

# A History of Linux





Varth



Writer



home



Chromium



Firefox



Chrome



Evolution



Pidgin Internet Messenger



Screenshot



Bluefish Editor



Network Servers



Trash

This UGA/UBE Bios is released under the GNU LGPL

Please visit :

. <http://bochs.sourceforge.net>

. <http://www.nongnu.org/ugabios>

cirrus-compatible UGA is detected

Bochs BIOS - build: 10/12/07

\$Revision: 1.166 \$ \$Date: 2006/08/11 17:34:12 \$

Options: apmbios pcibios eltorito

ata0 slave: QEMU HARDDISK ATA-7 Hard-Disk (40 MBytes)

ata1 master: QEMU CD-ROM ATAPI-4 CD-Rom/DVD-Rom

Booting from Floppy...

Loading system ...

Partition table ok.

81278/40950 free blocks

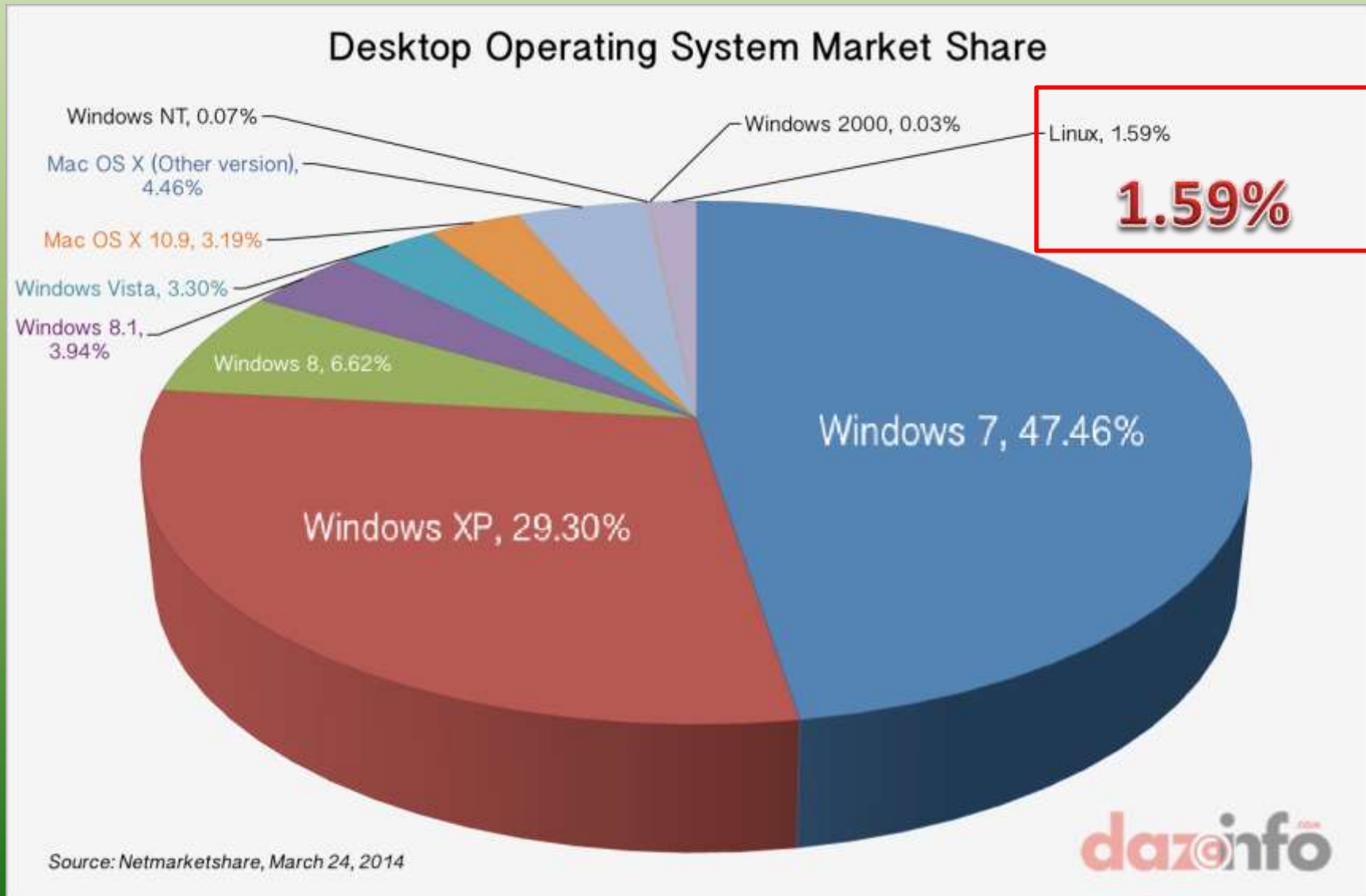
13545/13664 free inodes

1513 buffers = 1549312 bytes buffer space

Ok.

1

# Desktop market share (2014)



# Prehistory of Linux

- The Unix operating system was developed by Ken Thompson and Dennis Ritchie of AT&T Bell Laboratories in 1969 and first released in 1970.



# Prehistory of Linux

- In 1977 the University of California, Berkeley released a free UNIX-like system, Berkeley Software Distribution (BSD). But BSD contained Unix code, so AT&T sued.





# Prehistory of Linux

- In 1983, Richard Stallman started the GNU project to create a free UNIX-like operating system. Hurd (the GNU kernel) failed to attract enough developers, leaving GNU incomplete.



# Prehistory of Linux

- In 1987 Andrew S. Tanenbaum released MINIX, a Unix-like system intended for academic use. While source code for the system was available, modification and redistribution were restricted.





## comp.os.minix

Message from discussion [What would you like to see most in minix?](#)

**Linus Benedict Torvalds** [View profile](#)

[More options](#) Aug 26 1991, 2:12 pm

Hello everybody out there using minix -

I'm doing a (free) operating system (just a hobby, won't be big and professional like gnu) for 386(486) AT clones. This has been brewing since april, and is starting to get ready. I'd like any feedback on things people like/dislike in minix, as my OS resembles it somewhat (same physical layout of the file-system (due to practical reasons) among other things).

I've currently ported bash(1.08) and gcc(1.40), and things seem to work. This implies that I'll get something practical within a few months, and I'd like to know what features most people would want. Any suggestions are welcome, but I won't promise I'll implement them :-)

Linus (torva\_\_@kruuna.helsinki.fi)

PS. Yes - it's free of any minix code, and it has a multi-threaded fs. It is NOT protable (uses 386 task switching etc), and it probably never will support anything other than AT-harddisks, as that's all I have :-).

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# Linus Benedict Torvalds

- Born: December 28, 1969 (age 45)
- Born in Helsinki, Finland
- Chief developer on the Linux kernel
- Created the revision control system Git
- 2014 IEEE Computer Society Computer Pioneer Award



# Linux

- Torvalds made the code of Linux freely available to everyone on the internet, and therefore lots of people created their own versions of Linux.

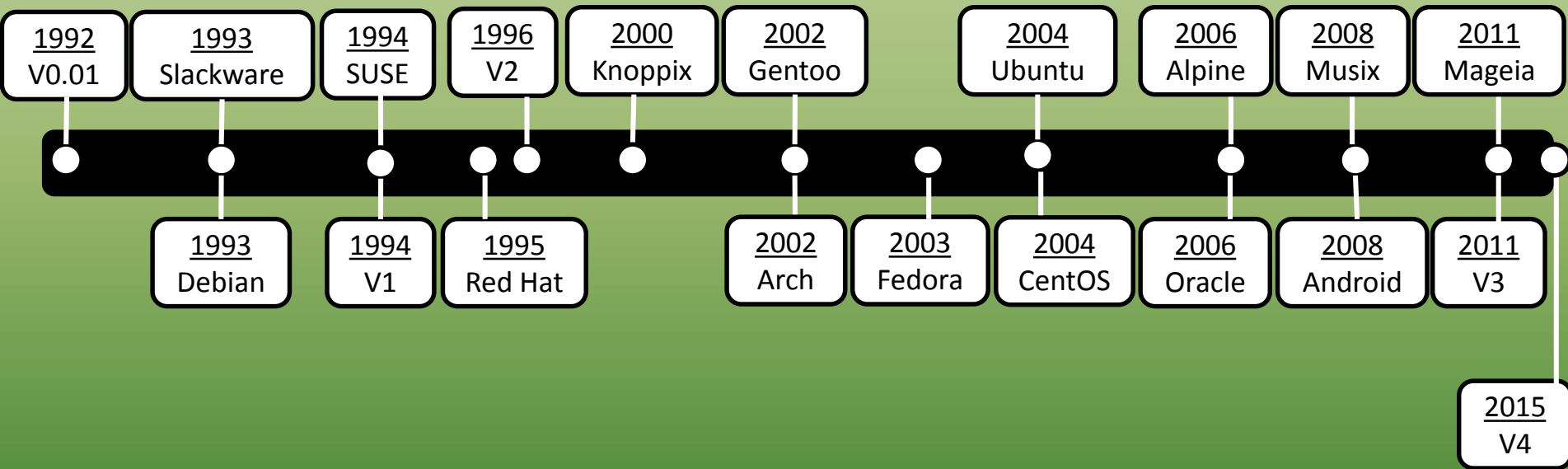
# Linux

- Linux is therefore an example of Open-source software, in which the copyright holder provides the rights to study, change and distribute the software to anyone and for any purpose. Open-source software is often developed in a public, collaborative manner.

# Timeline of Linux

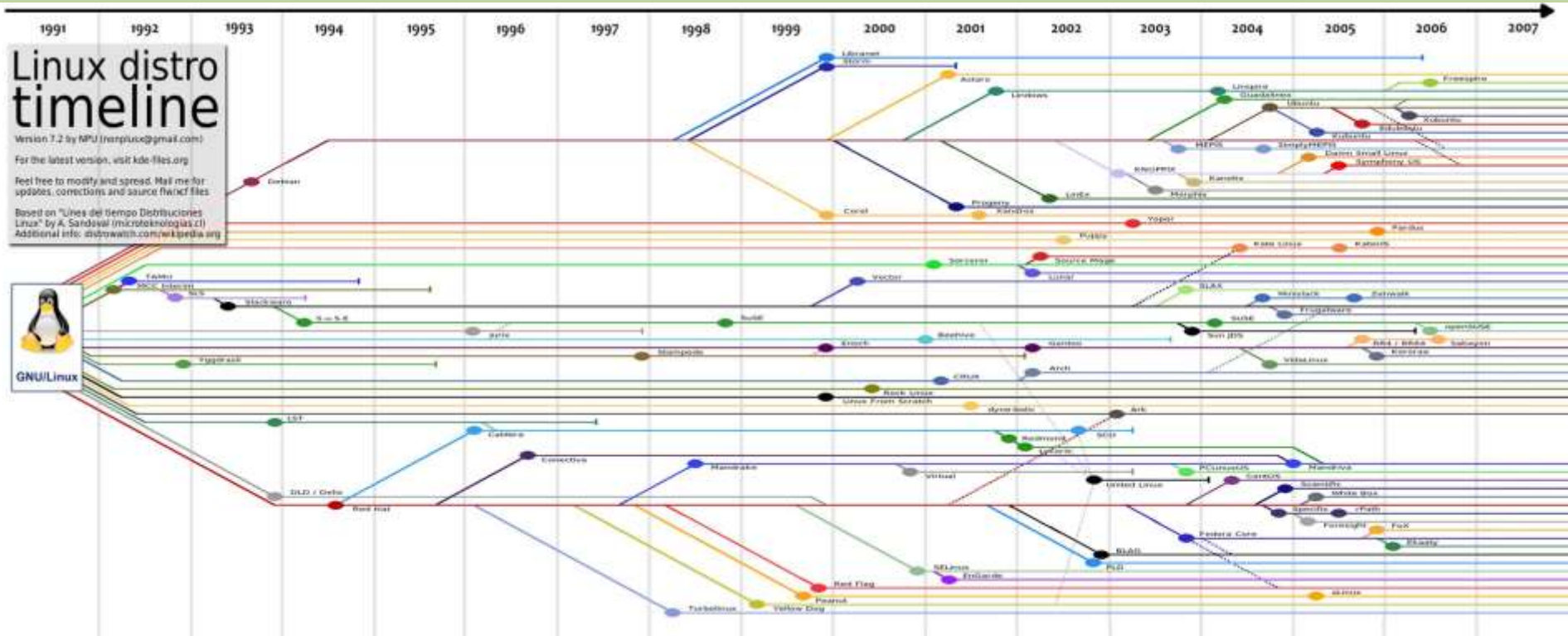


# Timeline of Linux





# Timeline of Linux



# Timeline of Linux



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<b>2009-02-15</b>	<p align="center"><b><u>Distribution Release: Debian GNU/Linux 5.0</u></b></p> <p>Big day for the Debian fans - <a href="#">Debian GNU/Linux 5.0 "Lenny"</a> has been released: "The Debian Project is pleased to announce the official release of Debian GNU/Linux version 5.0 (code-named 'Lenny') after 22 months of constant development. Debian GNU/Linux is a free operating system which supports a total of twelve processor architectures and includes the KDE, GNOME, Xfce, and LXDE desktop environments. This release includes numerous updated software packages, such as the K Desktop Environment 3.5.10, an updated version of the GNOME desktop environment 2.22.2, the Xfce 4.4.2 desktop environment, LXDE 0.3.2.1, the GNUMstep desktop 7.3, X.Org 7.3, OpenOffice.org 2.4.1, GIMP 2.4.7..." See the <a href="#">release announcement</a> and <a href="#">release notes</a> for a detailed description of the release. As usual, a wide variety of installation media is available for <a href="#">free download</a> from the project's <a href="#">mirror sites</a>. For new installations, the live CD method of installing the distribution is probably the easiest; get the GNOME or KDE live CD for i386 and x86_64 architectures from here: <a href="#">debian-live-500-i386-gnome-desktop.iso</a> (691MB, MD5, torrent), <a href="#">debian-live-500-x86-kde-desktop.iso</a> (681MB, MD5, torrent), <a href="#">debian-live-500-</a></p>
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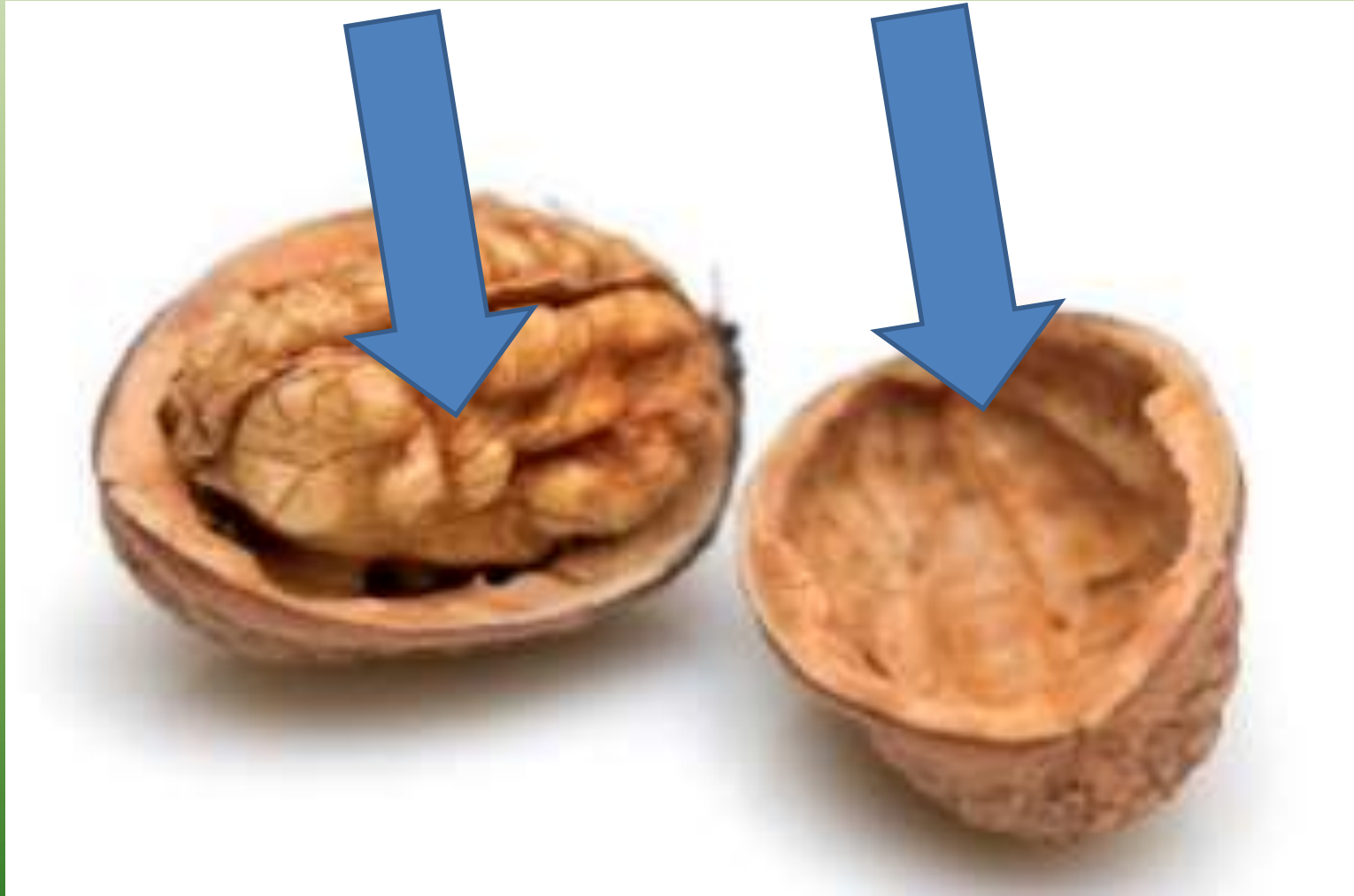
# Kernel

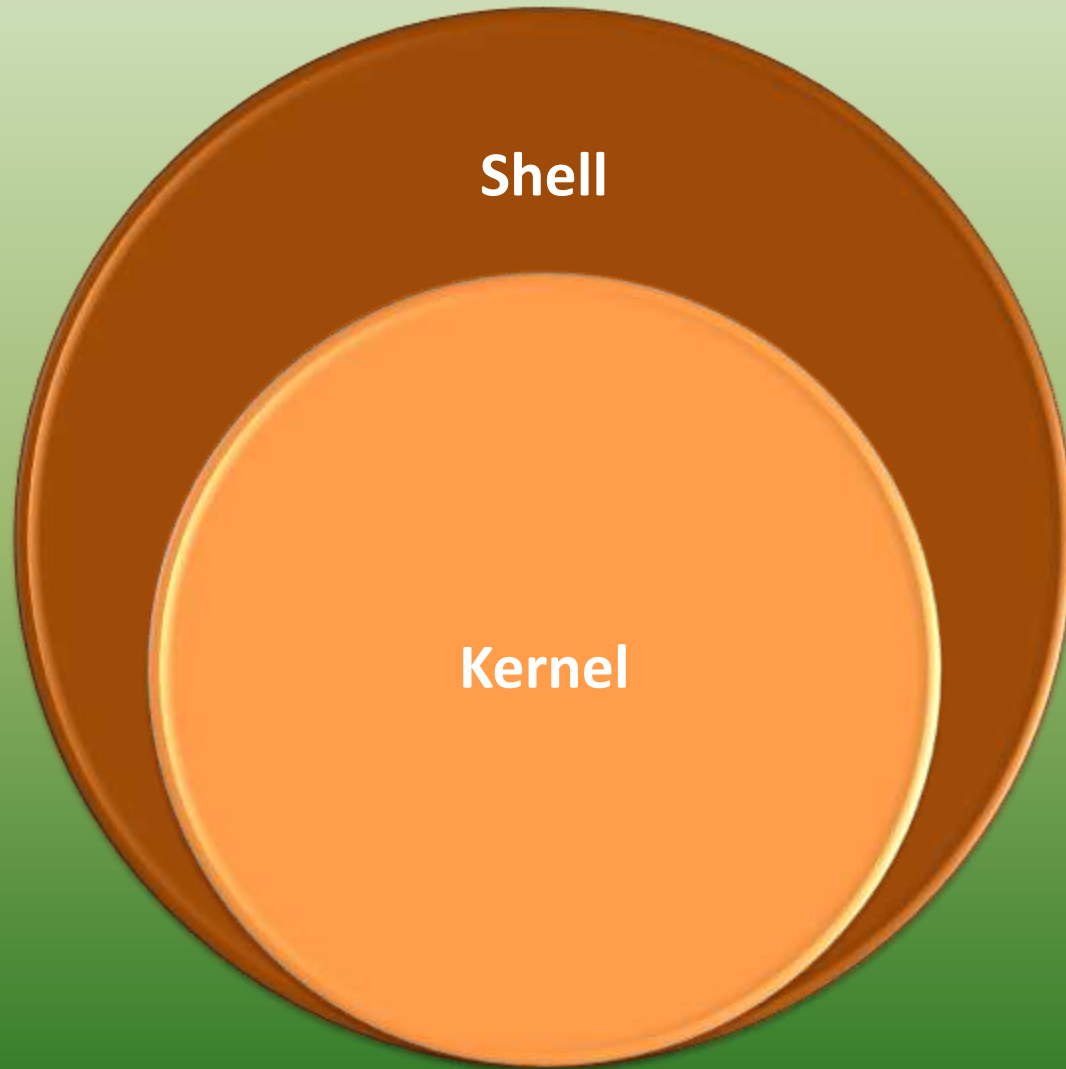




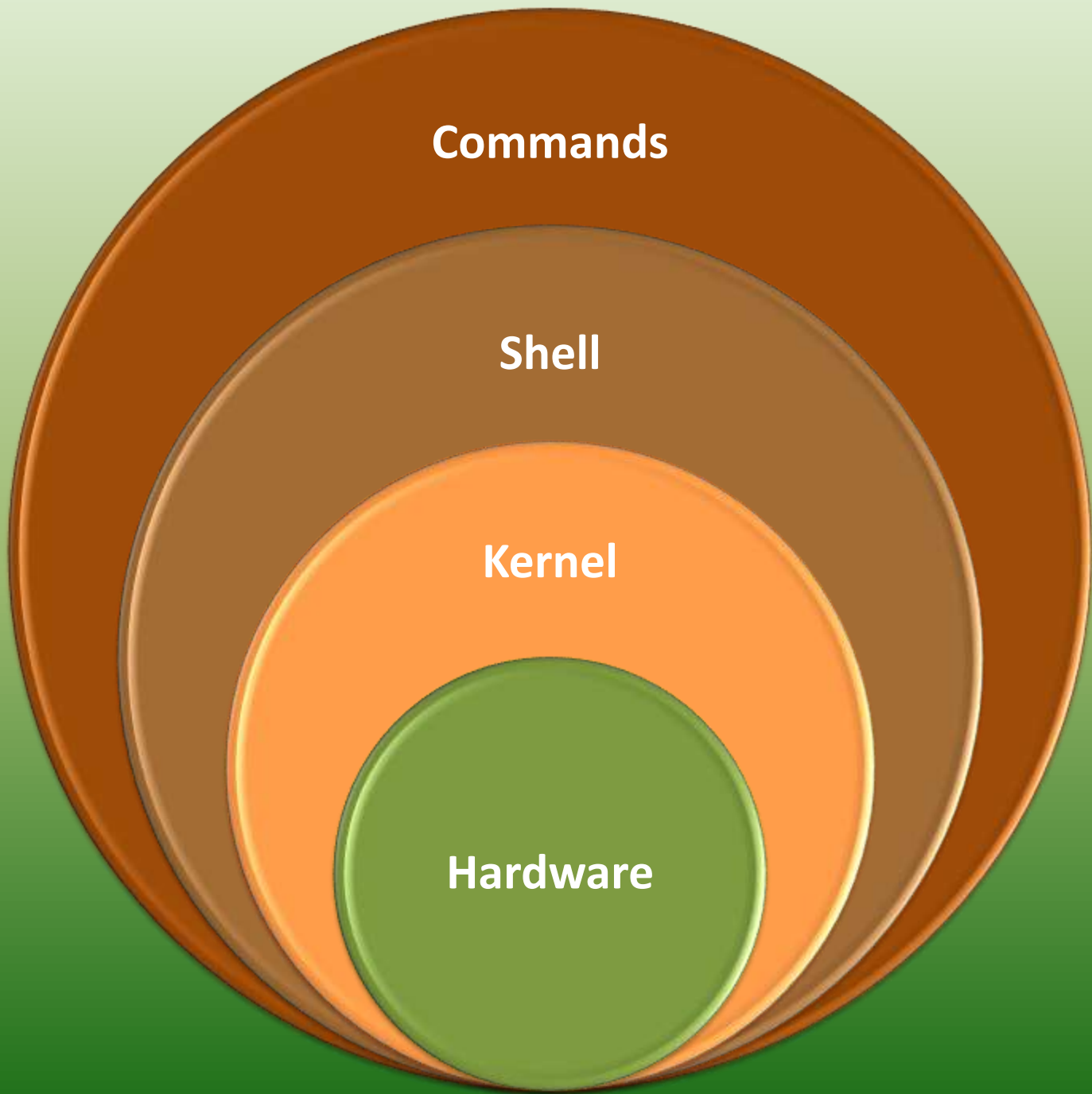
**Kernel**

**Shell**









# V0.01

September  
1991

- Not a mature product at the time
- Minix-like kernel for i386(+) based AT-machines

Efficiently using the 386 chip, use of system calls rather than message passing, a fully multi-threaded FS, minimal task switching, and visible interrupts

```
This VGA/VE Bios is released under the GNU LGPL.

Please visit :
. http://bochs.sourceforge.net
. http://www.nongnu.org/vgabios

cirrus-compatible VGA is detected

Bochs BIOS - build: 10/12/07
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ata1 master: QEMU CD-ROM ATAPI-4 CD-Rom/DVD-Rom

Booting from Floppy...

Loading system ...

Partition table ok.
31278/40950 free blocks
13545/13664 free inodes
1513 buffers = 1549312 bytes buffer space
Ok.
#
```

# V1.0

March  
1994

- Allowed Multi-programming – multiple programs run at the same time.
- Virtual Memory management supported

**Linux is highly backwards compatible, so if a program worked in any version of Linux it will work on all versions of Linux.**

```
[ 8.920947] input: HDA Intel PCH Headphone as /devices/pci0000:00/0000:00:1b.0
/sound/card0/input11
[ 8.921089] mei 0000:00:16.0: PCI INT A -> GSI 16 (level, low) -> IRQ 16
[ 8.921096] mei 0000:00:16.0: setting latency timer to 64
[ 9.249847] Synaptics Touchpad, model: 1, fw: 7.5, id: 0x1e0b1, caps: 0xd00073
/0x240000/0xa0400
[ 9.283798] input: SynPS/2 Synaptics TouchPad as /devices/platform/i8042/serio
1/input/input12
[ 9.422009] scsi 6:0:0:0: Direct-Access Multiple Card Reader 1.00 PQ:
0 ANSI: 0
[ 9.423558] sd 6:0:0:0: [sdb] Attached SCSI removable disk
[ 9.767983] Adding 2097148k swap on /dev/sda3. Priority:-1 extents:1 across:2
097148k
[ 10.540393] XFS (sda4): Mounting Filesystem
[ 10.773454] XFS (sda4): Ending clean mount
[ 21.358256] alx 0000:02:00.0: irq 44 for MSI/MSI-X
[ 21.358260] alx 0000:02:00.0: irq 45 for MSI/MSI-X
[ 21.358263] alx 0000:02:00.0: irq 46 for MSI/MSI-X
[ 21.359557] alx 0000:02:00.0: enp2s0: NIC Link Up: 100 Mbps Full
[ 21.363343] ADDRCONF(NETDEV_UP): enp2s0: link is not ready
[ 21.363933] ADDRCONF(NETDEV_CHANGE): enp2s0: link becomes ready
[ 29.219796] fuse init (API version 7.16)
[ 31.707722] enp2s0: no IPv6 routers present
```

# V2.0

June  
1996

- Restructured memory management and improvements in task scheduling
- Improved SCSI support

**Increased networking protocols. Filesystem support for NCP (Novell) and SMB (MS Lan Manager, etc.) network filesystems added.**

SLOC	Directory	SLOC-by-Language (Sorted)
5292368	drivers	ansic=5287617, yacc=1688, asm=1475, perl=792, lex=779, sh=17
1813893	arch	ansic=1579228, asm=233258, sh=683, awk=470, pascal=121, perl=58, python=45, sed=30
677915	fs	ansic=677887, sh=28
493972	sound	ansic=493789, asm=183
461287	net	ansic=461191, awk=96
276270	include	ansic=274652, cpp=1576, asm=42
112545	kernel	ansic=112240, perl=305
52239	mm	ansic=52239
46132	Documentation	xml=35306, ansic=6192, perl=2320, sh=1018, python=949, lisp=218, awk=129
42838	tools	ansic=38994, perl=2376, python=1286, sh=181, asm=1
40654	crypto	ansic=40654
39560	security	ansic=39560
36305	scripts	ansic=22033, perl=7903, sh=1909, cpp=1817, yacc=1278, lex=917, python=448
25749	lib	ansic=25736, awk=13
13763	block	ansic=13763
5556	ipc	ansic=5556
4414	virt	ansic=4414
2306	init	ansic=2306
1876	firmware	asm=1660, ansic=216
1103	samples	ansic=1103
538	usr	ansic=524, asm=14
0	top_dir	(none)

# V3.0

July  
2011

- Better handling of virtualization systems
- Btrfs data scrubbing and automatic defragmentation

**Not a major change in kernel concept, but started a new version number to mark the 20<sup>th</sup> anniversary of Linux**

```
[ 0.953693] serio: i8042 KBD port at 0x60,0x64 irq 1
[ 0.954816] serio: i8042 AUX port at 0x60,0x64 irq 12
[ 0.956069] mousedev: PS/2 mouse device common for all mice
[ 0.957743] input: AT Translated Set 2 keyboard as /devices/platform/i8042/serio0/input/input0
[ 0.960144] rtc_cmos rtc_cmos: rtc core: registered rtc_cmos as rtc0
[ 0.961230] rtc0: alarms up to one day, 114 bytes nvram
[ 0.962307] cpuidle: using governor ladder
[ 0.963320] cpuidle: using governor menu
[ 0.964366] TCP cubic registered
[ 0.965316] NET: Registered protocol family 10
[ 0.967271] Mobile IPv6
[ 0.970938] NET: Registered protocol family 17
[ 0.972209] Registering the dns_resolver key type
[ 0.973334] Using IPI No-Shortcut mode
[ 0.974557] registered taskstats version 1
[ 0.976637] rtc_cmos rtc_cmos: setting system clock to 2011-09-09 20:32:52 UTC (1315600372)
[ 0.982005] Initializing network drop monitor service
[ 0.983351] Freeing unused kernel memory: 404k freed
[ 0.984627] Write protecting the kernel text: 2768k
[ 0.985825] Write protecting the kernel read-only data: 1068k
[ 0.986935] NX-protecting the kernel data: 3376k
Loading, please wait...
```

# V4.0

2015

- XX

xxx



# Some Other Linux Versions

# Slackware

July  
1993

- Slackware is oriented toward simplicity and software purity
- Provides no graphical installation procedure

Developed by:  
Patrick Volkerding



# Debian

September  
1993

- The Debian Project's policies focus on collaborative software development and testing processes
- New release every two years.

Developed by:  
Ian Murdock and the  
Debian Project



# SUSE

1994

- "Software und System-Entwicklung", meaning "Software and systems development".
- Often includes YaST setup and configuration tool

Developed by:  
Roland Dyroff, Thomas  
Fehr, Burchard Steinbild,  
and Hubert Mantel



# Red Hat

May  
1995

- In 2003 Red Hat Linux merged with the community-based Fedora Project
- Introduced a graphical installer called Anaconda and Lokkit for configuring the firewall capabilities.

Developed by:  
Bob Young, Marc Ewing  
and Red Hat Inc.

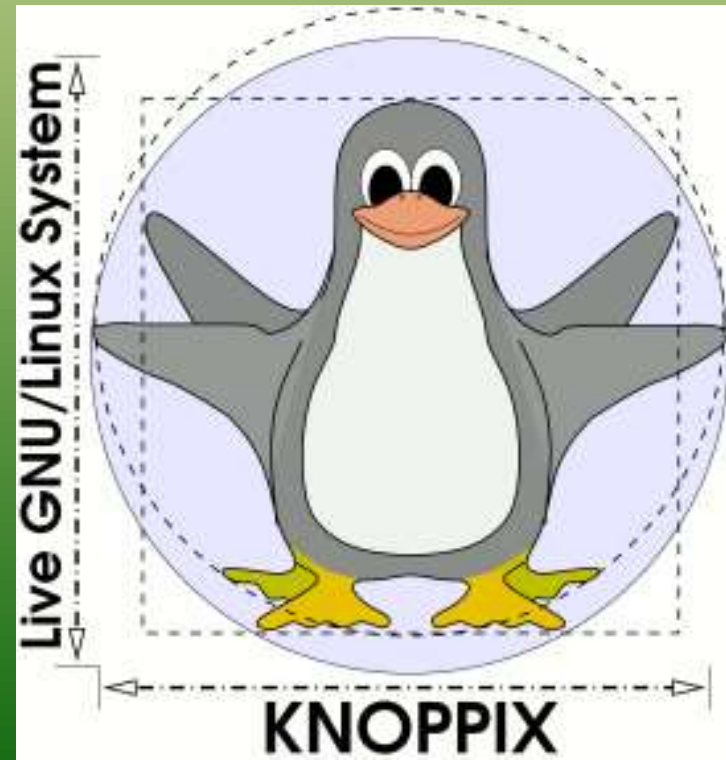


# Knoppix

September  
2000

- Can be used to copy files easily from hard drives with inaccessible operating systems.
- Designed to be booted straight from CD, DVD or USB.

Developed by:  
Klaus Knopper





# Gentoo

March  
2002

- Gentoo package management is designed to be modular, portable, and easy to maintain.
- Not a binary software distribution, source code is compiled locally and optimized for the specific type of computer.

**Developed by:  
Daniel Robbins and Gentoo  
Foundation**



# Arch

March  
2002

- The development team focused on elegance, code correctness, and minimalism.
- The user is expected to make significant effort to understand the systems function.

**Developed by:**  
Judd Vinet, Aaron Griffin  
and the Arch Linux team



# Fedora

November  
2003

- Focuses on innovation, integrating new technologies early on and working closely with Linux communities.
- Linus Torvalds uses Fedora on all of his computers.

Developed by:  
Fedora Project (owned by  
Red Hat)



# CentOS

2004

- The project is affiliated with Red Hat but aspires to be more public, open, and inclusive.
- Provides a free, enterprise-class, community-supported computing platform.

**Developed by:**  
**David Parsley, Lance Davis**  
**and the CentOS Project**



# Ubuntu

October  
2004

- Committed to open source development; encouraged to use free software, study how it works, improve upon it, and distribute it.
- Named after the Southern African philosophy of ubuntu (literally, "human-ness").

Developed by:  
Mark Shuttleworth and  
Canonical Ltd.



# Alpine

2006

- Lightweight and secure by default while still being useful for general-purpose tasks.
- Compiles all packages with stack-smashing protection.

Developed by:  
Alpine Linux development  
team





# Oracle

October  
2006

- Based on Red Hat Enterprise Linux (RHEL), repackaged and freely distributed by Oracle.
- Oracle Linux supports KVM and Xen.

Developed by:  
Oracle Corporation



# Musix

December  
2006

- Collection of software for audio production, graphic design, video editing and general purpose applications.
- Documentation is in Spanish.

**Developed by:**  
**Marcos Germán**  
**Guglielmetti. And teams**  
**from Argentina, Spain,**  
**Mexico and Brazil.**



# Android

September  
2008

- Android is designed primarily for touchscreen mobile devices such as smartphones and tablet computers.
- The most widely used mobile OS.

Developed by:  
Google, and Open Handset  
Alliance



# Mageia

June  
2011

- A secure, and sustainable operating system, designed to set up a stable and trustable governance to direct collaborative projects.
- Uses all major desktop environments

Developed by:  
Former employees of  
Mandriva



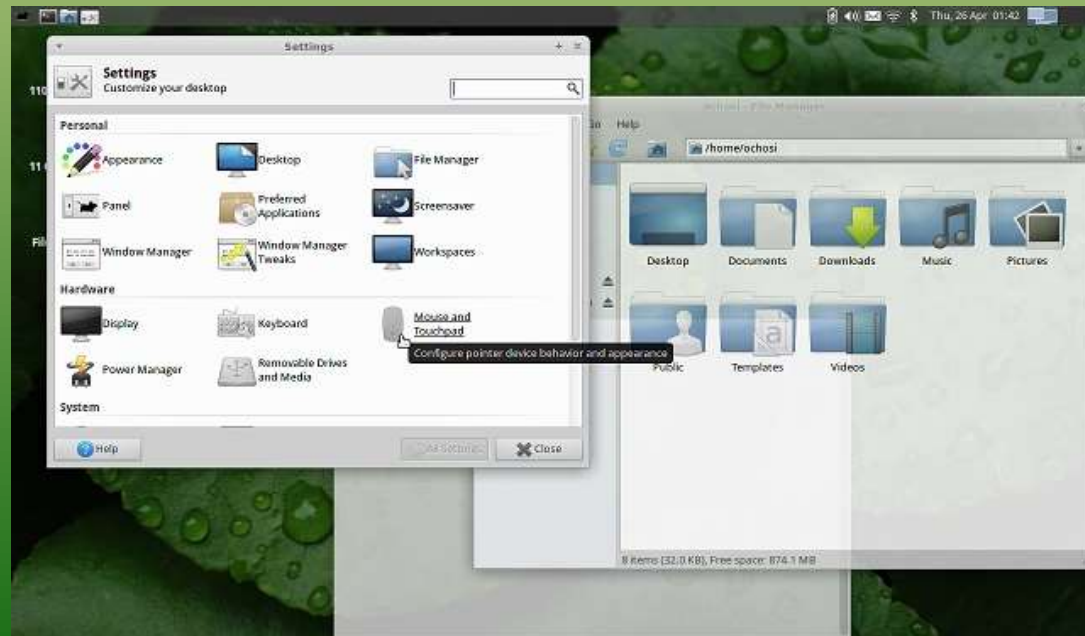
# Some Linux Desktop Environments

# Xfce

1996

- It aims to be fast and lightweight, while still being visually appealing and easy to use.
- Does not feature any desktop animations, but translucency effect is supported.

**Developed by:  
Olivier Fourdan**





# Enlightenment

1997

- Enlightenment developers have referred to it as "the original eye-candy window manager"
- Supports virtual desktops

Developed by:  
Carsten Haitzler (aka  
Raster or Rasterman)

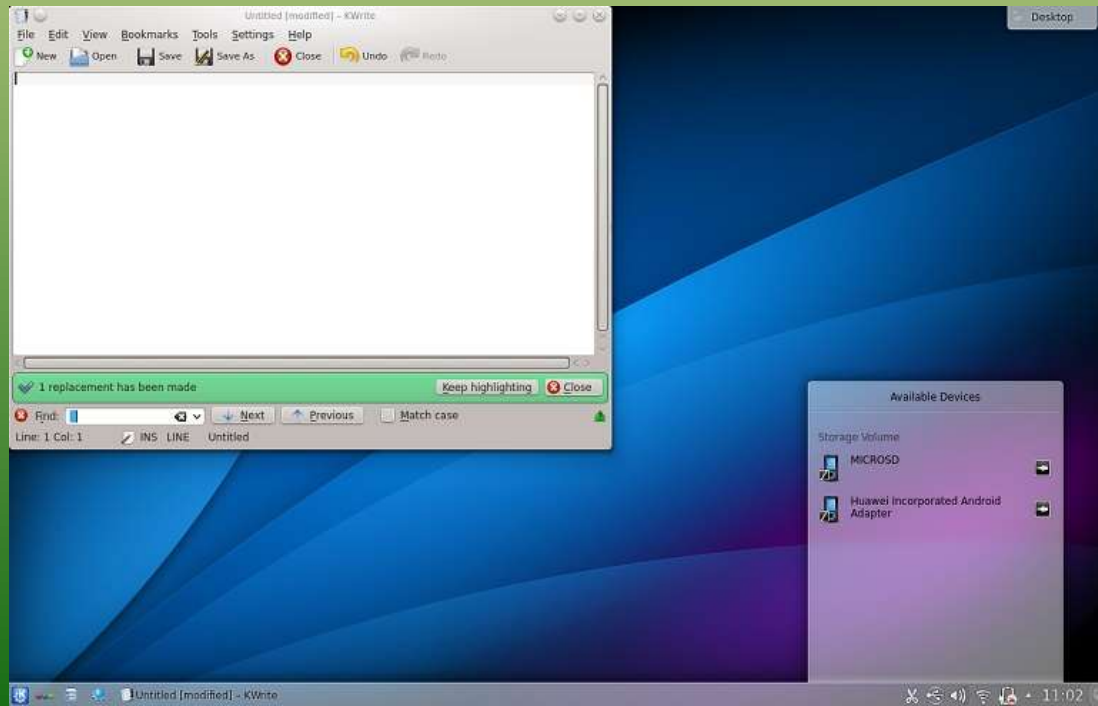


# KDE

July  
1998

- Developed as an easy-to-use environment
- Works well with multimedia devices and applications and mobile devices.

**Developed by:  
Matthias Ettrich and KDE**



# GNOME

March  
1999

- Focuses on internationalization and localization and accessibility of software.
- Incorporates *freedesktop.org* standards and programs to better interoperate with other desktops.

Developed by:  
Miguel de Icaza, Federico  
Mena, and the GNOME  
project



# LXDE

2006

- Suitable for resource-constrained computers, e.g., netbooks or System on a chip computers.
- A desktop environment that is fast and energy efficient

**Developed by:**  
**Hong Jen Yee ( aka PCMan)**



# Razor-qt

2010

- Tailored for users who value simplicity, speed, and an intuitive interface
- Merged with LXDE in 2013 to become LXQt

**Developed by:  
The Razor-qt Team**



# MATE

August  
2011

- Forked from GNOME 2, to maintain the simple and clean interface that was controversially removed in GNOME 3.

**Developed by:  
Perberos and MATE  
Developers**



# Cinnamon

December  
2011

- Another fork of GNOME 2, which provides a range of user configurable interface components.
- Better performance.

**Developed by:  
Linux Mint development  
team**

