

My Title

a L^AT_EX Sampler for CMPT880

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Abstract

An abstract should be written last, comprising four sentences: the thesis statement (appearing near the end of the introduction), a summary statement describing the experimental design (appearing early in the experiment section), a summary statement conveying the experimental results and their interpretation (appearing near the end of the results section), and a summary of future work enabled by the paper (appearing in the summary section). I recommend simply copying the appropriate sentences, then polishing their edges to make them flow smoothly as a coherent summary of the paper. Indeed. Yes.

This is the introductory section. It should introduce a *research question*¹, and convey its importance: the *so what* I stress in lecture. It then focuses on a specific *research problem* related to the research question. It takes a stand by ending with a *thesis statement* describing a research result which resolves the research question.

Table 1: Measurements

Item		Description	Points
point	(<i>pt</i>)	/172.27 inches	0
pica	(<i>pc</i>)	typewriter measure	12.0
em		width of a letter <i>m</i>	varies with font
en		width of a letter <i>n</i>	varies with font
ex		height of a letter <i>x</i>	varies with font
inch	(<i>in</i>)	English measure	72.27

Some papers might include a roadmap of the paper, indicating that the next section is background (including previous, but not comparable, experiments), followed by our experiment design section. Those are followed by a series of results (such as tables like Table 1) and interpretations, which are compared

¹See the course textbook[?] if you are not intimately familiar with this term.

and contrasted with others' results. Last, a summary and future work might be presented.

1 This is a Section

This is a paragraph. It introduces a new technical word, *frob*, which means to manipulate. Note that I use semantic (i.e. meaning-based) markup, not syntactic (i.e. format-based) markup.

This is another paragraph, with lots of text. It continues, with lots of text. It continues, with lots of text. It continues, with lots of text. It continues, with lots of text. It continues, with lots of text. It continues, with lots of text. It continues, with lots of text. It continues, with lots of text. It continues, with lots of text. It continues, with lots of text, in Section 1.

Theorem 1 (Monochromaticity of Horses). *All horses are the same color.*

Proof. We proceed by induction over the size of the herd. There are two cases:

1. $n = 1$ A herd of one horse clearly contains horses of precisely one colour.
2. *induct* Assume the induction hypothesis:

Any herd of $n > 1$ horses are all the same colour.

and consider a herd of $n + 1$ horses. Remove one horse, H_1 , leaving a herd of n horses, $\{ H_2, \dots H_{n+1} \}$, which by assumption, are all the same colour, that is,

$$H_2 = \dots = H_n = H_{n+1}$$

Then, because $n > 1$, we still have a herd of $n \geq 1$ horses by removing a different horse, H_{n+1} . Now we have

$$H_1 = H_2 = \dots = H_n$$

So, we have that all $n + 1$ horses are the same colour:

$$H_1 = H_2 = \dots = H_n = H_{n+1}$$

Hence, by the principle of (weak) mathematical induction, all horses are the same colour. □

Corollary 1 (White Horse Theorem). *All horses are white.*

Proof. This is a trivial consequence of the previous theorem, given that George Washington's horse was white. □

There are other surprising consequences of our theorem, including the following, which does not contradict Corollary 1.



Figure 1: Figures are Captioned Below

Corollary 2 (Nonexistence of Horses). *Horses do not exist.*

Proof. Without loss of generality, consider a horse. It has fore legs and two more hind. Since $4 + 2 = 6$, that means it has six legs; clearly a *horse of a different colour* [?]. But this is impossible, by Theorem 1. So, no horse can exist. \square

As a more truthful example, because it involves mathematical equations, consider the following proof that zero equals one, starting with Equation 1.

Theorem 2. $1 = 0$.

Proof. Assume

$$a = b \tag{1}$$

Then,

$$\begin{aligned} a^2 &= ab \\ 2a^2 &= a^2 + ab \\ 2a^2 - 2ab &= a^2 + ab - 2ab \\ 2a(a - b) &= a^2 - ab \\ &= a(a - b) \\ 2a &= a \\ 2 &= 1 \\ 1 &= 0 \end{aligned}$$

\square

There is a figure, namely Figure 1, somewhere. L^AT_EX is notorious for putting them in strange places². There are also tables, as in Table 2; I make them differently, because book tables are more aesthetically pleasing³.

This paragraph cites an interesting article [?]. And then we cite another via authors: ?] says nothing useful.

Now we're done ... except for two programs, defining `main()` in two ways.

²But, L^AT_EX will never place it on a page *before* the one containing the text that immediately preceeds it.

³Also known as *beautiful*.

Table 2: Tables are Captioned Above

Key	Value
<i>this</i>	is a table.
<i>what</i>	contains <code>aligned</code> items.
<i>how</i>	using <code>\includepackage{booktabs}</code> .
<i>where</i>	here, there, everywhere.

```
//this is a silly program
int main(int argc, char* argv[]) {
    write(1, argv[0], 7);
}
```

Figure 2: a Program Directly

The first, Figure 2, inserts source directly in the \LaTeX file, using the `alltt` environment, and the other, Figure 3, uses the `listings` package to read the code from an external source file and place it at a page.

an Unnumbered Section

There are many details about \LaTeX that we can discover as future work, c.f. ?]. For example,

- special settings for two-sided printing;
- struts to adjust individual inter-line spacing;
- the `vfill` and `hspace` commands to add flexible space;
- layout-dependent dimensions, such as `baselineskip` and `textwidth` to adjust for new sizes;
- sophisticated document classes like `memo` for production-quality books;

```
int main(int argc, char *argv[]) {
    write(1, argv[0], 7);
}
```

Figure 3: Program Again, as a Listing

- `xypic` package for most line-drawing needs
- `subfloat` for complex multi-figure and multi-caption figures;
- other font sizes, like Huge, LARGE, Large, large, small, footnotesize, and tiny;
- hundreds of other font faces;
- drop capitals,
- every arrow, operator, and other symbol under the sun,
- packages to typeset chess, go, checkers, and music;
- headers and footers for placing chapter titles and book titles into the margins;
- marginal notes;
- change bars;
- macros to define new environments; and
- colours for backgrounds.

For now, the examples found here suffice.

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- *November 10, 2012: initial release for CMPT880*