

CS 252:

Advanced Programming Language Principles



L^AT_EX

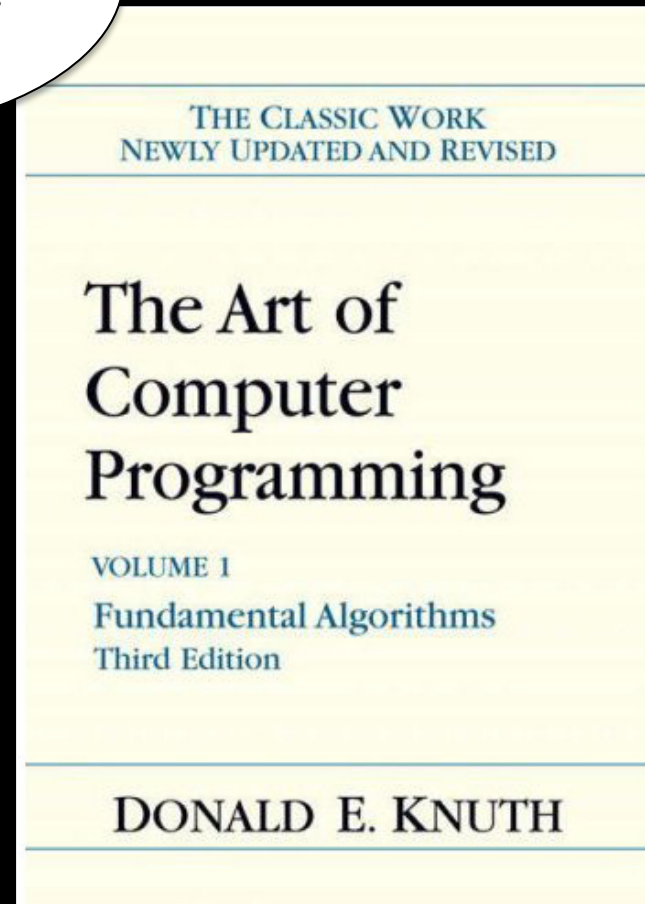
Prof. Tom Austin

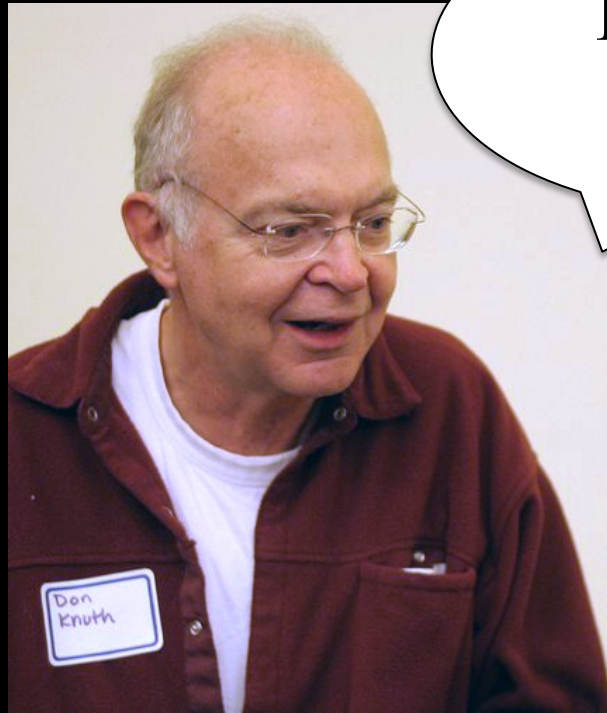
San José State University



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.

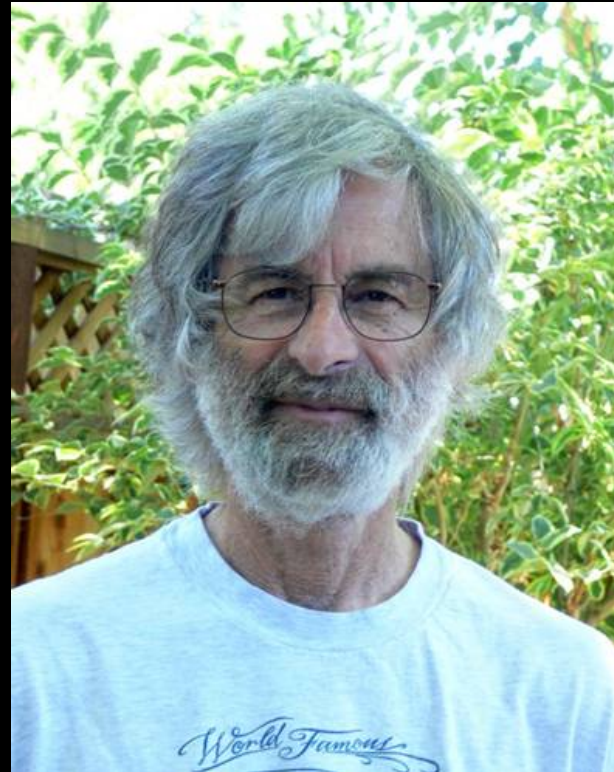
To solve his problem,
Knuth created TeX

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
Lamport **T**eX



Leslie Lamport

Interesting aspects

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


```
\documentclass{article}
```

```
\title{Hello World}
```



Specifies
document type

```
\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}
```



`biblio.bib`
has references

BibTeX

- Reference details in `.bib` file
- In `.tex` file
 - `\cite` command adds references

`plainurl`
specifies
format

– Place bibliography with

```
\bibliographystyle{plainurl}  
\bibliography{biblio}
```

BibTeX Example

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

Extended Example

(in class)

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.