



ARISTOTLE
UNIVERSITY OF
THESSALONIKI

Open Source: Tools for Physics

Seminar 1

Introduction to GNU/Linux and the Command Line

About Me

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Sbozzolo

...and GNU/Linux enthusiast!

Why?

Major Premise

Physicists have to do **every day** numeric manipulations. (Data analysis, simulations, ...)

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Conclusion

A physicist who knows them has much more time to focus on physics, therefore he will be (probably) a **better physicist**

Calendar

- 2 May, 6 PM: GNU/Linux and Command Line
- 9 May, 6 PM: Scripting and Git
- 16 May, 6 PM: Python
- 23 May, 4 PM: L^AT_EX and Emacs

with 45 + 45 minutes format

Modality

Workshop-like seminars

Task

Develop from scratch a simulation for a physical phenomena of great interest, **analyze** results and **publish** a report.

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In the meantime **discover** many interesting open source tools. You can bring your own laptop and follow what I do

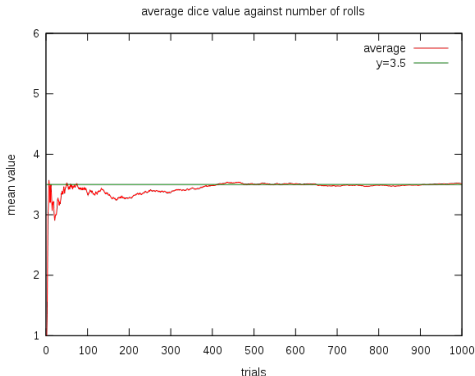
Dice!

We will verify the law of large numbers and the central limit theorem



The law of large number

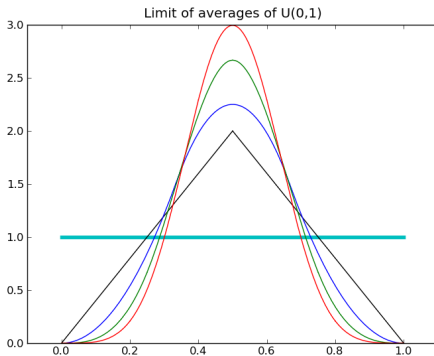
In layman's terms



If $N \rightarrow +\infty$ the mean value reaches the *true* value

The central limit theorem

In layman's terms



If $N \rightarrow +\infty$ (almost) everything ends in a Gaussian

GNU/Linux

A very brief history - I

1971 - UNIX (Dennis Ritchie)
(Proprietary Operative System)



GNU/Linux

A very brief history - II

1985 - GNU (Richard Stallman)
(Based on the UNIX philosophy)



GNU/Linux

A very brief history - III

1991 - Linux (Linus Torvalds)
(The missing piece – a kernel)



The GNU/Linux Philosophy

Axiom zero

GNU/Linux should be **Free** and **Open** (FLOSS) (Reproducible Research)

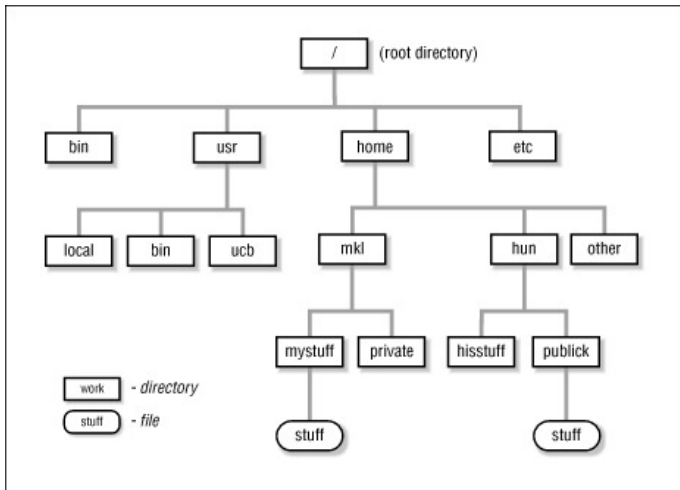
Axiom one

GNU/Linux should have **small extensible inter-operating** programs

Axiom two

In GNU/Linux **plain text** should play a central role

The (Pseudo)-File System



Firsts applications of the axioms

Command Line (or Terminal, or Shell)

To the terminal!