LINUX BOOTING PROCESS

There are six stages in the Linux Booting Process

1. BIOS - Basic Input / Output System
2. MBR - Master Boot Record
3. GRUB - Grand Unified Bootloader
4. Kernel
5. Init
6. Runlevel

BIOS - The BIOS load and exercise the Master Boots Record (MBR) boot loader. When you first turn on your computer, the BIOS first perform some integrity check of HDD or SSD.
Then the BIOS searches for loads, and executes the boot loader program which can be found in the Master Boot Record (MBR). The MBR is sometimes on a USB stick or CD ROM such as with a live installation of Linux.
Once the boot loader program is detected, its then loaded into memory and the BIOS gives control of the system to it.

MBR - Is responsible for loading and executing the GRUB boot loader. The MBR is located in the 1st sector of the bootable disk, which is typically / dev / hda, or / dev / sda, depending on your hardware.
The MBR also contains information about GRUB or LILO in very old systems.

GRUB - Sometimes called GNU GRUB, is the typical boot loader for most modern linux systems. The GRUB splash screen is often the first thing you see when you boot your computer.
It has a simple menu where you can select some options if you have multiple kernel images installed.
In many system you can find the GRUB configuration file at / boot / grub / grub.conf or / etc / grub.conf

Kernel - The kernel is often referred to as the core of any operating system, linux included. it has complete control over everything in your system.
In this stage of the boot process, the kernel that was selected by GRUB first mounts the root file system that specified in the / grud.conf / file.
Then it execute the / sbin / init / program which is always the first program to be executed. you can confirm this with its process id (PID), which should always be 1.
The kernel then establishes a temporary root file system using initial RAM Disk (Initrd) until the real file system is mounted.

Init - At this point your system executes run level programs. At one point it would look for an init file, usually found at / etc / init tab to decide the linux run level. Modern Linux system use system to choose a run level instead. According to TechMint these are the available run level.

Run level 0 is matched by poweroff.target (and **runlevel0.target** is a symbolic link to **power off.target**).

Run level 1 is matched by rescue.target (and **runlevel1.target** is a symbolic link to **rescue.target**).

Run level 3 is emulated by **multi- user.target** (and **runlevel3.target** is a symbolic link to **multi-user.target**).

Run level 5 is emulated by **graphical.target** (and **runlevel5.target** is a symbolic link to **graphical.target**).

Run level 6 is emulated by **reboot.target** (and **runlevel6.target** is a symbolic link to **reboot.target**).

Emergency is matched by **emergency.target**

system will then begin executing brunlevel programs.

Runlevel - Depending on which linux distribution you have installed, you may be able to see different services getting started. For example, you might catch "starting sendmail... ok "

These are known as runlevel programs, and are executed from different directories depending on your run level. Each of the 6 runlevels described above has its own directory:

- Run level 0 - / etc / rc0.d /
- Run level 1 - / etc / rc1.d /
- Run level 2 - / etc / rc2.d /
- Run level 3 - / etc / rc3.d /
- Run level 4 - / etc / rc4.d /
- Run level 5 - / etc / rc5.d /
- Run level 6 - / etc / rc6.d /

The exact location of these directories varies from distribution to distribution.
If you look in the different run level directories, you'll find programs that start with either an "S" or "K" for startup and kill, respectively. Startup programs are executed during system startup, kill programs during shutdown.

That's everything you need to know about the linux booting process. Now go out there and make "Tux proud".