Introduction to Linux

Linux: Based on Unix.

1) Copyrighted. The authors own it.

2) Gnu Public License.
Full source is supplied.
New source is publicly posted on the internet.
You can use it, change it, sell it, copy it, give it away,
–but, you must supply source to your changes.
You may build and sell proprietary software that runs on it.

3) Multi-platform support.
Intel x86, AMD64, ARM, MIPS, Power PC, SPARC, Itanium, Alpha

4) Virtual memory.
Swap space (disk) acts as slow RAM.
Each process runs in its own virtual address space,
Linux maps virtual to physical memory, physically the process could be running in any part of RAM (or disk).

5) Network support. (TCP/IP, NIS, NFS)

6) Multi-process support.

7) Documentation.
Unix manual entries,
How-To files (CD/DVD ROM, Distro Site),
FAQ (Frequently Asked Questions),
Various online locations. Google is your friend (but make sure you search for the correct distro and version).

8) X Window System support. Provides GUI.

Linux/Unix Operating System Organization

Kernel: Central utilities of the operating system.

Size and content varies.

Implements Virtual memory (memory management) and process control (loads and runs programs).

Multi-process support (context switching, prioritization).

Supports concept of multiple users, groups of users, privileges.

Device drivers and low-level perpherial I/O

File systems

Networking support

Intel CPUs: the kernel runs in protected mode.

MACH (micro) kernels (not Linux):
device drivers, networking software, are privileged "user" programs

Linux Components

Many programs run priviledged processes in user mode:

System programs:
nfsd: network file system server
lpd: line printer controller
inetd: network services controller

Applications (privileged):
X11: window system.

Most user programs run with standard privileges:
Nautilus: file manager.

Services

System services provide a lot of system functionality

`init/systemd`–
Controls start up and shutdown.
Controlled by configuration files in the `/etc/rc.d`
directory
Starts and terminates user programs

`agetty`–controls start of the login process

`inetd`–controls the starting of network utilities

`klogd, syslogd`–controls the log files

`nfsd, mountd`–controls the network file system Your home
directory is there, if the sysadmin did the setup right.

`ypbind`–controls network databases, including the
login/password database.

`kswapd`–controls virtual memory (paging)

`kflushd`–controls file buffering

`portmap`–necessary for any rpc service