



LEIDEN UNIVERSITY MEDICAL CENTER

# Operating system basics

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## *Operating systems*

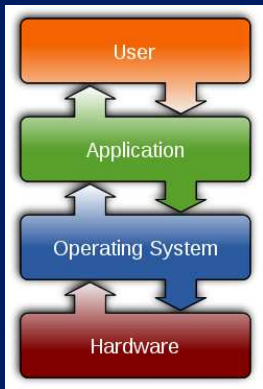


Figure 1 : Operating systems.

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.

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



Figure 3 : Cassette tape.

## *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
FDOSBOT   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*

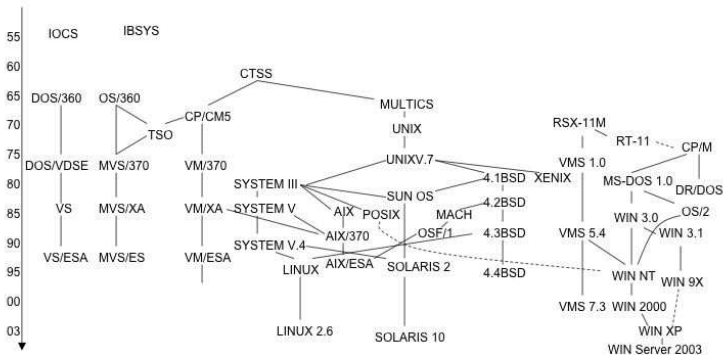


Figure 7 : The operating system family tree.

*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.

## Microsoft Windows

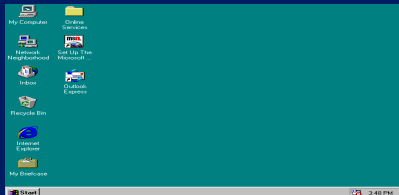
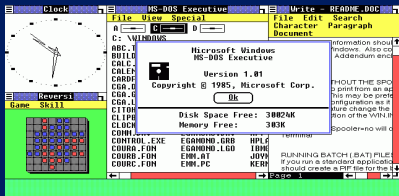


Figure 8 : Older versions.

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

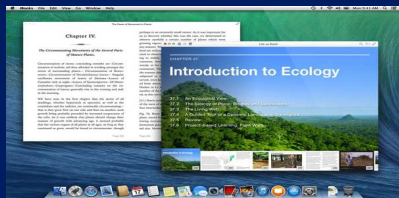


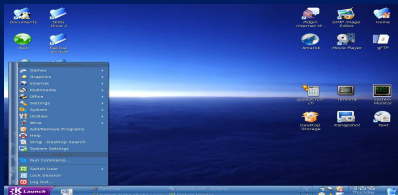
Figure 10 : OS X.

### 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.

Michiel van Galen  
Jeroen Laros

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