

LaTeX – A document preparation system

... The Art of Professional Typesetting

Ankit Deshmukh

October 31, 2019

Department of Civil Engineering
Indian Institute of Technology Hyderabad

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Introduction

LaTeX philosophy: Write first; format later

1. LaTeX looks better and it's free.¹
2. LaTeX is the mathematical typesetting standard and becoming a standard on the web.
3. LaTeX is what you make it. Unlike menu based word processor, you do all by typing.
4. When you give a document made with LaTeX, also give out the source code that generated it.
5. Changing a formatting style is easy (require change in a class file).

You can have a simple guide to LaTeX Here.²

¹Robert Talbert

²A simple guide to LaTeX

Setting up LaTeX

Step 01: La(TEX) installer. (I recommend **TexLive** - full install)

Step 02. A code editor i.e., **Texmaker**, Rstudio etc.

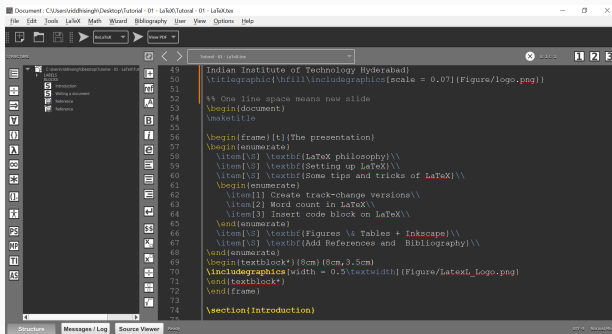


Figure 1: LaTeX working environmental in Texmaker.

Writing a document

Some tips and tricks of LaTeX

1. Define document types with `\documentclass`

```
\documentclass[a4paper,12pt]{article} % journal article
\documentclass[10pt]{beamer}          % presentation
```

2. LaTeX can compute anything, It is **Turing complete language**.

3. To define your own commands/functions, using `\newcommand`

```
\newcommand{\name}[num]{definition}
% An example to defining new function
\newcommand{\printMeeting}[2]{\{#1\} and \{#2\} wait for none!}

% calling a function
\printMeeting{Time}{Tide}
```

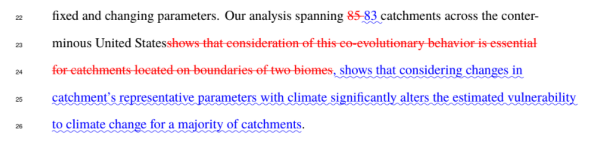
Time and Tide wait for none!

Create track-change versions

latexdiff– Determine and mark up significant differences between LATEX files. To create diff version of your files:

- § Download and install **Perl** and add it to Environment variable path
- § With Texlive package manager install **latexdiff**.
- § Go to command prompt and run the following line of code

```
latexdiff "Older.tex" "Revision.tex" > "TrackChange.tex"
```



The screenshot displays a LaTeX document with track changes. Line 22 contains the text "fixed and changing parameters. Our analysis spanning 85-83 catchments across the conterminous United States". Line 23 shows a red deletion: "~~shows that consideration of this co-evolutionary behavior is essential~~". Line 24 shows a red deletion: "~~for catchments located on boundaries of two biomes,~~". Line 25 shows a blue insertion: "shows that considering changes in". Line 26 shows a blue insertion: "catchment's representative parameters with climate significantly alters the estimated vulnerability to climate change for a majority of catchments.".

Figure 2: *latexdiff* output.

Word count in LaTeX

- § You will need a **Perl** distribution installed on your machine.
- § Download **texcount** and extract.
- § Open command prompt and paste the following line of text below.
`texcount.pl -html -v -sum Your_Manuscript.tex`
- § Change the name of input **tex* file and press enter. It will generate a text count HTML file.

```
File: SampleDocumentV1.tex  
Encoding: ascii  
Sum count: 157  
Words in text: 148  
Words in headers: 9  
Words outside text (captions, etc.): 0  
Number of headers: 3  
Number of floats/tables/figures: 0  
Number of math inlines: 0  
Number of math displayed: 0  
Subcounts:  
  text+headers+captions (/headers//floats//inlines//displayed)  
0+3+0 (1/0/0/0) _top_  
74+3+0 (1/0/0/0) Section: Some random text  
74+3+0 (1/0/0/0) Subsection: Some more text
```

Figure 3: *TexCount* output.

Insert code block on LaTeX

You can insert code blocks using `listings` user package.

```
\lstinputlisting[language=R, caption = A test code block]  
{ListInput.R}
```

Formatting setting code block

```
% Setting for my your code  
\usepackage{listings}  
\lstset{frame          = tb,  
        language      = R,  
        basicstyle     = {\footnotesize\ttfamily},  
        numbers        = left,  
        numberstyle    = \tiny\color{gray},  
        keywordstyle   = \color{blue},  
        commentstyle   = \color{dkgreen},  
        stringstyle    = \color{mauve},  
        breaklines     = true,  
        breakatwhitespace= true,  
        tabsize        = 4  
}
```

Insert code block ...cont.

Listing 1: *A test code for code blocks*

```
1 # Title :: A Test file for Inputlisting
2 # Author :: Ankit Deshmukh
3 # DOC   :: 2019-10-29 11:48:47
4 # Remarks ::
5 # ClearUp and dir -----
6 graphics.off(); rm(list = ls()); cat("\014")
7 setwd("C:/Users/AnkitDeshmukh/Documents")
8 # Load required libraries -----
9 library(tidyverse)}
10 # Main code -----
11 print("Print my code")
12 # End of code -----
```

Figures & Tables + Inkscape

LaTeX like input graphics in vector format (PDF,SVG,and EPS).

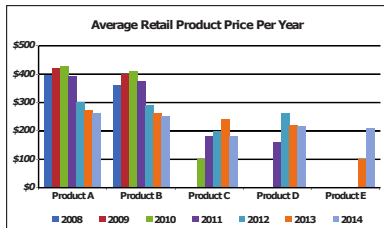


Figure 8.1 Original visual

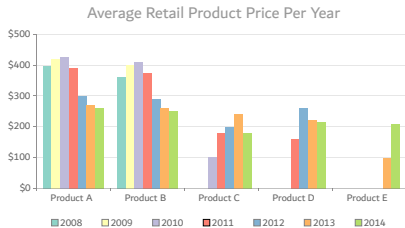


Figure 8.1 Modified visual

Figure 4: *Edit figure/pdf in Inkscape*

To insert tables, use [online tools](#) or Excel2LaTeX - Excel plugin.

Add References and Bibliography

[§] You can cite in-document references with `\ref` command.

References to my in-document Figure `/ref{fig:Setup}`

[§] To site you article references use `\cite` command.

This is my references `\cite{lamport1994latex}`.

This is my references Lamport [1994].

[§] Adding list of reference at the bottom of the files.

```
% Bibliography slides
\begin{frame}[allowframebreaks]{}
\bibliography{Reference}
\bibliographystyle{abbrvnat} % bib style name
```

References

L. Lamport. *LATEX: a document preparation system: user's guide and reference manual*. Addison-wesley, 1994.