Open Source: Tools for Physics

Seminar 1

Introduction to GNU/Linux and the Command Line

About Me
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...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 it 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: LaTeX 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

Dice!

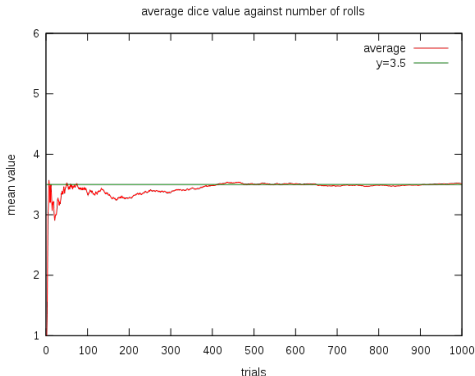We will verify the law of large number and the central limit theorem
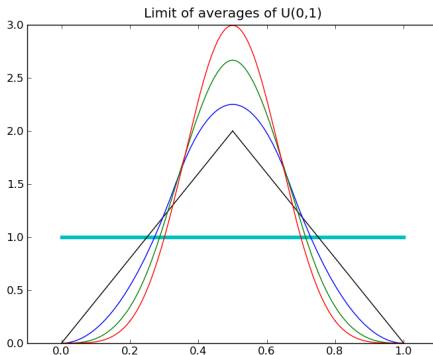
The law of large number
In layman's terms

average dice value against number of rolls

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

The central limit theorem

In layman's terms

Limit of averages of U(0,1)

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

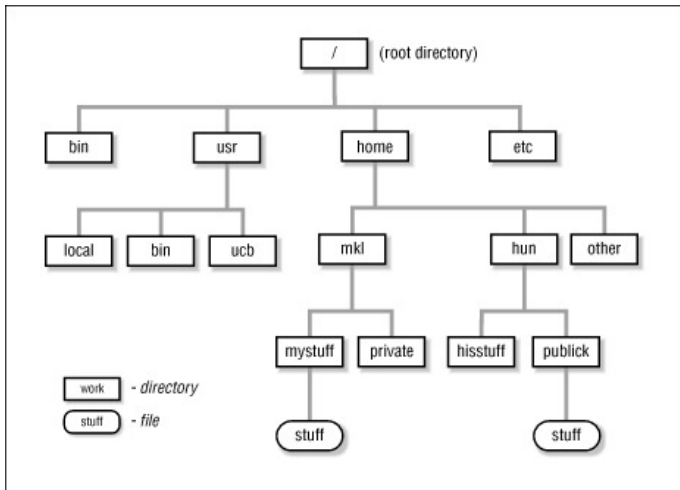GNU/Linux should be Free and Open (FLOSS) (Reproducible Research)

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!