Lisbon School
of Economics
& Management
Universidade de Lisboa

CONCEPTS AND TOOLS

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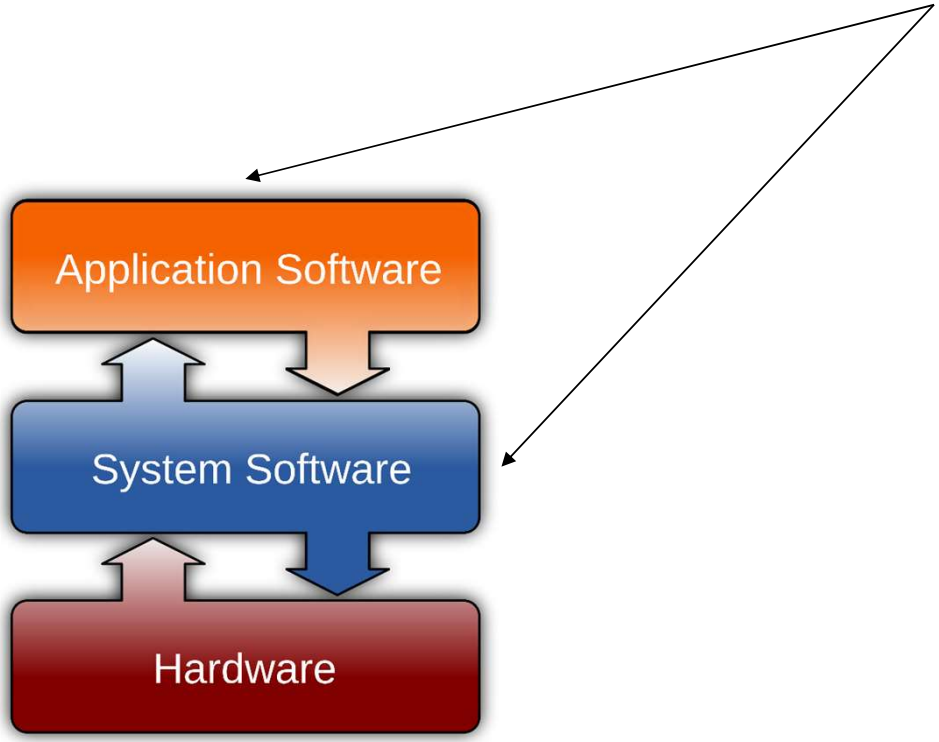
- Hardware
- Software
- Operating System
- Programming Languages
- Algorithm
- Compiler
- Interpreter

- Operating Systems?

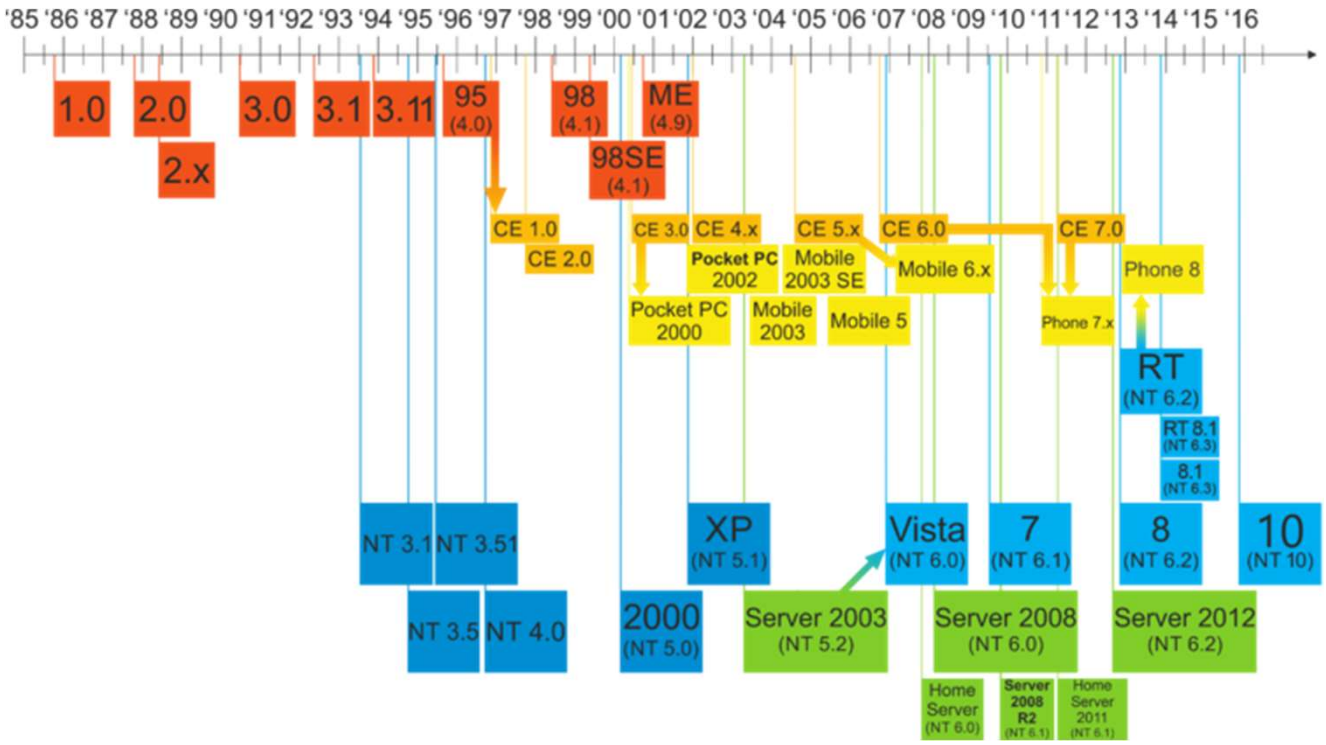
Software



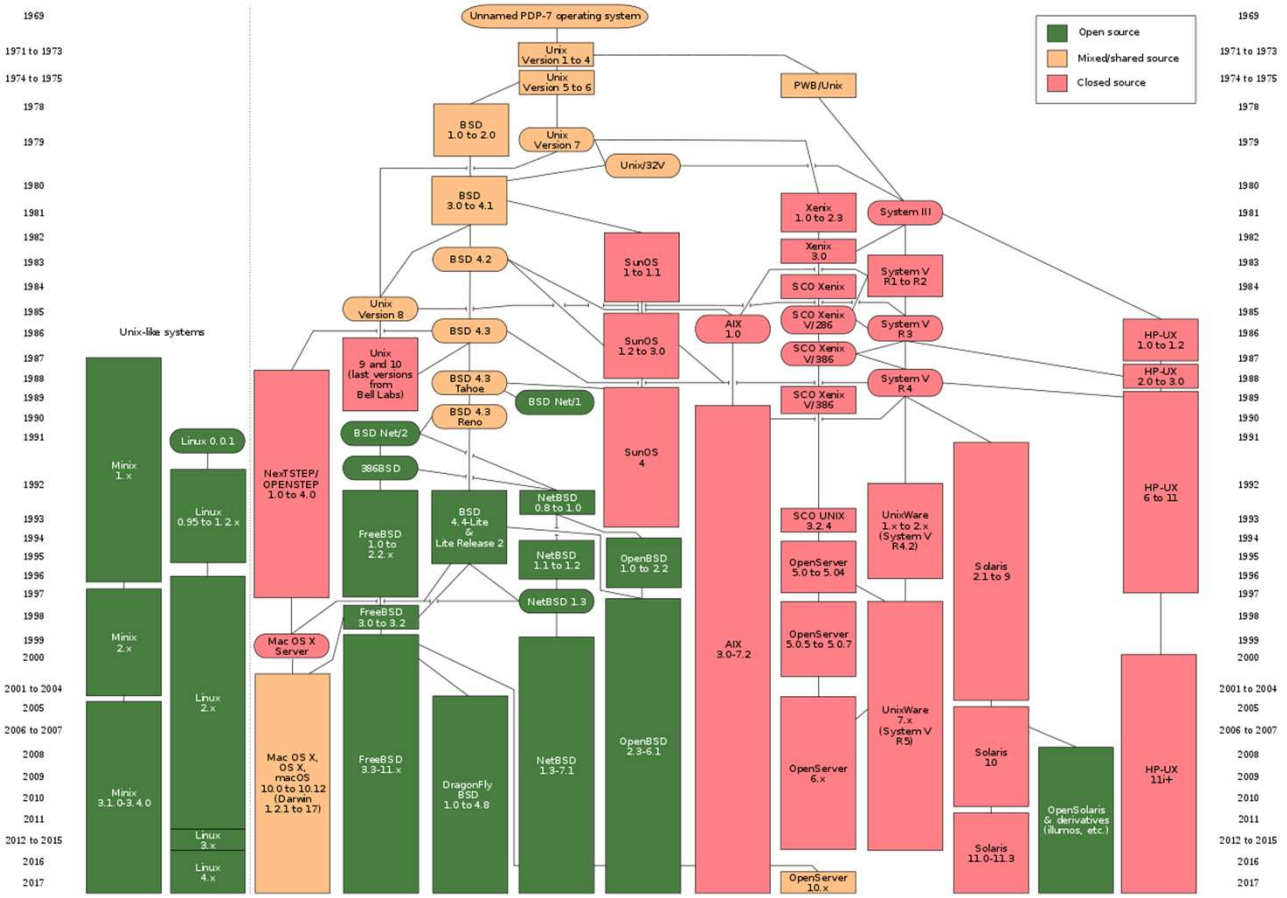
Operating System

- From a functional standpoint, an operating system
  - is a set of programs that acts as an intermediary between hardware and its users,
  - providing high level interface to low level hardware resources (such as CPU, memory, I / O devices). .

Microsoft Family



Unix Family


Open source
Mixed/shared source
Closed source
Unix-like systems
Unnamed PDP-7 operating system
Unix Version 1 to 4
Unix Version 5 to 6
PWB/Unix
BSD 1.0 to 2.0
Unix Version 7
Unix/32V
BSD 3.0 to 4.1
Xenix 1.0 to 2.3
System III
Xenix 3.0
BSD 4.2
SunOS 1 to 1.1
System V R1 to R2
SCO Xenix
Unix Version 8
BSD 4.3
SunOS 1.2 to 3.0
AIX 1.0
SCO Xenix V/286
System V R3
SCO Xenix V/386
HP-UX 1.0 to 1.2
HP-UX 2.0 to 3.0
Unix 9 and 10 (last versions from Bell Labs)
BSD 4.3 Tahoe
BSD Net/1
System V R4
SCO Xenix V/386
BSD 4.3 Reno
BSD Net/2
Linux 0.0.1
SunOS 4
386BSD
NeXTSTEP/ OPENSTEP 1.0 to 4.0
NetBSD 0.8 to 1.0
HP-UX 6 to 11
Minix 1.x
FreeBSD 1.0 to 2.2.x
BSD 4.4-Lite & Lite Release 2
SCO UNIX 3.2.4
UnixWare 1.x to 2.x (System V R4.2)
Linux 0.95 to 1.2.x
NetBSD 1.1 to 1.2
OpenBSD 1.0 to 2.2
OpenServer 5.0 to 5.04
Solaris 2.1 to 9
NetBSD 1.3
FreeBSD 3.0 to 3.2
OpenServer 5.0.5 to 5.0.7
Minix 2.x
Mac OS X Server
AIX 3.0-7.2
Linux 2.x
UnixWare 7.x (System V R5)
Mac OS X, OS X, macOS 10.0 to 10.12 (Darwin 1.2.1 to 17)
FreeBSD 3.3-11.x
DragonFly BSD 1.0 to 4.8
NetBSD 1.3-7.1
OpenBSD 2.3-6.1
OpenServer 6.x
Solaris 10
OpenSolaris & derivatives (illumos, etc.)
HP-UX 11i+
Minix 3.1.0-3.4.0
Linux 3.x
Linux 4.x
Solaris 11.0-11.3
OpenServer 10.x
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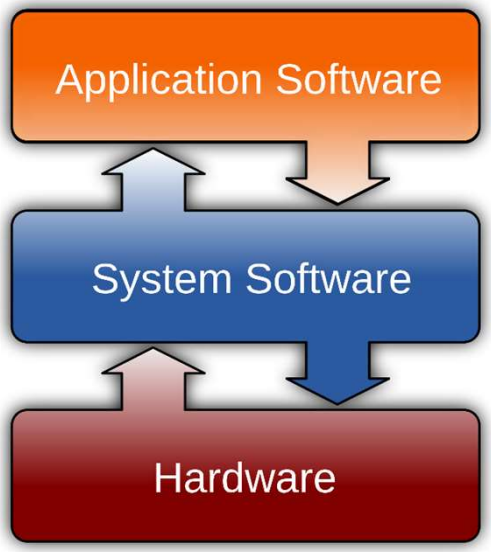
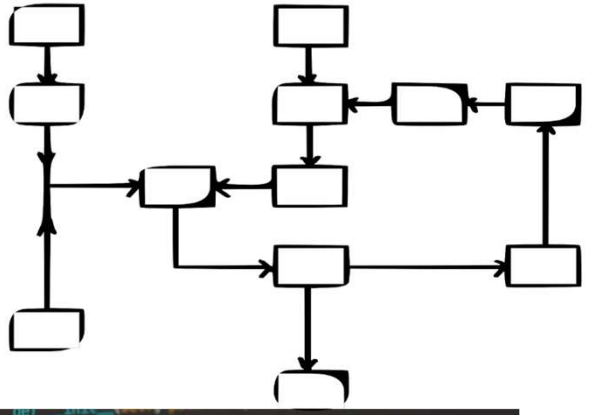
Software



- System Software
  - Operating System
  - Compilers
  - DBMS (Data Base Management Systems)
  - Libraries
  - …
- Applications

Programming

- Algorithm
- Programming Language
- Computer Program



Algorithm

- is a finite sequence of well-defined, instructions that solves a specific problem.

Programming Language

- is an artificial language including a set of instructions

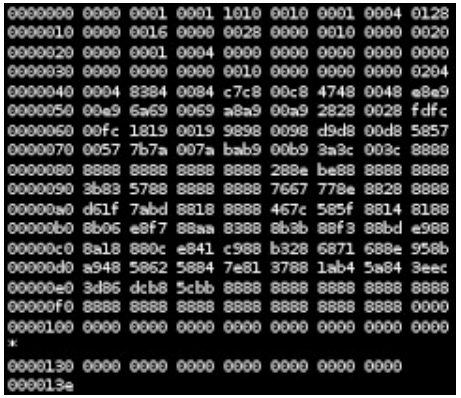
Computer program

- is a sequence of instructions that can be executed by a computer to perform a specific task.

Compiler and Interpreter

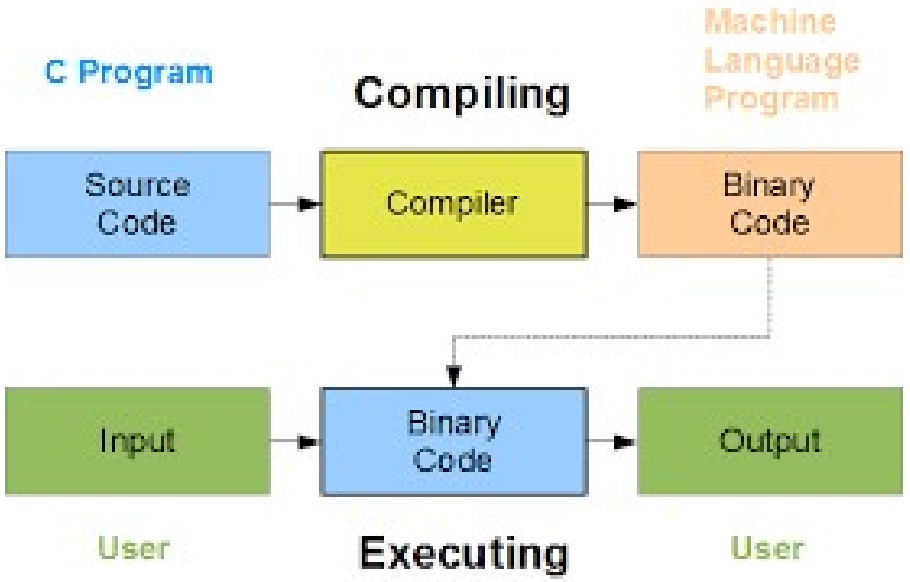
- Typically converts:

high level language
(which the programmer easily perceives)



machine-perceived language.

Compiler


C Program
Compiling
Machine Language Program
Source Code
Compiler
Binary Code
Input
Binary Code
Output
User
Executing
User

Interpreter

Interpreter

- It is a Software
- It has control over translation and execution.
- It takes the code and as translates it to lower level language and controls its execution.

Interpreter

- is a free and open source distributed version control system designed to handle projects. Includes: Control version, repository

- Platform that hosts source code. Uses git.

Conclusion

- Hardware and Software
- Operating System
- Programming Languages, Algorithm and Program
- Compiler vs. Interpreter

References

- Anthony Ralston, Edwin D. Reilly, and David Hemmendinger (2003). *Encyclopedia of Computer Science* (4th ed.). John Wiley and Sons Ltd., Chichester, UK.
- Daintith, J., & Wright, E. (2008). A Dictionary of Computing. : Oxford University Press
- Downey, A. (2012). *Think Python*. 2nd Edition O'Reilly Media, Inc.