# LINUX

Linux is a unix-like computer operating system assembled under the model of free and open source software development and distribution.The defining component of linux is the linux kernel,is an operating system.the kernel first released on 17th September,1991 by linus torvalds.The free software Foundation uses the name to describe the operating system,which has led to some controversy.The linux is written in primary C and D assembly.The kernel was at monolithic (linux kernel).The license of thelinux GPLV2 and other free and open source licensens,expect for the “linux” trademark.Linux was originally developed for personal computer based on the intel x86 architecture,but has since been ported to more platforms than only any other operating system.because of the dominance operating system.Because of the dominance of the linux has the largest installed base of all general-purpose operating system.Linuxis also the leading operation system on servers and other big iron system on servers andother big iron system such as mainframe computers and is used on 99.6% of the top500 supercomputers.It is usedby around 2.3% of destop computers.The chromebook,which runs the linux kernel based chrome Os,dominates the US k-12 education market and represents nearly 20% of the sub-$300 notebook sales in the US.Linux also run on embedded.

The development of linux is one of the most prominent examples of free and open-sources software collaboration.The underlying source code may be used,modified and disturbed-commercially or non commercially by anyone under the terms of its respective licenses,such as the GNU ‘GENERAL PUBLIC LICENSE’.Typically,Linux is packaged in a form known as a linux distribution (or distro for short) for both destop and server use.Some of the most popular mainstream linux distributiuons are Arch Linux,CentOs,Debian,Fedora ,Genatoo Linux mint,Mageia,open SUSE and Ubuntu together with commercial distribution such as Red Hat ENTERPRISE.Linux and SUSE

The [user interface](https://en.wikipedia.org/wiki/User_interface), also known as the [shell](https://en.wikipedia.org/wiki/Shell_(computing)), is either a [command-line interface](https://en.wikipedia.org/wiki/Command-line_interface) (CLI), a [graphical user interface](https://en.wikipedia.org/wiki/Graphical_user_interface) (GUI), or through controls attached to the associated hardware, which is common for [embedded systems](https://en.wikipedia.org/wiki/Embedded_systems). For desktop systems, the default mode is usually a graphical user interface, although the CLI is commonly available through [terminal emulator](https://en.wikipedia.org/wiki/Terminal_emulator)windows or on a separate [virtual console](https://en.wikipedia.org/wiki/Virtual_console_(PC)).

CLI shells are text-based user interfaces, which use text for both input and output. The dominant shell used in Linux is the [Bourne-Again Shell](https://en.wikipedia.org/wiki/Bourne-Again_Shell) (bash), originally developed for the [GNU project](https://en.wikipedia.org/wiki/GNU_project). Most low-level Linux components, including various parts of the [userland](https://en.wikipedia.org/wiki/Userland_(computing)" \o "Userland (computing)), use the CLI exclusively. The CLI is particularly suited for automation of repetitive or delayed tasks, and provides very simple [inter-process communication](https://en.wikipedia.org/wiki/Inter-process_communication).

On desktop systems, the most popular user interfaces are the [GUI shells](https://en.wikipedia.org/wiki/GUI_shell), packaged together with extensive [desktop environments](https://en.wikipedia.org/wiki/Desktop_environment), such as the [K Desktop Environment (KDE)](https://en.wikipedia.org/wiki/KDE), [GNOME](https://en.wikipedia.org/wiki/GNOME_desktop), [MATE](https://en.wikipedia.org/wiki/MATE_(software)), [Cinnamon](https://en.wikipedia.org/wiki/Cinnamon_(desktop_environment)), [Unity](https://en.wikipedia.org/wiki/Unity_(desktop_environment)), [LXDE](https://en.wikipedia.org/wiki/LXDE), [Pantheon](https://en.wikipedia.org/wiki/Elementary_OS) and [Xfce](https://en.wikipedia.org/wiki/Xfce" \o "Xfce), though a variety of additional user interfaces exist. Most popular user interfaces are based on the [X Window System](https://en.wikipedia.org/wiki/X_Window_System), often simply called "X". It provides [network transparency](https://en.wikipedia.org/wiki/Network_transparency) and permits a graphical application running on one system to be displayed on another where a user may interact with the application; however, certain extensions of the X Window System are not capable of working over the network.[[62]](https://en.wikipedia.org/wiki/Linux#cite_note-64) Several X display servers exist, with the reference implementation, [X.Org Server](https://en.wikipedia.org/wiki/X.Org_Server), being the most popular.

Several types of [window managers](https://en.wikipedia.org/wiki/Window_manager) exist for X11, including [tiling](https://en.wikipedia.org/wiki/Tiling_window_manager), [dynamic](https://en.wikipedia.org/wiki/Dynamic_window_manager), [stacking](https://en.wikipedia.org/wiki/Stacking_window_manager) and [compositing](https://en.wikipedia.org/wiki/Compositing_window_manager). Window managers provide means to control the placement and appearance of individual application windows, and interact with the X Window System. Simpler [X window managers](https://en.wikipedia.org/wiki/X_window_manager) such as [dwm](https://en.wikipedia.org/wiki/Dwm" \o "Dwm) or [ratpoison](https://en.wikipedia.org/wiki/Ratpoison" \o "Ratpoison) provide a [minimalist](https://en.wikipedia.org/wiki/Minimalism_(computing)) functionality, while more elaborate window managers such as [FVWM](https://en.wikipedia.org/wiki/FVWM), [Enlightenment](https://en.wikipedia.org/wiki/Enlightenment_(software)) or [Window Maker](https://en.wikipedia.org/wiki/Window_Maker) provide more features such as a built-in [taskbar](https://en.wikipedia.org/wiki/Taskbar) and [themes](https://en.wikipedia.org/wiki/Theme_(computing)), but are still lightweight when compared to desktop environments. Desktop environments include window managers as part of their standard installations, such as [Mutter](https://en.wikipedia.org/wiki/Mutter_(window_manager)) (GNOME), [KWin](https://en.wikipedia.org/wiki/KWin" \o "KWin) (KDE) or [Xfwm](https://en.wikipedia.org/wiki/Xfwm" \o "Xfwm) (xfce), although users may choose to use a different window manager if preferred.

[Wayland](https://en.wikipedia.org/wiki/Wayland_(display_server_protocol)) is a display server protocol intended as a replacement for the X11 protocol; as of 2014, it has not received wider adoption. Unlike X11, Wayland does not need an external window manager and compositing manager. Therefore, a Wayland compositor takes the role of the display server, window manager and compositing manager. Weston is the reference implementation of Wayland, while GNOME's Mutter and KDE's KWin are being ported to Wayland as standalone display servers. Enlightenment has already been successfully ported since version 19.

The primary difference between Linux and many other popular contemporary operating systems is that the [Linux kernel](https://en.wikipedia.org/wiki/Linux_kernel) and other components are [free](https://en.wikipedia.org/wiki/Free_software) and [open-source software](https://en.wikipedia.org/wiki/Open-source_software). Linux is not the only such operating system, although it is by far the most widely used.[[66]](https://en.wikipedia.org/wiki/Linux#cite_note-MarketShare09NOV-68) Some [free](https://en.wikipedia.org/wiki/Free_software_license) and [open-source](https://en.wikipedia.org/wiki/Open-source_license) software licenses are based on the principle of [copyleft](https://en.wikipedia.org/wiki/Copyleft" \o "Copyleft), a kind of reciprocity: any work derived from a copyleft piece of software must also be copyleft itself. The most common free software license, the [GNU General Public License](https://en.wikipedia.org/wiki/GNU_General_Public_License) (GPL), is a form of copyleft, and is used for the Linux kernel and many of the components from the [GNU Project](https://en.wikipedia.org/wiki/GNU_Project).

Linux based distributions are intended by developers for [interoperability](https://en.wikipedia.org/wiki/Interoperability) with other operating systems and established computing standards. Linux systems adhere to [POSIX](https://en.wikipedia.org/wiki/POSIX),[[67]](https://en.wikipedia.org/wiki/Linux#cite_note-69) [SUS](https://en.wikipedia.org/wiki/Single_UNIX_Specification),[[68]](https://en.wikipedia.org/wiki/Linux#cite_note-70)[LSB](https://en.wikipedia.org/wiki/Linux_Standard_Base), [ISO](https://en.wikipedia.org/wiki/International_Organization_for_Standardization), and [ANSI](https://en.wikipedia.org/wiki/American_National_Standards_Institute) standards where possible, although to date only one Linux distribution has been POSIX.1 certified, Linux-FT.[[69]](https://en.wikipedia.org/wiki/Linux#cite_note-71)[[70]](https://en.wikipedia.org/wiki/Linux#cite_note-72)

Free software projects, although developed through [collaboration](https://en.wikipedia.org/wiki/Collaboration), are often produced independently of each other. The fact that the software licenses explicitly permit redistribution, however, provides a basis for larger scale projects that collect the software produced by stand-alone projects and make it available all at once in the form of a Linux distribution.

Many Linux distributions, or "distros", manage a remote collection of system software and application software packages available for download and installation through a network connection. This allows users to adapt the operating system to their specific needs. Distributions are maintained by individuals, loose-knit teams, volunteer organizations, and commercial entities. A distribution is responsible for the default configuration of the installed Linux kernel, general system security, and more generally integration of the different software packages into a coherent whole. Distributions typically use a [package manager](https://en.wikipedia.org/wiki/Package_manager) such as [apt](https://en.wikipedia.org/wiki/Advanced_Packaging_Tool), [yum](https://en.wikipedia.org/wiki/Yellowdog_Updater,_Modified), [zypper](https://en.wikipedia.org/wiki/Zypper" \o "Zypper), [pacman](https://en.wikipedia.org/wiki/Pacman_(package_manager)" \o "Pacman (package manager)) or [portage](https://en.wikipedia.org/wiki/Portage_(software)) to install, remove, and update all of a system's software from one central location. A distribution is largely driven by its developer and user communities. Some vendors develop and fund their distributions on a volunteer basis, Debian being a well-known example. Others maintain a community version of their commercial distributions, as Red Hat does with Fedora, and SUSE does with openSUSE.

In many cities and regions, local associations known as Linux User Groups (LUGs) seek to promote their preferred distribution and by extension free software. They hold meetings and provide free demonstrations, training, technical support, and operating system installation to new users. Many Internet communities also provide support to Linux users and developers. Most distributions and free software / open-source projects have IRC chatrooms or newsgroups. Online forums are another means for support, with notable examples being LinuxQuestions.org and the various distribution specific support and community forums, such as ones for Ubuntu, Fedora, and Gentoo. Linux distributions host mailing lists; commonly there will be a specific topic such as usage or development for a given list.