

Typesetting Technical Reports and Conference Papers Using LaTeX

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Abstract

This technical report explains how to produce a technical report using LaTeX.

Abstracts for technical publications should have the following characteristics.

Limit the length of the abstract: (1) 100–150 words for IEEE journal articles, conference papers, or a master’s thesis, (2) less than 350 words for a doctoral dissertation.

Write a “report in miniature”, which means it has a self-contained message that does not expect the reader to look at the paper. Answer the questions, “What?”, “How?”, and “Why?”

Use no citations, footnotes, or equations in the abstract. Use no superlatives; you are not selling anything. Do not use acronyms and mathematical symbols unless absolutely necessary.

Keywords: *typesetting, LaTeX*

1. Introduction

The goal of this technical report is to facilitate producing technical report in an acceptable form using the LaTeX typesetting system.

The Office of Graduate Studies publishes the *Standards for Preparing Theses and Dissertations* [2], which we refer to as the *Standards*. The document, *Guidelines for Dissertations, Theses, and Project Reports in the Department of Computer Science and Engineering: Typesetting using LaTeX* by Edward Allen explains tools for producing a thesis that conforms to the department’s format requirements. It also gives a variety of tips on using LaTeX. A dictionary [3] will help you in your writing. *The Chicago*

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Manual of Style [1] can answer many obscure detailed questions about formatting style.

2. What is LaTeX?

LaTeX is a typesetting system that is used primarily in academia. LaTeX files are compatible with many academic publishers’ typesetting systems. For example, LaTeX files are one of the preferred form for final submission of articles to the various *IEEE Transactions*.

LaTeX has very strong capabilities for typesetting mathematics beautifully and for managing bibliographies. Even though, its user interface is not “friendly” compared to commercial word processors, suitable style files obviate concern for detailed formatting issues. Consequently, some will find it attractive for typesetting a technical report, etc. This document is itself an example, so its source files can be used as the starting point for your document.

3. Getting Started

This document explains features of various template files (*.tex) and the document class file (msu*.cls) that make preparing your document much easier. The overall process has the following steps.

1. Create a separate directory for your document.
2. Download the template files to your directory from the Web site.
3. Test whether you can correctly typeset this document to verify that your LaTeX installation is ready.
4. Copy the main file (examplereport.tex) to your own filename.
5. Prepare your bibliography files (*.bib).
6. Edit your front matter file (frontmatter.tex)

7. Write the body of your document in one or more separate files (e.g., `sections.tex`). Similarly, write any appendices in separate files (e.g., `appendix.tex`)
8. Write the abstract in a separate file (`abstract.tex`).
9. Edit the acknowledgments in a separate file (`ack.tex`).
10. Typeset your document, resulting in a postscript file (`*.ps`).

Note that \LaTeX and necessary style files `*.cls`, and `msucs.bst` are installed on the Computer Science and Engineering Department's Unix system, so you do not need a personal copy to run \LaTeX there. If you are running \LaTeX on your own computer, copy `msuconf.cls`, `msureport.cls`, `msutermpaper.cls`, `msuthesis.cls`, and `msucs.bst` to your directory also. Use the following commands to typeset this document.

```
latex exemplereport
bibtex exemplereport
latex exemplereport
latex exemplereport
dvips exemplereport
```

The repeated `latex` commands are necessary to resolve cross-references. You must check for error messages at each step by examining `exemplereport.log`. Some warnings about unresolved references are expected on the earlier runs of `latex`. Each `latex` command outputs a log file (`exemplereport.log`) which may have error messages. `bibtex` also outputs a log file (`exemplereport.blg`) which may have error messages. Error messages from `dvips` will be on your screen. You should carefully examine a printed copy of the final output file, `exemplereport.ps`.

A bibliography file (`*.bib`) is a structured ASCII file that is a data base shared by all your papers and your thesis. \LaTeX automatically creates a References list for your document, selecting only those entries in the `*.bib` file that are cited. This is a major advantage of \LaTeX .

On the Computer Science and Engineering Department's Unix system, your BibTeX files (`*.bib`) should be in the same directory as your document. On your own machine, they can be in an appropriate \LaTeX directory.

Copy `exemplereport.tex` to your own file name, for example, `report.tex`. Edit the frontmatter information in `frontmatter.tex`.

- Edit the name of your `*.bib` files in the definition of `\biblist`.

- You may renew various commands that define the names of your abstract file, acknowledgments file, appendix file, and sections file.
- You may renew the definition of the `\appendixname` to accommodate multiple appendices if necessary. If you have no appendix, then delete the file `appendix.tex`.

Your main file (e.g. `report.tex`) uses all the other components of your paper. Use \LaTeX , BibTeX, and `dvips` to produce a postscript version of your paper. Use the following commands.

```
latex report
bibtex report
latex report
latex report
dvips report
```

See your \LaTeX book for details. The result is a postscript file, `report.ps`.

`ghostview` is available under Unix and Windows to view postscript files on screen. Under Windows, `ghostview` enables one to print postscript files. Under Unix, you can send a postscript file to a postscript printer using the `lpr` command.

Under Windows, Adobe Acrobat's Distiller program can convert a postscript file (`*.ps`) into a `*.pdf` file.

For further information see the *Guidelines* by Allen.

4. Conclusions

Your concluding section synthesizes the message of your paper. It may restate key points from the Introduction and other sections.

At the end of the Conclusions section, research papers typically discuss possible future work related to the topic.

Acknowledgments

At a minimum, you should acknowledge financial support, permission to use copyrighted materials, trademarks and service marks, and personal assistance. The following is a hypothetical example; edit it with your information, and add your personal feelings.

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References

- [1] *The Chicago Manual of Style*, 13th edition, University of Chicago Press, Chicago, 1982.
- [2] Office of Graduate Studies, *Standards for Preparing Theses and Dissertations*, 5th edition, Mississippi State University, Mississippi State, Mississippi, 2007.
- [3] *Webster's New Collegiate Dictionary*, 10th edition, Merriam-Webster, Springfield, Massachusetts, 1994.

Appendix

An Example

Redefine `\appendixname` to be either “Appendix” if you have only one appendix section, or “Appendices” if you have more than one. (In a thesis, it is not necessary to redefine `\appendixname`.)

Multiple appendices are written like the body of the paper using `\Section`. \LaTeX numbers them with capital letters.

If there is only one appendix, then use `\oneappendix` instead of `\Section` so it is not designated by A. For example, the title of this appendix does not have a number A.