

Introduction:

Computer has been the premier invention of this century. It plays an important role in almost every part of our lives. It has become so important that without it we would not be able to live the way we do. Look around you and you would find computers scattered all over the places, starting with the machine of computer to washing machine, refrigerator, and car, mobile and to life saving devices with the doctors. Everywhere a small computer is working for your convenience and they seem to perform almost any task in the world. Computers have had a tremendous impact on the way information is processed within an organization. Although information has been processed manually throughout the history yet in modern management where decision-making is very fast and in the era of corporate governance, it is not possible without the help of information system managed by computers.

COMPUTER DEFINATION

Computer is an electronic device, which can automatically accept & store input data; process them according to the instruction given by the user, and produce output result.

Computer

The word “computer” comes from word “compute” which means “to calculate.” Computer is an electronic device or a combination of electronic devices which solves problems after accepting data and supplies results to the user. It is a tool which can be used to read and write stories, draw and look at images, and send and receive e-mail. It can store a large amount of information

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and perform various scientific and mathematical tasks.



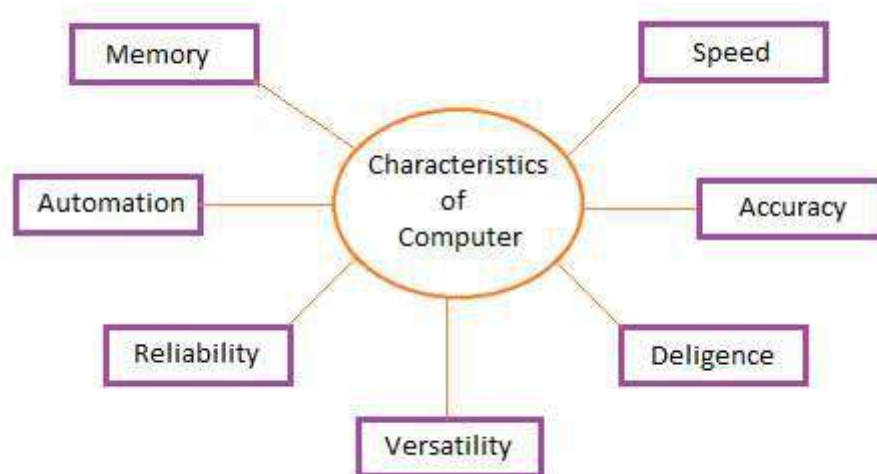
Basically, a computer system comprises the following five elements:

1. Hardware
2. Software
3. People
4. Procedure
5. Data/information

Characteristics of Computers:

The ever-increasing use of computers is due to their special characteristics. A computer is not just a calculating machine. It is also capable of doing complex activities and operations.

The main characteristics of a computer are given below:



Speed:

A computer works with much higher speed and accuracy compared

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to humans while performing mathematical calculations. Computers can process millions (1,000,000) of instructions per second. The time taken by computers for their operations is microseconds and nanoseconds.

Accuracy:

Computers perform calculations with 100% accuracy. Computer's physical circuits rarely make errors, if the data and instruction are correctly fed. Most of the errors occurring in computers are either hardware errors or human errors.

Diligence:

A computer can perform millions of tasks or calculations with the same consistency and accuracy. It is free from problems like lack of concentration, confusions etc. It is never confused like humans and can consecutively take instructions without failing or getting bored.

Versatility:

Many different types of tasks can be performed on computer. At one point of time, it might be busy in calculating statistical data for annual performance evaluation of a business organization and at the other point of time; it might be working on inventory control.

Reliability:

A computer is reliable as it gives consistent result for similar set of data i.e., if we give same set of input any number of times, we will get the same result.

Automation:

Computer performs all the tasks automatically i.e. it performs tasks without manual intervention.

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Power of Remembering:

They have a large amount of memory to hold a very large amount of data. A large amount of data/information can be stored in secondary storage devices. They have a great remembering power.

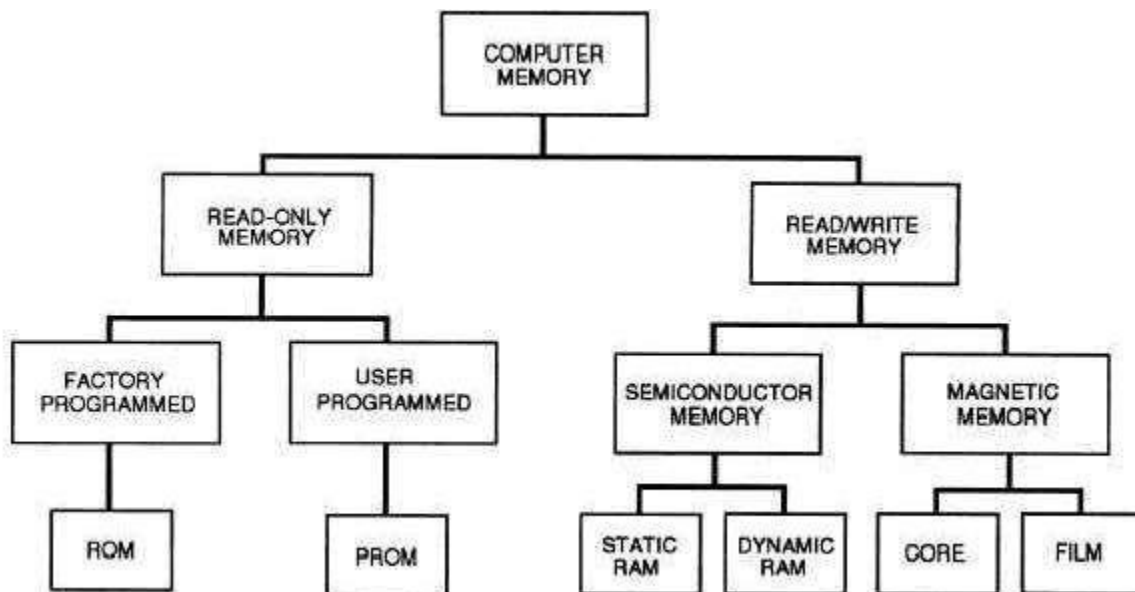
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□ Memory Organization

Computer data storage, often called storage or memory, refers to computer components and recording media that retain digital data used for computing for some interval of time.

Computer data storage provides one of the core functions of the modern computer, that of information retention.

It is one of the fundamental components of all modern computers, and coupled with a central processing unit (CPU, a processor), implements the basic computer model.



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RAM: Random Access Memory

- ✓ The word Random Access Memory means the computer can access any memory cell without accessing all cells. Sequentially that is the memory is said to be RANDOM ACCESS MEMORY.
- ✓ It has random access property any part of this memory can be accessed directly for reading or writing data in the same time. It is also called read – write memory.
- ✓ Contents of this memory remain in it as long as electrical current is available. If power fails, all the contents in the memory will be lost.
- ✓ Information can be read from and written into it during the operation.
- ✓ The user enters program and data into RAM; it retains stored as long as power supplying is on and the content will be lost when power supply is switched off. So, it is known as Volatile Memory.
- ✓ There are two kinds of RAM: Static RAM and Dynamic RAM.

ROM: Read Only Memory

- ✓ Non-volatile memory chip in which data are stored permanently, and cannot be altered by programmers.
- ✓ The ROM is Read Only Memory.
- ✓ It is semiconductor memory and used for permanent storage.
- ✓ This memory cannot be returned to when power is switched off; the content of ROM remains unchanged. It has also called random access property.
- ✓ It contains assembler, compiler, monitor, programs or any other permanent program. ROM's widely used for function table (sine,

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cosine, logarithm, square roots) multiplication, division, sub rooting etc.

- ✓ Contain of RAM are stored at the time of manufacturing.
- ✓ So, they can't be change after manufacture.

PROM: Programmable Read Only Memory

- ✓ Similar to read only memory with the exception that these chips can be reprogrammed by using special external equipment
- ✓ ROM can be programmed once special circuit is used for programming it.
- ✓ Once program it becomes Read Only Memory

EPROM: Erasable PROM

- ✓ It is an Erasable PROM.
- ✓ The contents are Erase by exposing it to high intensity Ultra violate light source 10 to 20 minute.
- ✓ Ultra violate source it wave length 2537 A is used for this purpose
- ✓ The user can't Erase the contain of single memory location word entire content are Erase.

EEPROM: Electrically Erasable PROM

- ✓ EPROM chip in which stored information is erased by using high voltage electric pulse beat). Also known as FLASH Memory
- ✓ This ROM doesn't need to remove it from microcomputer for erasing
- ✓ This memory on be Erase Electrically in few mini second of kind (10 mile second) about 10 mile second is required to write. Each

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of data input device.

- If required single bit than also bit Erase and programming of this memory is much Erase as computer to EEPROM

□ What is a Motherboard?

A motherboard is a circuit board inside general-purpose computing systems, including personal computers, smart televisions, smart monitors, and other similar devices, which supports communication between different electrical components and houses components such as the CPU, memory, etc.

A computer's motherboard is typically the largest printed circuit board in a machine's chassis. It distributes electricity and facilitates communication between and to the central processing unit (CPU), random access memory (RAM), and any other component of the computer's hardware. There is a broad range of motherboards, each of which is intended to be compatible with a specific model and size of the computer.

Since different kinds of processors and memories are intended to function best with certain types of motherboards, it is difficult to find a motherboard that is compatible with every type of CPU and memory. Hard drives, on the other hand, are generally compatible with a wide variety of motherboards and may be used with most brands and types.

A computer motherboard may be found inside a computer casing, which is the point of connection for most of the computer's elements and peripherals. When it comes to tower computers, one may look for a motherboard on either the right or left side of the tower; the circuit board is the most significant.

The earliest motherboards for personal computers included relatively fewer real components. Only a CPU and some card ports were included on the very first IBM PC motherboard. Users inserted various components, including memory and controllers for floppy drives, into the slots provided.

Compaq became the first company to utilize a motherboard that was not based on a design created by IBM. The new architecture utilized a CPU made by Intel. When Compaq's sales began to take off, other businesses quickly followed suit, even though several companies in the industry believed it was a risky move.

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But by the 1990s, Intel had a dominant share of the market for personal computer motherboards. Asus, Gigabyte Technology, and Micro-Star International (MSI) are the three most influential companies in this industry. However, Intel remains one of the ten best motherboard manufacturers in the world, even though Asus is now the largest motherboard maker on the planet.

Types of Motherboards

To comprehend what motherboards are and what they do, we must first examine their various types and specifications.

1. Advanced Technology (AT) motherboard

Due to their larger physical dimensions (which can be measured in hundredths of millimeters), these motherboards do not work properly with computers that fall into the category of smaller desktops. A larger physical size makes it more difficult to install new [hardware drivers](#).

The power connections on these motherboards are in the form of sockets and plugs with six prongs each. Due to the difficulty in recognizing these power connections, users often have issues while trying to connect and operate them. In the 1980s, motherboards of this sort were all the rage, and they continued to be manufactured far into the 2000s.

2. Standard ATX motherboard

ATX is an enhanced version of the AT motherboard that Intel created in the 1990s. Its name means “advanced technology extended,” and its initials stand for “advanced technology.” Unlike AT, it is much more compact and enables the associated components to be interchanged. The connection elements have witnessed significant progress and development.

3. Micro ATX motherboard

The length and width of these motherboards, measured in millimeters, are also 244 mm (size metrics will differ as per the manufacturer). This motherboard has fewer ports and slots than the Standard ATX board.

Users who do not want excessive connections and subsequent upgrades, like adding more RAM, an extra GPU, or other Peripheral Component Interconnect (PCI) cards, are better suited for this kind of motherboard than others.

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This motherboard may be installed in any case with enough space to accommodate 244 mm by 244 mm. It can also be installed in larger cases that are compatible with Standard ATX or eXTENDED ATX motherboards.

4. eXtended ATX motherboard

The dimensions of this motherboard are 344 millimeters by 330 millimeters (dimensions will differ with different manufacturers). This motherboard supports a single or a twin CPU configuration and has up to eight RAM slots.

Additionally, it has a higher number of PCIe (where e is for Express) and PCI slots, which may be used to add PCI cards for a wide range of applications. Workstations and servers are both able to use this software. There is sufficient room on all eATX motherboards, making them ideal for desktop computers, thanks to the significant space provided for airflow and the attachment of various components.

5. Flex ATX motherboard

These ATX Form Factor mainboards do not enjoy the same degree of popularity as their ATX Form Factor counterparts. They are the ones within the ATX family that are considered the most compact. They were designed to occupy a minimal amount of space and had a minimal price tag. Flex ATX is a modification of mini ATX that Intel created between 1999-2000. It is a motherboard standard.

6. Low-Profile EXtended (LPX) motherboard

In comparison to previous iterations, this has two significant enhancements. The first change was that the output and input ports were moved to the rear of the device, and the second change was the addition of a riser card, which enables the device to have additional slots and makes it easier to attach components.

There is an implementation of some of these functionalities on the AT motherboard. The primary drawback of this board is that it does not have any accelerated graphic port (AGP) ports, resulting in a connection to PCI that is made directly. The new low-profile extended (NLX) boards are where issues present in these motherboards have been addressed.

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7. BTX motherboard

Balanced technology extended, abbreviated as BTX, is a strategy developed to fulfill the requirements of emerging technologies, which call for increased power consumption and, as a result, emanate more heat. During the middle of the 2000s, Intel ceased the future production of BTX boards to concentrate on low-power CPUs.

8. Pico BTX motherboard

Given their diminutive size compared to a typical motherboard, these boards are called Pico. Even though the upper half of the BTX is shared, support is provided for two expansion slots. Its distinguishing characteristics are the half-height or riser cards, and it is designed to meet the needs of digital applications.

9. Mini ITX motherboard

It is important to note that there is no regular-sized version of the information technology extended (ITX) motherboard. In its place, the motherboard has been downsized into a more compact form than in earlier iterations. It was developed in the 2000s, and its measurements are 17 by 17 centimeters.

Due to its reduced power consumption and quicker cooling capabilities, it is primarily used in computers with a small form factor (SFF). Given that it has a relatively low level of fan noise, the motherboard is the one that is recommended the most for use in home theater systems because it will enhance the overall performance of the system.

10. Mini STX motherboard

The name “Intel 5×5” was initially given to the motherboard now known as the Mini-STX, which stands for mini socket technology extended. Although it was introduced in 2015, the motherboard has dimensions of 147 millimeters by 140 millimeters. This converts to a length of 5.8 inches and a width of 5.5 inches; hence, the 5×5 name is rather misleading.

The Mini-STX board is 7 millimeters longer from front to back, making it somewhat rectangular in shape. This is in contrast to the shape of other tiny form factor boards, like the Next Unit of Computing (NUC) or the mini-ITX, which are square.

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How does a motherboard work?

When you turn your computer on, the power supply transfers electricity to the motherboard to be used by the computer. Data is transported between the chipset components via data buses and travels between the southbridge and northbridge sections.

The data connections to the CPU, RAM, or PCIe are made through the northbridge component. The operations performed by the RAM are first “interpreted” by the CPU as being output after the RAM begins to deliver inputs to the CPU. After being written to the PCIe, the data is either copied or moved to the expansion card, based on the kind of card you have.

The data connection to the basic input/output system (BIOS), the universal serial bus (USB), the serial advanced technology attachment (SATA), and the PCI bus are managed by the southbridge component. Your computer can start up because of signals sent to the BIOS, and the data sent to the SATA “awakens” your optical, hard disc, and solid-state drives. The video card, network card, and sound card receive power from the information stored on the SATA.

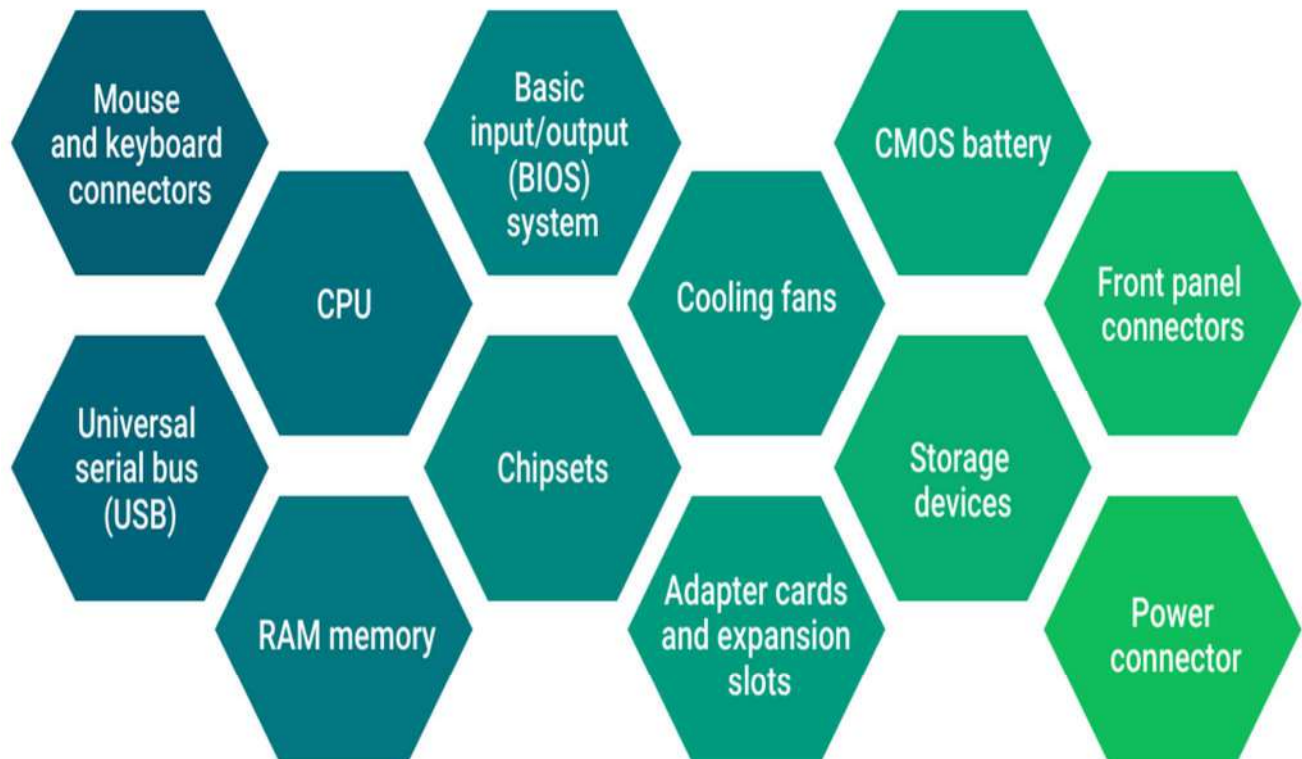
The remaining components interact via an electrical signal, which serves as a hub for them. These data buses pass via a microchip’s northbridge or southbridge elements, which then branch off to other components like the CPU, RAM, PCI, and PCIe, amongst other elements.

The information sent over buses will be encoded using a programming language (1 and 0). When a signal is sent to a motherboard from one of its components, the motherboard will process it and translate it into a language the other component can comprehend. On most of today’s computing systems, all of this will occur in a split second, and there is almost no delay between the input and the output.

12 Key Components of a Motherboard

The following are the key components of a motherboard:

Key Components of a Motherboard



1. Mouse and keyboard connectors

Computer motherboards must have two separate connectors that allow users to connect their external mouse and keyboard. These connectors are responsible for sending instructions and receiving responses from the computer. There are two keyboard and mouse connectors, the PS/2 and the

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USB. The personal system/2(PS/2) port is a mini-DIN plug that contains six pins and connects the mouse or keyboard to an IBM-compatible computer. Other computers use the USB port to connect the mouse or keyboard.

2. Universal serial bus (USB)

The USB is a computer interface that connects computers to other devices, such as phones. The USB port is a significant part of a motherboard that allows users to connect external peripheral devices such as printers, scanners, and pen drives to the computer. Moreover, it enables users to transfer data between the device and the computer. A USB port allows users to connect peripheral devices without restarting the system. Types of USB include USB-A, USB-B, USB-mini, micro-USB, USB-C, and USB-3.

3. CPU

The central processing unit (CPU) is commonly referred to as the computer's brain. The CPU controls all the functions of a computer. CPUs are available in different form factors, each requiring a particular slot on the motherboard. A CPU can contain one or multiple cores. A CPU with a single core can only perform a single task at a time, while those with multiple cores can execute multiple tasks simultaneously.

4. RAM memory

RAM slots connect the random access memory (RAM) to the motherboard. RAM allows the computer to temporarily store files and programs that are being accessed by the CPU. Computers with more RAM capacity can hold and process larger files and programs, thus enhancing performance. However, RAM contents are erased when the computer is shut down. A computer usually has two RAM slots. However, some computers have up to four RAM slots in the motherboard to increase the available memory.

5. Basic input/output (BIOS) system

The BIOS contains the firmware of the motherboard. It consists of instructions about what to do when the computer is turned on. It is responsible for initializing the hardware components and loading the computer's operating system. The BIOS also allows the computer's operating system to interact and respond with input and output devices such as a mouse and keyboard.

In some motherboards, the legacy BIOS is replaced by the modern extensible firmware interface (EFI) or the unified extensible firmware interface (UEFI).

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UEFI and EFI allow the computer to boot faster, provide more diagnostic and repair tools, and provide a more efficient interface between the operating system and computer components.

6. Chipsets

The chipsets of a computer control how the computer hardware and buses interact with the CPU and other components. Chipsets also determine the amount of memory users can add to a motherboard and the type of connectors that the motherboard can have.

The first type of chipset is the northbridge chipset. The northbridge manages the speed at which the CPU communicates with the components. It also controls the processor, the AGP video slot, and the RAM.

The second type of chipset is the southbridge chipset. The southbridge chipset controls the rest of the components connected to the computer, including communication between the processor and expansion ports such as USB ports and sound cards.

7. Cooling fans

The heat generated when electric current flows between components can make a computer run slowly. If too much heat is left to build up unchecked, it could damage computer components. Thus, a computer performs better when kept cool. Cooling fans increase the airflow, which helps to remove heat from the computer. Some elements, such as video adapter cards, have dedicated cooling fans.

8. Adapter cards and expansion slots

Adapter cards are integrated into the motherboard to enhance a computer's functionality. Examples include sound and video adapters. The expansion slots allow users to install compatible adapter cards. Examples of expansion slots include the peripheral component interconnect (PCI) slot, the AGP slot (which enables the insertion of video cards), the PCI Express serial bus slot, and the PCI-extended slot.

9. CMOS battery

The CMOS battery is a small round battery found on the motherboard of every computer. It provides power to the complementary metal oxide semiconductor (CMOS) chip. The CMOS chip stores BIOS information and computer settings,

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even when powered down. The CMOS battery allows users to skip resetting BIOS configurations, such as boot order, date, and time settings, each time they power on their computer.

10. Storage devices

Storage drives store data permanently or retrieve data from a media disk. The storage devices can either be installed in the computer as hard drives or in removable drives that can connect to the computer through the USB ports. Hard disk drives(HDD) or solid-state drives (SSD) are computers' primary storage drives. Computers with SSDs execute tasks much faster and perform better than HDDs. Users can also use optical drives such as compact discs to store information.

11. Front panel connectors

Front panel connectors connect the light-emitting diode (LED) lights on the front of the case to the hard drive, the power button, the reset button, and the internal speaker for testing. Some USB and audio devices also have LED lights.

These front panel connectors are usually plugged into small pins on the motherboard. Although the pins are grouped and color-coded, their layout structure varies depending on the model of the motherboard.

12. Power connector

The power connector provides an electric supply to the computer to function as intended. The power supply connector has 20 pins and converts 110-V AC power into +/-12-Volt, +/-5-Volt, and 3.3-Volt direct current (DC) power.

Functions of a Motherboard

The following are seven functions of a motherboard:

Functions of a Motherboard



Manages
data flow



Conserves
resources



Optimizes
power distribution



Drives
communication



Enhances
performance



Improves
reliability



Enables
productivity



1. Manages data flow

The BIOS component of the motherboard ensures that the operating system interacts well with input and output devices, such as the keyboard and mouse, to process instructions. This ensures that the data sent to the computer moves as expected to perform the intended purpose. It also manages data flow

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through its USB ports, allowing for data transfer between devices. Additionally, it ensures the processor can access information from the RAM to boost efficiency.

2. Conserves resources

The motherboard saves consumers time, energy, and money by connecting all the computer connects. The motherboard provides a platform on which manufacturers can connect all the necessary components to ensure that the computer functions. Thus, saving consumers' time and energy as they do not have to assemble and connect different parts manually. Moreover, collecting the individual components can prove costly as consumers would be forced to incur additional transport and other miscellaneous costs.

3. Optimizes power distribution

The motherboard provides and distributes power optimally. Computers require electricity to function. The motherboard has a power connector plug that connects the computer to a power source and converts it into a form of electrical power that the computer can use. After that, the motherboard ensures that the electric current is distributed optimally to different system components.

The motherboard has an integrated circuit technology with pre-defined connections that ensure each element gets the necessary power. Moreover, the circuits ensure less energy is consumed to make the computer an energy-efficient machine.

4. Drives communication

The motherboard makes communication between different components easier. For a computer to process a particular set of instructions, sometimes it may require several components to communicate and work together to complete the task. In such scenarios, the motherboard relies on its circuit technology to enable communication between these components. The motherboard may also depend on some of its components, such as the CPU, BIOS, expansion ports, and USB ports, to interact with the computer's operating system.

5. Enhances performance

The motherboard boosts the capabilities of a computer. Motherboards often transform the capabilities of a computer. For instance, they have additional

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features and functionalities, such as built-in sound and video capabilities that can enhance the computer's output. Motherboards also allow users to connect peripheral devices such as printers, enabling computers to perform additional tasks such as printing documents. Additionally, users can expand and upgrade factory-made motherboard parts such as memory slots or hard disks to boost the capabilities of their computers.

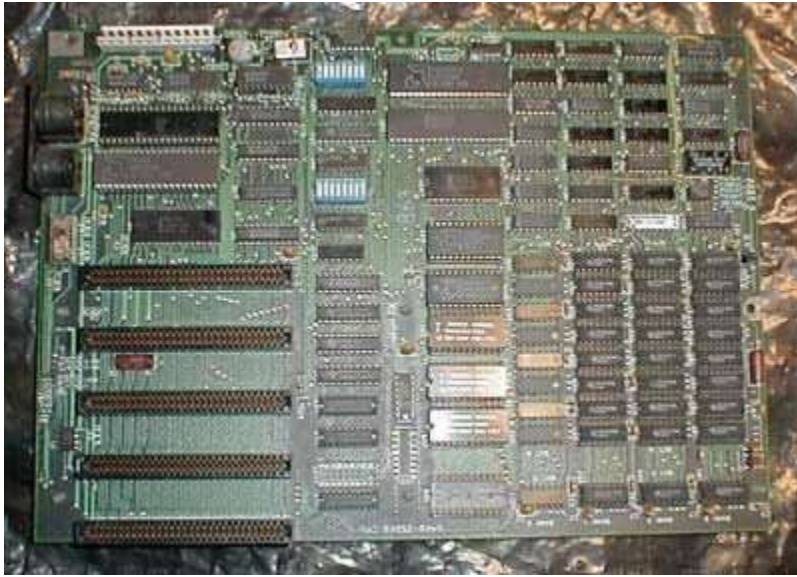
6. Improves reliability

A good motherboard boosts the overall reliability of the computer. A high-quality motherboard provides a stable foundation for its components to operate on. A good motherboard has proper cooling, and its integrated circuit technology is set in place. These factors enable it to control the computer's hardware efficiently by ensuring that each element functions as expected and communicates with the other components. A reliable computer performs tasks efficiently and thus enhances the user experience.

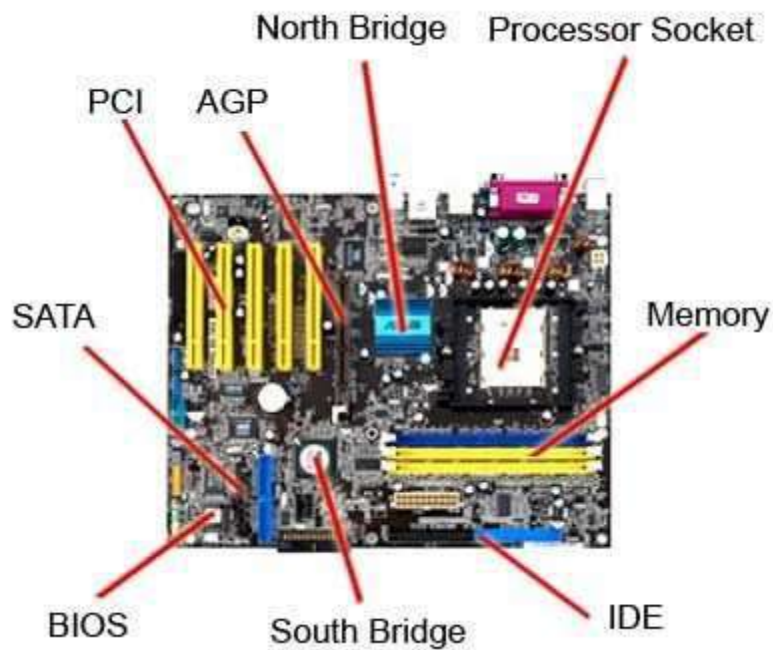
7. Enables productivity

The motherboard reduces effort duplication and simplifies work for computer users. While traditional computers came pre-installed with BIOS, modern ones are pre-installed with EFI and UEFI. BIOS, EFI, and UEFI enable computers to boot without requiring users to reconfigure basic settings, time, and date. They also load the operating system into the memory. Therefore, these motherboard components allow users to focus on other productive tasks.

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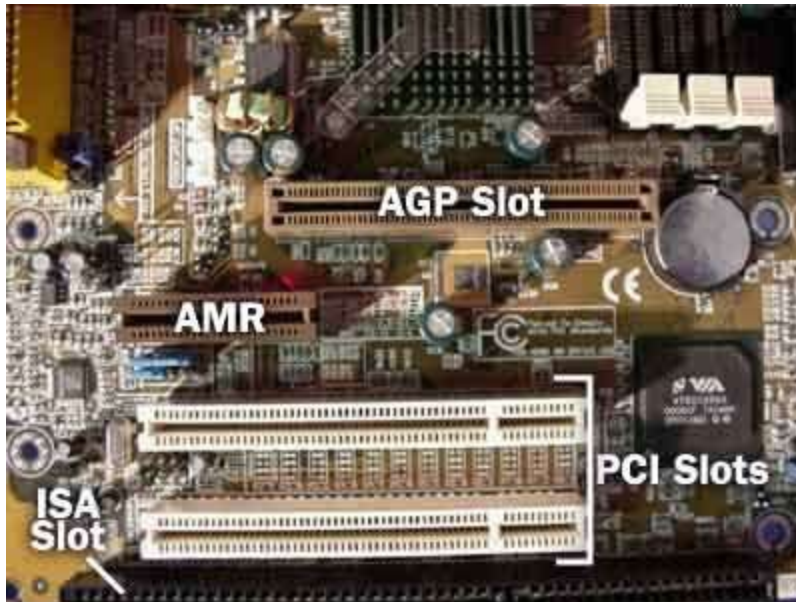


Motherboards tie everything in your computer together. Wonder what all those parts are on your motherboard?

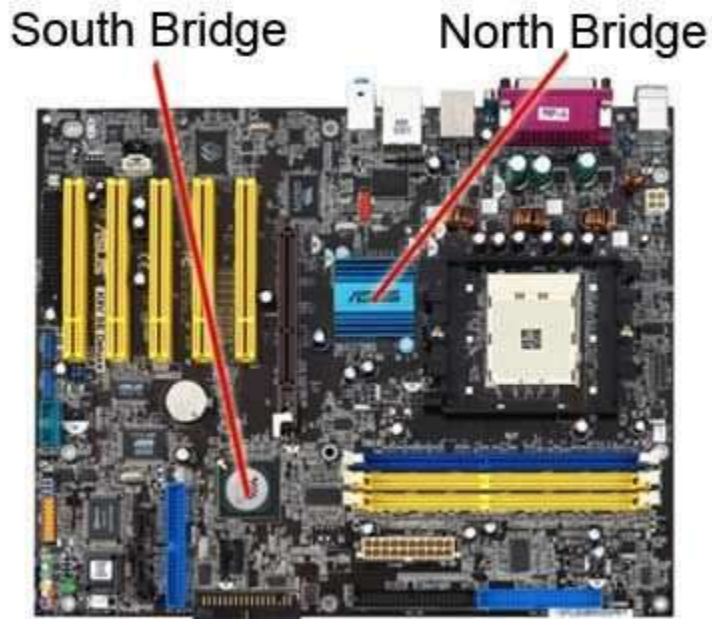


A typical motherboard contains areas for computer memory, CPU, AGP, PCI and more. See a close up of motherboard slots on the next page.

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Computer hardware, such as memory, PCI and AGP connect to the motherboard through slots. Have you ever seen a motherboard bridge? See the next Image



The chipset is the "glue" that connects the microprocessor to the rest of the motherboard and therefore to the rest of the computer. On a PC, it consists of two basic parts -- the north bridge and the south bridge. Take a look at computer memory next.

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Computer memory has a big effect on system performance. Pictured above is SIMM memory, or single in-line memory module, which is a type of RAM memory module. See DIMM memory on the.



DIMM, or dual in-line memory module, has a 64-bit path to memory chips, whereas the SIMM has only a 32-bit. The next type of memory is often found in notebooks, printers and networking equipment.

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SODIMM, or small outline dual in-line memory module, is made with integrated circuits and is about half the size of DIMM modules. See where RAM is located inside a desktop computer next.

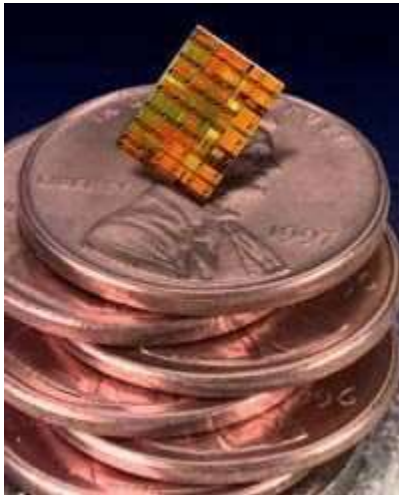


A RAM upgrade can greatly extend your computer's lifespan. The next picture is of a type of memory that your computer uses on start-up.

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The basic input-output system BIOS is the first thing you see when you turn on your computer. BIOS gives important instructions to the computer hardware on the next page.



A microprocessor -- also known as a CPU or central processing unit -- is a complete computation engine that is fabricated on a single chip. See a high-performance processor on the next page that was originally used in supercomputers.

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64-bit processors have entered the mainstream, such as this eight-generation Athlon processor. However, you need the hard drive on the next page to store all the information processed by your computer.



A hard disk is a sealed aluminum box, which has been opened in this photo. The controller electronics are attached to one side, controlling the read/write mechanism and the motor that spins the platters. See a close up of the disk and platters next.

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This hard drive has three platters, also called hard disks, and six read/write heads. See how the hard disk is read on the next.



The arm on a hard disk holds the read/write heads and has to be incredibly fast and precise. There is one arm per read/write head, and all of them are lined up to form one unit. See what connects your hard drive to your PC in the next picture.

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The Integrated Drive Electronics interface is the most popular way to connect a hard drive to a PC. See the drive that connects your peripherals next.



The Peripheral Component Interconnect (PCI) bus provides direct access to system memory for connected devices. PCI slots can be used for network, graphics and sound cards. See a PCI card on the next page.

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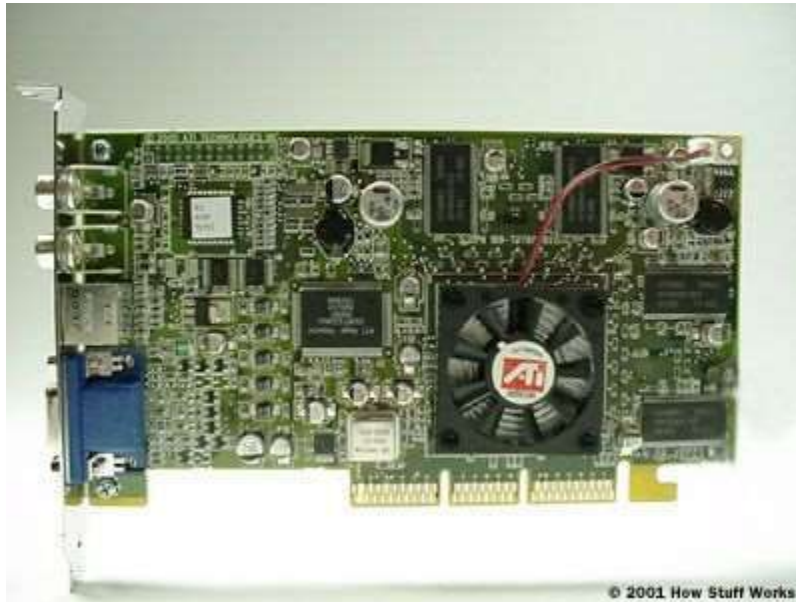


PCI cards use 47 pins to attach to a PCI slot. Pins are thin metal feet that allow computer chips to be attached to a circuit board. The next piece of hardware replaced the PCI as the standard way to connect a graphic card.



An AGP, or accelerated graphics port, allows the operating system to designate RAM for use by the graphics card (like the one above) on the fly. Take a closer look at a graphics card on the next page.

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Like a motherboard, a graphics card is a printed circuit board that houses a processor and RAM. If you are into computer games, you probably want this next piece of hardware.



PCI Express or PCIe eliminates the need for the AGP by accepting more data and supplying more power to video cards. However, the item in the next picture has been replacing PCIe as the new standard.

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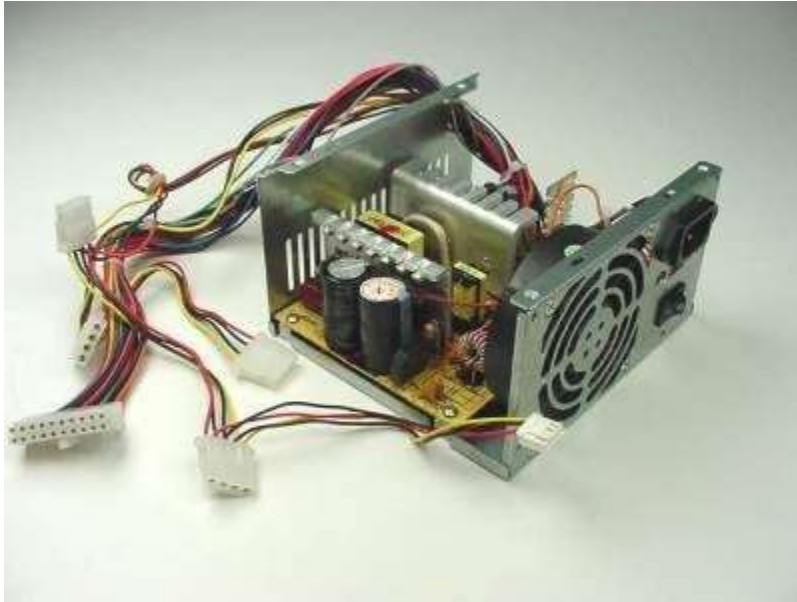


Just about any computer that you buy today comes with Universal Serial Bus connectors let you attach everything from mice to printers.



This PC power supply has been removed from its PC case. The small, red switch at right, above the power-cord connector, is for changing line voltages in various countries. See the interior of the power supply next.

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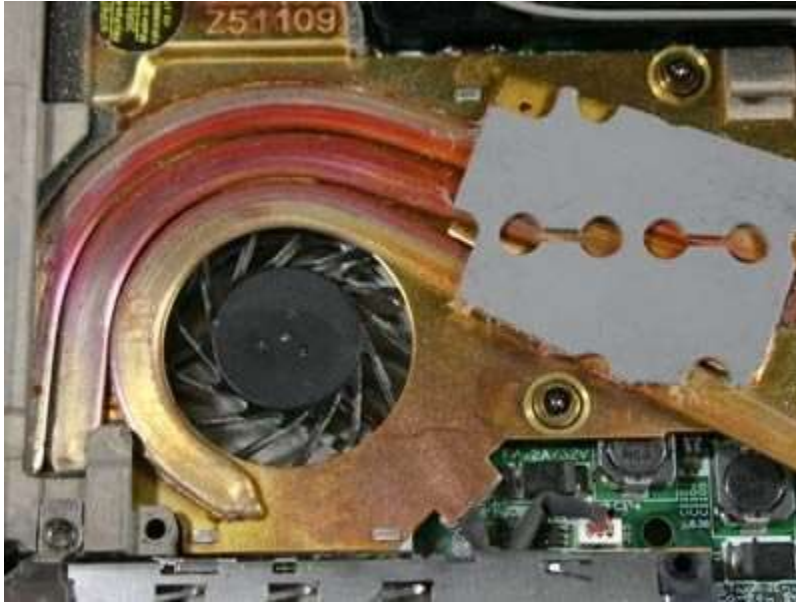


PC power supplies use switcher technology to convert the AC input to lower DC voltages. The 3.3- and 5-volts are typically used by digital circuits, while the 12-volt is used to run motors in disk drives and fans. See power supply transformers next.



In this photo you can see three small transformers (yellow) in the center. To the left are two cylindrical capacitors. The large finned pieces of aluminum are heat sinks. Take a closer look at a heat sink next.

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Here you can see a heat sink and fan in a laptop, similar to the hardware in a desktop.

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Create Your Own Run Command in Windows 10/8/7

Almost every Windows OS user is aware of the Run command. Run Command allows you to access or open files & folder in just a click by using short commands, for example: cmd for Command Prompt, Calc for Calculator or much more. But these short commands are a few only for systems folder & applications.

Just Imagine, if you can create such short commands to open any file, folder or application which you access frequently? Yes, you can do it. Create your own Run Command in Windows

Step 1: First Right Click on Desktop Screen → Navigate to “New” → select “Shortcut”.

Step 2: In next window, just enter or browse the location of the file and folder which you want to access using Short Run Command. Click on “Next” button and Enter the “Name of this Shortcut icon” or “Name of Short Run Command for this file & folder”. I have created “Soft” name shortcut folder

Step 3: The Final Step → Just Cut (ctrl+x) this Shortcut icon from Desktop and navigate to “C:/Windows/” and paste it here. That’s IT!!!

Now for testing, just open run command “Window Key +R” and enter the name for example “soft” in my case. Your desired file & folder will get opened.

PC ASSEMBLY AND MAINTENANCE

[Set Automatic Shutdown Timer in Windows 10/8/7](#)

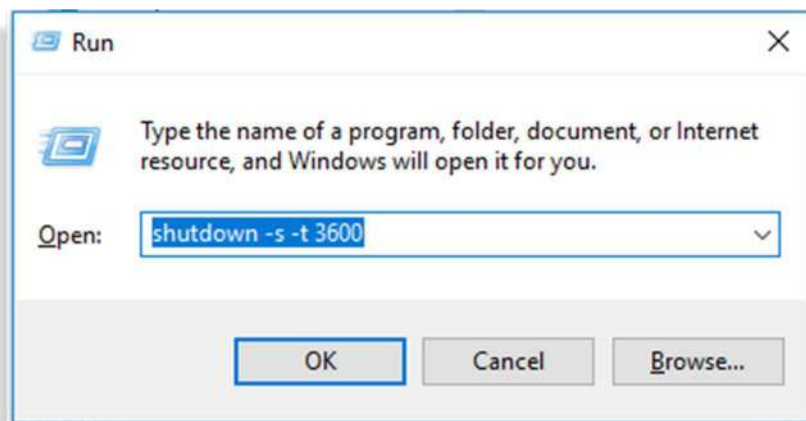
To set automatic shutdown timer, you don't require to download any extra software/tool. This can easily be done from Run Command Window, Command prompt and also by using Windows Task Scheduler. Steps are pretty simple and straightforward, anyone non-technical person can also do it. Just follow the step by step guide as given below for 3 methods:

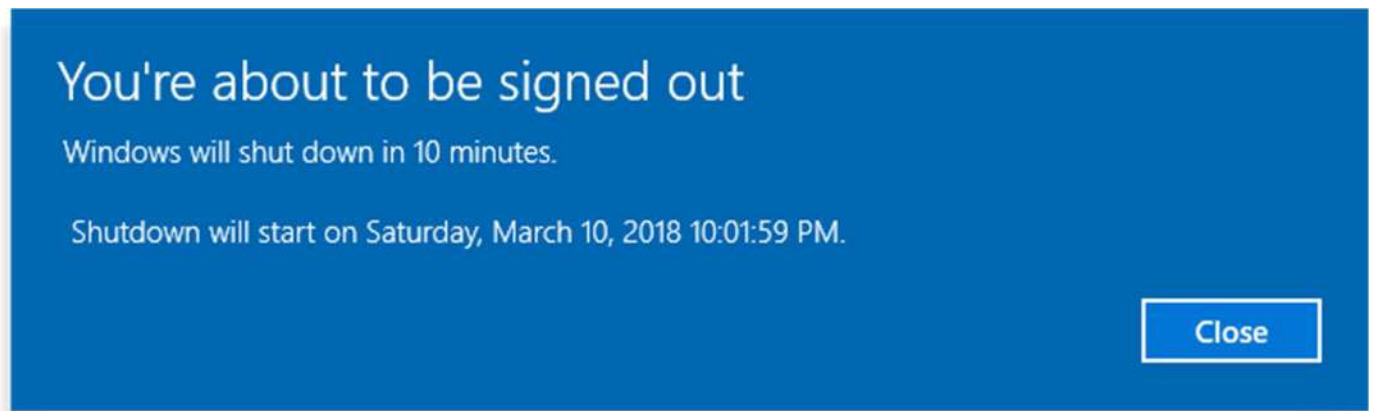
Method 1: Using Run Command Window

In method 1 and method 2, we gonna use a simple command to shutdown our system after a specific period of time.

Just open Run Command Window by pressing 'Windows key+r' and type 'shutdown -s -t 3600' and press 'Enter'. Here '3600' is the time in 'seconds'. A message will pop up that Windows will automatic shutdown after

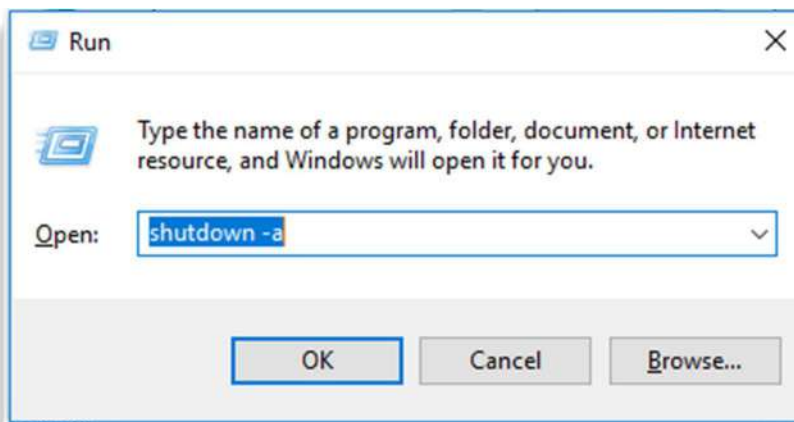
the set specific time.





Cancel the Set Timer:

To cancel the set timer, again open 'run command window' and type command: 'shutdown -a'. You will get instantly a message that your scheduled shutdown has been cancelled.

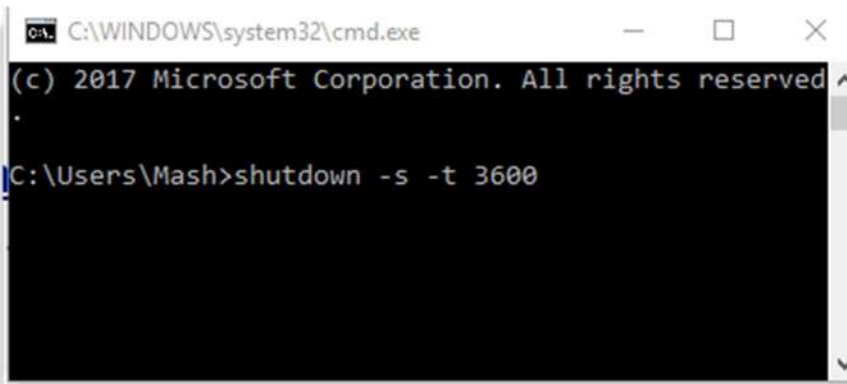


Method 2: Using Command Prompt:

Similar to the method 1, explained above, we also gonna use the same command in 'Command prompt'.

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To open command-prompt, Go to Start Menu and search for 'Command Prompt' OR directly open run window and type 'CMD.' Now type the same command: 'shutdown -s -t 3600' and press enter.

A screenshot of a Windows Command Prompt window. The title bar shows 'C:\WINDOWS\system32\cmd.exe'. The window content displays '(c) 2017 Microsoft Corporation. All rights reserved.' followed by a new line. The command prompt shows 'C:\Users\Mash>shutdown -s -t 3600'.

A message will also pop up that Windows will automatic shutdown after the set specific time, as shown above.

Cancel the Set Timer

To cancel the set timer, again open 'command prompt' and type command: 'shutdown -a' and press enter. You will get instantly a message that your scheduled shutdown has been cancelled, as shown above.

Method 3: Schedule Automatic Shutdown Using 'Windows Task Scheduler'

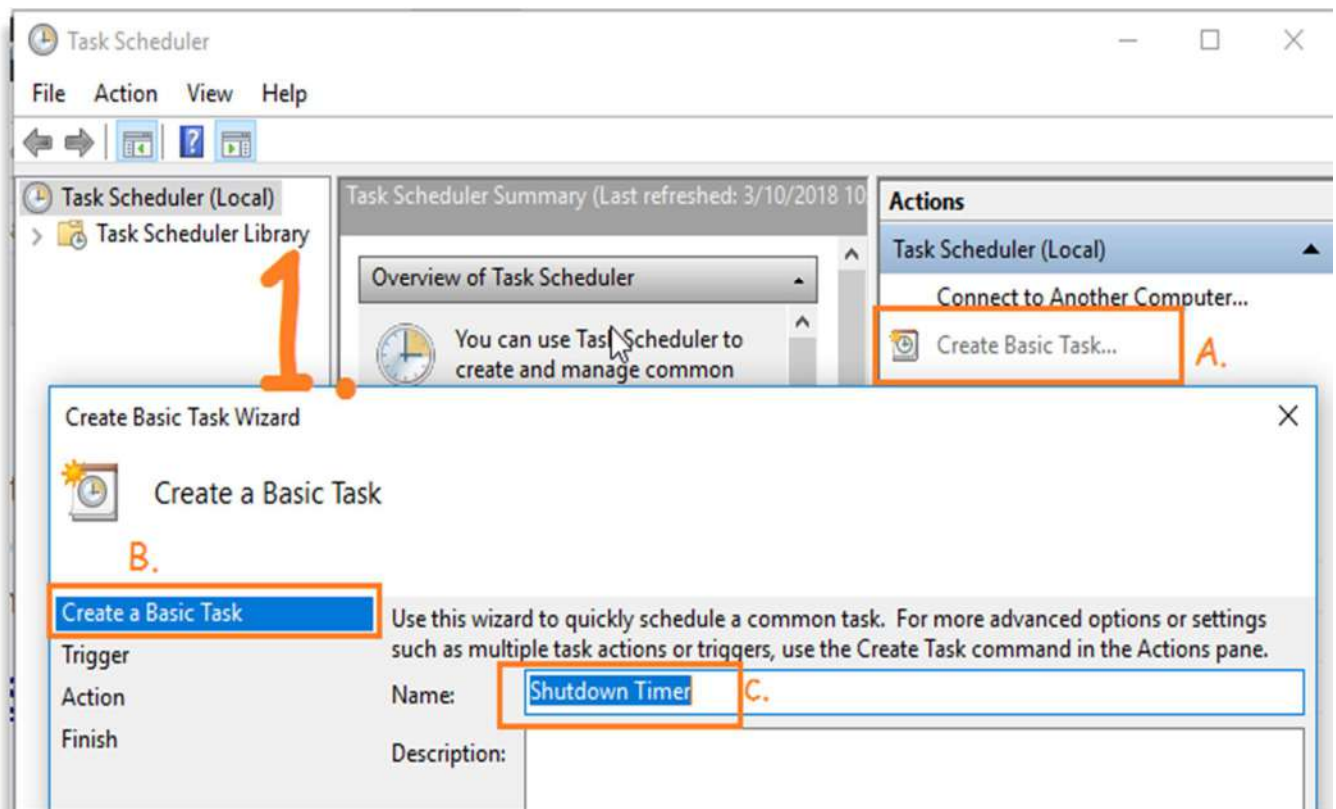
Windows Task Scheduler allows you to schedule and automates your work. We can also use Task Scheduler to set automatic shutdown timer. Read here complete article to know how you can create a new task and schedule to automate your work.

To create shutdown timer, follow the simple steps given below:

PC ASSEMBLY AND MAINTENANCE

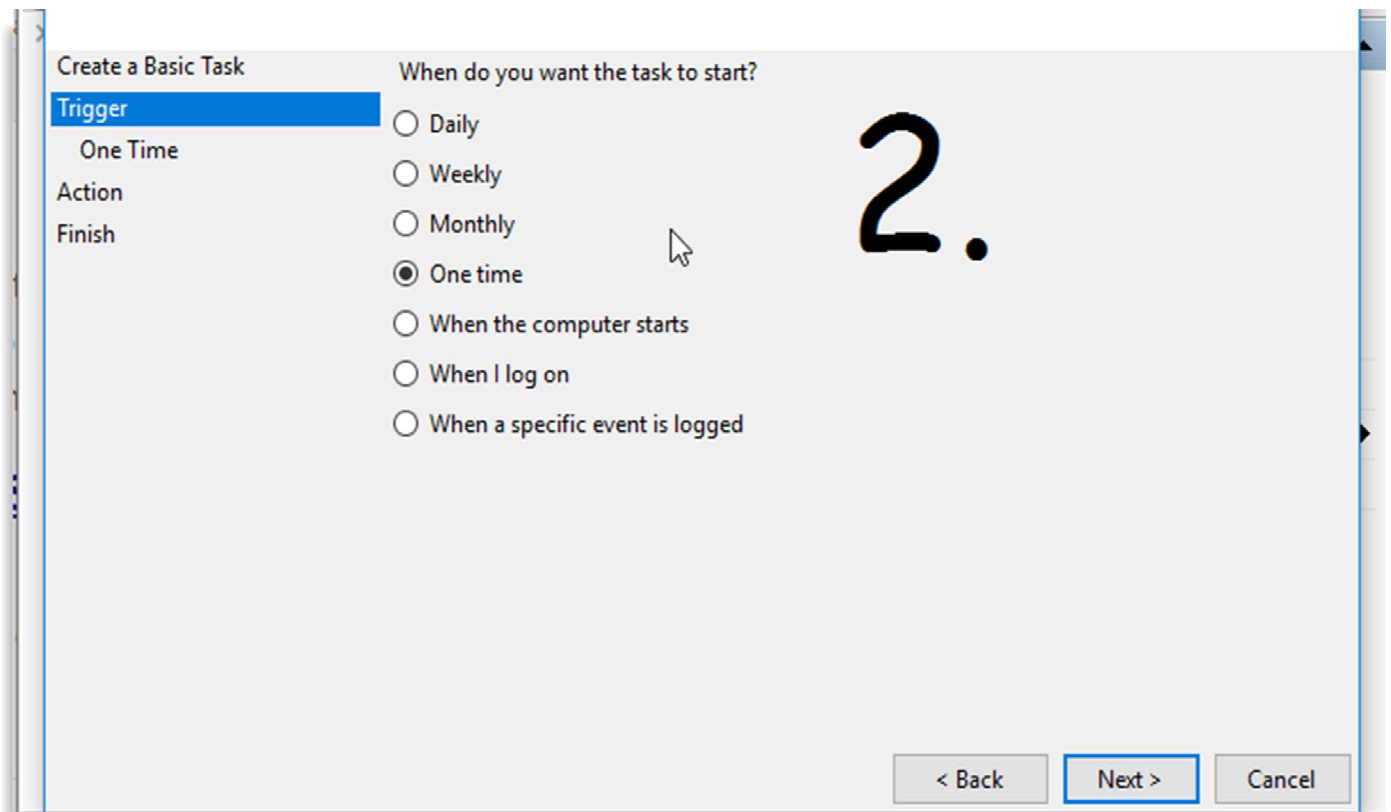
Step 1: Go to start menu and search for 'Task Scheduler' and open it.

Step 2: Now click on 'Create Basic Task' link available in the rightmost column. A New window will open, just give a name to this task & click on Next. For instance, we have given it a name: 'Shutdown timer'



Step 3: In next window, select when you want to schedule the task and move further.

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Step 4: Now, you can set the exact time, when you want your system to shutdown. Set the exact time and click on next.

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Create a Basic Task

Trigger

One Time

Action

Finish

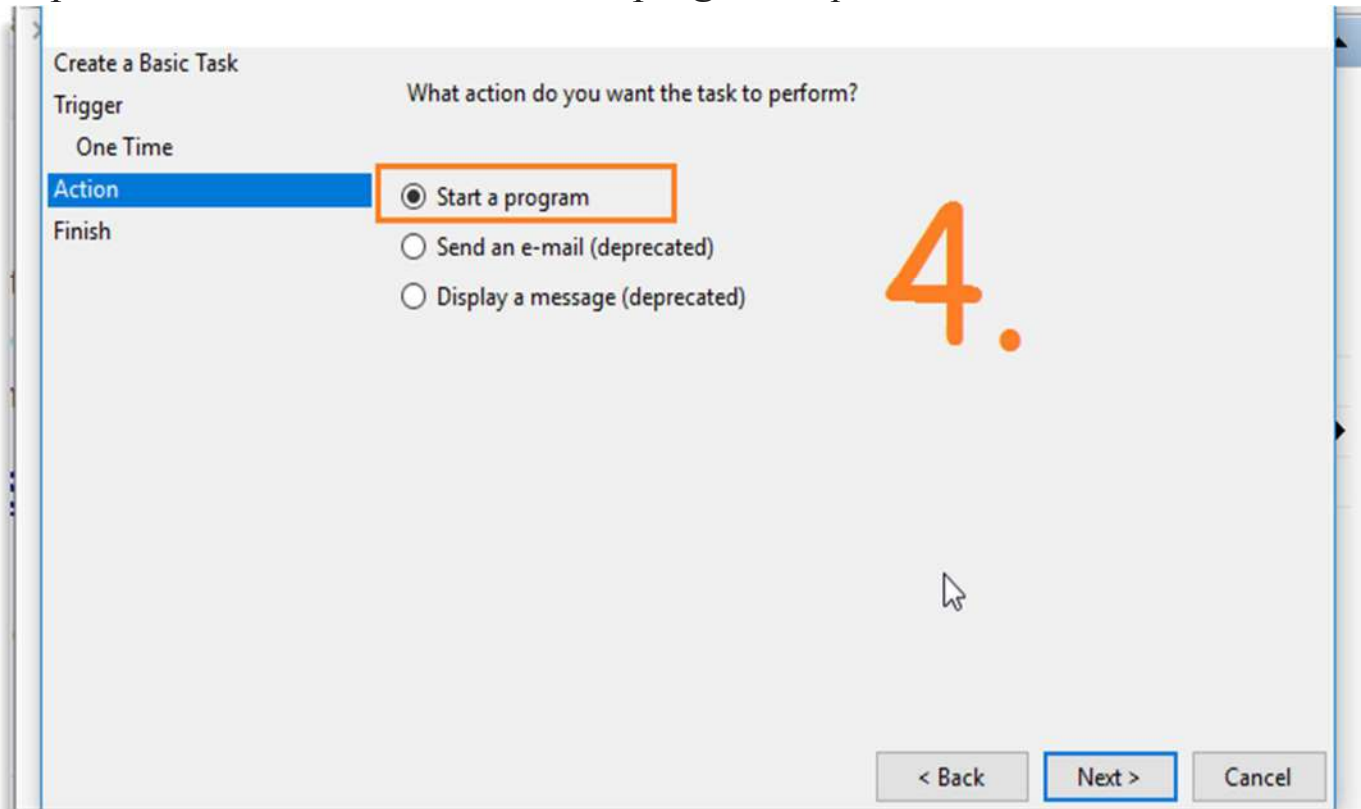
Start: 3/10/2018 10:56:08 PM ☐ Synchronize across time zones

3.

< Back Next > Cancel

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Step 5: In Action tab, select 'Start a program' option → click on 'Next'.

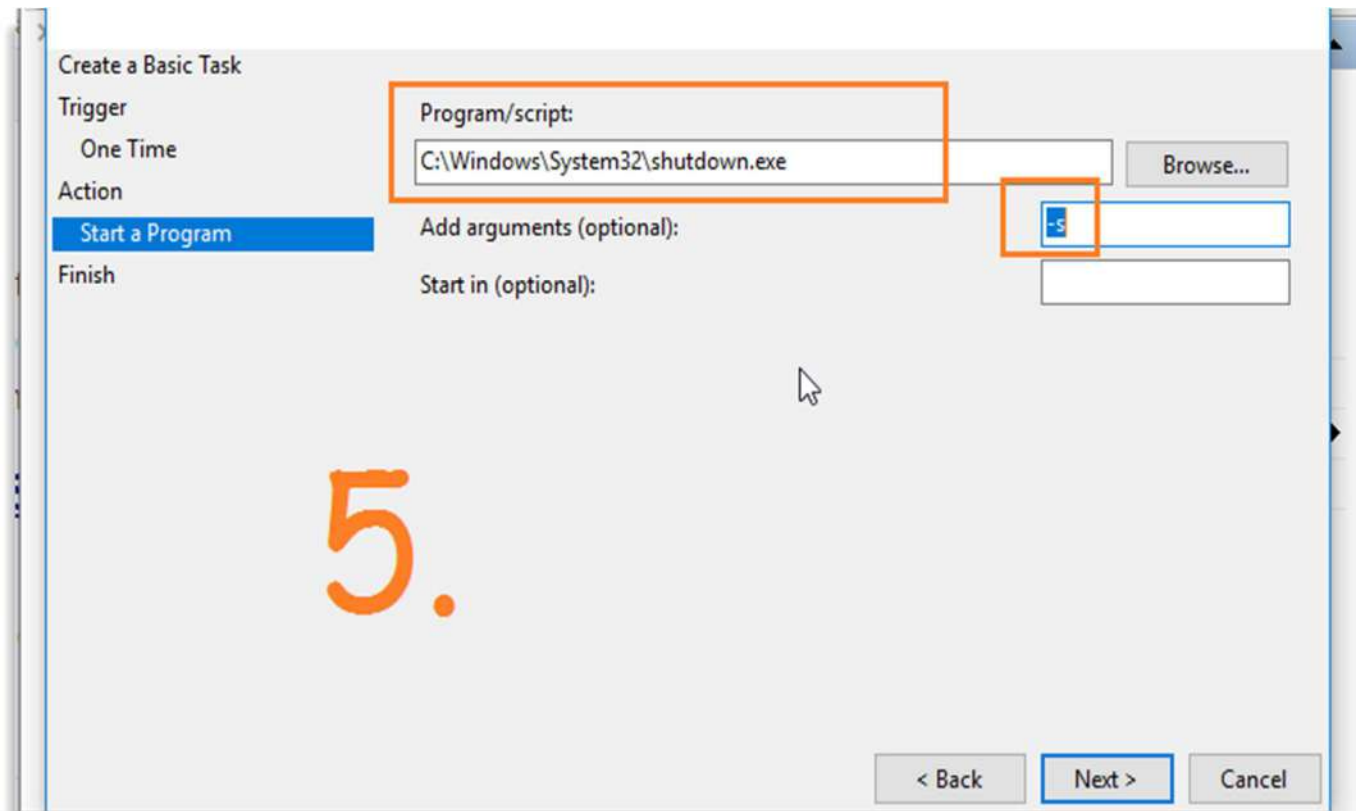


Step 6: Now we are gonna browse to a program 'shutdown.exe' in our windows and don't forget to add '-s' in argument field. Just click on next and

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finish

it.



Now you have successfully created a scheduler to shutdown your computer at a specific time.

[Get Access to Restricted Folders by Windows](#)

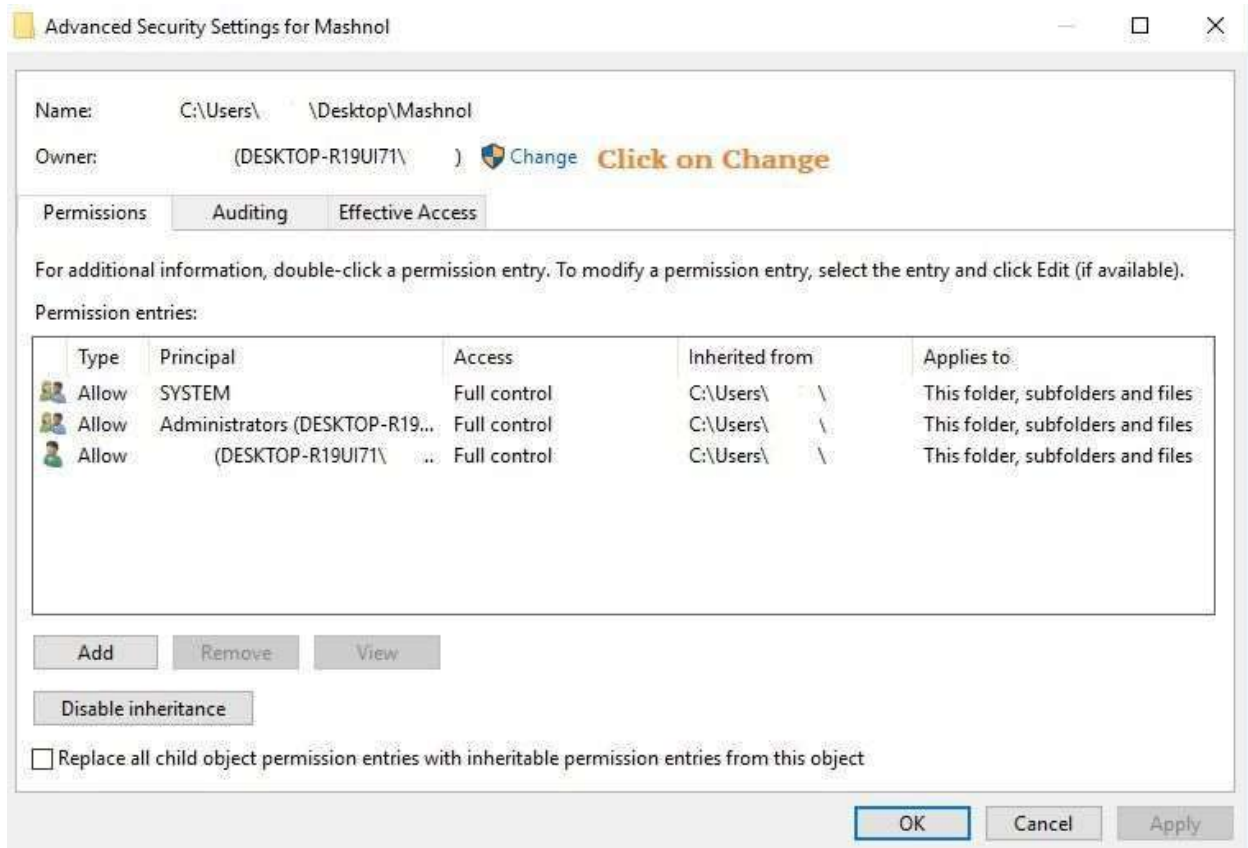
1. Log in your Windows Administrator Account.
2. Now we need to access the Advanced properties of the restricted folder so Right click on the folder and select Properties.
3. In Properties popup select Security tab and Click on Advanced Button. It will Popup Advanced Security Settings for Local. Here you can see the Name,

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location, and ownership of the folder.



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4. Now click on **Change** at the end of Owner. It will popup **Select User or Group**

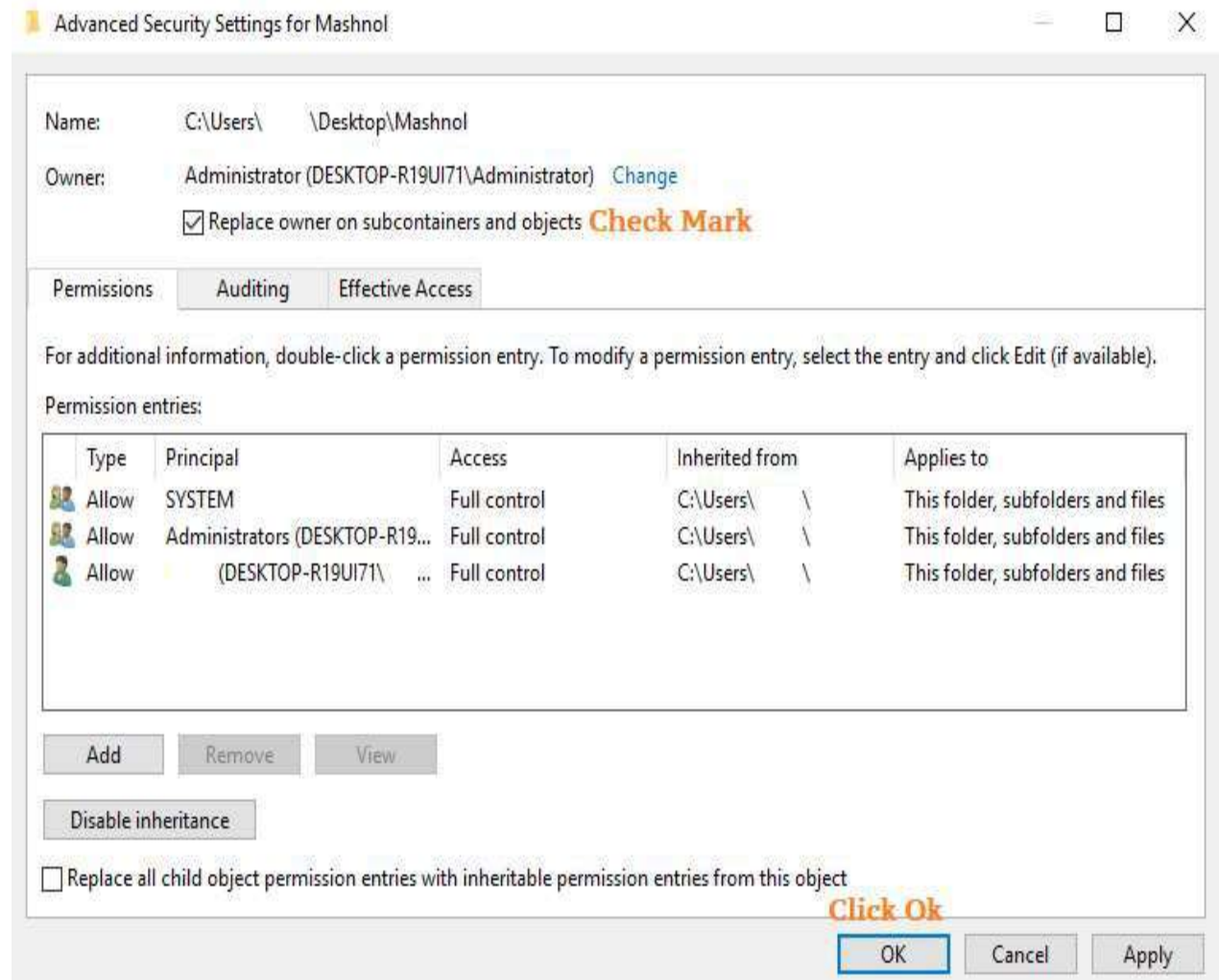


Group for the folder.

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5. In the Select User or Group Popup add your account username, here we are using Administrator account so we will add administrator in the Enter the object name to select.

6. Click on Check Names. The system will check the username and if it is right. It will automatically be applied to the folder.



7. Now click on OK button and below the Owner option, click on Checkbox next to Replace owner on sub containers and object options.

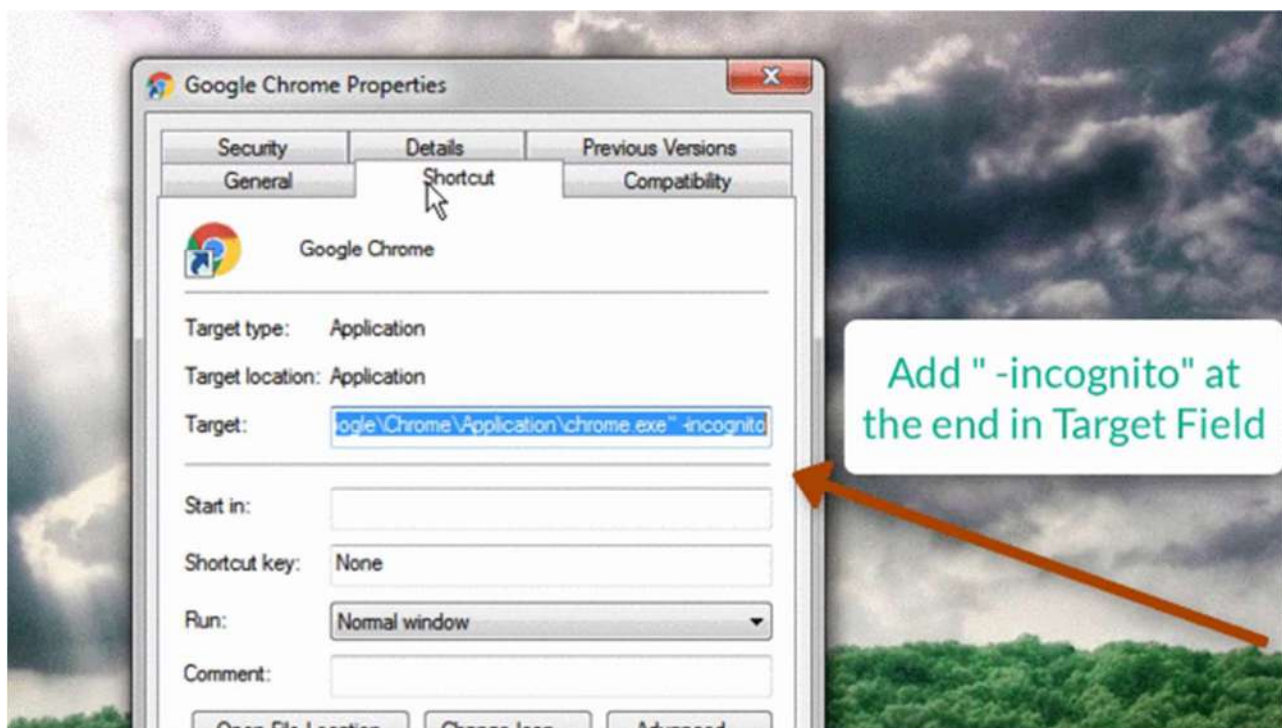
PC ASSEMBLY AND MAINTENANCE

✚ START BROWSER IN INCOGNITO | PRIVATE MODE BY DEFAULT

Here we gonna discuss 3 popular browsers: Google Chrome, Mozilla Firefox & Internet Explorer.

GOOGLE CHROME: BROWSER IN INCOGNITO MODE DIRECTLY

First Right Click on the icon of the Google Chrome Browser on your desktop and go to “Properties”. Now select “Shortcut” Tab and just add “-incognito” in Target URL, as shown in below Image:



Now, whenever you will open Google Chrome Browse using this icon, Browser will automatically start in Incognito mode. That's It!!!

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MOZILLA FIREFOX: START BROWSER IN PRIVATE MODE

Open Mozilla Firefox Browser → click on 3 horizontal bar “Menu icon” from Top Right Corner → Go To “Options”. Now On the left pane, click on “Privacy” option and under “History”, click on the drop down icon and select “Never Remember History” → Click on “OK”.

INTERNET EXPLORER: START BROWSER IN PRIVATE MODE

First Right Click on the icon of the Internet Explorer on your desktop and go to “Properties”. Now select “Shortcut” Tab and just add “-private” in Target URL

How To Fix Chrome Memory Leak Issue | High RAM Usage?

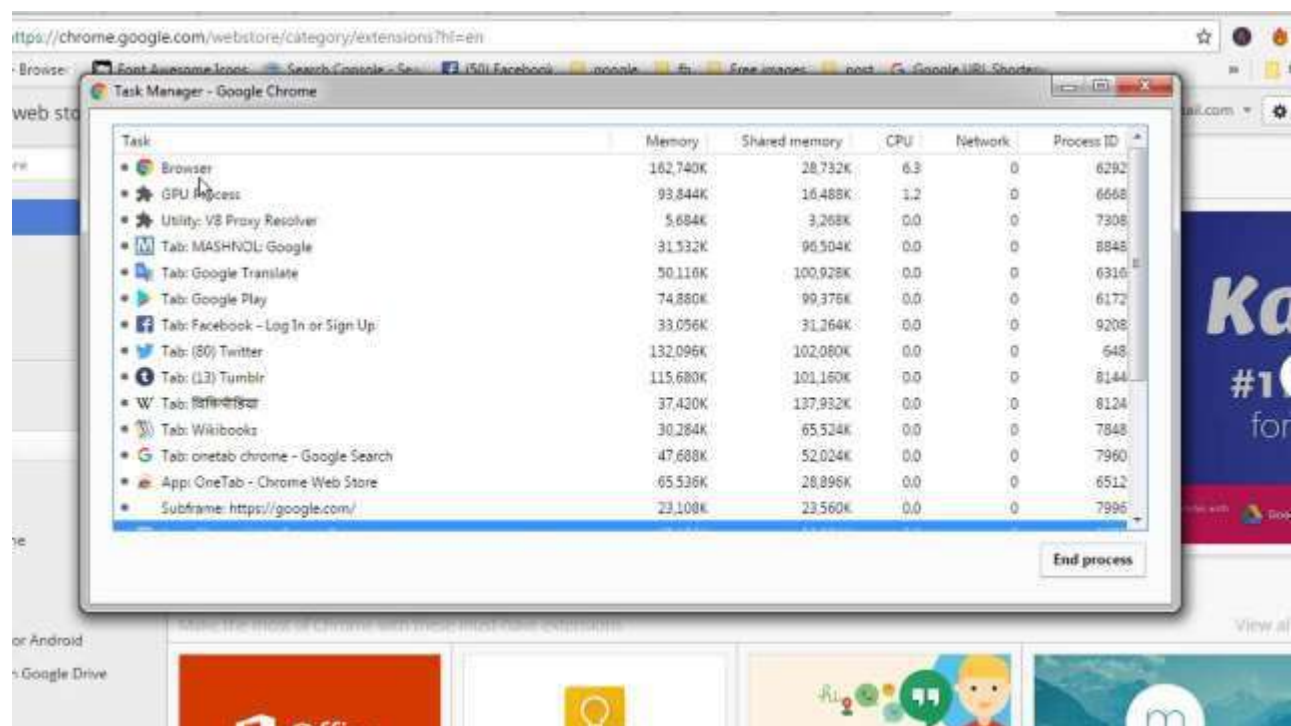
Browsers are the medium using which we can surf or browser over the internet. Most popular browsers like: Google Chrome, Firefox, Safari, Opera etc. These browsers share most of the part of RAM memory of your system or device.

If you have opened 10-15 Tabs in your browser, it may take about 1-1.5 GB RAM of your system. It may sluggish, freeze or hang your computer system. Ultimately it will hamper your work every time. Here we will discuss for Google Chrome Brower. So, Let's see how we can fix Chrome Memory Leak Issue or Chrome High RAM Usage?

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GOOGLE CHROME TASK MANAGER

The question arises, can we know which tab is eating how much amount of RAM in our browser? YES, Google Chrome Browser has its inbuilt task manager. To open this inbuilt task manager, you can use **shortcut key** “Shift+Esc”. Google Chrome Task Manager window will get opened (as shown below) and you can easily know which tab of your browser eating how much amount of RAM.



The screenshot shows the Google Chrome Task Manager window overlaid on a browser window. The task manager displays a list of tasks with columns for Task, Memory, Shared memory, CPU, Network, and Process ID. The tasks listed include the Browser, GPU process, Utility: V8 Proxy Resolver, and several tabs for various websites like MASHNOL, Google Translate, Google Play, Facebook, Twitter, Tumblr, and Wikibooks. The 'Browser' task is highlighted, showing it is using 162,740K of memory and 28,732K of shared memory.

Task	Memory	Shared memory	CPU	Network	Process ID
Browser	162,740K	28,732K	6.3	0	6292
GPU process	93,844K	16,488K	1.2	0	6668
Utility: V8 Proxy Resolver	5,684K	3,268K	0.0	0	7308
Tab: MASHNOL: Google	31,532K	96,504K	0.0	0	8848
Tab: Google Translate	50,116K	100,928K	0.0	0	6316
Tab: Google Play	74,880K	99,376K	0.0	0	6172
Tab: Facebook - Log In or Sign Up	33,056K	31,264K	0.0	0	9208
Tab: (80) Twitter	132,096K	102,080K	0.0	0	648
Tab: (13) Tumblr	115,680K	101,160K	0.0	0	8144
Tab: Wikibooks	37,420K	137,932K	0.0	0	8124
Tab: Wikibooks	30,284K	65,524K	0.0	0	7848
Tab: onetab chrome - Google Search	47,688K	52,024K	0.0	0	7960
App: OneTab - Chrome Web Store	65,536K	28,896K	0.0	0	6512
Subframe: https://google.com/	23,108K	23,560K	0.0	0	7996

From here you can easily manage Tabs & extension of your browser & “END PROCESS” them to save RAM

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FIX CHROME MEMORY LEAK ISSUE

We can not stop ourselves from browsing or opening many tabs in system browser. So, it's always a good idea if somehow the tabs which we are not using for a long time get automatically Kill or suspended. As we may need these tabs again.

Here we come up with 2 such Google Chrome Extension which can save you from Chrome Memory Leak issue:

1. One Tab
2. The Great Suspender

1. "ONE TAB" CHROME EXTENSION

“[One Tab](#)” chrome extension, allows you to convert all of your tabs in a list instantly and whenever you need to access them again, you can restore them individually or all the tabs in just a click. Using this Awesome extension you can save up to 95% RAM Memory with just a click.

Follow the simple steps given below:

Step 1: First Download & Install: [One Tab Chrome Extension](#) in your browser.

Step 2: An icon on the Top right corner will appear on the address bar. Whenever you are with too many tabs and want to clutter them, just click on this icon once, all the tabs will get converted into a list.

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Step 3: After this, you can check the memory usage of your browser using “Google Chrome Task Manager“. Now, if you need to open any tab again, just click on the link, it will restore in a new tab. That's It!!!

2. THE GREAT SUSPENDER

The Great Suspender is a lightweight Chrome extension helps you in reducing chrome memory usage by just suspending the unused tabs. You can even set a particular time period after that unused tab will get automatically suspended OR you can create a whitelist of your favorite websites.

Follow the steps given below:

Step 1: First Download & Install: [The Great Suspender](#) Chrome Extension in your browser.

Step 2: An icon will appear in the top right corner of the address bar. Click on this icon, you will get options to “Suspend the opened tabs”. Just select, the option to suspend other tabs or a particular tab. Whenever you want to restore the suspended tab, just click anywhere on that webpage.

You can also set the time period, after that the unused tab will get automatically suspended to free up your browser memory. Right Click on the icon and set the settings according to your need.

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HOW TO ADD PROGRAM TO STARTUP IN WINDOWS 10

“Startup” folder is the hidden system folder, however, you can access windows hidden system folder using “Shell” command. So, let’s check out how to open “Startup” and how to add program into it.

Step 1: To open Startup folder, we will use Run Command: “Shell”. Just open Run window with “Windows Key+R” and type “shell:startup” and press Enter.

Step 2: Window of Startup folder will get opened. Now Here you can see the shortcut icon of many system programs. There are 2 ways to add the shortcut of any file/folder or program into it.

(1) Right Click anywhere in “Startup” folder and click on “NEW” and select “Shortcut”. Just browse the location of the program or file/folder, in next window named this shortcut and finish it.

(2) You may directly Copy the concerned program into it.

Once you have made entry of your program, file or folder in “Startup” folder, you can check the “startup” status from “Task Manager → Startup” Tab,

REMOVE PROGRAM FROM STARTUP IN WINDOWS 10

As you have added any program into “Startup” folder, in the similar fashion to remove the same from “Startup”, just delete it from “Startup” folder. It will get deleted from Startup List. The same can be instantly checked in “Task Manager → Startup” tab.

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Best Way To Display Android Screen On PC

“AirDroid” is one of the best apps that allows you do more apart from Sharing Android Screen. Yes, AirDroid is a FREE wonderful tool and available for “Android OS” as well as “Windows/Mac OS”. You would also like to know [how you can control your Android Device Remotely from PC](#).

If you have read above share article, then you are aware of AirDroid tool & its functionality. In a Computer system, AirDroid can be used either by Using “Web Browser” or Using Application Software.

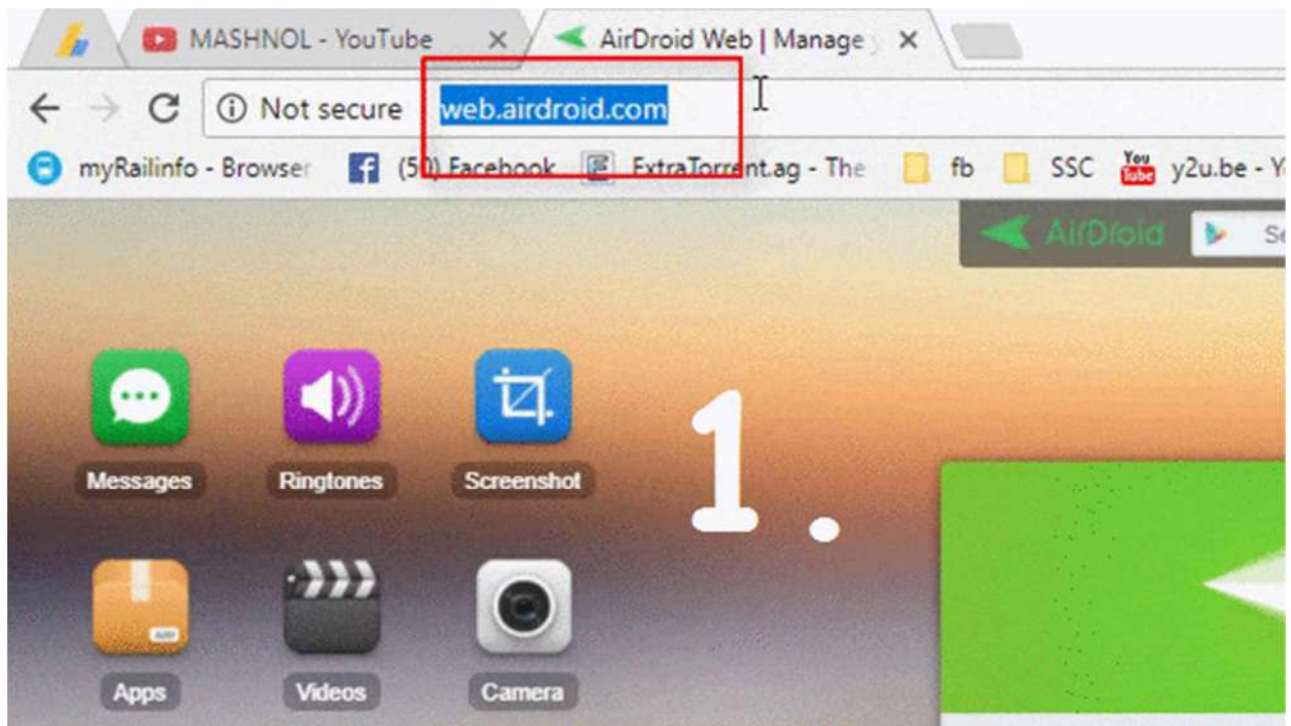
1. Using Web-Browser :

Step 1: Visit “Web.AirDroid.com” in your Browser and install [AirDroid App](#) in your Android Device from Google Play Store.

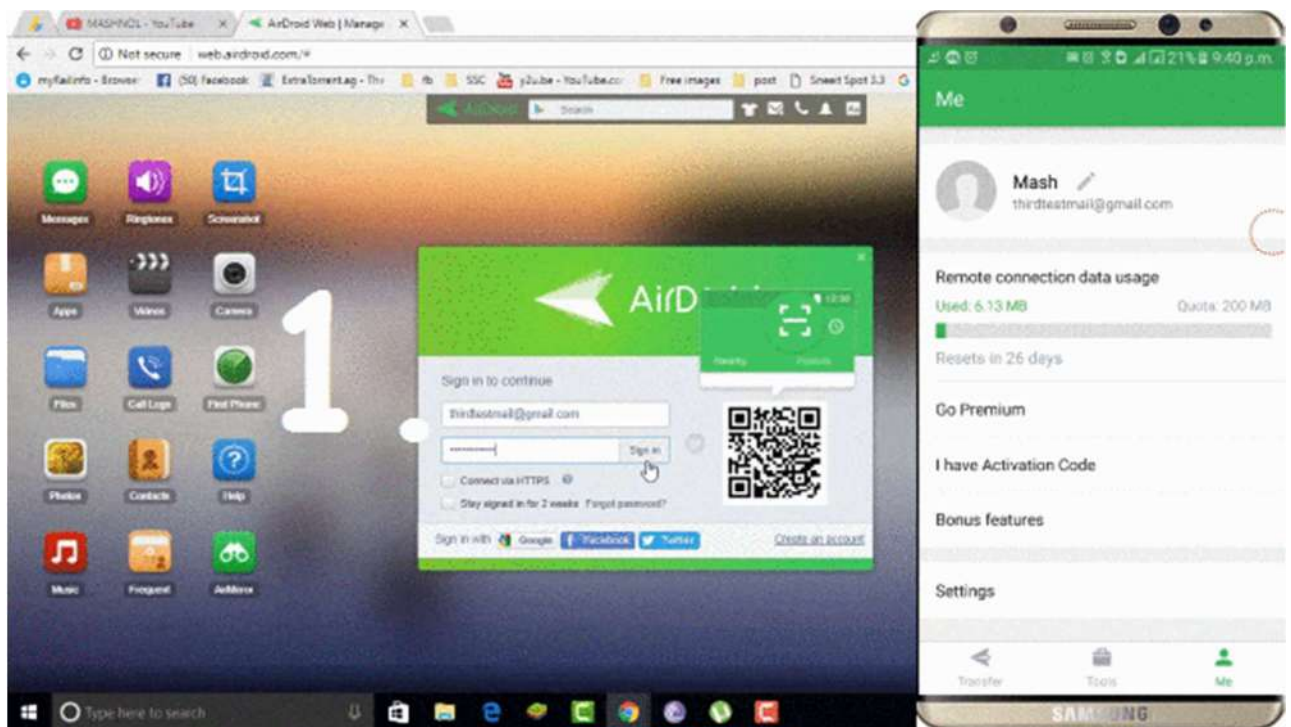
Step 2: Open AirDroid App Installed in your Android Device. If your Android Device & Computer is connected to the same network, then you can connect by just entering the URL shown in AirDroid App. Refer to Image No. 2 of below GIF Image.

OR By just [Scanning the QR code](#) through your app “[-]” on Top Right corner to the QR Code available on the home page on the Web.airDroid.com website.

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OR By creating an account with Email id & Password and Login with this same ID in both Android and Computer system. as shown in GIF Image below:



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Step 3: Now, On your Web Browser, Locate [“Screenshot”](#) Icon and Click on it. On your Android Device, a pop-up box will be opened, just tap on “Start Now”. Voila!!! You can see your mobile screen on Computer and also maximize this window.

2. Using Application Software:

“AirDroid” Application Software can be downloaded from its official Website: Download. Just install this software in your system and Create an account and Sign in with this account to both your Android and Computer system. Now, you can easily Display Android Device in PC. That’s it !!!

How To Find the IP Address of My Router

Here we gonna explain for both Windows and Mac OS. We can easily find IP address using Command Prompt. Steps are pretty simple and straightforward., Let’s check out one by one:

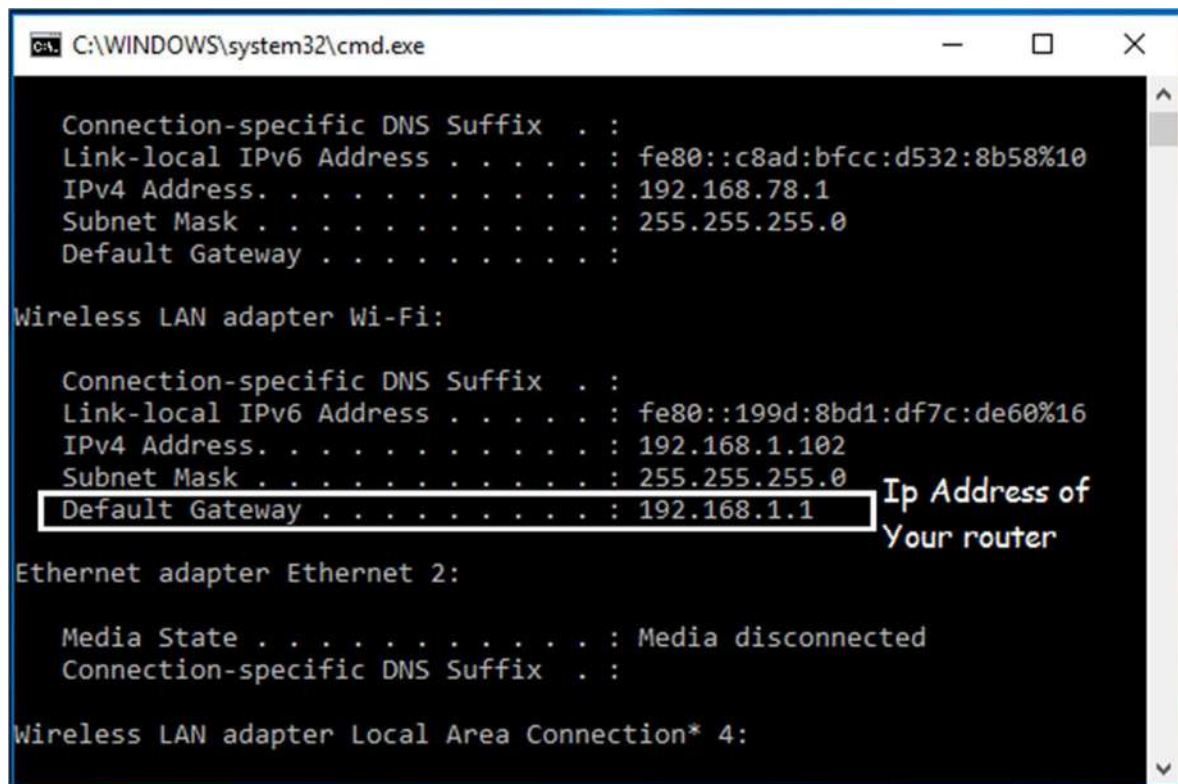
1. In Windows OS:

Step 1: In Windows open Command Prompt (cmd) from Run Window (Windows key+R) and Type CMD, press enter.

Step 2: Now Command Prompt window will get open. here just type ‘ipconfig /all’ command following by ‘Enter’.

Step 3: List of all Ethernet Network Adaptor and WiFi Network Adaptor will be shown with their respective details. In case your router is Wireless, search for ‘Wireless LAN Adapter Wi-Fi’.

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```
C:\WINDOWS\system32\cmd.exe

Connection-specific DNS Suffix . : 
Link-local IPv6 Address . . . . . : fe80::c8ad:bfcc:d532:8b58%10
IPv4 Address. . . . . : 192.168.78.1
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 

Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . : 
Link-local IPv6 Address . . . . . : fe80::199d:8bd1:df7c:de60%16
IPv4 Address. . . . . : 192.168.1.102
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.1.1

Ethernet adapter Ethernet 2:

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

Wireless LAN adapter Local Area Connection* 4:
```

The screenshot shows a Windows Command Prompt window with the title "C:\WINDOWS\system32\cmd.exe". It displays the output of the 'ipconfig' command. The output is organized into sections for different network adapters. The first section is for the 'Wireless LAN adapter Wi-Fi', showing its IPv4 address as 192.168.78.1 and its default gateway as 192.168.1.1. The second section is for the 'Ethernet adapter Ethernet 2', which is currently 'Media disconnected'. The third section is for the 'Wireless LAN adapter Local Area Connection* 4'. A white rectangular box highlights the 'Default Gateway' line for the Wi-Fi adapter, which shows the IP address '192.168.1.1'. To the right of this box, there is a text annotation that reads 'Ip Address of Your router'.

LAN Adapter Wi-Fi”.

2. In Mac OS:

If you are using Mac OS, then to find the IP Address of your router we gonna use a command in Terminal App.

Just open Terminal App and Enter command:“route -n get default”. Here the value of the “Default Gateway” is your Routers IP Address.

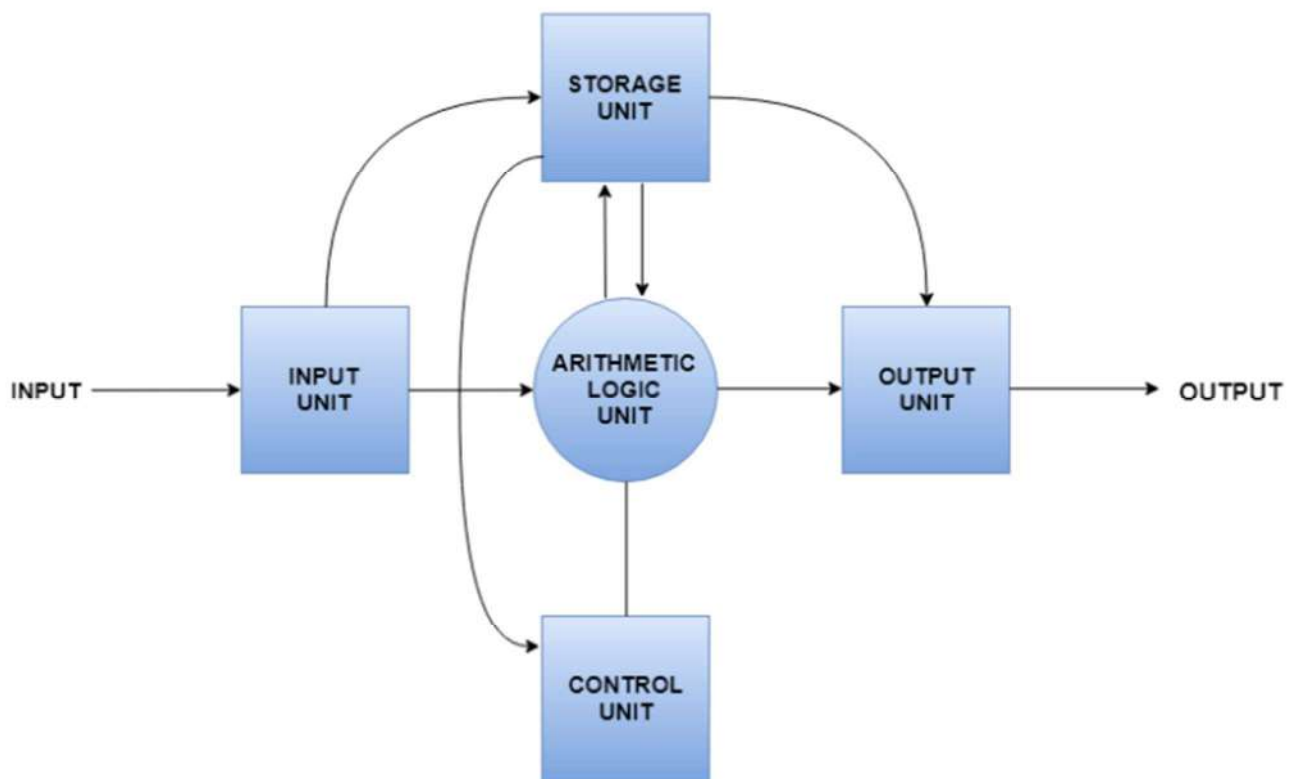
In the worst case scenario, nothing works for you, just reset your Router to factory defaults and this will change your Router IP Address to default one “192.168.1.1/192.168.0.1” [Or Google Your Routers Default IP Address]. That's It!!!

PC ASSEMBLY AND MAINTENANCE

Computer Architecture:

A computer system is basically a machine that simplifies complicated tasks. It should maximize performance and reduce costs as well as power consumption. The different components in the Computer System Architecture are Input Unit, Output Unit, Storage Unit, Arithmetic Logic Unit, Control Unit etc.

A diagram that shows the flow of data between these units is as follows —



The input data travels from input unit to ALU. Similarly, the computed data travels from ALU to output unit. The data constantly moves from storage unit to ALU and back again. This is because stored data is computed on before being stored again. The control unit controls all the other units as well as their data.

Details about all the computer units are —

· Input Unit

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The input unit provides data to the computer system from the outside. So, basically it links the external environment with the computer. It takes data from the input devices, converts it into machine language and then loads it into the computer system. Keyboard, mouse etc. are the most commonly used input devices.

Output Unit

The output unit provides the results of computer process to the users i.e it links the computer with the external environment. Most of the output data is the form of audio or video. The different output devices are monitors, printers, speakers, headphones etc.

Storage Unit

Storage unit contains many computer components that are used to store data. It is traditionally divided into primary storage and secondary storage. Primary storage is also known as the main memory and is the memory directly accessible by the CPU. Secondary or external storage is not directly accessible by the CPU. The data from secondary storage needs to be brought into the primary storage before the CPU can use it. Secondary storage contains a large amount of data permanently.

Arithmetic Logic Unit

All the calculations related to the computer system are performed by the arithmetic logic unit. It can perform operations like addition, subtraction, multiplication, division etc. The control unit transfers data from storage unit to arithmetic logic unit when calculations need to be performed. The arithmetic logic unit and the control unit together form the central processing unit.

Control Unit

This unit controls all the other units of the computer system and so is known as its central nervous system. It transfers data throughout the computer as required including from storage unit to central processing unit and vice versa. The control unit also dictates how the memory, input output devices, arithmetic logic unit etc. should behave.

PC ASSEMBLY AND MAINTENANCE

BIOS Configuration:

The BIOS (Basic Input/Output System) boots up your computer and manages the data flow between the operating system (OS) and attached devices. Since the BIOS is tied to a computer's motherboard, the appearance of each computer's BIOS will vary slightly depending on the manufacturer. You should only configure the BIOS settings if you're absolutely certain about the changes.

Things You Should Know

- Never make changes to your BIOS unless you're confident on what it will do.
- To access the BIOS, turn on your computer and press the startup key. In most cases, this is "F2" or "Del".
- Change BIOS settings by using the arrow keys on your keyboard and "Enter".

Steps:

Turn on your computer. You'll only be able to access the BIOS upon startup.

- If your computer is already on, you'll need to restart your computer.

Press **Del** or **F2** to enter setup. You can press and hold or repeatedly press this button. The setup button is usually Del or F2, but this could vary depending on your device.

- Here's a list of some of the most common setup keys by manufacturer:

- Acer: F2 or DEL
- ASUS: F2 or Del
- Dell: F2 or F12
- HP: ESC or F10
- Lenovo: F2 or Fn + F2
- Lenovo Desktops: F1
- Lenovo ThinkPads: Enter + F1.
- MSI: DEL for motherboards and PCs
- Microsoft Surface Tablets: Press and hold the volume-up button.
- Origin PC: F2

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- Samsung: F2
- Sony: F1, F2, or F3
- Toshiba: F2
- It's best to start pressing the setup key as soon as the computer begins to restart.
- If you see "Press [key] to enter setup" or something similar flash across the bottom of the screen and then disappear, you'll need to restart your computer and try again.
- Look at your computer model's manual or online support page to confirm your computer's BIOS key.

Accessing and configuring the BIOS (Basic Input/Output System) of a computer can be a useful step in troubleshooting hardware issues or optimizing system performance. Here are the steps to access and configure the BIOS:

1. Turn on the computer and watch for a message on the screen indicating which key or keys to press to enter the BIOS setup utility. This message varies depending on the computer manufacturer but is typically displayed as "Press [key] to enter Setup" or "Press [key] to enter BIOS".
2. Press the key or keys indicated on the screen to enter the BIOS setup utility. This may be a single key, such as F2 or Delete, or a combination of keys, such as Ctrl+Alt+Esc.
3. Once you are in the BIOS setup utility, use the arrow keys to navigate through the menus and options. The layout and options available in the BIOS may vary depending on the manufacturer and model of your computer.
4. To make changes to the BIOS settings, select the option you want to modify and press Enter. Use the arrow keys to select the desired option or value, and press Enter to save the changes.
5. Be careful when making changes to the BIOS settings, as incorrect settings can cause your computer to fail to boot or cause other issues. It's a good idea to write down the original settings before making any changes, so you can revert to them if necessary.
6. Once you have made the desired changes, select the option to save and exit the BIOS setup utility. Your computer will then restart, and the new

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settings will take effect.

7. If you experience any issues after making changes to the BIOS settings, you can return to the BIOS setup utility and restore the original settings

How to make Bootable USB Drive:

To make a bootable USB drive, follow these steps:

1. Insert the USB drive into your computer's USB port.
2. Download the ISO file for the operating system or application you want to make bootable.
3. Download and install a USB bootable creation software such as Rufus, UNetbootin, or Etcher.
4. Run the USB bootable creation software and select the USB drive you want to make bootable from the list of available drives.
5. Select the ISO file you downloaded earlier.
6. Choose the file system and partition scheme for the USB drive.
7. Click the "Start" or "Create" button to begin the process of making the USB drive bootable.

Wait for the process to complete. This may take several minutes, depending on the size of the ISO file and the speed of your computer.

Once the process is complete, safely eject the USB drive from your computer.

Your USB drive is now bootable and can be used to install the operating system or application on a computer. Make sure to change the boot order in the BIOS settings of the target computer to boot from the USB drive.