

Ateneo de Manila University

Introduction to the UNIX/Linux Graphical User Interface



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Section I

GUI

Graphical User Interface (GUI)

- ★ can be considered as one of the greatest achievements of computer science in the last century
- ★ gave computing mass market appeal
- ★ takes advantage of the computer's graphics capabilities to make programs easier to use
- ★ provide the user with a simple interface to the computing system

Components of a GUI

★ pointer

- a symbol is used to select objects and commands
- typically is a appears as a small angled arrow
- an I-beam or a block pointer is used to character based GUI's
- also know as the cursor

★ pointing device

- usually a mouse or trackball
- enables you to manipulate the pointer

★ icons

- small pictures that represent commands, files, or windows.
- icons can be moved around the display screen as if they were real objects on your desk

★ desktop

- area on the display screen where icons are grouped
- the icons are intended to represent real objects on a real desktop

★ windows

- divides the screen into different areas
- each window can run a different program or display a different file
- can also move windows around the display screen
- their shape and size can be changed at will

★ menu

- another way of grouping command
- menu items can be clicked to execute the commands

Section II

X-Window System

History

- ★ developed in 1984 at the Laboratory for Computer Science at the Massachusetts Institute of Technology
- ★ part of the Athena project in cooperation with DEC
- ★ descended from a windowing system project at Stanford called **W**
- ★ some research at Xerox Corporation's Palo Alto Research Center (PARC) also went into **X**'s design
- ★ the first operational GUI ran on the Alto computer which was completed at Xerox PARC on April 1973
- ★ is currently developed and distributed by the X Consortium
- ★ the current version of the X Window System is **X11R6.6** and it supports several UNIX(R) and UNIX-like operating systems

XFree86

- ★ a free and open source implementations of the X Window System
- ★ primarily a collection of X servers for UNIX-like OSs on Intel x86 platform
- ★ derived from X386, and much of it is contributed back into X11R6
- ★ the current version of the XFree86 Window System is **XFree86 4.2.0**

XFree86

- ★ client-server based architecture
- ★ support for a large number of video card and monitors
- ★ support for OpenGL standards
- ★ support for Direct Rendering Interface (DRI)
- ★ support for a wide range of Internationalized keyboards and input devices

Components of an X-Window System

- ★ display
 - refers to the totality of the input and output device being access by a particular user
 - each system can have multiple displays
- ★ display manager
 - interface to enables users to logon
 - enables users to select their desktop/window managers
 - enables remote X connections to be made
- ★ desktop environment
 - manages all the elements in a desktop/screen
 - loads the window manager
- ★ screen
 - also called the Desktop

- is the collection of all elements on the display
- ★ root window
 - refers to the window behind all elements on the screen
 - programs are executed from this window
 - can be as simple as a blank screen or can have menus and icons
- ★ window manager
 - is the main interface between the X Window system and the user
 - provides such functionality as window borders, menus, icons, virtual desktops, button bars, tool bars
 - users can customize it at will, often adding to its functionality in the process
- ★ pointer
 - is the arrow or indicator of any given shape which represents the location your pointing device

- changes to give you contextual feedback on the state of the mouse on the screen

- ★ window

- is a frame in which any given application resides
- includes pretty much anything except the so-called root window
- **Active Window** refers to the window currently in focus

- ★ menu and icons

- used to represent objects, programs and commands
- can be places in windows and in the screen

Section III

Window Managers

Window Managers

- ★ FVWM and variants
- ★ MLVWM
- ★ IceWM
- ★ Sawmill
- ★ Enlightenment
- ★ KVWM
- ★ DTWM

FVWM

- ★ F Virtual Window Manager
- ★ one of the original free software window managers
- ★ developed by Robert Nation
- ★ variants are: FVWM, FVWM2, FVWM95

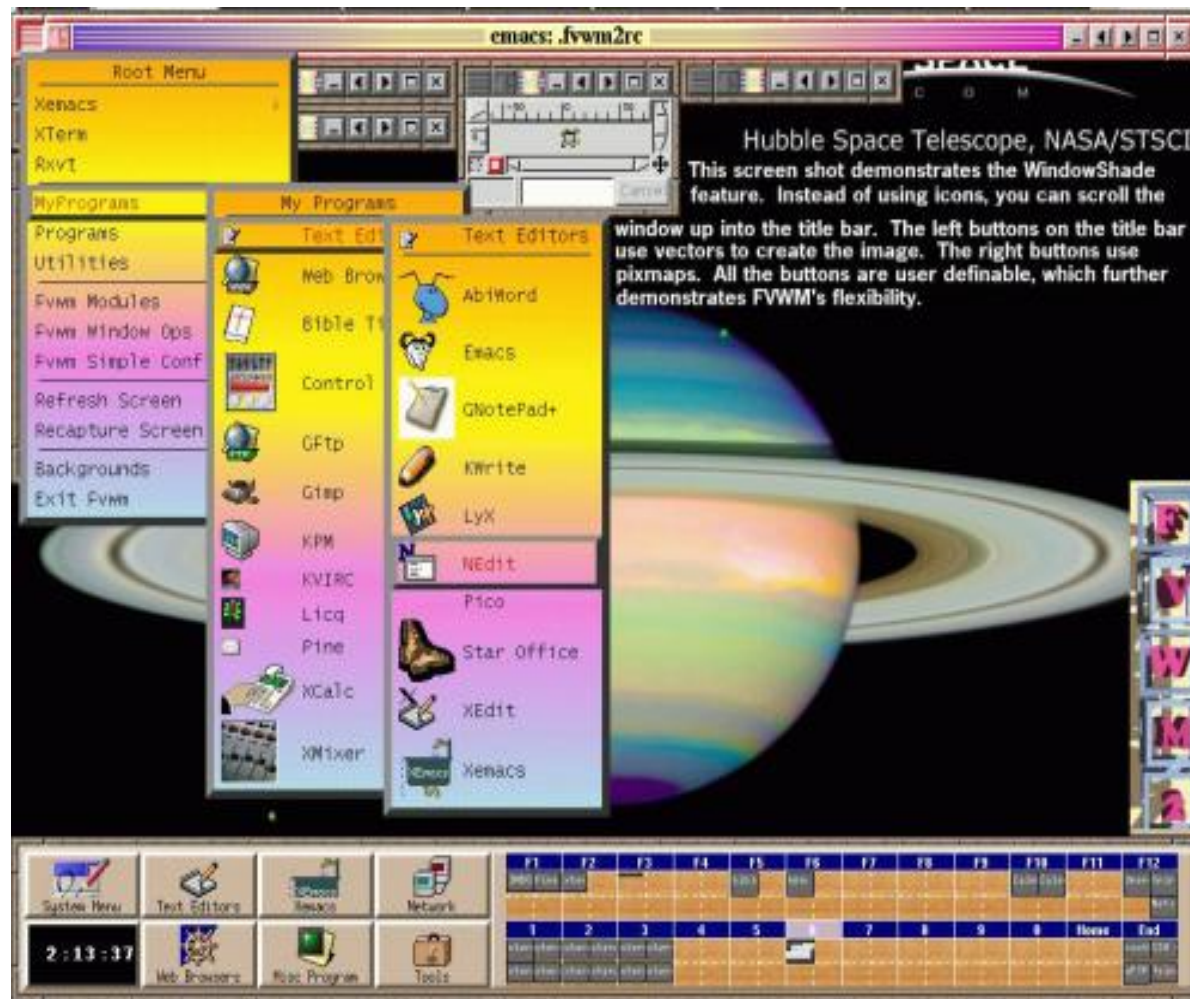


Figure 1: FVWM2 screenshot

MLVWM

- ★ Macintosh-Like Virtual Window Manager
- ★ intended to emulate the MacOS look
- ★ developed by Takashi Hasegawa

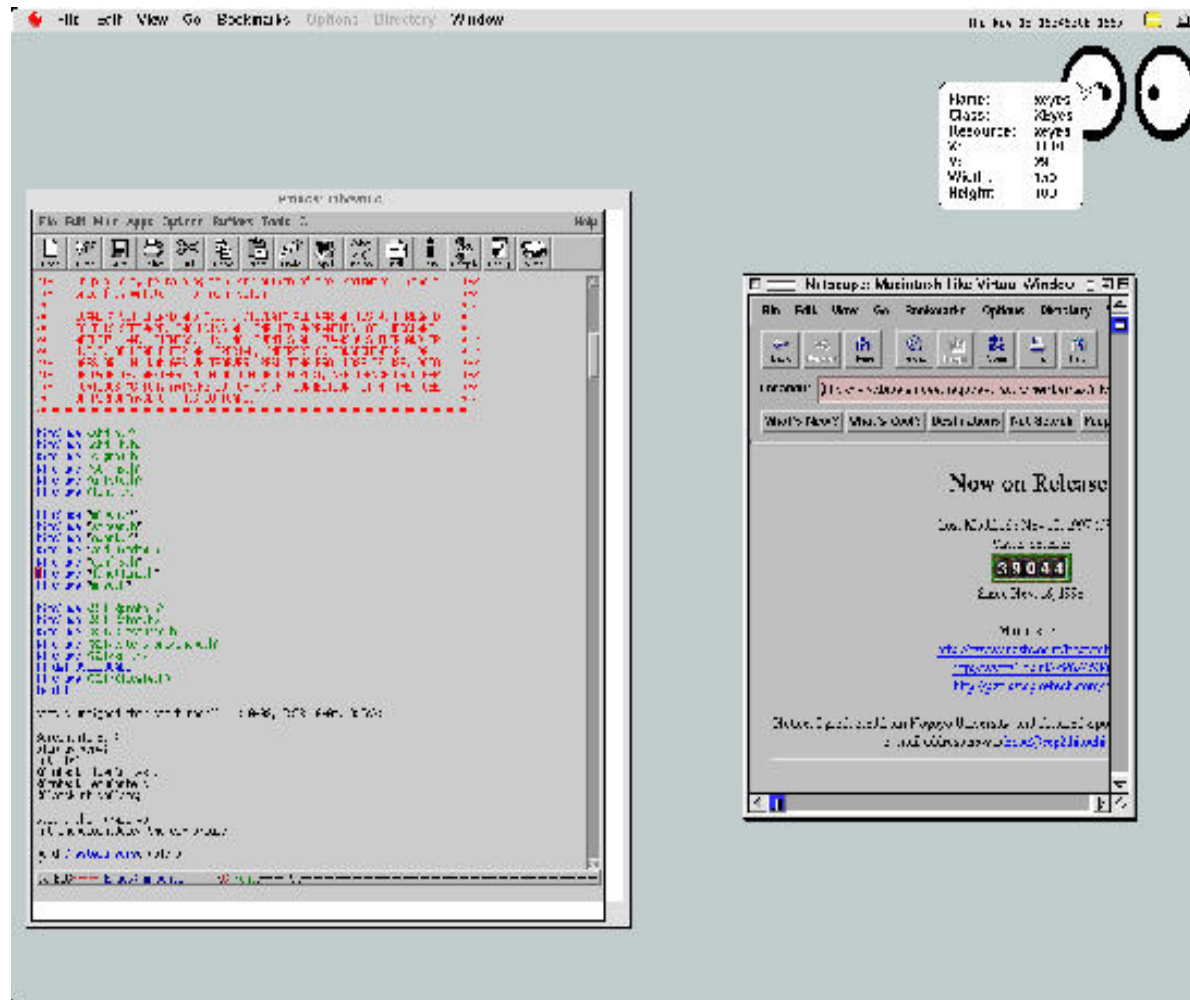


Figure 2: MLVWM screenshot

IceWM

- ★ ICE Window Manager
- ★ is a small, but powerful window manager
- ★ optional use of mouse
- ★ developed by Marko Macek and Mathias Hasselmann

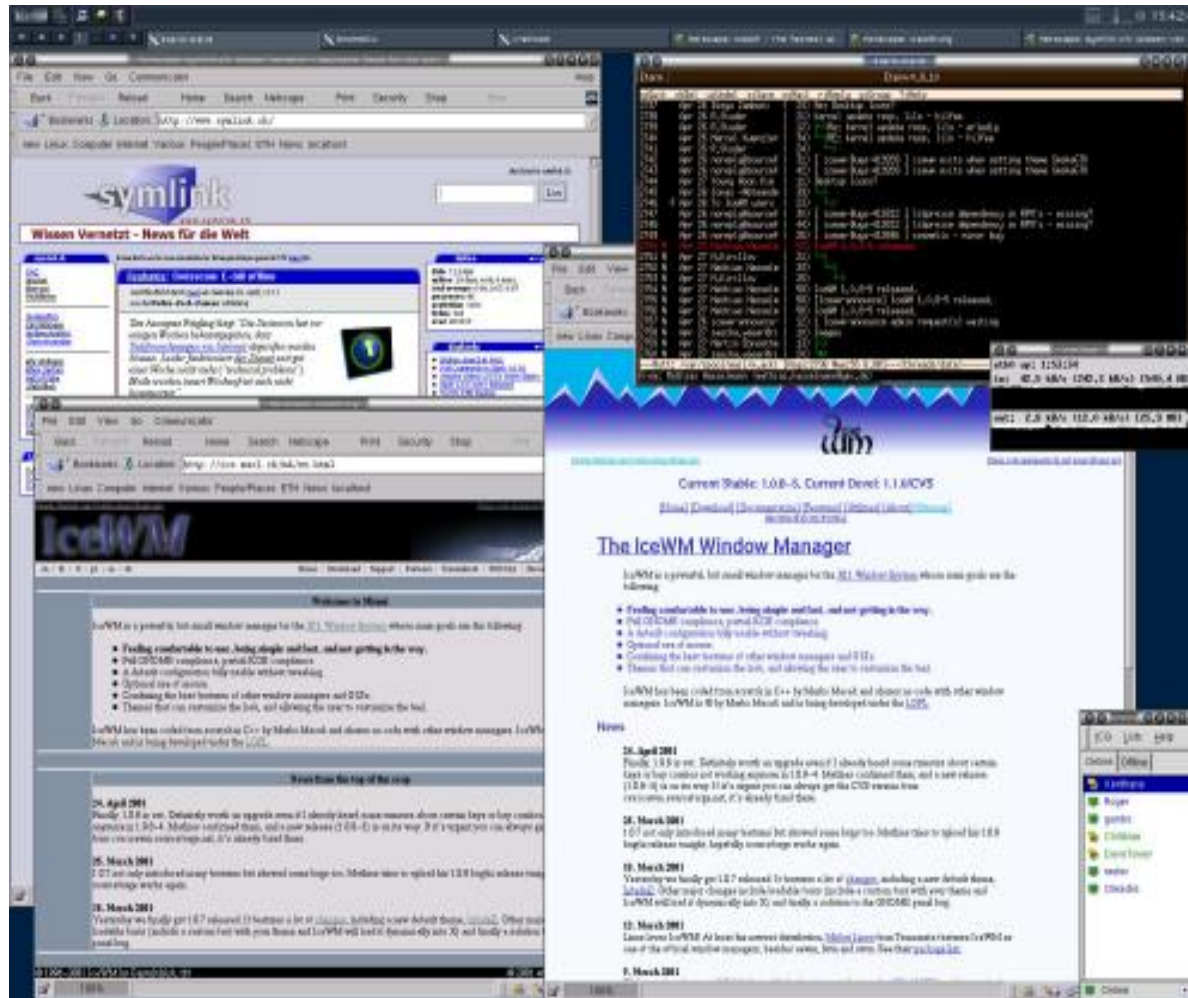


Figure 3: ICEWM screenshot

Sawmill WM

- ★ Sawmill Window Manager
- ★ is an extensible window manager using a Lisp-based scripting language
- ★ it aims to simply to manage windows in the most flexible and attractive manner possible
- ★ developed by John Harper

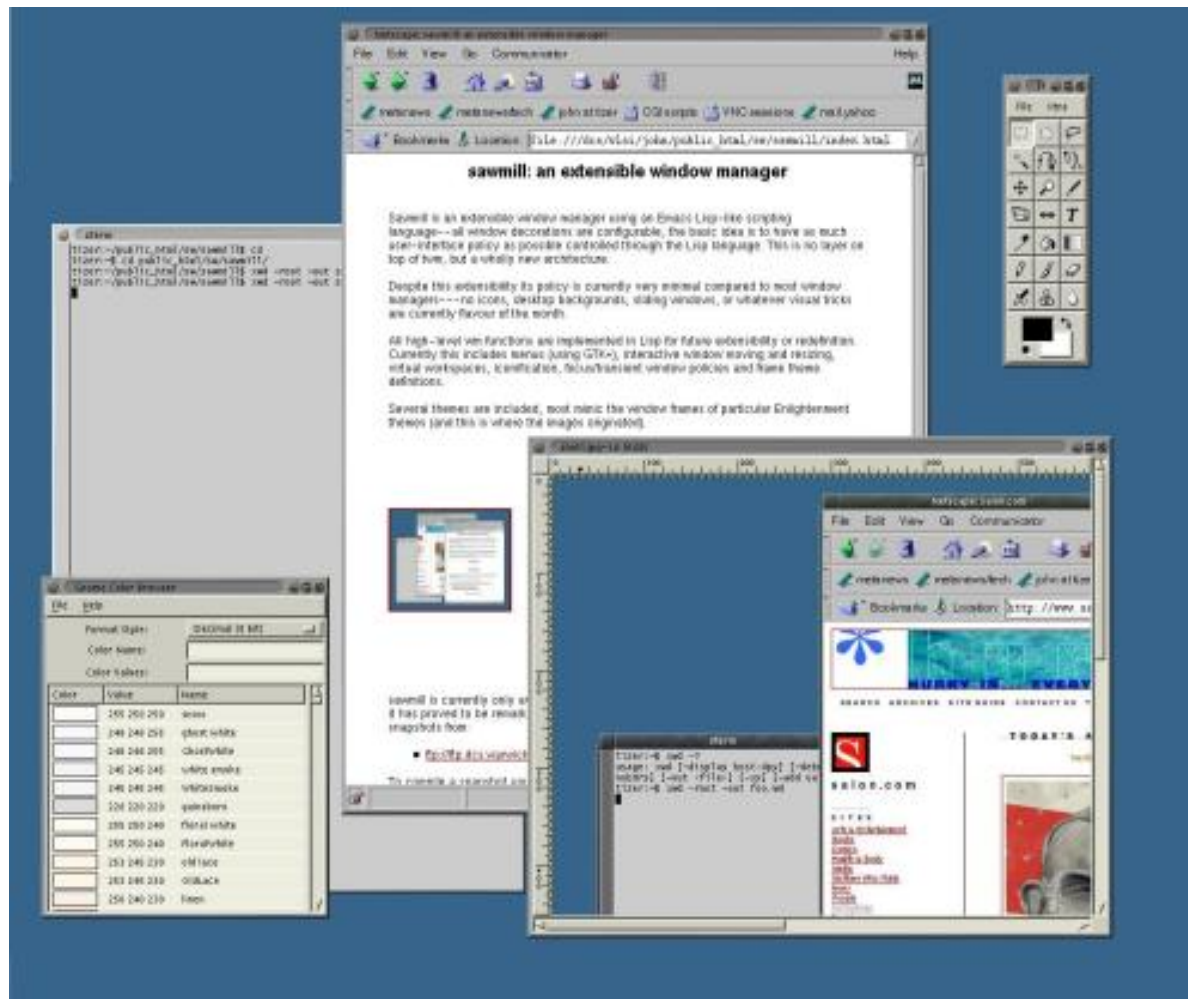


Figure 4: Sawmill WM screenshot

Enlightenment Window Manager

- ★ is a completely themeable, highly configurable Window Manager
- ★ version E16 can run in both GNOME and KDE
- ★ version E17 will be a desktop environment
- ★ developed by Eric Rasterman



Figure 5: Enlightenment screenshot

KDE Window Manager

- ★ is a fully customizable, themable window manager
- ★ is the default window manager of KDE
- ★ developed by KDE development team

DTWM

- ★ Desktop Window Manager
- ★ is the window manager of CDE
- ★ maintained by the Open Group

Section IV

Desktop Environments

Desktop Environments

- ★ CDE
- ★ XFCE
- ★ KDE
- ★ Gnome

CDE

- ★ Common Desktop Environment
- ★ is an integrated graphical user interface for open systems desktop computing
- ★ provides delivers a single, standard graphical interface for the management of data, files and applications
- ★ popular Unix Desktop Environment
- ★ maintained by the Open Group

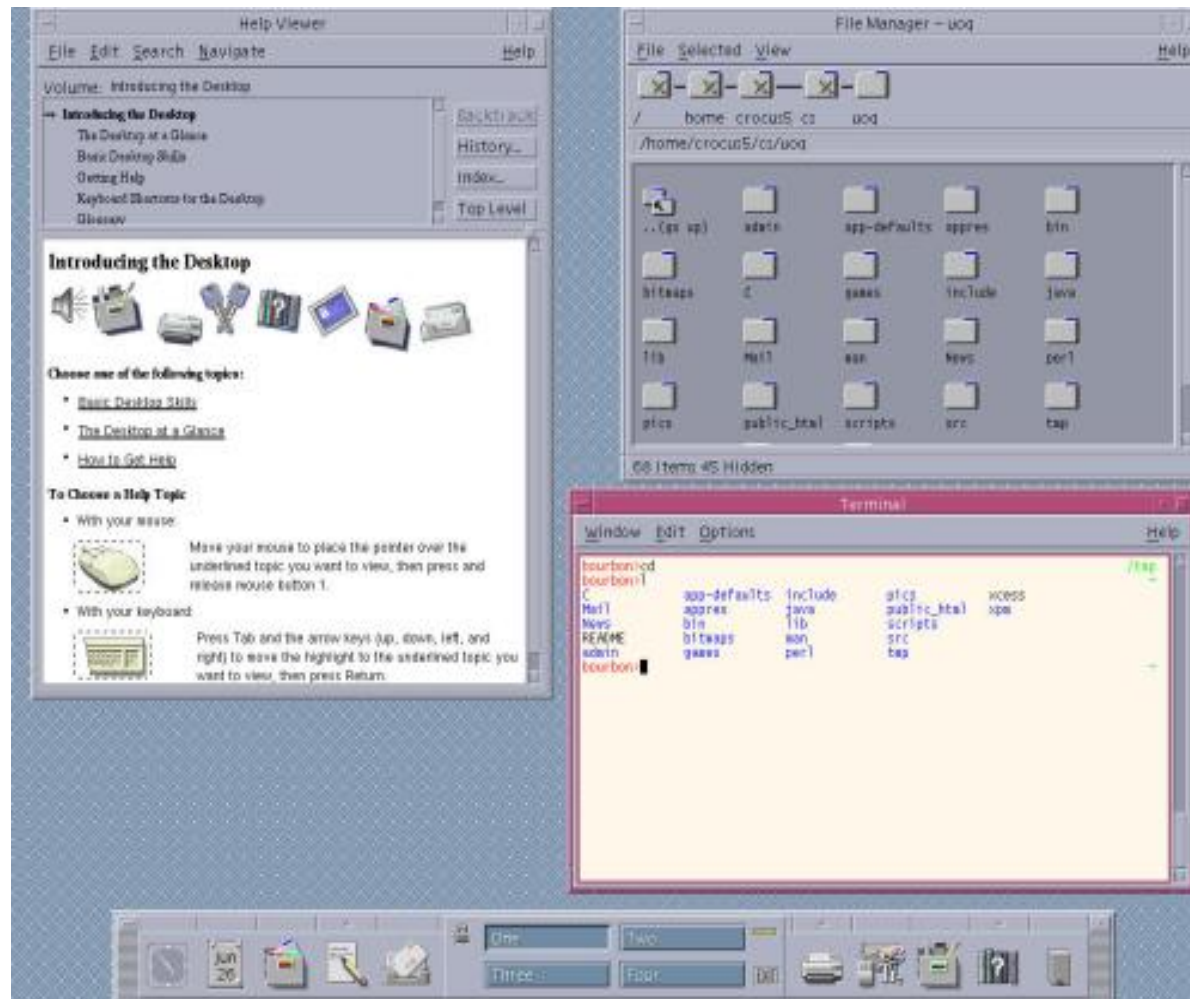


Figure 6: CDE screenshot

XFCE

- ★ looks and feels like CDE
- ★ is a lightweight desktop environment for various UNIX systems
- ★ one of the smallest and fastest completely GNOME and KDE compliant desktop environments
- ★ developed by Olivier Fourdan



Figure 7: XFCE screenshot

KDE

- ★ K Desktop Environment
- ★ is a powerful Open Source graphical desktop environment
- ★ combines ease of use, contemporary functionality, and outstanding graphical design with the technological superiority of the Unix operating system
- ★ is a mature desktop suite as a base for a growing number of applications
- ★ provides WYSIWYG developer tools
- ★ contains an entire office productivity suite
- ★ maintained by the K Development Team

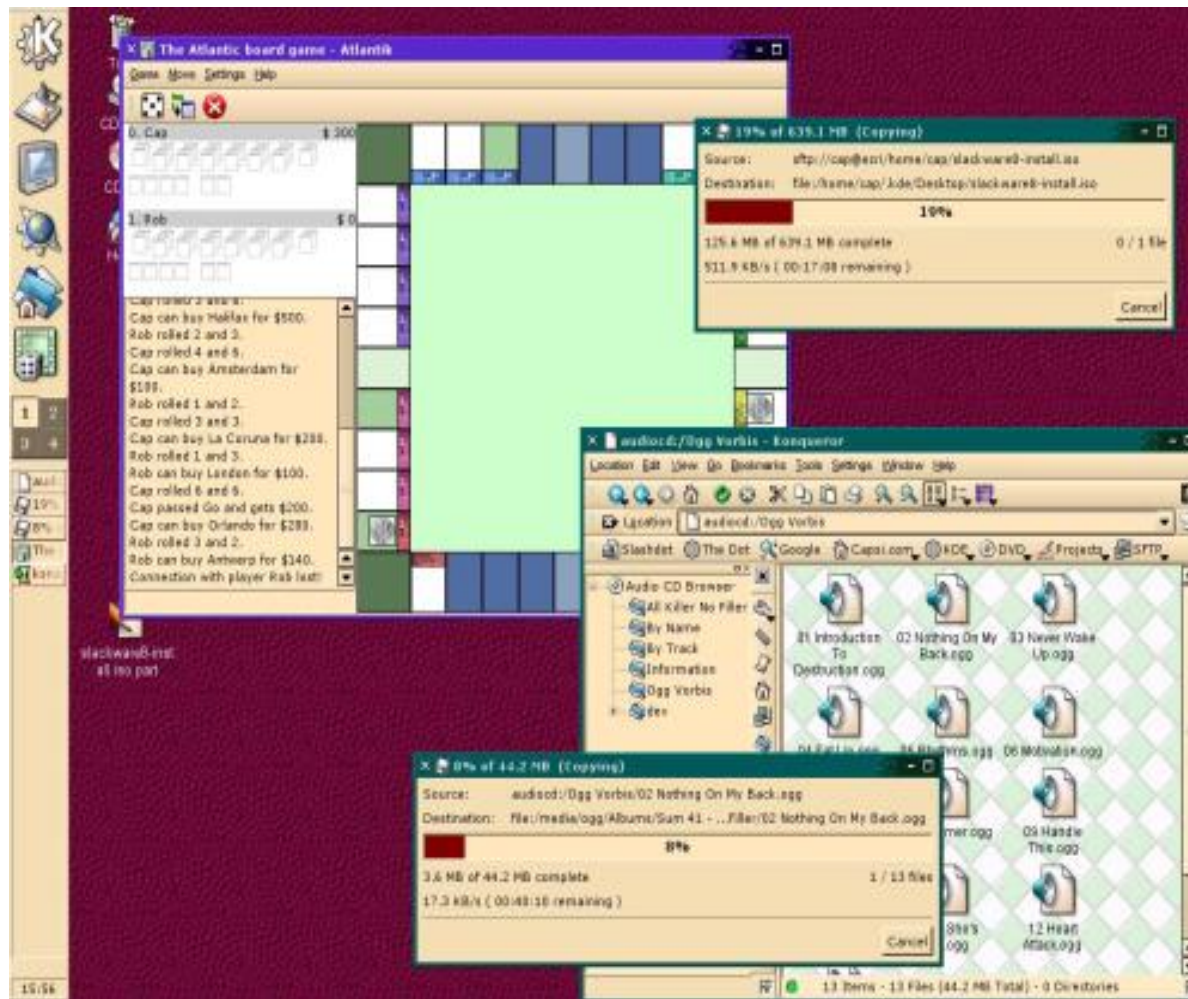


Figure 8: KDE screenshot

GNOME

- ★ a complete free and easy-to-use desktop environment for the user
- ★ rich collection of tools, libraries, and components to develop powerful applications on Unix
- ★ provides WYSIWYG developer tools
- ★ contains a number of office productivity applications
- ★ maintained by the GNOME developers

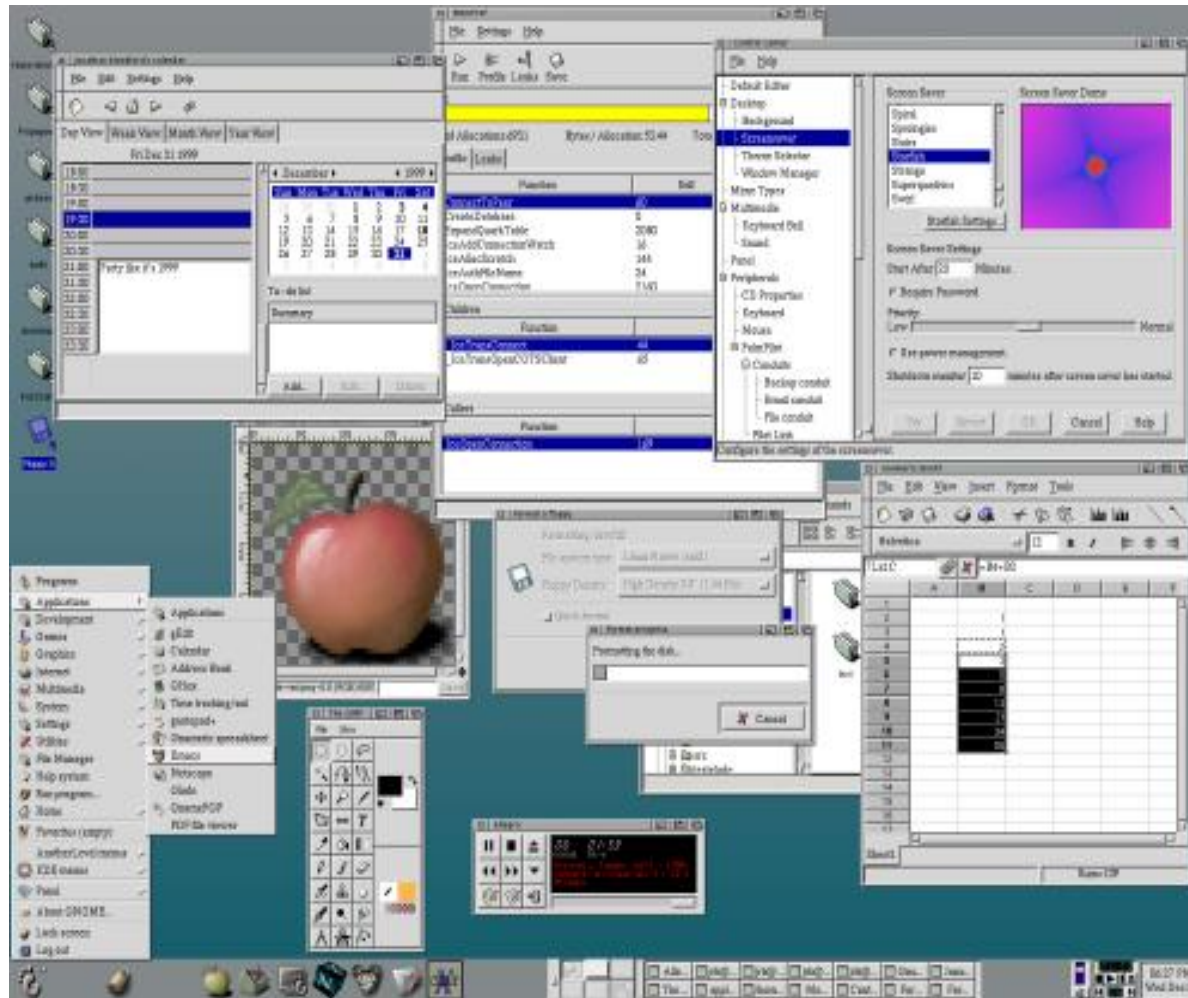


Figure 9: GNOME screenshot



Figure 10: The Teacher's Desktop screenshot



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