**CHAPTER II**

**BASIC THEORY**

1. **Understanding Operating System**

An operating system (OS) is the program that, after being initially loaded into the computer by a [boot](https://searchwindowsserver.techtarget.com/definition/boot) program, manages all the other programs in a computer. The other programs are called *applications* or application programs. The application programs make use of the operating system by making requests for services through a defined application program interface ([API](https://searchmicroservices.techtarget.com/definition/application-program-interface-API)). In addition, users can interact directly with the operating system through a user interface such as a command line or a graphical user interface ([GUI](https://searchwindevelopment.techtarget.com/definition/GUI)).

An operating system performs these services for applications:

* In a [multitasking](https://whatis.techtarget.com/definition/multitasking) operating system where multiple programs can be running at the same time, the operating system determines which applications should run in what order and how much time should be allowed for each application before giving another application a turn.
* It manages the sharing of internal memory among multiple applications.
* It handles input and output to and from attached hardware devices, such as hard disks, printers, and dial-up ports.
* It sends messages to each application or interactive user (or to a system operator) about the status of operation and any errors that may have occurred.
* It can offload the management of what are called *batch* jobs (for example, printing) so that the initiating application is freed from this work.
* On computers that can provide parallel processing, an operating system can manage how to divide the program so that it runs on more than one processor at a time.

All major computer platforms (hardware and software) require and sometimes include an operating system, and operating systems must be developed with different features to meet the specific needs of various [form factors](https://whatis.techtarget.com/definition/form-factor).

Common desktop operating systems:

1. [**Windows**](https://searchwindowsserver.techtarget.com/definition/Windows) is Microsoft’s flagship [operating system](https://whatis.techtarget.com/definition/operating-system-OS), the [de facto standard](https://whatis.techtarget.com/definition/de-facto-standard) for home and business computers. Introduced in 1985, the [GUI](https://searchwindevelopment.techtarget.com/definition/GUI)-based OS has been released in many versions since then. The user-friendly [Windows 95](https://whatis.techtarget.com/definition/Windows-95) was largely responsible for the rapid development of personal computing.
2. [**Mac OS**](https://whatis.techtarget.com/definition/Mac-OS) is the operating system for Apple's [Macintosh](https://whatis.techtarget.com/definition/Macintosh) line of personal computers and workstations.
3. [**Linux**](https://searchdatacenter.techtarget.com/definition/Linux-operating-system) is a [Unix](https://searchdatacenter.techtarget.com/definition/Unix)-like [operating system](https://whatis.techtarget.com/definition/operating-system-OS) that was designed to provide personal computer users a free or very low-cost alternative. Linux has a reputation as a very efficient and fast-performing system.

A [mobile OS](https://searchmobilecomputing.techtarget.com/definition/mobile-operating-system) allows [smartphones](https://en.wikipedia.org/wiki/Smartphone), [tablet PCs](https://searchmobilecomputing.techtarget.com/definition/tablet-PC) and other mobile devices to run applications and programs. Mobile operating systems include **Apple** [**iOS**](https://searchmobilecomputing.techtarget.com/definition/iOS), **Google** [**Android**](https://searchmobilecomputing.techtarget.com/definition/Android-OS), **BlackBerry OS** and [**Windows 10 Mobile**](https://whatis.techtarget.com/definition/Windows-10-Mobile).

1. **Understanding Linux OS**

Linux (pronounced "lih-nux", not "lie-nux") is a Unix-like [operating system](https://techterms.com/definition/operating_system) (OS) created in 1991 by Linus Torvalds. He developed Linux because he wasn't happy with the currently available options in [Unix](https://techterms.com/definition/unix) and felt he could improve it. So he did what anybody else would do, and created his own operating system.

When Linus finished building a working version of Linux, he freely distributed the OS, which helped it gain popularity. Today, Linux is used by millions of people around the world. Many computer hobbyists (a.k.a. nerds) like the operating system because it is highly customizable. Programmers can even modify the [source code](https://techterms.com/definition/sourcecode) and create their own unique version of the Linux operating system.

[Web hosting](https://techterms.com/definition/webhost) companies often [install](https://techterms.com/definition/install) Linux on their Web servers because Linux-based servers are cheaper to set up and maintain than Windows-based servers. Since the Linux OS is freely distributed, there are no licensing fees. This means Linux servers can host hundreds or even thousands of [websites](https://techterms.com/definition/website) at no additional cost. Windows servers, on the other hand, often require user licenses for each website hosted on the the server.

Linux is available in several distributions. Some of the most popular distributions include Red Hat Enterprise, CentOS, Debian, openSUSE, and Ubuntu. Linux also supports several hardware [platforms](https://techterms.com/definition/platform), including Intel, PowerPC, DEC Alpha, Sun Sparc, and Motorola. Since Linux is compatible with so many types of hardware, variations of the Linux operating system are used for several other electronic devices besides computers. Some examples include cell phones, cable boxes, and Sony's PS2 and PS3 gaming consoles.

1. **Understanding Linux Mint OS**

Linux Mint is a free and [open source](https://whatis.techtarget.com/definition/open-source) operating system ([OS](https://whatis.techtarget.com/definition/operating-system-OS)) [distribution](https://searchdatacenter.techtarget.com/definition/distribution) based on [Ubuntu](https://searchdatacenter.techtarget.com/definition/Ubuntu) and [Debian](https://searchdatacenter.techtarget.com/definition/Debian) for use on [x-86](https://searchwindowsserver.techtarget.com/definition/x86) [x-64](https://whatis.techtarget.com/definition/x86-64)-compatible machines.

Mint is designed for ease of use and a ready-to-roll out-of-box experience, including [multimedia](https://searchmicroservices.techtarget.com/definition/multimedia) support on desktops. The operating system is easier to install than most [Linux](https://searchdatacenter.techtarget.com/definition/Linux-operating-system) distributions. Mint includes software required for e-mail and online functionality as well as support for multimedia content, whether online or from a user's own files and physical media.

Unlike most Linux distributions, Mint includes proprietary third-party [browser](https://searchwindevelopment.techtarget.com/definition/browser) [plugins](https://whatis.techtarget.com/definition/plug-in), Java, media [codecs](https://searchunifiedcommunications.techtarget.com/definition/codec), and other components to enable support for common accepted standards. This support allows for DVD and BluRay playback, as well as Flash for [streaming media](https://whatis.techtarget.com/definition/streaming-media). Although the OS includes a [firewall](https://searchsecurity.techtarget.com/definition/firewall), Mint claims to have no need of [antimalware](https://searchsecurity.techtarget.com/definition/antimalware). Mint is compatible with Ubuntu installer, which enables access to 30,000 existing pieces of free, open source software.

There are several different desktop editions of Mint, including Cinnamon, GNOME, XFCE and KDE, to best support various hardware. The operating system is also provided in an alternate Linux Mint Debian Edition for those that are more familiar with Linux. That edition is said to be less intuitive and user-friendly but also faster and more responsive.