Module 6: \LaTeX

Lecture 0b: TEX, \LaTeX, \textsc{BibTeX}: an overview

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A. What are $\TeX$, $\LaTeX$ and $\ Bib\TeX$?

1. $\TeX$

- Developed by D. E. Knuth in 1977/78
  - Donald Ervin Knuth
  - Born 10th January 1938, Milwaukee, Wisconsin
  - Professor Emeritus in Computer Science at Stanford University
  - [https://cs.stanford.edu/~uno/index.html](https://cs.stanford.edu/~uno/index.html)

  
  > $[\ldots] \TeX$, a new typesetting system intended for the creation of beautiful books—and especially for books that contain a lot of mathematics.

- Written in WEB/Pascal [see, e.g.,

- Essentially stable since 1989; current version: 3.14159265 (TeX Live 2015)
A. What are \TeX, \LaTeX and \ Bib\TeX? 

2. \LaTeX

- Developed by L. Lamport in 1983
  - Leslie Lamport
  - Born 7th February 1941, New York City, New York
  - Working at Microsoft Research
  - \url{http://www.lamport.org/}

- Intended as a “standard set” of \TeX–macros
- Essentially stable since 1994; current version: \LaTeX\ 2ε
- \LaTeX\ 3 still under development
A. What are \TeX, \LaTeX\ and \BibTeX\?

3. \BibTeX

- Developed by O. Patashnik in 1983
  - Oren Patashnik
  - Born 1954
  - Working at Center for Communications Research, La Jolla

- Generates \LaTeX\–bibliographies according to styles

- Essentially stable since 1988; current version: 0.99d

- \BibTeX\ 1.0 still under development [see also O. Patashnik. \BibTeX\ 1.0. \textit{TUGboat}, 15(3):269–273, 1994. 
A. What are \texttt{\LaTeX}, \texttt{\LaTeX} and \texttt{\BibTeX}?

4. Timeline

- 1977: Knuth begins research on typography [see also D. E. Knuth. Deciding to make my own typesetting program (interview).](https://www.webofstories.com/play/donald.knuth/51)


- 1983: Lamport writes the first \texttt{\LaTeX} manual


- 1985: Computer Modern (CM) fonts replace American Modern (AM) fonts in \TeX

- 1985: Patashnik releases \texttt{\BibTeX} ver.0.98 for \texttt{\LaTeX} 2.08

- 1985: Lamport releases his final version of the \texttt{\LaTeX} macros: \texttt{\LaTeX} 2.09


- 1987: Partl, Hyna and Schlegl release an introduction to \texttt{\LaTeX} 2.09 (in german) into the public domain

- 1990: The American Mathematical Society releases \texttt{\AMS-\LaTeX} 1.1, a port by Mittelbach and Schvpf of Spivak’s \texttt{\AMS-\TeX} to \texttt{\LaTeX} 2.09

- 1994: The \texttt{\LaTeX}3 team (lead by Mittelbach since 1989) introduces \texttt{\LaTeX} 2ε

B. Why (not) \LaTeX{}?

1. Advantages

- Typographically “correct” documents, ready-to-print
- Separation design $\leftrightarrow$ content
- Structured documents
- Numbering, crossreferencing, citing out-of-the-box (also indexing; cf. makeindex)
- Easy to share (ASCII-text!)
- “Universal” language for mathematical formulæ (see also MathJax [https://www.mathjax.org/])
- Portability, stability & performance
- Direct submission to journals, arXiv [https://arxiv.org], etc...
- Open source!
- \text{(\TeX{} is Turing-complete [https://en.wikipedia.org/wiki/Turing_completeness], i.e., it can compute anything that is computable — theoretically; see, e.g., avremu: An AVR Emulator written in pure \LaTeX{} [https://gitlab.brokenpipe.de/stettberger/avremu/tree/master])}
B. Why (not) \LaTeX? 

2. Disadvantages

\begin{itemize}
  \item Initially steep learning curve (especially the design part)
  \item Not WYSIWYG (although, see, e.g., LyX [http://www.lyx.org/])
\end{itemize}
C. Further reading


http://www.xent.com/FoRK-archive/feb98/0307.html


https://tobi.oetiker.ch/lshort/lshort.pdf

https://en.wikibooks.org/wiki/LaTeX

TeX – LaTeX stack exchange. https://tex.stackexchange.com

D. E. Knuth. Deciding to make my own typesetting program (interview).
https://www.webofstories.com/play/donald.knuth/51