. It provides a review of your tasks, including which tasks have run and which are active.



6. On the left side, choose Task Scheduler Library.

   Tasks are organized into folders. The Task Scheduler Library folder is the “root folder” for all tasks.



   Additional tasks in the Task Scheduler window are organized by owner. You see a folder for Microsoft, which contains subfolders for Windows and Windows Defender. When the Windows folder is open, it shows additional subfolders for tasks related to specific programs or tools in Windows.

7. Open the Microsoft folder, and then the Windows folder, and finally the System Restore folder.

The System Restore folder contains tasks that periodically create restore points for system recovery. The top part of the window describes the tasks for the System Restore folder. One task that's listed, SR, is shown as Ready. You can also see the next and last run times, which verifies that the task is performing properly.

On the General tab at the bottom of the screen, you see the task's description. You can also see that the task is scheduled to run whether you're logged in or not.

8. Click the Triggers tab.

   A *trigger* is an event that prompts a task to run. It can be a time of day or it can be an action, such as system startup.

9. Click the Actions tab.

   An *action* is what a task does — run a program, display a message, or make another thing happen, set a restore point, defragment the hard drive, or send an email message, for example.

   Yes, the action shown for setting a restore point is technical. But keep in mind that you're viewing a Windows task. The tasks you set up will not be as complex.

10. Click the Conditions tab.

    The settings on the Condition tab refine when the task is run. The task doesn't run unless all the conditions are met.

11. Click the Settings tab.

    The Settings tab lists further control over the task, including when to stop a task that might run amok.

12. Click the History tab.

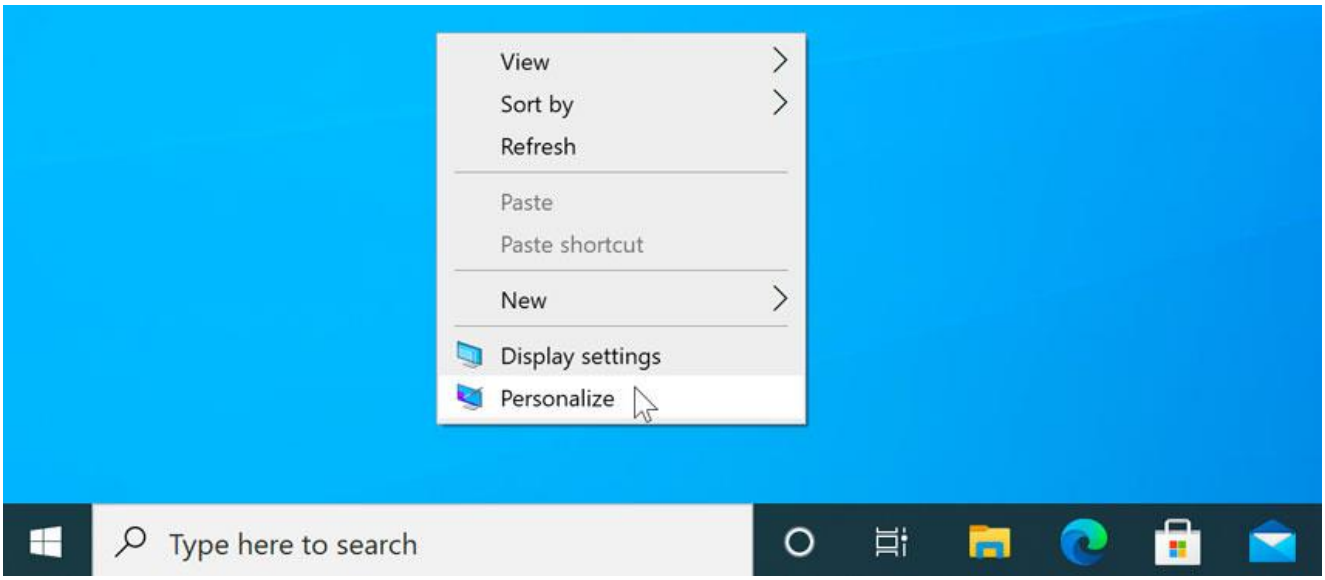
    You find on the History tab some information about when the task was last run and whether it ran successfully. That's your way to test whether your tasks are doing what you set them to do.

13. Close the Task Scheduler window when you're done poking around.

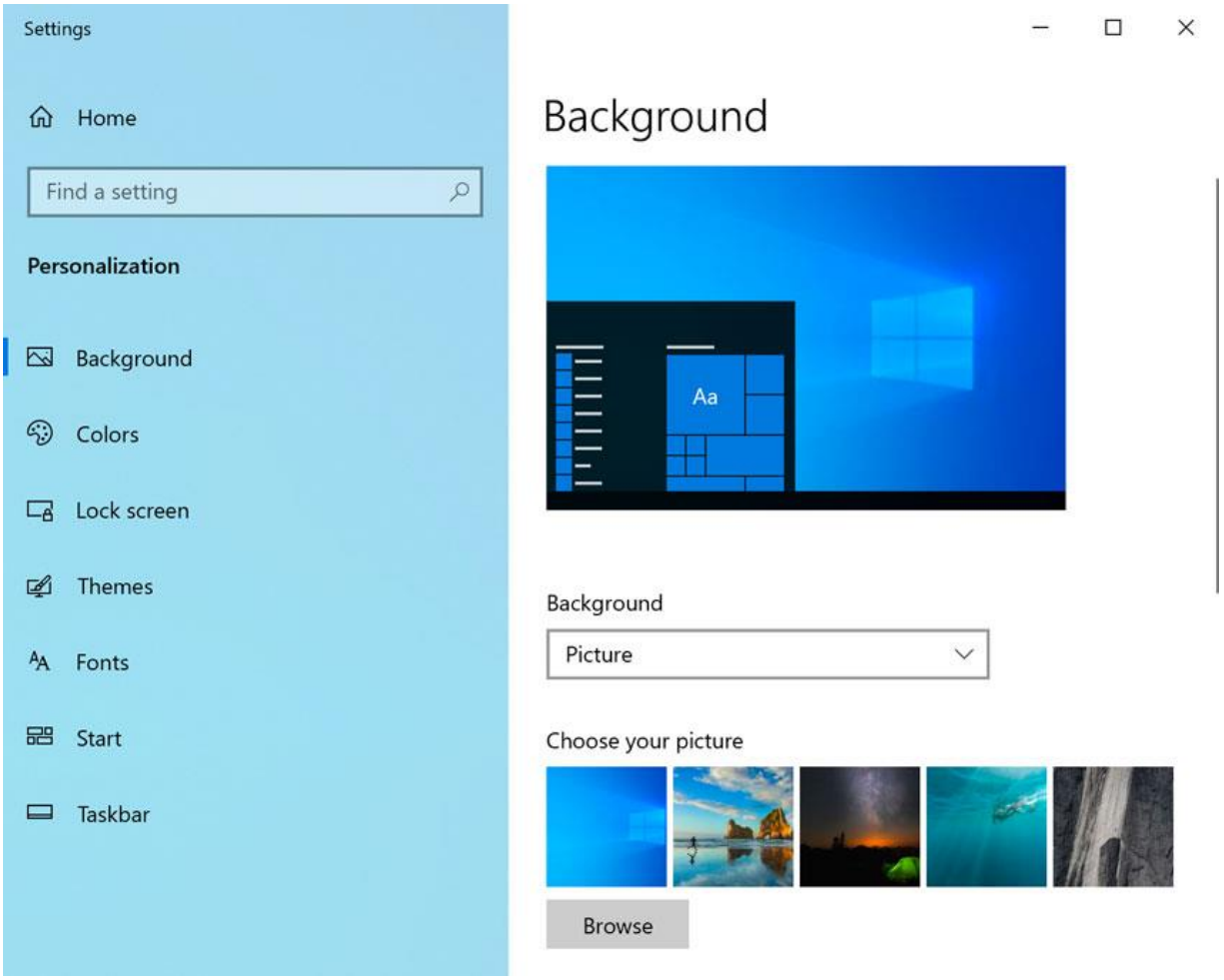
    You can choose any task in any folder to study how it's set up, how it works, and whether it's run. In fact, reviewing the already-created tasks is a helpful way to find different ways to configure your own tasks.

Customizing your desktop

Windows 10 makes it easy to customize the look and feel of your desktop. To access the **Personalization settings**, right-click anywhere on the desktop, then select **Personalize** from the drop-down menu. The Personalization settings will appear.



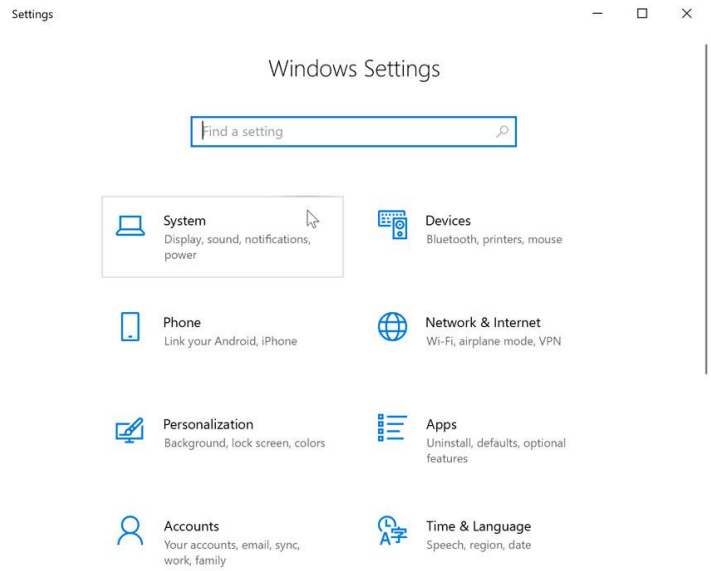
Click the buttons in the interactive below to learn more about using the Personalization settings.



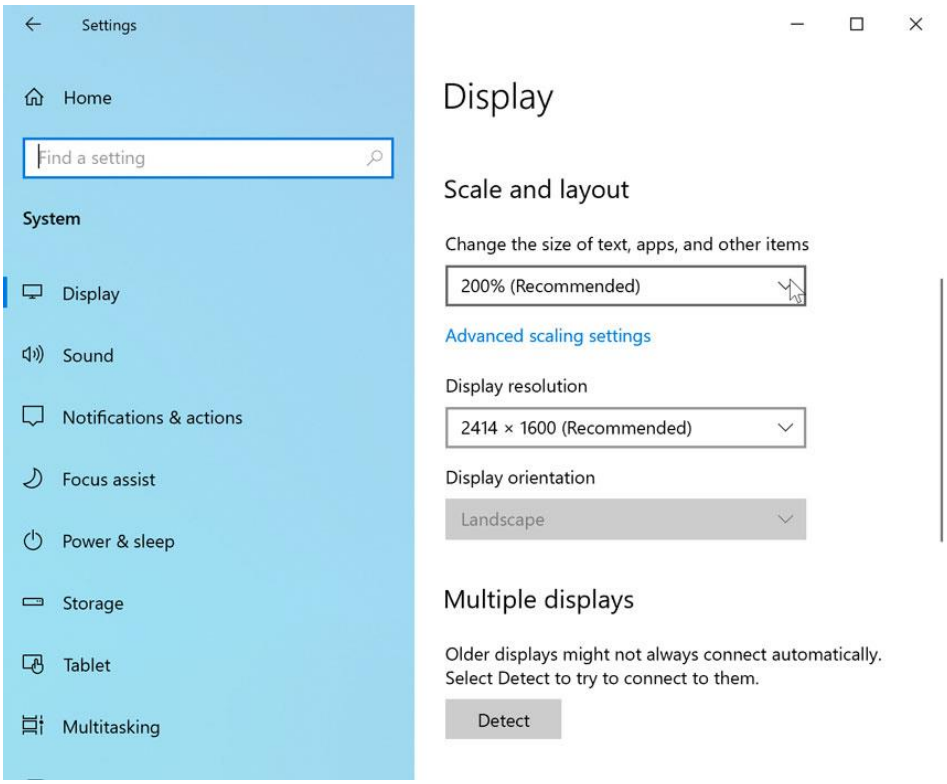
To change the font size:

If you have difficulty seeing the text on your computer, you can increase the **font size**. Increasing the font size will also increase the size of icons and other items on your desktop.

1. Open the **Settings** app, then select **System**.



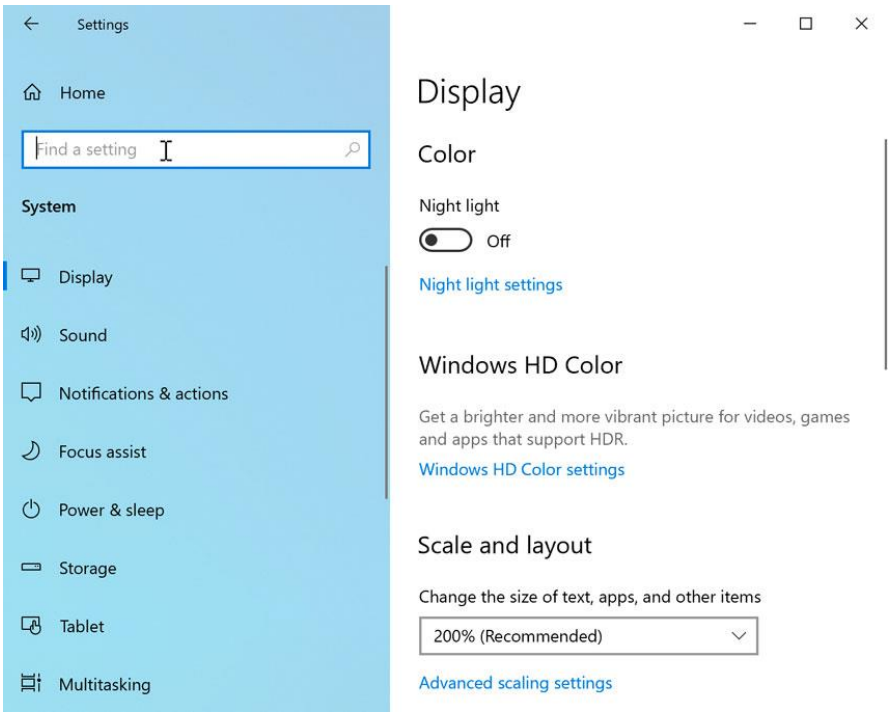
2. The **Display** options will appear. Use the drop-down arrow to scale up or down the size. Note that a larger size may interfere with the way some items appear on the screen.



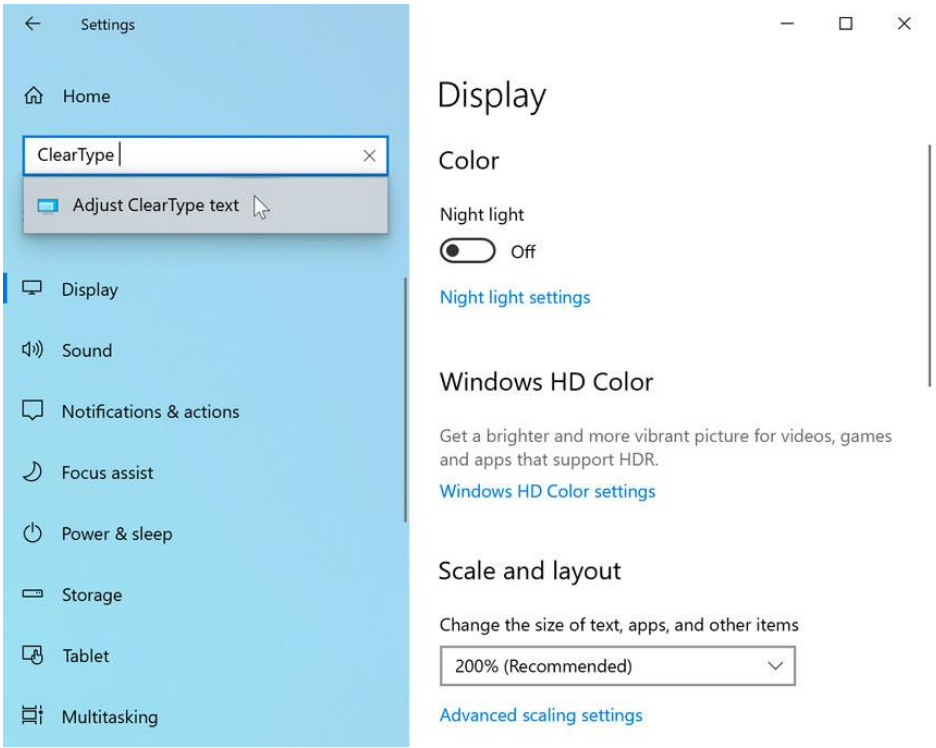
3. Once you've made your selection, the changes will take effect.

To adjust ClearType settings: ClearType allows you to fine tune how the text on your computer looks, which helps improve readability.

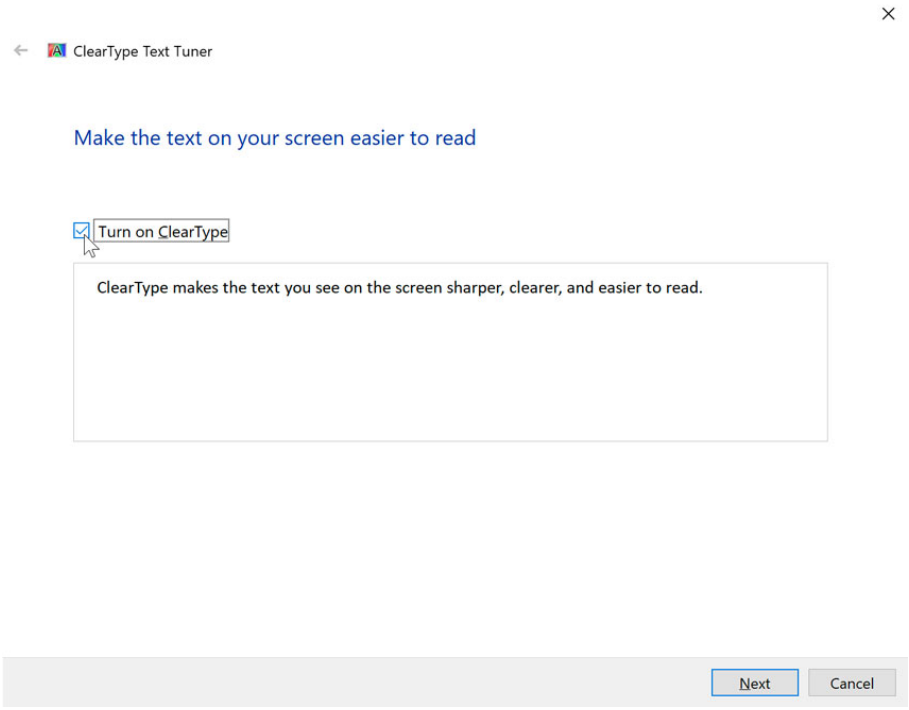
1. From the settings pane, click the **Find a setting** search box.



2. Choose **Adjust ClearType text**.



3. The **ClearType** dialog box will appear. Follow the instructions, choosing the text that appears best to you.



4. When you're done, click **Finish**. The ClearType settings will be applied.

Experiment 10.

1. Execute basic commands in Windows using command prompt and PowerShell like listing the drives in a system, creating a new file, removing a file or directory, retrieving the list of processes and services, etc.,
2. Use command line to encrypt and decrypt files and folders.

1. Execute basic commands in Windows using command prompt and PowerShell like listing the drives in a system, creating a new file, removing a file or directory, retrieving the list of processes and services, etc.,

01. Lists Installed Drivers (driverquery)

Drivers are very important in your PC. Missing a important driver can hamper your work.

Use driverquery command to get a full list of installed drivers in your pc. It'll help you to find the missing driver.

Command Prompt

```
C:\Users\IBM COMPUTER>driverquery

Module Name  Display Name           Driver Type   Link Date
============ ====================== ============= ====================
1394ohci     1394 OHCI Compliant Ho Kernel
3ware        3ware                  Kernel        5/19/2015 4:28:03 AM
Acceleromete HP Mobile Data Protect Kernel        6/4/2020 8:12:47 AM
ACPI         Microsoft ACPI Driver  Kernel
AcpiDev      ACPI Devices driver    Kernel
acpiex       Microsoft ACPIEx Drive Kernel
acpipagr     ACPI Processor Aggrega Kernel
AcpiPmi      ACPI Power Meter Drive Kernel
acpitime     ACPI Wake Alarm Driver Kernel
Acx01000     Acx01000               Kernel
ADP80XX      ADP80XX                Kernel        4/10/2015 2:49:48 AM
AFD          Ancillary Function Dri Kernel
afunix       afunix                 Kernel
ahcache      Application Compatibil Kernel
amdgpio2     AMD GPIO Client Driver Kernel        2/7/2019 3:32:20 PM
amdi2c       AMD I2C Controller Ser Kernel        6/13/2018 11:25:43 AM
AmdK8        AMD K8 Processor Drive Kernel
AmdPPM       AMD Processor Driver   Kernel
amdsata      amdsata                Kernel        5/14/2015 6:14:52 PM
amdsbs       amdsbs                 Kernel        12/12/2012 3:21:44 AM
```

Use driverquery -v to obtain more information.

02. Networking Information (ipconfig)

ipconfig will provide you your ip address along with your local network.

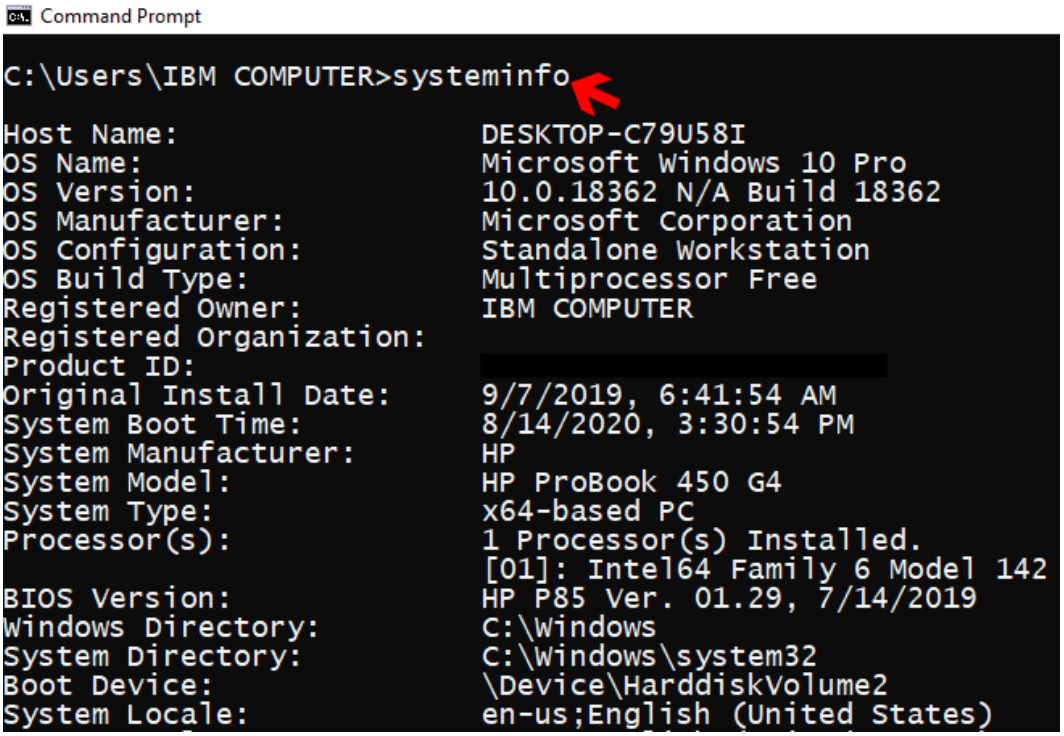
Command Prompt

```
C:\Users\IBM COMPUTER>ipconfig

Windows IP Configuration


PPP adapter Broadband Connection:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::5c8d:212c:e7ea:660f%37
   IPv4 Address. . . . . . . . . . . : 172.16.21.239
   Subnet Mask . . . . . . . . . . . : 255.255.255.255
   Default Gateway . . . . . . . . . : 0.0.0.0

Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::5d44:9ddc:efc5:be64%18
   Autoconfiguration IPv4 Address. . : 169.254.190.100
   Subnet Mask . . . . . . . . . . . : 255.255.0.0
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Wi-Fi:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
```

03. List Hardware Information (systeminfo)

Use systeminfo to know very basic information about your pc’s hardware, like – motherboard,

processor & ram.

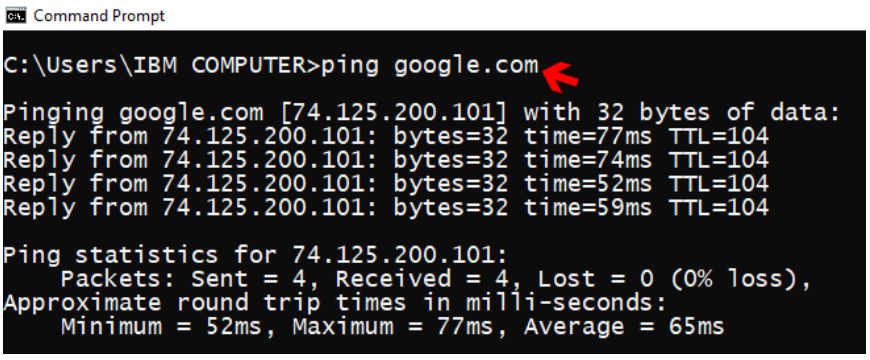


04. Check if Server is Reachable (ping)

The ping command sends packets of data to a specific IP address (or domain) on a network and then lets you know how long it took to transmit that data and get a response.

If you get the response properly then the connection of the device is working properly if not a particular server or your online connection is blocking communication between your computer and another.

ping <ip or domain>

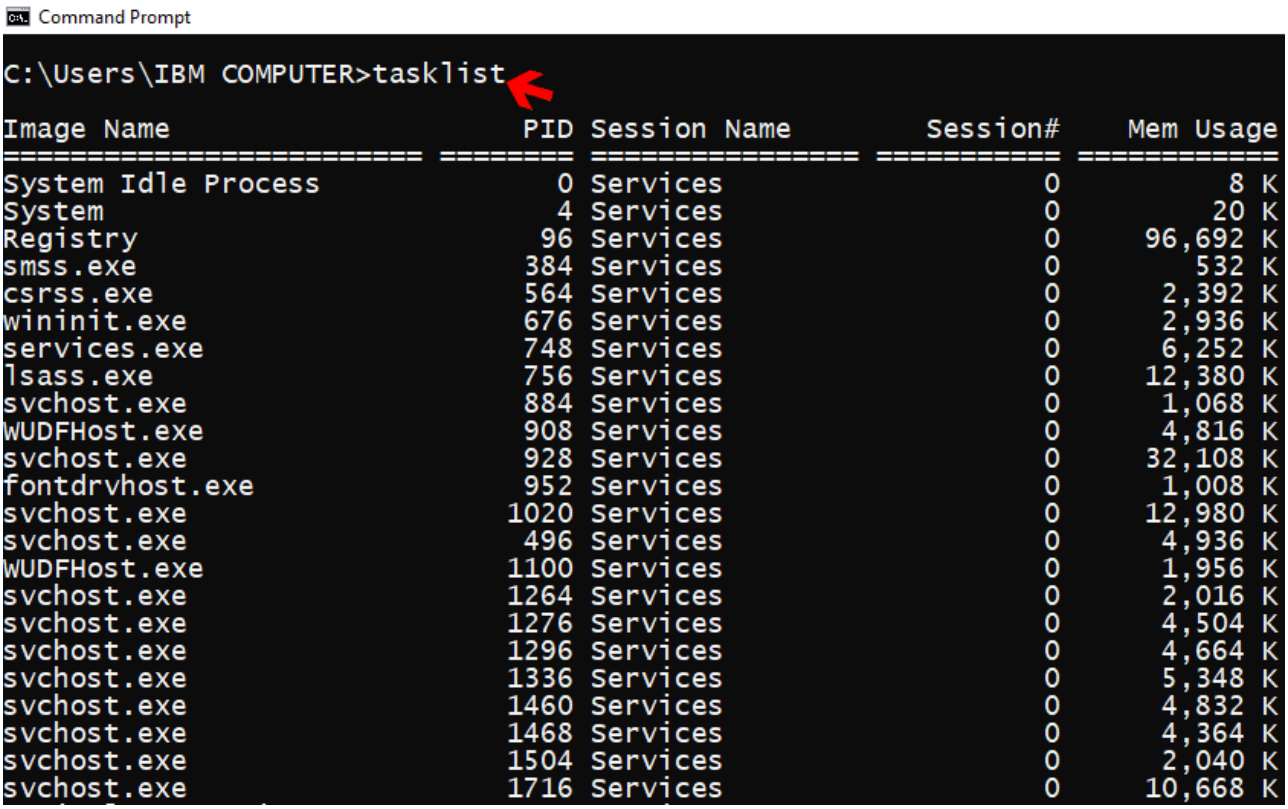


05. Scan and Repare System Files (sfc /scannow)

sfc /scannow will scan and repare windown system files. But you must be run the console as an administrator.

06. List Currently Running Tusk (tasklist)

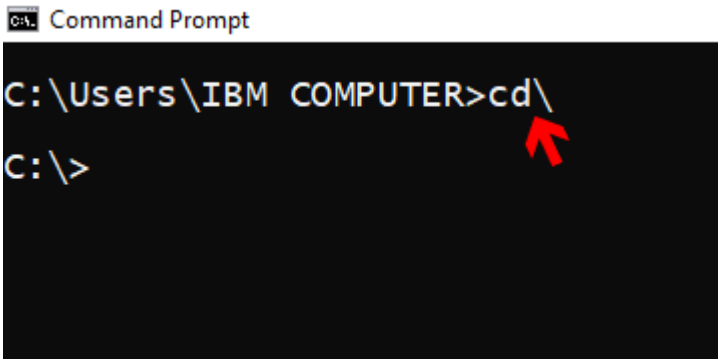
Use tasklist to get currant list of all tasks running on your pc.



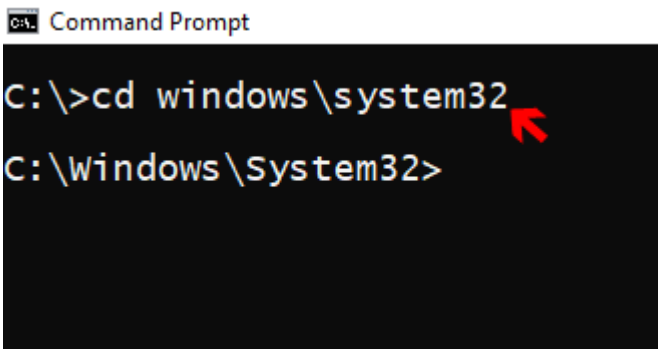
Use tasklist -v to obtain more detail of all tasks.

07. Change the Directory / Folder (cd)

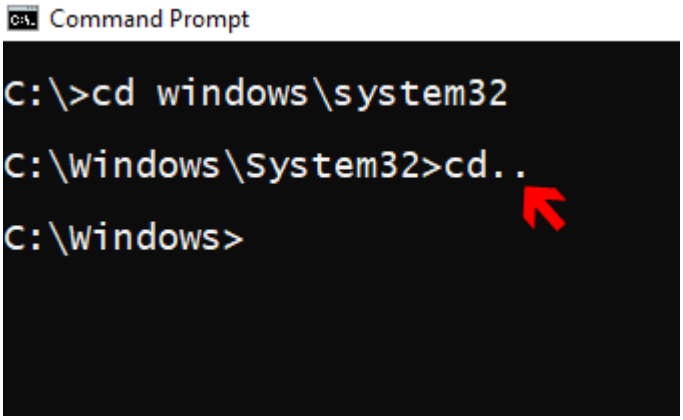
Use cd\ to go to the top of the directory tree.



If you need to go to a specific folder from this drive run the command CD Folder. The subfolders must be separated by a backslash character: \.

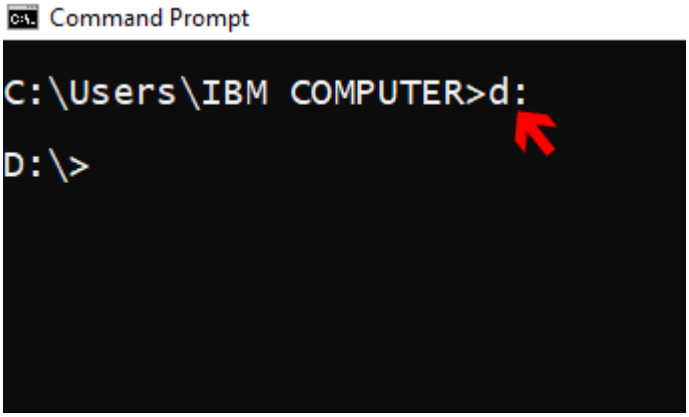


Use the cd.. command to go one folder up.

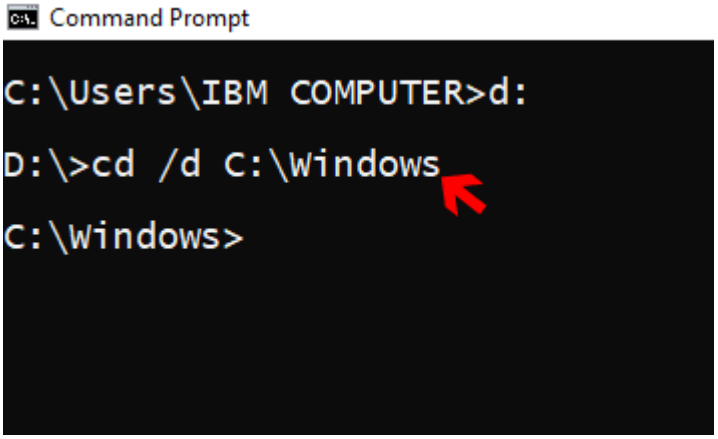


08. Change the Drive

If you wanted to change the drive from “C:” to “D:”, type d: and then press Enter.

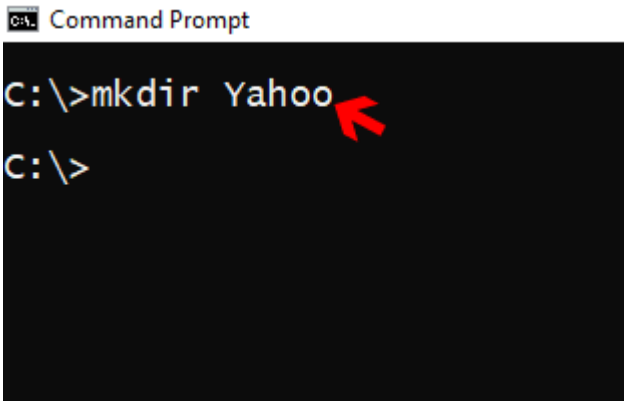


If you are now on the “D:” drive and you want to go to the Windows folder from the”C:” drive, you should type cd /d C:\Windows and press Enter.

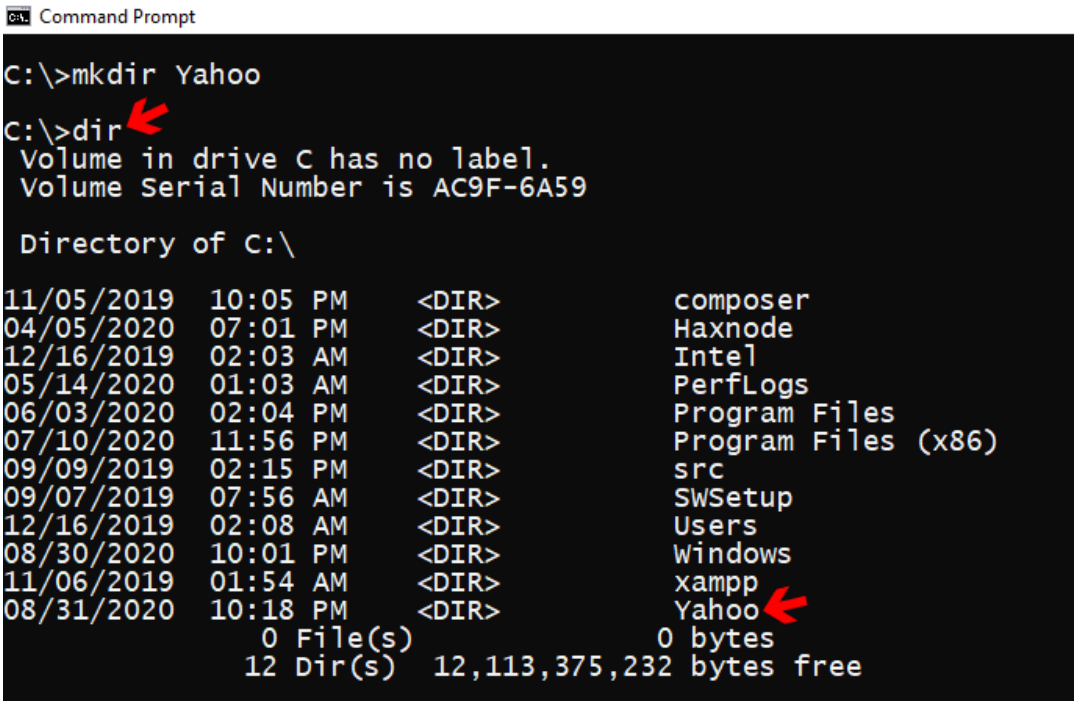


09. Create a New Directory / Folder (mkdir)

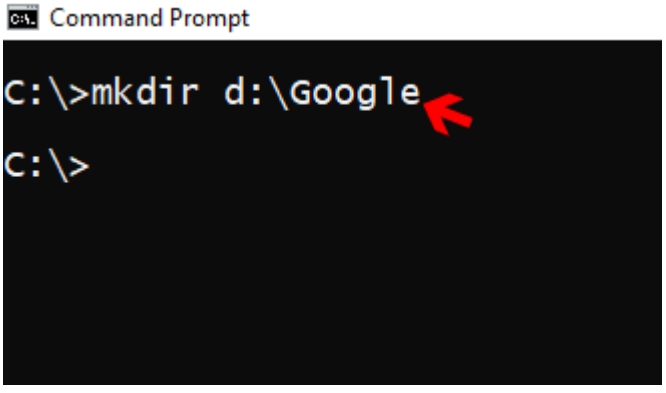
You can make a new folder using the mkdir (Make Directory) command. The syntax of these commands is mkdir Folder.



To test if it worked, use the dir command. The newly created folder appears in the list.



If you are working on the “C:” drive and you want to create a new folder in “D:,” called Google, type mkdir d:\Google and then press Enter.



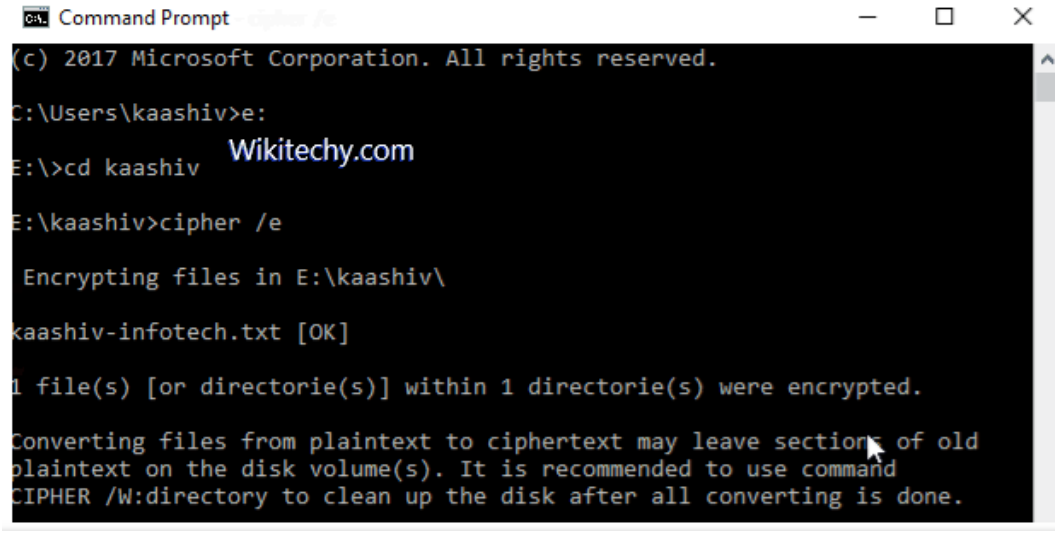
10. Clear Screen (cls)

To clear the existing commands in prompts type cls and press Enter cls

Steps to Encrypt your file using Command Prompt

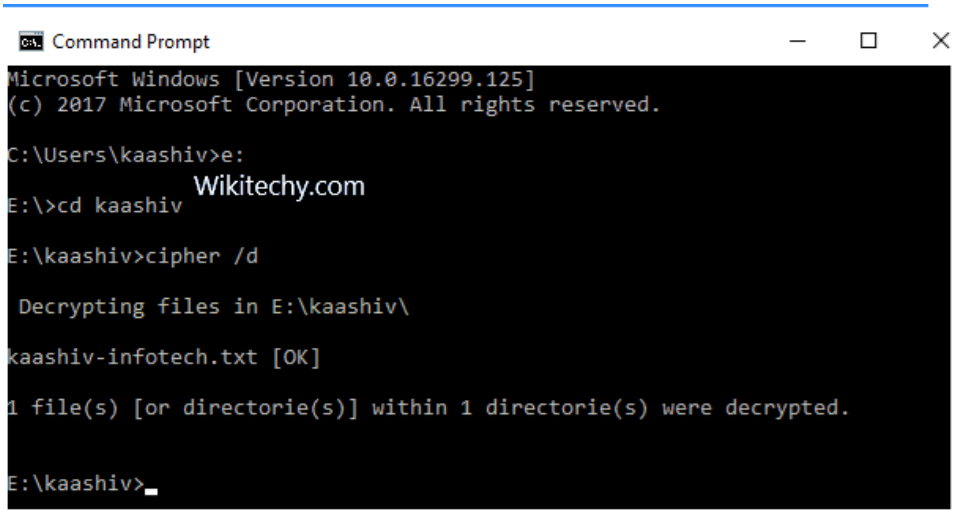
- Open ‘cmd‘ from the start menu and change your working directory to the folder where your files are. This can be done by using the “cd”. E.g. C:\>cd Desktop **`C:\>cd specific`**
- Type `‘cipher /E’` and press Enter. E.g. C:\specific>cipher /E and automatically the command prompt encrypt the files in the folder.

- Files in that specific folder will get Encrypted with [OK] written in front of the File name.



Steps to Decrypt your file using Command Prompt

- As for decryption, the process of encryption is the same, but the only difference is typing cipher /D and automatically the command prompt decrypted the files in the folder.
- Files in that specific folder will be Decrypted With [OK] written in front of the file name.



Experiment 11:

1. Observe the layout of a laptop and compare it with a desktop.
2. Follow/review manufacturer maintenance guide for repair and maintenance.
3. Power Issues: Battery not charging, No power.
4. Trouble shoot computer hardware issues in the following scenarios-

-Unexpected shutdowns. –Lockups -POST & Boot -Continuous reboot -No Power -Loud Noises. -Intermittent device failure -Smoke and burning smell -Indicator lights.

Answer:

1. Observe the layout of a laptop and compare it with a desktop.

Difference between Desktop and Laptop:

DESKTOP	LAPTOP
It needs external devices to be fully functional.	It is all-in-one computer system.
It is large in size.	While it is small in size.
It can have multiple internal drives.	It can have limited internal drives.
It is not portable.	While it is easily portable.
It runs only on main power supply.	While it can run on battery, AC supply and main power supply too.
External keyboard and mouse are necessary to work.	Keyboard and mouse are in-built. However external keyboard and mouse also can be used.
It has more powerful processor.	It has less powerful processor except gaming laptops.
It has wide range of screen size.	While the range of screen size in laptops is limited.
The repairing of desktops is easy work as compared to laptops.	While the repairing of laptops is little complex.
Components of desktop can be easily removed.	Components of laptops are not easily removable.
The number of data ports are more in desktops.	The number of data ports are less in laptops.

2. Follow/review manufacturer maintenance guide for repair and maintenance.

- Protect with padding. ...
- Organize cords. ...
- Update your operating system. ...
- Unplug to avoid overcharging. ...
- Purge your system of junk files and programs. ...
- Run regular antivirus scans. ...
- Clean the keyboard and case. ...
- Update your passwords.
- Organise your data
- Backup your data

3. Power Issues: Battery not charging, No power.

A dead adapter is one of the most common reasons your laptop isn't charging. Check whether the charging port is making a good connection with the adapter and charging brick. Also, the plug that goes into the laptop might be worn out from use. Check the power jack on the laptop.

4. Trouble shoot computer hardware issues in the following scenarios-
-Unexpected shutdowns. –Lockups -POST & Boot -Continuous reboot -No Power -Loud Noises.
-Intermittent device failure -Smoke and burning smell -Indicator lights.

Unexpected shutdowns: Corrupted or damaged drivers are one common cause behind shutdown problems. It's easiest to tell if you've updated recently, or installed new software – if the problems started immediately after an update, that's a fairly good indication of the culprit and you should try rolling back to the previous stable release.