LATEX

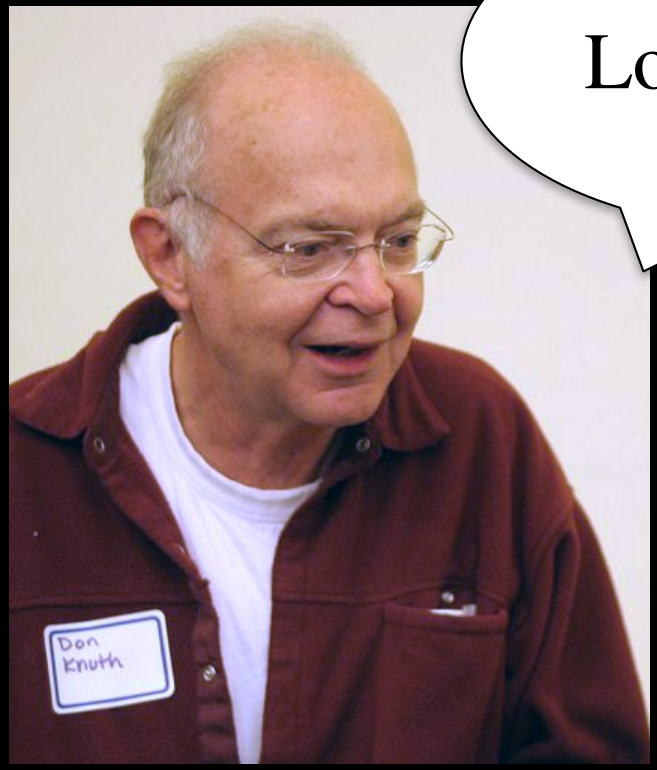
YOUR PAPER MAKES NO GODDAMN SENSE,
BUT IT'S THE MOST BEAUTIFUL THING
I HAVE EVER LAID EYES ON.

CS 252:
Advanced Programming Language Principles

LaTeX

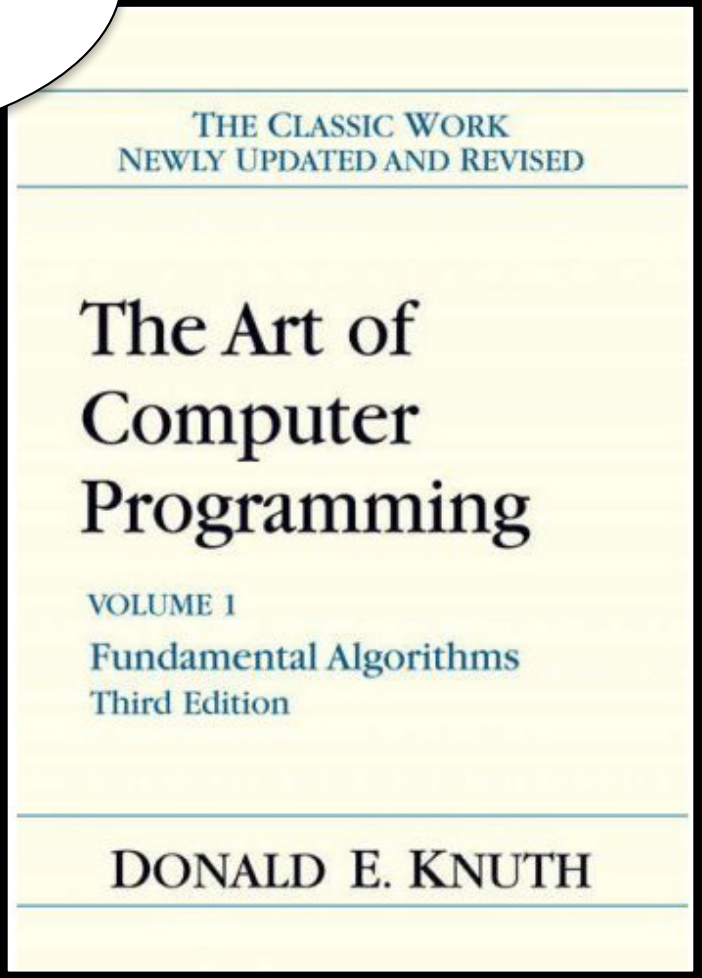
Prof. Tom Austin

San José State University



Donald Knuth

Looks nice!



Ick! Bad fonts.

Donald Knuth

The Art of Computer Programming 1977 edition

In 1977, Knuth published a 2nd version.

Knuth did not like the fonts…

…but he did not think it was important.

HAH! That was a joke.

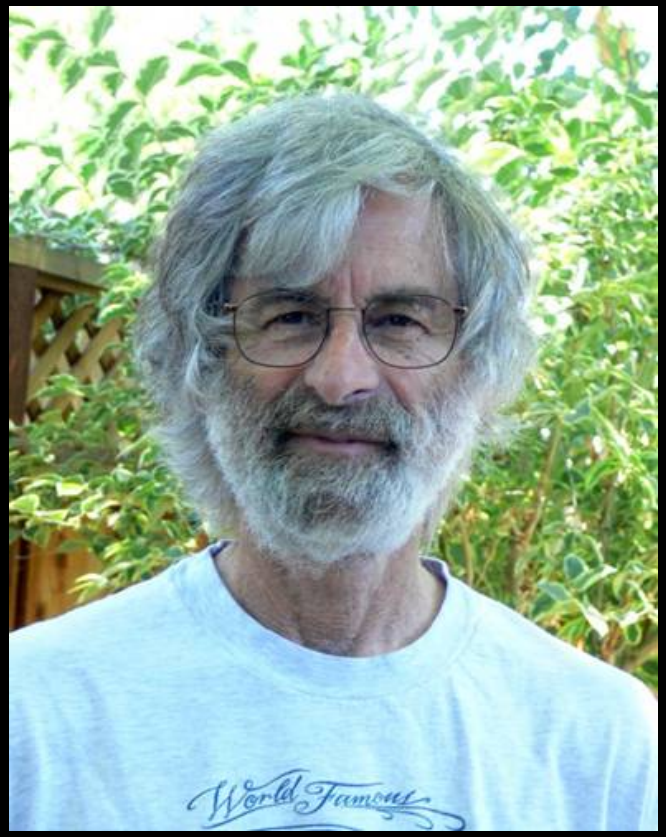
To solve his problem,
Knuth created **TeX**

The birth of TeX

- Precisely controls the interface of content.
- *literate programming*
  - –logic is in natural language
  - –code is interspersed

LaTeX

In 1985, Leslie Lamport released **La**mport **TeX**



Leslie Lamport

Interesting aspects

- *Domain specific language* (DSL)
- Separation of concerns
  - Formatting kept separately from content (mostly)
- *Literate programming*

```
\documentclass{article}

\title{Hello World}

\begin{document}
\maketitle

\end{document}
```

```
\documentclass{article}

\title{Hello World}

\begin{document}
\maketitle

\end{document}
```

Generates a title from information.

Sections & Labels

```
\section{Section One}
\label{sec:one}

\subsection{A subsection}

... (sometime later)
Back in Section~\ref{sec:one} …
```

References are tedious to

- reformat
- renumber

BibTeX

- Reference details in `.bib` file
- In `.tex` file
  - `\cite` command adds references
  - Place bibliography with `\bibliographystyle{plainurl}\bibliography{biblio}`

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`plainurl` specifies format

BibTeX Example

```
@article{literate,
  author  = {Donald E. Knuth},
  title   = {Literate Programming},
  journal = {Comput. J.},
  year    = {1984},
  volume  = {27},
  number  = {2},
  pages   = {97--111},
}
```

Extended Example
(in class)

Some references

- LaTeX symbols table https://oeis.org/wiki/List_of_LaTeX_mathematical_symbols
- Overleaf – Collaborative LaTeX tool https://www.overleaf.com/
- SJSU thesis LaTeX template https://github.com/taustin/SJSU-thesis-LaTeX

LaTeX lab

Write a short essay in LaTeX. The organization must be:

- **Abstract**
- Section 1: **Personal History**
  (make up something interesting if your life has been boring)
- Section 2: **Academic/Career Goals**
  (include at least one itemized/enumerated list)
- Section 3: **Research Topics of Interest**
  (include 2 citations of papers, *USING BIBTEX*)

Include at least one label and one ref in your document.