1. The X Window System:

- The X Window System, commonly referred to merely as X, is a highly configurable, cross-platform, complete and free client-server system for managing graphical user interfaces (GUIs) on single computers and on networks of computers.
- X is a large and complex system, with a level of complexity comparable to that of an operating system itself. It is one of the most powerful and useful software packages for Linux and other Unix-like operating systems, and it is the de facto standard graphic engine for such systems.
- X is also one of the most successful free software technologies that has been developed to date.
- A GUI is a **human-computer interface** (i.e., a way for humans to interact with computers) that uses windows, icons and menus and which can be manipulated by a mouse (and often to a limited extent by a keyboard as well).
- GUIs stand in sharp contrast to **command line interfaces** (CLIs), which use only text and are manipulated solely via a keyboard.
- The **client-server architecture** (i.e., network design) is a modularized system that divides work between two separate, but linked, programs, referred to as clients and servers.
- The latter, which typically (but not necessarily) run on remote machines (i.e., computers located elsewhere on the network), handle requests from multiple clients (i.e., users), process the data as requested, and return the results to the clients' computer screens.
- **Cross-platform** refers to **the ability of software to operate on more than one platform** with identical (or nearly identical) functionality.

The term ***platform*** **can refer to any of several things**, or to a combination thereof, depending on the situation:

(1) The type of OS (e.g., FreeBSD, Linux, Mac OS X, any of the various Microsoft Windows systems),

(2) The type of processor (e.g., x86, PowerPC, SPARC or Alpha) and

(3) The type of hardware system (e.g., mainframe, workstation, desktop, handheld or embedded).

- An important factor in X's hardware independence is the fact that it is compatible with most currently available video cards.

2. Window Managers

Linux Window managers manage the system windows which bring up the application. Let us clear it with an example; when you usually start one application, you will get a manager for your window which usually runs in the background and for the appearance and placement, these are responsible.

Linux **window managers** with your **desktop environment** because the desktop manager is something that basically contains windows toolbars, wallpapers, desktop widget, folders and icons and these usually afford you a collection of applications and some libraries so that you can operate your computer in a cohesive way.

The **desktop environment** has its own manager where compositing **window manager** will let the window to be drawn and created separately.

Purpose of window manager

1. A **stacking window manager** renders the windows one-by-one onto the screen at specific co-ordinates. If one window's area overlaps another, then the window "on top" overwrites part of the other's visible appearance.

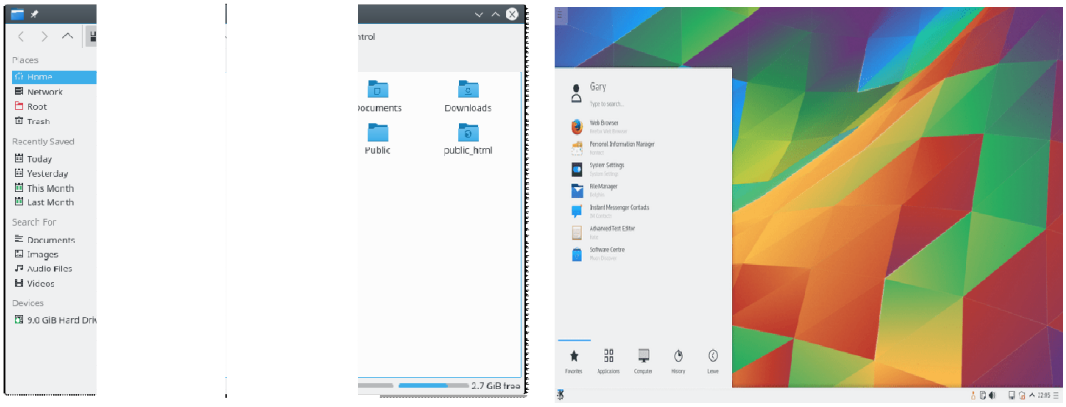
2. A **tiling window manager** is a window manager with an organization of the screen into mutually non-overlapping frames (hence the name tiling), as opposed to the traditional approach of coordinate-based stacking of objects (windows) that tries to emulate the desk paradigm.

3. A **compositing window manager** may appear to the user similar to a stacking window manager. However, the individual windows are first rendered in individual buffers, and then their images are composited onto the screen buffer; this two-step process means that visual effects (such as shadows, translucency) can be applied.

4. A **virtual window manager** is a window manager that uses virtual screens, whose resolution can be higher than the resolution of one's monitor/display adapter thus resembling a two dimensional virtual desktop with its viewport.

3. The KDE Desktop

- KDE stands for K Desktop Environment.
- It is a desktop environment for Linux based operation system.
- You can think KDE as a GUI for Linux OS.
- KDE has proved Linux users to make it use as easy as they use windows.
- KDE provides Linux users a graphical interface to choose their own customized desktop environment.
- You can choose your Graphical Interface among various available GUI interfaces that have their own look.
- You can imagine Linux without KDE and GNOME just like DOS in windows.
- KDE and GNOME are much similar with Windows except they are related to Linux through x server rather than operation system.
- When you install Linux you have a choice to choose your own desktop environment from two or three different desktop environments like KDE and GNOME.



The image on this page shows the default KDE Plasma desktop. As you can see the wallpaper is very bright and vibrant.

There is a single panel at the bottom of the screen and in the top left of the screen is a small icon with three lines going through it.

The panel has the following icons in the bottom left corner:

- The application launcher (or menu as most people like to call it)
- Virtual Workspace selector

The bottom right corner has the following icons and indicators:

- System notifications
- Audio
- Networks
- Updates
- Clock
- Panel Editor

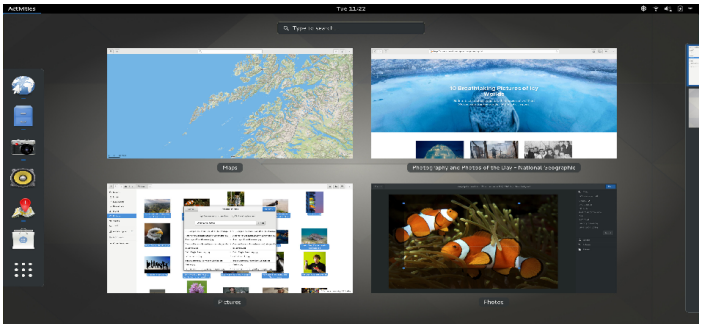
The menu has 5 tabs:

- Favorites
- Applications
- Computer
- History
- Leave

The favorites tab has a list of your favorite programs. Clicking on an icon brings up the application. There is a search bar at the top of all the tabs which can be used to search by name or type. You can remove an item from the favorites by right-clicking on the menu and selecting remove from favorites. You can also sort the favorites menu alphabetically from a to z or indeed from z to a.

4. GNOME

- Acronym for **G***NU* **N***etwork* **O***bject* **M***odel* **E***nvironment*.
- GNOME is part of the GNU project and part of the free software, or open source, movement.
- GNOME is a Windows-like desktop system that works on UNIX and UNIX-like systems and is not dependent on any one window manager.
- The current version runs on Linux, FreeBSD, IRIX and Solaris.
- The main objective of GNOME is to provide a user-friendly suite of applications and an easy-to-use desktop.



- All GNOME programs share a coherent style of graphical user interface (GUI) but are not limited to the employment of the same GUI widgets.
- GNOME provides two different login sessions, one is based on GNOME Panel and Window Manager, and this session is called **GNOME Flashback.**
- It is light-weight, has lower hardware requirements than GNOME Shell and consumes less memory and CPU.
- It provides a traditional and highly customizable taskbar (panel) with many plug-ins bundled in one package (gnome-applets) including a customizable start menu.

GNOME Shell Overview mode

1 Activities button	3 Notification area	5 Status menu
2 Dash	4 Search bar	6 Workspace list

- GNOME Shell is the default Graphical Shell of the GNOME desktop environment. It features a top bar holding (from left to right) an Activities button, an application menu, a clock and an integrated system status menu.

- The application menu displays the name of the application in focus and provides access to functions such as accessing the application's preferences, closing the application, or creating a new application window.