

# Introduction



- History
- Distributions
- Licensing
- Installing

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# A Historical Perspective



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# UNIX

- It started way back in '69 with UNICS...
  - Which turned into UNIX...
    - Which was developed and specialized
      - ...
      - BSD
      - UNIX 95
      - HP UX
      - SYS V
      - SCO
      - LINUX
      - ...

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## Linus Torvalds Linux

- In the 80's, Tannenbaum developed MINIX, a UNIX clone.
- Linus Torvalds et. al. made suggestions for modifications.
- Tannenbaum did not think this was needed.
- Linus developed LINUX, an OS that SHOULD implement the users needs.
- Post in comp.os.minix

*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.*

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## Linux Distributions



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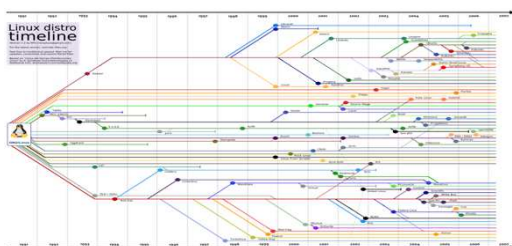
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## Linux distributions over time



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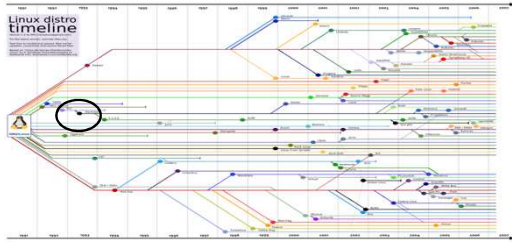
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# Slackware



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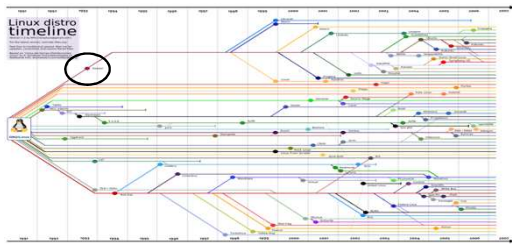
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# Debian



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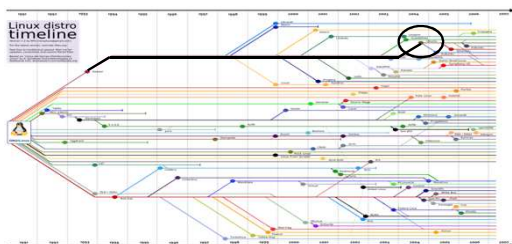
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# Ubuntu



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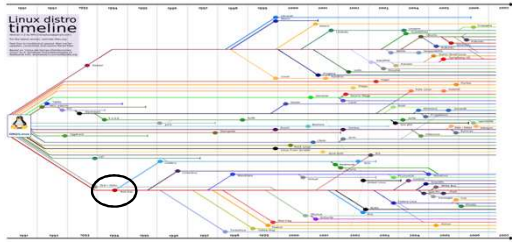
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## Red Hat



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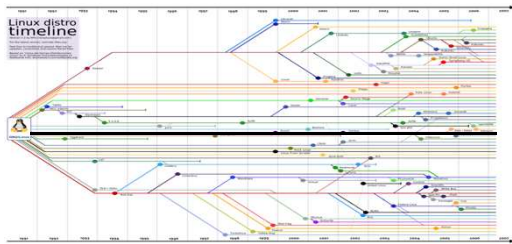
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## Linux distributions over time



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## Open Source Licensing



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## GNU Linux

- 1991, GNU needed a new OS, Linus Torvalds needed software to run on his OS.
- Joint efforts made LINUX go public in late 1991.
- For many years LINUX stayed in "GURU" state.
- But now...

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## Free Software and the Free Movement

- Founder and frontal figure
  - Richard Stallman
- The free software manifest
  - You have the freedom to run the program, for any purpose.
  - You have the freedom to modify the program to suit your needs. (To make this freedom effective in practice, you must have access to the source code, since making changes in a program without having the source code is exceedingly difficult.)
  - You have the freedom to redistribute copies, either gratis or for a fee.
  - You have the freedom to distribute modified versions of the program, so that the community can benefit from your improvements.

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## Richard Stallman



(cc) v.3  
Richard Stallman

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## Copyleft and the GNU GPL

- To keep free software free the GNU General Public License was developed.
- Using the copyright law it was possible to protect the derivatives.

*“Copyleft—all rights reversed”*

Don Hopkins



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## Creative Commons

-  ShareAlike (sa)
-  NonCommercial (nc)
-  Attribution (by)
-  NoDerivs (nd)

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## Creative Commons, top 6

1. Attribution alone (by)
2. Attribution + Noncommercial (by-nc)
3. Attribution + NoDerivs (by-nd)
4. Attribution + ShareAlike (by-sa)
5. Attribution + Noncommercial + NoDerivs (by-nc-nd)
6. Attribution + Noncommercial + ShareAlike (by-nc-sa)

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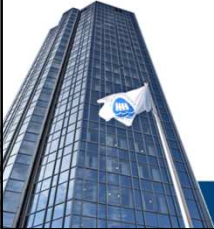
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# System Overview



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# Computer System Overview



By: Gullikman

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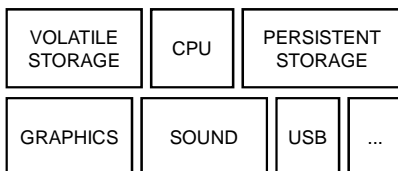
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# System Overview - Hardware



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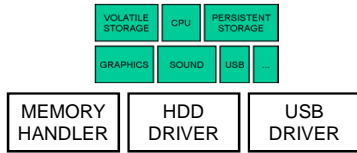
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## System Overview - Drivers



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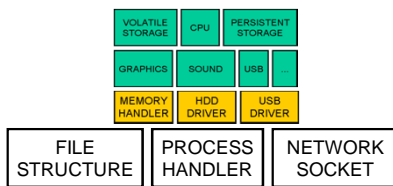
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## System Overview - Services



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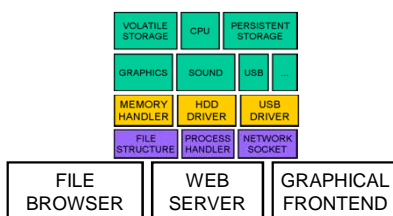
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## System Overview - Applications



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# OS Installation

Documentation  
Installation  
Updates



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# Installation

- Document the current hardware and OS
- Gather and document drivers and software
- Install the OS, document configurations
- Install extra drivers
- Install applications and servers
- Update the system
- Restart and make the system live

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# Documentation

- Hardware vendors and versions
- OS distribution and release
- Driver vendors and release
- Application/server distribution and release
- Updates/ upgrades made
- All non-standard configurations

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## Updates

- System updates handles e.g.
  - Security breaches
  - Software/ hardware deadlocks
  - Memory leaks
- Make sure you keep your system updated!

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## System Control



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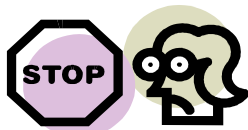
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## Start / Stop OS

- Has to be done in a controlled manner
  - Sudden stops might damage hardware and software.
- A boot loader could be used to start different operating systems or an OS with different start parameters.



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## Start and stop

- When the system is running, data is distributed and non consistent.
- Configurations done during the session has potentially not been saved.
- Some services must be shut down in a specific manner.
- Harddrives might be damaged by sudden stops.



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## Start OS

- Start up of an OS is not trivial
  - The system must be brought up in a structured way, level by level.
  - A number of different errors must be handled.
  - Automated!
  - But what if
    - There are errors?
    - You want to customize?
- This process is rather complex but also very important and we will revisit this later on in the course.



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## Shell Basics

- Command interface
  - Text based
  - Usually labeled "the shell" or "the prompt"
  - Used for issuing commands to the system
- Commands are formatted in the following way  
`command arg1 arg2 arg3 ...`
  - Allowed combinations are system specific.
- The filestructure is case dependent



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## Stop the OS

```
shutdown  
shutdown -h now  
shutdown -r now  
shutdown -h 20:01  
shutdown -h +5
```



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