

L^AT_EX AND ACADEMIC TYPESETTING

Yuxuan Lu

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北京工业大学程序设计集训队



- 15-minute tutorial
- 30-minute interactive exercise

- 卢雨轩
- <https://yuxuan.lu>
- 北工大 2019 级; 计算机科学与技术实验班; 荣誉学士学位
- 美国东北大学 Ph.D. Student in Computer Science
- 前北工大程序设计集训队队长 (2019-2023)
- ICPC 铜牌 $\times 3$; IEEE Xtreme World Rk 41, 85 (top 2% and 3.5 %)
- 负责 2 项国创、1 项星火
- 本科期间在国际学术会议或期刊发表论文 5 篇



- What is \LaTeX ?
 - Some “Fancy” and “Anti-human” text editor?
 - Some language describing math formula?
 - Some paper writing system that only researchers use?

- What is Word
 - Microsoft Word is a word processor developed by Microsoft.
 - What-you-see-is-what-you-get, “wysiwyg”
- How about L^AT_EX?
 - LaTeX is a high-quality typesetting system

- What is Word
 - Microsoft Word is a word processor developed by Microsoft.
 - What-you-see-is-what-you-get, “wysiwyg”
- How about L^AT_EX?
 - LaTeX is a high-quality typesetting system
- What's a typesetting system?
 - Typesetting is the composition of text for publication, display, or distribution
 - 活字印刷术
 - Adobe InDesign

LaTeX is a high-quality typesetting system; it includes features designed for the production of technical and scientific documentation. LaTeX is the de facto standard for the communication and publication of scientific documents. LaTeX is available as free software. You don't have to pay for using LaTeX, i.e., there are no license fees, etc. But you are, of course, invited to support the maintenance and development efforts through a donation to the TeX Users Group (choose LaTeX Project contribution) if you are satisfied with LaTeX.

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Figure 1: Comparing L^AT_EX with Word

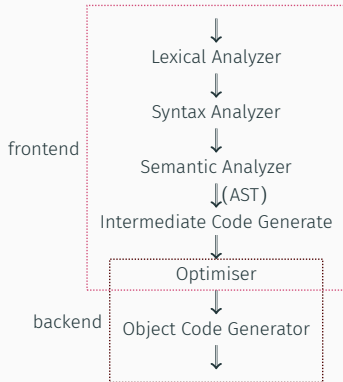
- T_EX was developed by Donald Knuth for typesetting his book “The art of computer programming” (计算机程序设计艺术)
 - At that time, math formulas was mostly written and typesetting by hand
- Leslie Lamport created L^AT_EX
 - A set of macro defined around T_EX
 - Provide high-level concepts, like “document class” and “packages”
- X_YL^AT_EX, LuaL^AT_EX, ...

- TeX's official pronunciation is 'tech'
 - X is χ as in χ^2 distribution
- Lay - TeX?
- Lah - TeX?
- Latex?
- Personally I think it doesn't matter
 - "The correct way to pronounce SQL is how your professor pronounces it"

- Out-of-the-box experience
- Easy-to-use “seperation of content and presentation”
 - You can easily switch to another template within 30 minutes
- Integrate with other softwares
 - Code highlighting
 - And even code execution

```
\begin{minted}{python}
import os
import something_else
print("easy-to-use syntax highlighting!")
\end{minted}
```

```
import os
import something_else
print("easy-to-use syntax highlighting!")
```



SQL code			
<pre>SELECT column_name as Name, data_type as Type, is_nullable as Nullable, column_default as ↳ Default FROM information_schema.columns WHERE table_schema = 'public' AND table_name = ↳ 'users';</pre>			
Result on PostgreSQL			
name	type	nullable	default
id	bigint	NO	nextval('users_id_seq'::regclass)
username	character varying	NO	
nickname	character varying	NO	
email	character varying	NO	
password	character varying	NO	
created_at	timestamp with time zone	NO	
updated_at	timestamp with time zone	NO	
deleted_at	timestamp with time zone	YES	
(8 rows)			
Result on OpenGauss			
name	type	nullable	default
deleted_at	timestamp with time zone	YES	
updated_at	timestamp with time zone	NO	
created_at	timestamp with time zone	NO	
id	bigint	NO	nextval('users_id_seq'::regclass)
password	character varying	NO	
email	character varying	NO	
nickname	character varying	NO	
username	character varying	NO	
(8 rows)			

Figure 2: And – Even run and render results from other software

This slide itself!

- Nope!
 - Macro-based syntax isn't friendly
 - It'll took a day to find a missing brace (})
- New challengers:
 - Typst

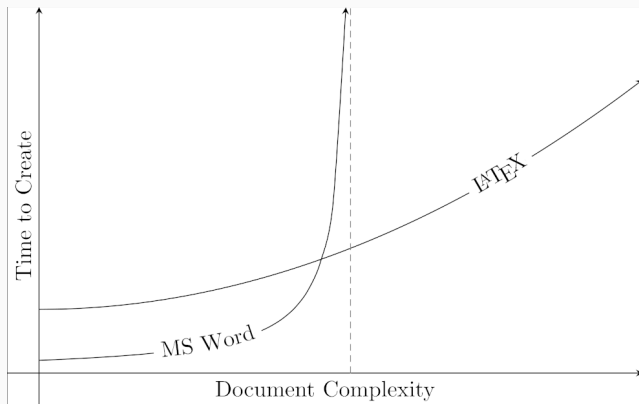


Figure 3: Graph of why \LaTeX is worth knowing

- When to use L^AT_EX
 - Academic publishing
 - Fine-grain typesetting
 - Course Project Report
 - Just for fun
- When not to use L^AT_EX
 - Homeworks
 - Use Markdown with LaTeX theme
 - Drawing diagrams
 - Whenever you don't feel like to
 - And whenever you are asked to

