**Booting** is a startup sequence that starts the operating system of a computer when it is turned on. A **boot** sequence is the initial set of operations that the computer performs when it is switched on. Every computer has a **boot** sequence.

**Boot Loader**

Computers powered by the central processing unit can only execute code found in the systems memory. Modern operating systems and application program code and data are stored on nonvolatile memories or mass storage devices. When a computer is first powered on, it must initially rely only on the code and data stored in nonvolatile portions of the systems memory. At boot time, the operating system is not really loaded and the computer’s hardware cannot peform many complex systems actions.

The program that starts the “chain reaction” which ends with the entire operating system being loaded is known as the boot loader (or bootstrap loader). The term creatively came from early designiners imagining that before a computer “runs” it must have it’s “boots strapped”. The boot loader’s only job is to load other software for the operating system to start. Often, multiple-stage boot loaders are used, in which several small programs of increasing complexity sequentially summon one after the other, until the last of them loads the operating system.

**Boot Devices**

The boot device is the device from which the operating system is loaded. A modern PC BIOS (Basic Input/Output System) supports booting from various devices. These include the local hard disk drive, optical drive, floppy drive, a network interface card, and a USB device. Typically, the BIOS will allow the user to configure a boot order. If the boot order is set to:

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

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

**Boot Sequence**

There is a standard boot sequence that all personal computers use. First, the CPU runs an instruction in memory for the BIOS. That instruction contains a jump instruction that transfers to the BIOS start-up program. This program runs a power-on self test (POST) to check that devices the computer will rely on are functioning properly. Then, the BIOS goes through the configured boot sequence until it finds a device that is bootable. Once BIOS has found a bootable device, BIOS loads the bootsector and transfers execution to the boot sector. If the boot device is a hard drive, it will be a master boot record (MBR). The MBR code checks the partition table for an active partition. If one is found, the MBR code loads that partition’s boot sector and executes it. The boot sector is often operating system specific, however in most operating systems its main function is to load and execute the operating system kernel, which continues startup. If there is no active partition or the active parition’s boot sector is invalid, the MBR may load a secondary boot loader which will select a partition and load its boot boot secotr, which usually loads the corresponding operating system kernel.

**Booting**: When we start our Computer then there is an operation which is performed automatically by the Computer which is also called as Booting. In the Booting, System will check all the hardware’s and Software’s those are installed or Attached with the System and this will also load all the Files those are needed for running a system.

In the Booting Process all the Files those are Stored into the ROM Chip will also be Loaded for Running the System. In the Booting Process the System will read all the [information](http://ecomputernotes.com/fundamental/information-technology/what-do-you-mean-by-data-and-information) from the Files those are Stored into the ROM Chip and the ROM chip will read all the instructions those are Stored into these Files. After the Booting of the System this will automatically display all the information on the System. The Instructions those are necessary to Start the System will be read at the Time of Booting.

## There are two Types of Booting

1) Warm Booting: when the System Starts from the Starting or from initial State Means when we Starts our System this is called as warm Booting. In the Warm Booting the System will be Started from its beginning State means first of all, the user will press the Power Button , then this will read all the instructions from the ROM and the Operating System will b Automatically gets loaded into the System.

2) Cold Booting : The Cold Booting is that in which System Automatically Starts when we are Running the System, For Example due to Light Fluctuation the system will Automatically Restarts So that in this Chances Damaging of system are More. and the System will no be start from its initial State So May Some Files will b Damaged because they are not Properly Stored into the System.

What are the reasons you would need to warm boot?

Below is a list of the different reasons you may need to warm boot a computer.

* New [hardware](https://www.computerhope.com/jargon/h/hardware.htm), [software](https://www.computerhope.com/jargon/s/software.htm), or [driver](https://www.computerhope.com/jargon/d/driver.htm) has been installed and requires a reboot.
* A system setting has been changed that requires a reboot.
* An [update](https://www.computerhope.com/jargon/u/update.htm) has been installed and requires a reboot.
* The computer has a problem that cannot be fixed.
* Computer or software program is [frozen](https://www.computerhope.com/jargon/f/frozen.htm).

**Tip:** Rebooting the computer is a good first [troubleshooting](https://www.computerhope.com/jargon/t/troushoo.htm) step for many problems.

**Note:** When a computer freezes or gets into a [deadlock](https://www.computerhope.com/jargon/d/deadlock.htm) it cannot be warm booted and requires cold boot to restart.

Alternatively referred to as a **hard boot**, **cold boot**is a term used to describe the process of turning on the computer after it has been powered off. For example, when you first turn your computer on after being off for the night you are cold booting the computer.

To perform a cold boot (also called a "hard boot") means to start up a computer that is turned off. It is often used in contrast to a [warm boot](https://techterms.com/definition/warm_boot), which refers to restarting a computer once it has been turned on. A cold [boot](https://techterms.com/definition/boot) is typically performed by pressing the power button on the computer.

Both a cold boot and warm boot clear the system [RAM](https://techterms.com/definition/ram) and perform the [boot sequence](https://techterms.com/definition/bootsequence)from scratch. However, unlike a cold boot, a warm boot may not clear all system [caches](https://techterms.com/definition/cache), which store temporary information. Additionally, a cold boot performs a "power on self test" ([POST](https://techterms.com/definition/post)), which runs a series of system checks at the beginning of the boot sequence.

While a warm boot and cold boot are similar, a cold boot performs a more complete reset of the system than a warm boot. Therefore, if you are [troubleshooting](https://techterms.com/definition/troubleshooting) your computer, you may be asked to turn off your computer completely and perform a cold boot. This makes sure all temporary data is wiped from your system, which may help eliminate issues affecting your computer.