LaTeX Tutorial

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1 Introduction

LaTeX is a typesetting program which was originally designed in the early 1990s for books but is often used today in academic settings to write papers, journals, and tutorials. LaTeX allows almost infinite formatting options and can be used for pretty much anything. That being said, the learning curve for LaTeX is high and just getting started can be time consuming. When writing something like a book or a research paper, this trade-off of initial setup is negligible and worth it for the ability to format documents exactly like you want.

1.1 Why Learn LaTeX

At some point either in your professional, academic, or personal life, you will need to format a document in a way that regular "What You See Is What You Get" text editor such as Microsoft Word or Google Docs won't let you do. Alternatively, you might be writing a paper for a journal that requires a specific format.

1.2 Why This Tutorial

This tutorial will go over the fundamentals of LaTeX and get you situated to write a basic document. It is by no means a complete tutorial and can be used as a 'quick reference' guide anytime that you find yourself writing a document in LaTeX .

1.3 Getting Started

Getting started with LaTeX can be a difficult. There are options like Overleaf that allow you to edit and compile LaTeX directly from your browser. Personally, I do not like these sorts of solutions as they paywall key features such as version control and all your work is dependent on their servers being online. Instead, I strongly suggest downloading LaTeX locally on your computer and creating a Makefile to compile your files into a PDF. A simple installation script and Makefile template on how to do this can be found here but are outside the scope of this tutorial. A text editor such as vim or nano can be combined with LaTeX allowing easier navigation of large files.

2 Creating a .tex file

There are a lot of filetypes when compiling a LaTeX document. However, there are only 2 filetypes that we have to concern ourselves with when writing basic documents: .tex (LaTeX Source Document) and .cls (LaTeX Document Class). You can think of the .cls file like a template file. For example this file is being compiled with the IEEEtran.cls file. This tutorial will focus on editing .tex files where all of the content and structure of a document is defined.

2.1 Environments

Environments in LaTeX are used to format sections of text in specific ways. An environment called `xyz` would start with `\begin{xyz}` and end in `\end{xyz}` with the special environment rules applying to all the text inbetween those tags. There are lots of built-in environments such as `center` which centers all the text or `verbatim` which ignores any reserved characters and prints the texts in monospace font.

All documents start and end in the document environment.

2.2 Reserved Characters

There are some reserved characters in LaTeX that introduces

3 Sections

Creating sections and subsections in LaTeX is super easy and

4 Additional Features

4.1 Figures

Fig. 1. Sammy the Slug

4.2 Label, Cite, and Ref Commands

You will need to be able to define and explain how to use the following commands:

```
\label{fig_slug}
```

as it appears in the figure environment

```
\cite{IEEEhowto:kopka}
```

appears like: **[?]**

```
\ref{fig_slug}
```

appears like: **??**

4.3 Tables

An example of a floating table.

TABLE 1
An Example of a Table

One	Two
Three	Four

5 Conclusion

Conclusion goes here.

Appendix A
Appendix Title

Appendix one text goes here.

Appendix B

Appendix two text goes here.

Acknowledgements

The author would like to thank...

Reminder: you will need to explain how to include an Acknowledgement Section and then include your own Acknowledgement Section at the end of your own tutorial. Same applies for the References/Bibliography.

References

[1] H. Kopka and P. W. Daly, *A Guide to LaTeX*, 3rd ed. Harlow, England: Addison-Wesley, 1999.

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Gerald Moulds Biography text here.

John Doe Biography text here.

Jane Doe Biography text here.