UNIVERSITÀ DI PAVIA

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LaTeX

Lecture 1 – Getting started

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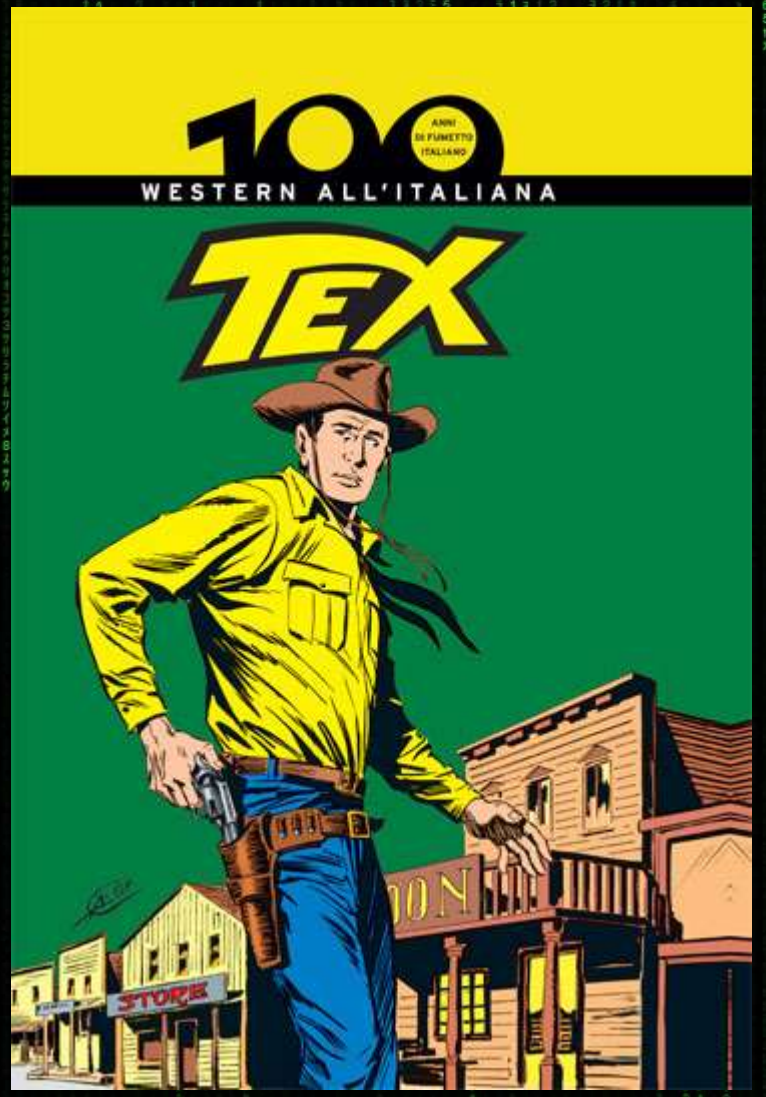
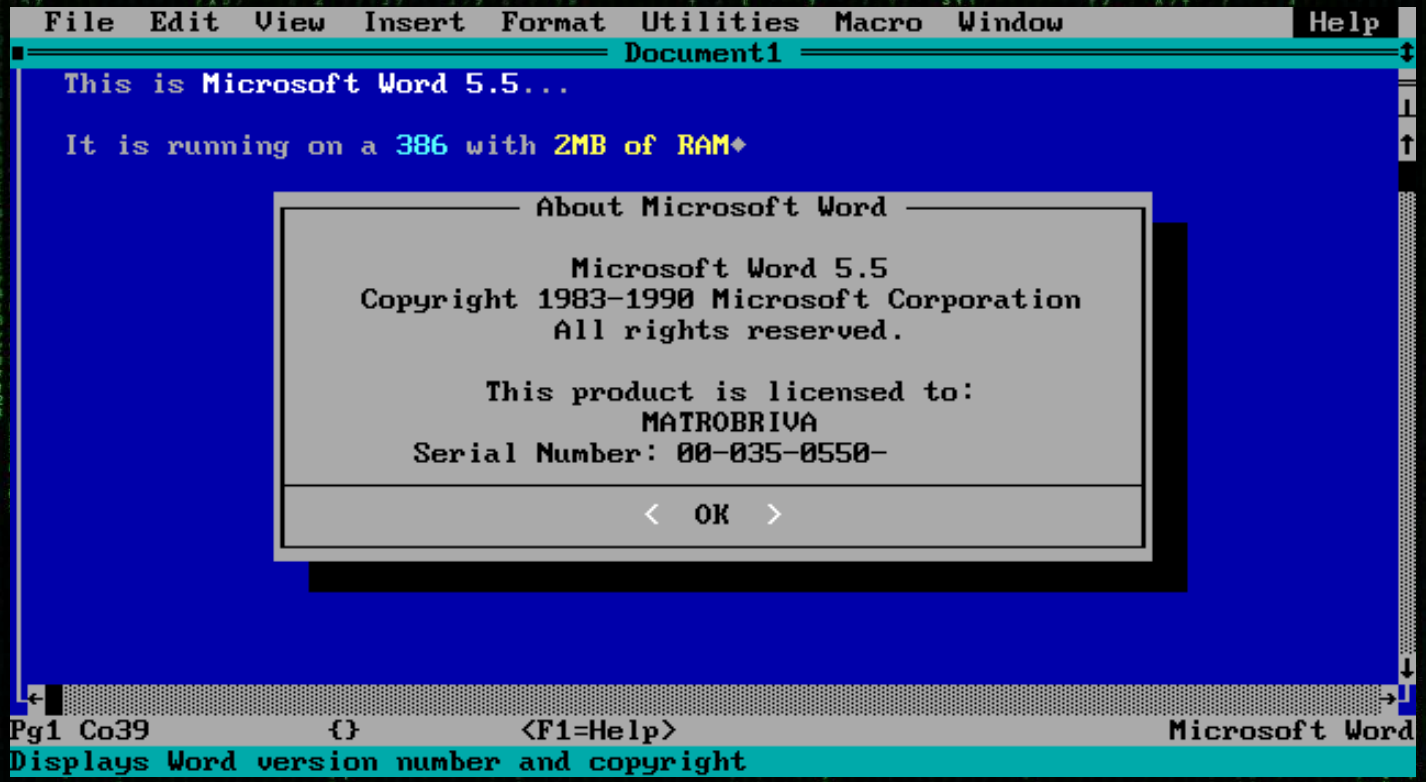
Goals of this seminar

- To «learn how to learn» markup languages (TeX, HTML, Markdown, …), a text-encoding system used to control its structure, formatting, or the relationship between its parts;
- To acquire skills in writing more or less complex documents in the LaTeX standard, used by scientists and researchers all over the World in their papers;
- To start saying «LaTeChZ (with aspirated «h») and not LaTeCS (the X is a greek letter called «chi», well written χ) [highly recommended…];
- To make you feel like Neo while writing lines and lines of code just for writing the recipe of your favourite cake or $E = mc^2$.



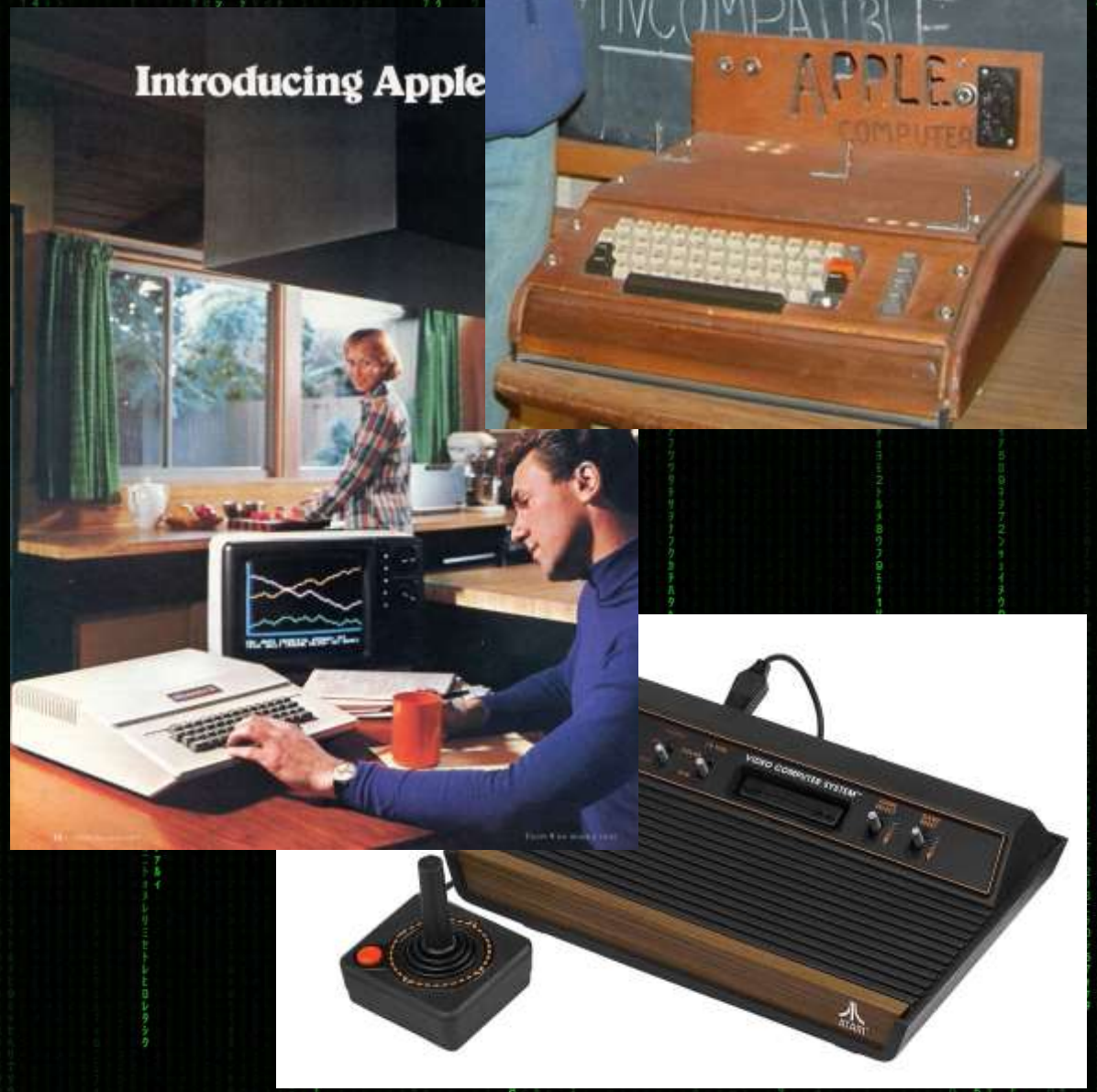
Word processors

- They are computer programs that provide for input, editing, formatting and output of text.
- Early word processors were stand-alone devices dedicated to the function.
- The functions of a word processor program fall somewhere between those of a simple text editor and a fully functioned publishing program.



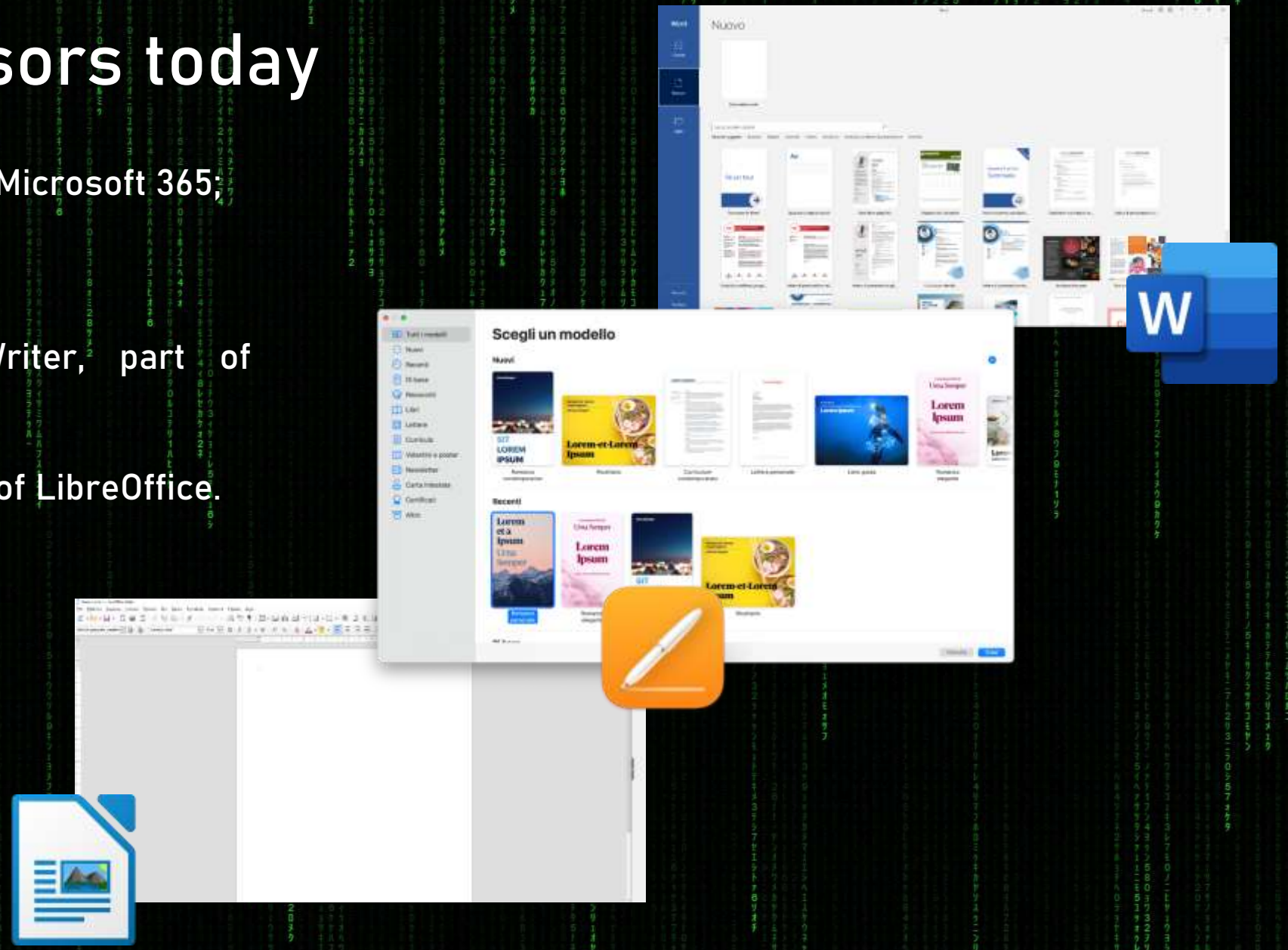
Pills of history

- 1968 – First word processor Astrotype, for DEC PDP-8 minicomputer;
- 1972 – AES 90 commercialization;
- Seventies - EasyWriter program for Jobs and Wozniak's Apple I;
- 1976 – Electric Pencil program for MITS Altair 8800;
- 1977 – Apple II;
- 1982 – AtariWriter;
- 1983 - Microsoft Word for MS-DOS 1.0.



Word processors today

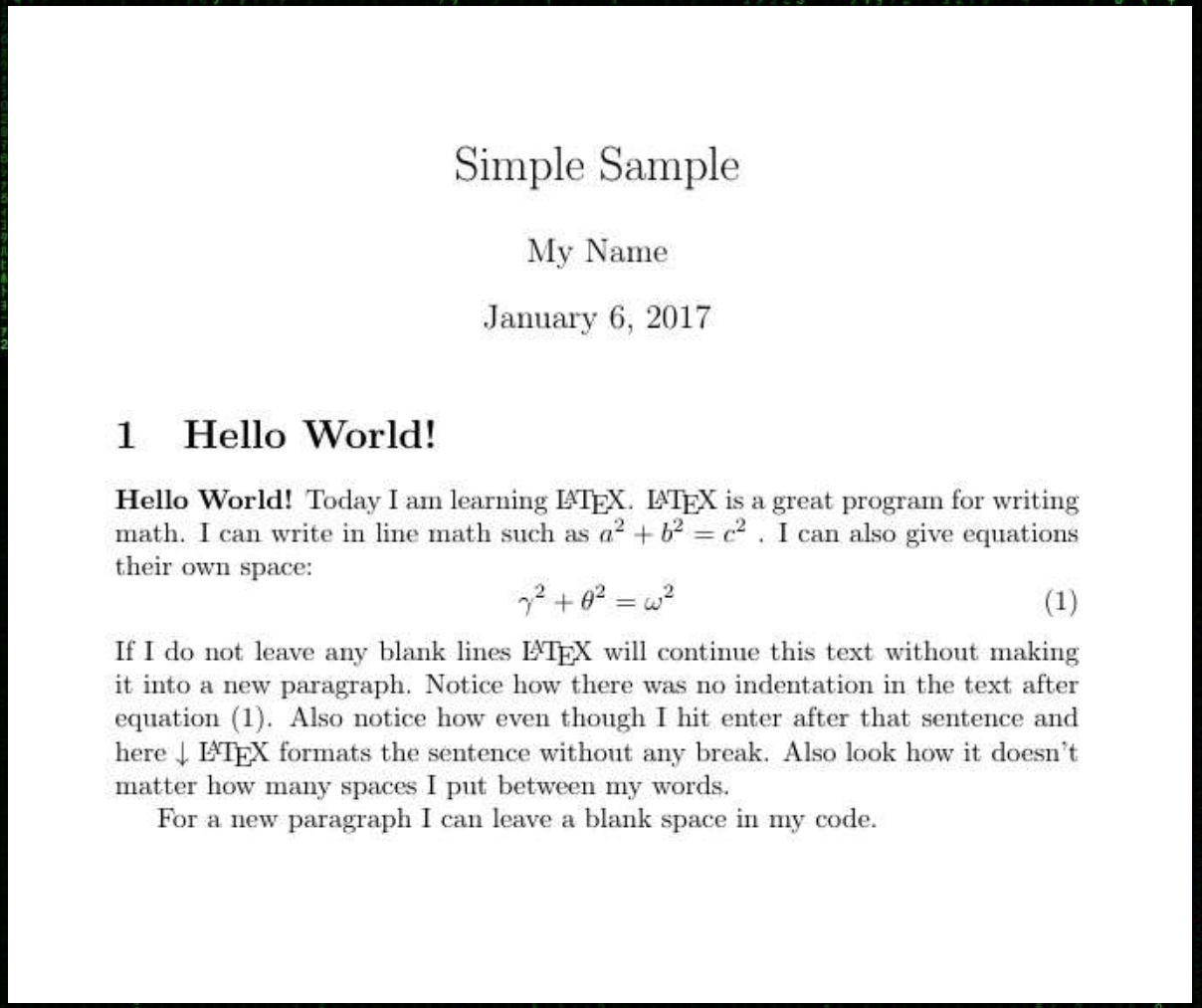
- Microsoft Word, part of Microsoft 365;
- Pages, part of iWork;
- Apache OpenOffice Writer, part of Apache OpenOffice;
- LibreOffice Writer, part of LibreOffice.



What LaTeX is?

- A document preparation system for high-quality typesetting;
- Most often used for medium-to-large technical or scientific documents;
- It can be used for almost any form of publishing;
- Not a typesetting language (!);
- Not a word processor (!!!).

LaTeX uses TeX as typesetting language, realized by Donald Ervin Knuth, IT professor at Stanford University, made available through open source software license.



Simple Sample

My Name

January 6, 2017

1 Hello World!

Hello World! Today I am learning LaTeX. LaTeX is a great program for writing math. I can write in line math such as $a^2 + b^2 = c^2$. I can also give equations their own space:

$$\gamma^2 + \theta^2 = \omega^2 \tag{1}$$

If I do not leave any blank lines LaTeX will continue this text without making it into a new paragraph. Notice how there was no indentation in the text after equation (1). Also notice how even though I hit enter after that sentence and here ↓ LaTeX formats the sentence without any break. Also look how it doesn't matter how many spaces I put between my words.

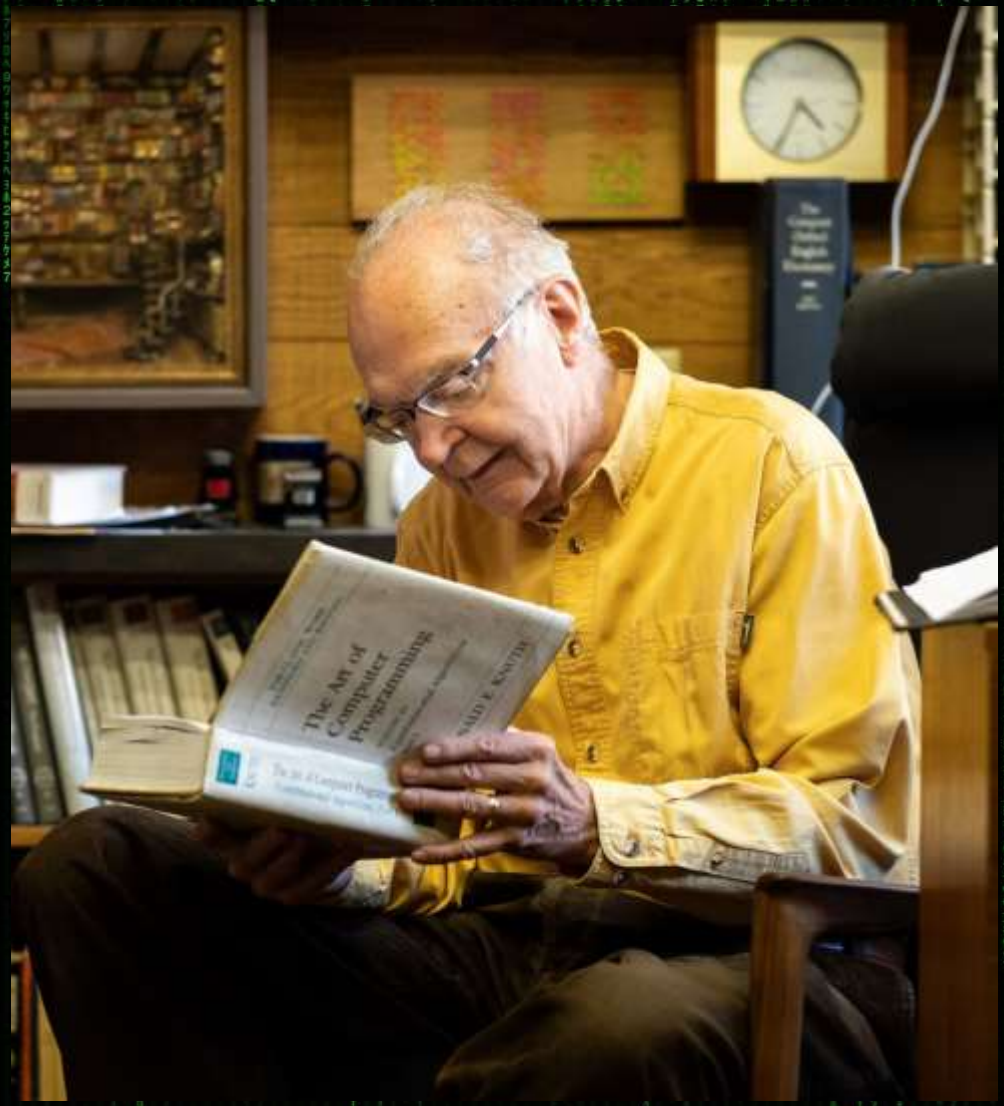
For a new paragraph I can leave a blank space in my code.

Pills of TeX history

- 1977 – Knuth starts writing a typesetting engine for exploring the power of contemporary digital press instruments;
- 1982 – TeX was born;
- 2014 – Latest revision, with version “converging to π” (3.14159 26535 89793 23846 …).

Actually TeX is an American Mathematical Society trademark.

Fun fact: its name is often pronunciated like the Italian comics character Tex Willer, but it should be pronunciated “tech”, because its root is τέχνη, téchnē, art, technics, technology. Really, TeX is the perfect name for a «state of art» software.



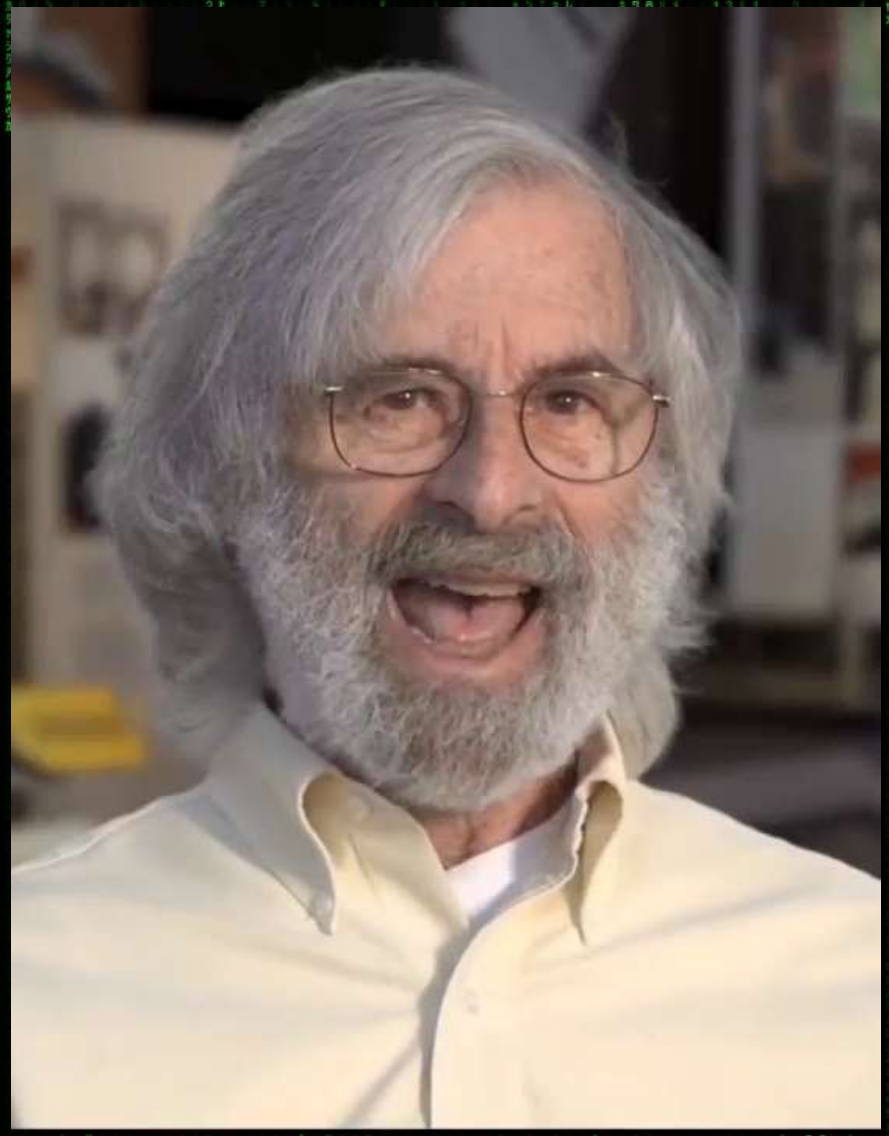
(Finally) LaTeX

We saw LaTeX ≠ TeX.

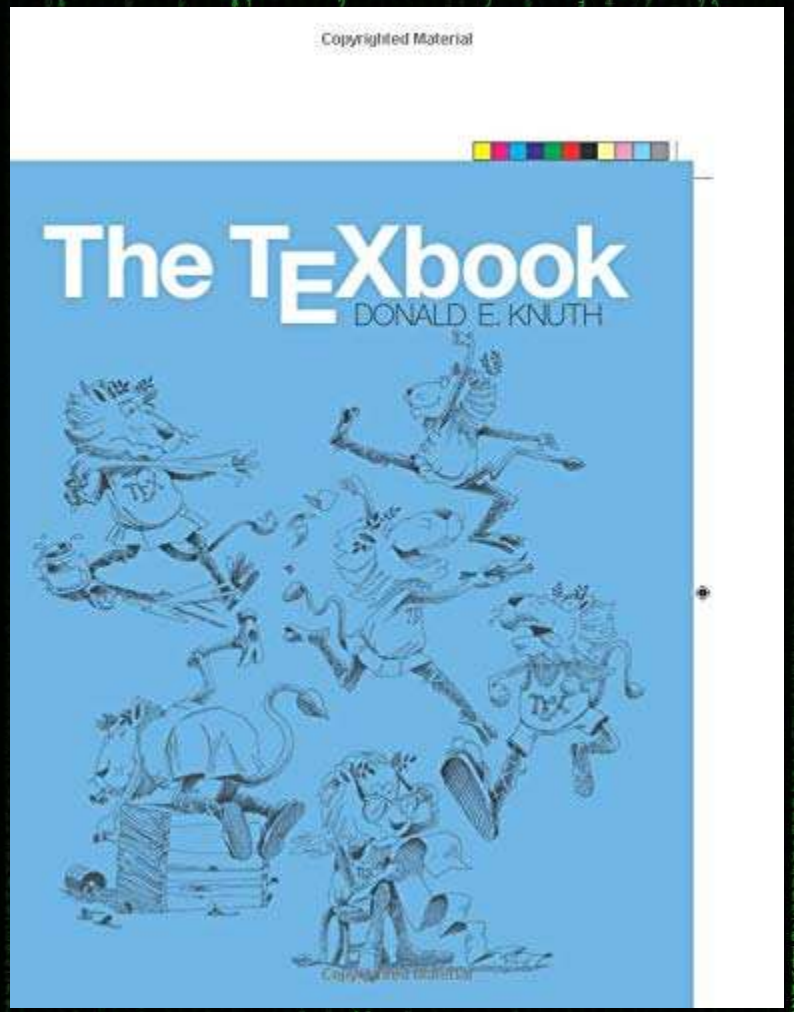
LaTeX (La(mport)TeX) was instead realised in 1985 by Leslie Lamport (2014 Turing prize, four honoris causa PhDs), and it is open source, too.

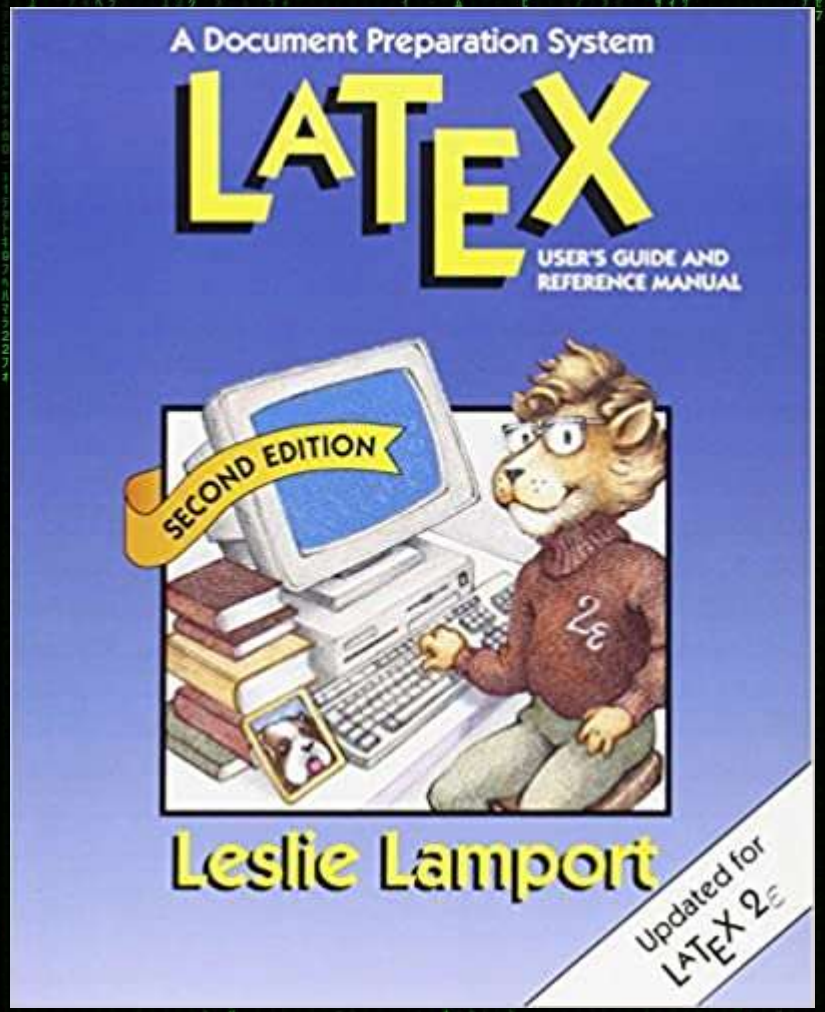
Created for automatizing in a single strike the most common operations needed for producing a TeX document, through its default settings it allows the user to create papers with the highest level of elegance and professionality possible, basing on the best typographic standards known.

Fun fact:
- first version was LaTeX 2.09;
- in 1994 LaTeX 2ε was released;
- 2016: latest revision.



Now the bricks, for the brave



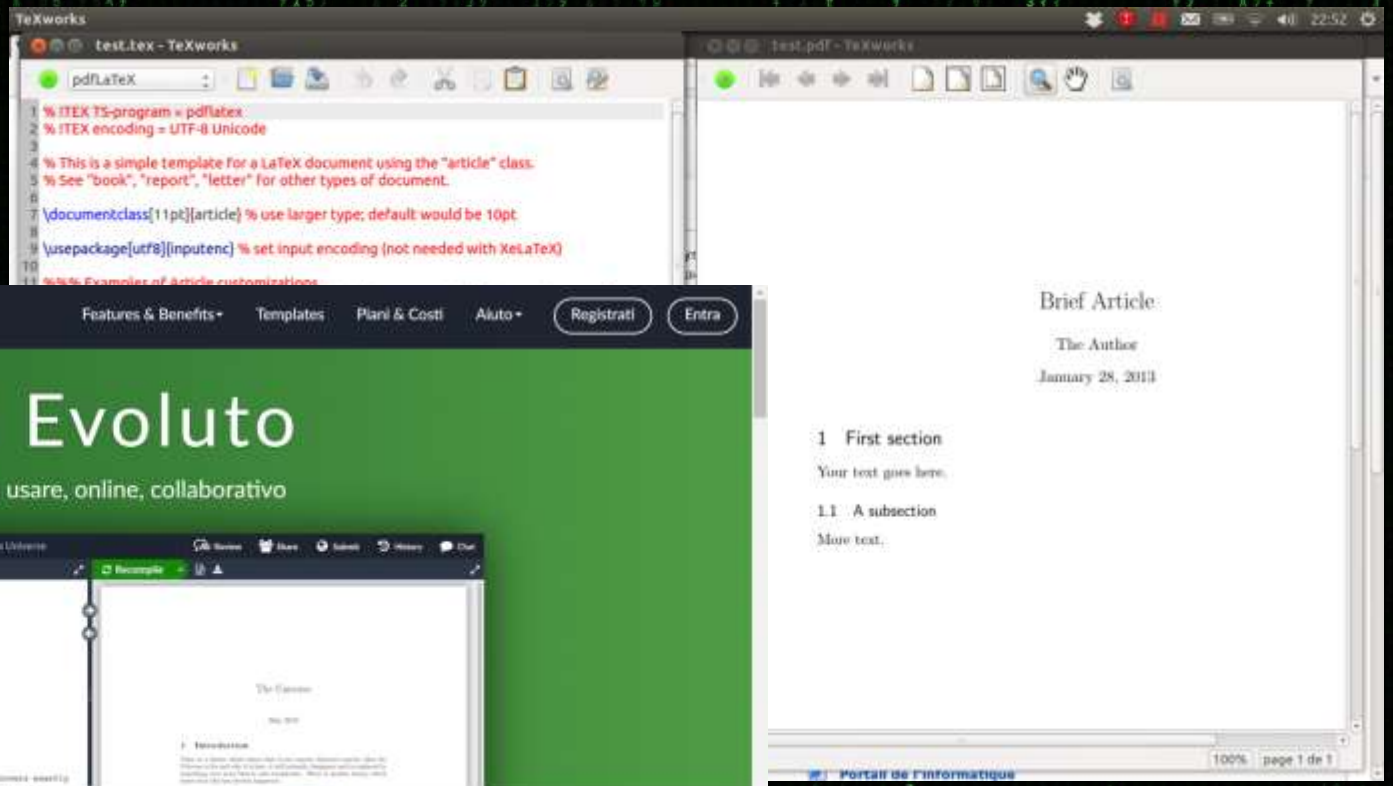


Pros and cons of LaTeX

- Generates documents with professional layouts;
- Generates high quality mathematical formula in a simple way;
- Automatically generates complex structures (indexes, bibliography, …)
- Contains several styles for composing articles, reports, books, reviews, used by professionals;
- The user only thinks about the content;
- It's free, multilanguage and multiplatform;
- It is used by thousands of people in the World;
- It's supported by a big community on the web;
- It's open source.

- It's not a WYSIWYG program (not natively…);
- You need attitude to abstract;
- At the beginning, it's not simple.

Before continuing…



References

- Overleaf documentation – https://it.overleaf.com/learn
- LaTeX wikibook – https://en.wikibooks.org/wiki/LaTeX
- Prof. Andrea Negri's «Metodi informatici per la fisica» course
- GitHub
- Personal academic and professional experience