



LEIDEN UNIVERSITY MEDICAL CENTER

Operating system basics

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Operating systems.

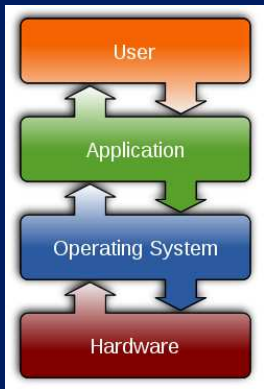


Figure 1 : Operating systems.

An operating system is a software layer between the hardware and the applications.

Applications can be the same on different operating systems (Skype, Firefox, World of Warcraft, ...).

Introduction

Before operating systems.

Load one program from tape (if you are lucky to have one).



Figure 2 : Sharp MZ-80K.



Figure 3 : Cassette tape.

If you want to run an other program, reset the computer and load an other program.

Before operating systems.

With the advent of *random access* devices came the need for operating systems.



Figure 4 : Commodore Amiga 500.



Figure 5 : Floppy disks and diskettes.

Text based operating systems.

This picture may look familiar to some of us.

```
Welcome to FreeDOS

CuteMouse v1.9.1 alpha 1 [FreeDOS]
Installed at PS/2 port
C:\>ver

FreeCom version 0.82 pl 3 XMS_Swap [Dec 10 2003 06:49:21]

C:\>dir
Volume in drive C is FREEDOS_C95
Volume Serial Number is 0E4F-19EB
Directory of C:\

FDOS                <DIR>    08-26-04  6:23p
AUTOEXEC.BAT        435      08-26-04  6:24p
BOOTSECT.BIN        512      08-26-04  6:23p
COMMAND.COM        93,963    08-26-04  6:24p
CONFIG.SYS          801      08-26-04  6:24p
FDOSBOOT.BIN        512      08-26-04  6:24p
KERNEL.SYS         45,815    04-17-04  9:19p
        6 file(s)          142,038 bytes
        1 dir(s)    1,064,517,632 bytes free

C:\>_
```

Figure 6 : FreeDOS.

The evolution of operating systems.

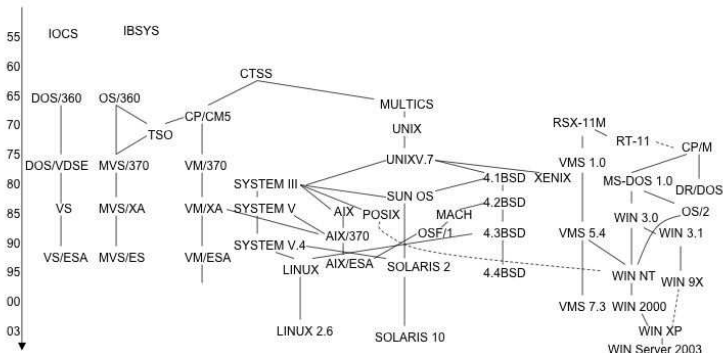


Figure 7 : The operating system family tree.

Modern operating systems.

Currently, there are two main classes for personal computers.

- Unix-like operating systems.
 - Solaris.
 - HP-UX.
 - BSD.
 - OS X.
 - Linux.
- Microsoft Windows.

Windows

Microsoft Windows.

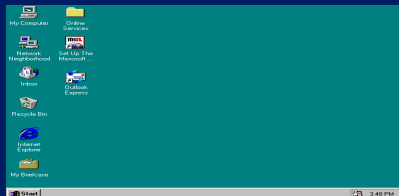
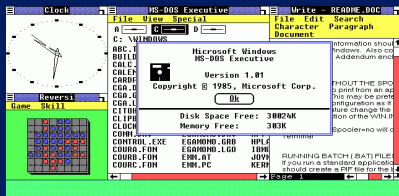


Figure 8 : Older versions.

Most popular user platform.

Used to compete with OS/2.

Less popular for servers.

- Webserver.
- File server.
- Name server.
- Firewalls.

Microsoft Windows.



Figure 9 : Windows 8.1.

Requirements:

- 1 GHz CPU.
- 2 GB memory.
- 20 GB disk.

OS X.

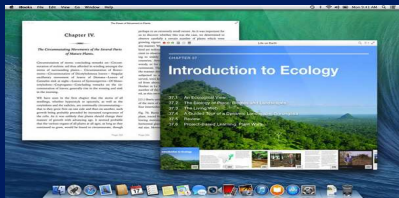


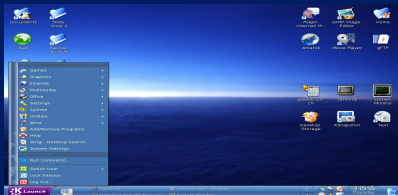
Figure 10 : OS X.

Requirements:

- Dual core CPU.
- 2 GB memory.
- 13 GB disk.

Unix-like operating systems

Linux.



Requirements:

- 1 GHz CPU.
- 128 MB memory.
- 5 GB disk.

Figure 11 : Different flavours.

Marketing.

Figure 12 : Mac vs. PC.

But actually, there is hardly any difference.

- You can run Windows or Linux on an Apple computer.
- You can run OS X on a HP computer.

Why our interest?

Unix-like systems are *modular*, you install what you need.

Furthermore:

- Designed for networking.
 - Clusters.
- Over 40,000 available packages.
- Free.

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Powerful command line tools.



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<https://humgenprojects.lumc.nl/trac/humgenprojects/wiki/NGS-intro>