IX International Course of Massive Data Analysis FOR GENOMICS

Introduction to Linux Shell

EMBL-EBI

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CENTRO DE INVESTIGACIÓN BIOMÉDICA EN RED
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Introduction
What is GNU/Linux and the Shell?

- GNU/Linux is a **free** and **open-source** operating system developed by thousands of contributors and led by *Linus Torvalds* since the beginning in 1991

- Linux **shells** (commonly *Bash*) allow users to execute more than 200 commands and to write pipelines in the *Shell Script* programming language to automatize tasks

- Linux is widely used in research and super computers, more than 96% of super computers use Linux:

  – http://www.top500.org/statistics/list

- It's an essential tool for bioinformatics and big data analysis and research

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Introduction
Why we use Linux?
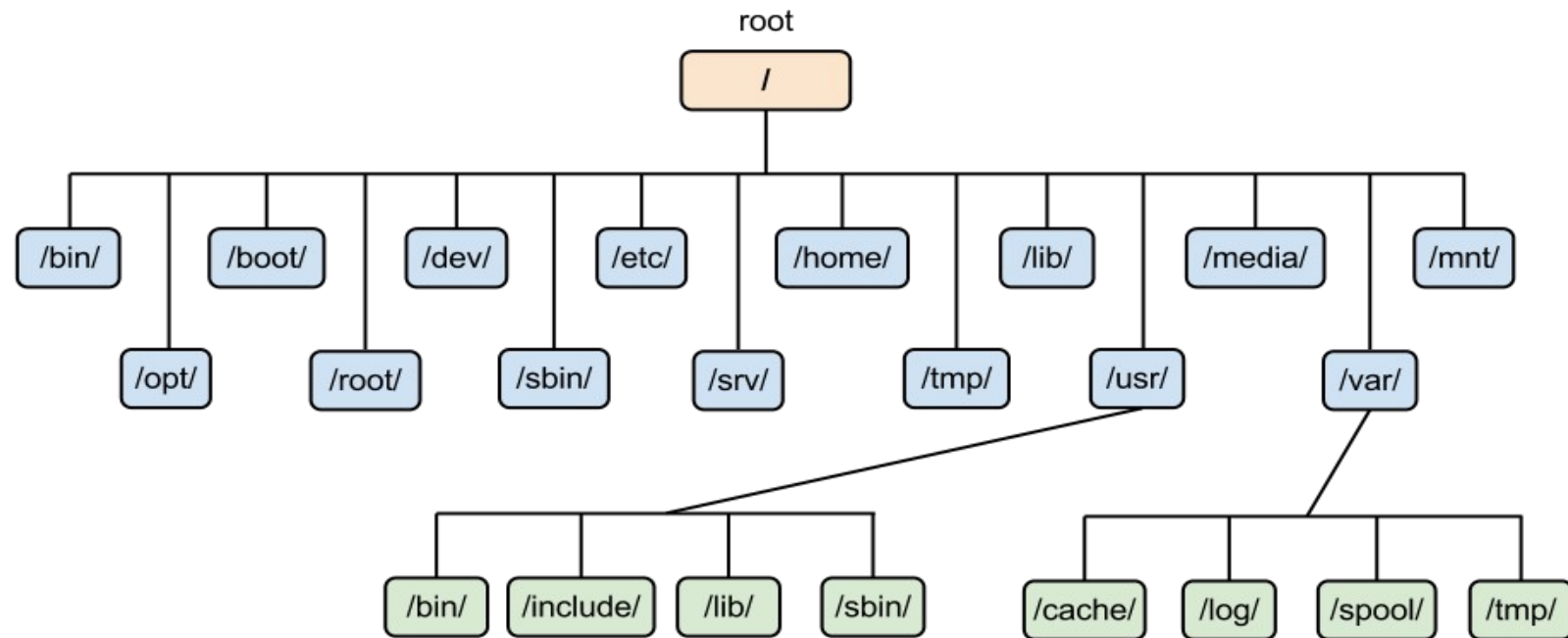
- Linux offers:

  – Ease to program and work with big data

  – Stability

  – Security

  – Low price

  – High-performance computing

  – ...

- Many times visual graphical interfaces to software does not exist

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Introduction
Linux filesystem

- All paths start at '**/**' called ***root***, no C: or D: like in Windows. Similar to other Unix-like systems such as Mac OS

- Users home folders under '**/home**', ie. */home/participant*

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Introduction
Understanding *paths*

- A **path** identifies uniquely a file or directory in the filesytem.

- The character '**/**' is used to concatenate directories

- Two types of paths:

  - **Absolute**: Always start with '**/**' which is the root folder. Example:

    - *ls /home/participant/Desktop*

  - **Relative**: All paths not beginning with '**/**' but with a file o folder name. Example

    - *ls Desktop*

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Most useful commands
Working with files and directories

- Many tutorials and documentation:
  - http://linuxcommand.org/learning_the_shell.php
- Inline help in the shell using command '**man**', ie. *man ls*
- Commands
  - cd
  - ls
  - mkdir and rm
  - pwd
  - mv
  - cp
  - less, head and tail
  - Output redirection: '**>**'
  - ...

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