

UNIVERSITY OF WATERLOO
Faculty of Engineering

A L^AT_EX DOCUMENT CLASS FOR WORK REPORTS

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Burbank, CA

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1B Computer Engineering
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Version 1.0

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Dr. A. Vanelli, Chair
E&CE Department,
University of Waterloo,
Waterloo, ON N2L 3G1

Dear Dr. A. Vanelli:

Re: Submission of my work term report.

I have just completed my first work term, following my 1B term. Please find enclosed my first work term report entitled: “A \LaTeX document class for work reports” for the Software Widgets group at Acme Incorporated. My departmental manager was Rube Goldberg and our group was primarily involved with writing and testing of labour-saving software.

This report focuses on the usage of the unofficial E&CE work report documentation class, `uw-ece-workreport.cls`, and provides a sample document on which to base your own report. It is written for fellow classmates who have some working knowledge of \LaTeX and \TeX .

I have had no direct assistance from anyone. I do wish to thank Leslie Lamport and Donald E. Knuth for inventing such marvellous typesetting tools.

I hereby confirm that I have received no further help other than what is mentioned above in writing this report. I also confirm that this report has not been previously submitted for academic credit at this or any other academic institution.

Yours sincerely,

J. Random Hacker, 01234567

Contributions

I worked in the Software Widgets group, which consisted of 2 animators, 6 cartoon characters, 3 software developers and 2 testers. We were to design labour-saving computerised devices, for internal consumption. Being self-sufficient, we were involved in the research, design, implementation and testing for all our software widgets.

Over the course of four months, we created three of these widgets. I was responsible for writing software. I looked at the design specifications, and wrote test-suites and software to meet them. The testers would add to my rudimentary test suites, and report errors to me whenever a test failed.

From the experiences in creating documentation for my programs, I acquired expertise in \LaTeX , which I found to be an excellent typesetting system. Armed with this knowledge, I was able to use this wonderful document class which eases the typesetting of work reports, and follows the E&CE guidelines [1] and the Co-op student manual [2].

From this sample work report, anyone can create a report that looks good, and is easy to read. Acme will benefit, because they now have a document class to provide to future co-op students, thereby reducing the time they spend on formatting reports.

Summary

This document describes the use of the `uw-ece-workreport.cls` document class in creating work reports. Written in the \LaTeX macro language, this document class is designed to typeset documents that conform to the University of Waterloo, Electrical and Computer Engineering work report guidelines [1], in addition to the University of Waterloo co-op student manual [2].

I also argue the advantages of using this document class over other more traditional ways of generating a report. I hope to convince the reader that using this technology is superior to writing the document in a WYSIWYG word processor.

Conclusions

Using this document class will allow you to reap the advantages of \LaTeX , \TeX and many years of labour donated by people much smarter than you or I. It is obvious that we should use their work to make ours that much better. For even the great Sir Issac Newton could only achieve what he did because he “stood on the shoulders of giants.”

Recommendations

Learn L^AT_EX and then use this document class to prepare your work reports. You will get nice, beautiful documents without a lot of fuss.

Table of Contents

Contributions	iii
Summary	iv
Conclusions	v
Recommendations	vi
Table of Contents	vii
1 Introduction	1
2 Advantages	2
3 Learning L ^A T _E X	3
4 Source	4
5 To do	5
A Bugs	6
B Colophon	7
C GNU General Public License	8
References	15

List of Figures

List of Tables

1 Introduction

This pretend report, written by an imaginary student, exists because I got sick of writing a report, and having to check my document over and over again for simple formatting errors. Now, I thought that a work report is useful due to its content; not because my Table of Contents did not have dot leading for page numbers. So, I turned to L^AT_EX as my saviour.

I, Simon Law, implemented my first work report in L^AT_EX in early December. Unfortunately, I was feeling my way around and didn't implement my scheme very well. After learning how to create a document class, I have created this document class, which I now offer to you.

If you find a problem with this document class, or have suggestions to offer; please drop me a note. As well, patches and fixes are always welcome. You can contact me at sfllaw@engmail.uwaterloo.ca.

2 Advantages

Using this class has a number of great advantages:

- You no longer have to worry about missing information. If you fill in all the information at the top of this document, your title page and all the important fields in your Letter of Submittal will be properly filled.
- Your references will be all correct. Your Table of Contents, List of Figure and List of Tables will be automatically generated. Citations and references will be done properly, and your bibliography will be automatically formatted in IEEE style.
- You can cross-reference other sections trivially, (*e.g.* One can find the introduction at §1, p.1).
- You no longer have to worry if your document looks good. You can ask the computer to worry about formatting and styles, without having to mess around with differing fonts (roman, **sans-serif**, **fixed**) or with differing styles (normal, **bold**, *italics*, underlined, *slanted*, SMALL-CAPS). You can concentrate on what you write, and are assured that your text will look great.
- Since the computer formats things for you, you can re-arrange sections trivially. Or you can define new styles to make global changes across the entire document.
- Math output is by far superior in L^AT_EX. You can write things like $\sum_{i=1}^{\infty} \frac{1}{x}$ or:

$$\int_0^{\infty} \delta(x) dx = u(x) + C$$

3 Learning L^AT_EX

Unfortunately, using L^AT_EX is not quite as intuitive as using a word processor. However, if you invest the time in learning it, the payoffs can be great. Unlike a word processor, L^AT_EX is written like a markup language, which means you use macros¹ to tell T_EX how to typeset your document. This means that you can edit your documents in any old text editor, be it as crude as Microsoft Notepad, or something more heavy-duty like vi² [4] or Emacs [5].

There are some good on-line books if you wish to learn L^AT_EX without having to shell out any hard earned money³. The standard reference is *A not so short introduction to L^AT_EX 2_ε* [6]. As well, *A simplified introduction to L^AT_EX* [7] is also an excellent reference.

The fundamental resource for learning L^AT_EX has to be *L^AT_EX: a document preparation system* [8] which is written by Leslie Lamport, the creator of L^AT_EX. Also of note is *The L^AT_EX companion* which is the next step up, if you want to become a power user.

How does one get a copy of L^AT_EX? On Unix systems, the t_EX [9] distribution is popular. For Windows users, M_IK_T_EX [10] is the distribution of choice. Follow each packages installation instructions for best results⁴.

You will probably want a PostScript interpreter, to create PDFs or to send PostScript output files to the printer. You can use Adobe Distiller, which you can purchase from Adobe Systems Inc.; or you could download a copy of Ghostscript⁵ [11].

¹The SGML/HTML/XML world calls these tags.

²Try Vim [3] which is Vi Improved.

³You are earning money during this work term, right?

⁴On a Debian GNU/Linux system, invoke `aptitude install tetex-bin tetex-extra`

⁵Again, on Debian GNU/Linux, run `aptitude install gs`

4 Source

This document, and the documents it uses are available under the GNU General Public License (GPL), reproduced in Appendix C. Note that you do not need to accept the GNU GPL to use this document, or to use the document class. I highly recommend that you read the GPL so you understand your rights and privledges.

You can find the most recent version of these documents in a tarball at: <http://www.eng.uwaterloo.ca/~sflaw/programs/uw-ece-workreport/>.

5 To do

There are still some things I want to do, to improve this example document:

1. Demonstrate the use of GlossT_EX to create glossaries.
2. Demonstrate the creation of an index.
3. Demonstrate the picture environment.
4. Make a table.
5. Make a figure and put a picture in it.

Examples that illustrate this usage are most definitely welcome. Please provide a patch against this document.

A Bugs

Currently, there are some known problems with this document class.

- It is not packaged using **docstrip**, so we do not have a literate program.
- The distribution is **tarred** up, when it should be packaged in one **docstrip** archive.
- The system does not install itself according to the T_EX Directory Structure standard.
- The system does not install itself at all.
- It is not officially supported or acknowledged by the E&CE department.
- Not all users have converted to using a typesetting language, and insist on using word processors.
- It does not bring world peace.

Fixes for these bugs are most certainly welcome. Please provide a patch against the document class document.

B Colophon

This sample document was written by Simon Law, a third-year Computer Engineering student at the University of Waterloo, in Waterloo, ON, CA. When he is not programming, he can be found reading or sleeping; both of which are his favourite activities.⁶

This document class, and the surrounding documentation is implemented using the L^AT_EX 2_ε macro package which is built on the T_EX typesetting system. The typeface used in typesetting is Computer Modern.

The entire system was written in the Vim text editor. The operating system used was Debian GNU/Linux which ran on an IBM ThinkPad A20m. This stalwart companion allowed me to work on this report periodically, even during my “off” time up at the cottage.

⁶OK, so I don’t have a life yet. I’m working on it.

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Version 2, June 1991

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