FSEM 1111 Computer Security – from a Free Software Perspective

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Scientific Writing

Requirements for Scientific Writing:

- A scientific **result**, ideally based on a new **idea**
- Knowledge of **English**
- Knowledge of conventions for scientific writing
- Knowledge of typesetting software

Structure of Scientific Articles

1. Title and Abstract (≤ 1 page)
2. Introduction
3. Methods
4. Results
5. Discussion
6. Conclusion ($\leq \frac{1}{2}$ page)
7. Citations

Abstract

- What were the objectives?
- Basic approach (how)
- Summary of the results
- Significance of the results

Introduction

- Motivation (Why should the reader care?)
- Context (Provide background necessary to understand the work)
- Objectives, hypotheses, lead into methods: key idea(s)

Methods

- What would someone else need to replicate your results?
- You want others to come to the same conclusion!

Results

- What did you find?
- This is the place for numbers, tables, figures, graphs.
- Make sure to describe how each value was obtained with sufficient specifics to allow the reader to reproduce!

Discussion

- Interpretation of the results
- Contrast with previous research
- Suggest future directions for research
- Note problems with the methods and results (if any)

Conclusion

- Synthesize the results of your paper
- Make it clear what are the important results
- Do not replicate what has been said earlier

References

- Different venues and disciplines have slightly different conventions
- You may not always know the venue before you start writing

$\Rightarrow$ Abstraction!

bibTEX

- Bibliography management system for LATEX
- Supports customizable bibliography styles (`.bst`)
- Supports text-based bibliography database (`.bib`)
- Trivial to learn!

`.bib` files

```
@PhdThesis{ grothoff2006dissertation,
  author = {Christian Grothoff},
  title  = {Expressive Type Systems for
            Object-Oriented Languages},
  school = {University of California, Los Angeles},
  year   = {2006},
}
```

.bib files

```
@inproceedings{ gap2003bennett,
  author    = "Krista Bennett and Christian Grothoff",
  title     = "{gap - Practical Anonymous Networking}",
  booktitle = "Designing Privacy Enhancing Technologies",
  publisher = "Springer-Verlag",
  pages     = "141--160",
  url       = "http://gnunet.org/download/aff.ps",
  year      = "2003"
}
```

.bib files

```
@TechReport{grothoff2004rgt,
  author =       {Christian Grothoff},
  title =        {Recycling Garbage Theory},
  institution =  {Purdue University},
  year =         {2004},
  number =       {CSD TR\# 04-012},
  note =         {http://grothoff.org/christian/rgt.ps},
}
```

Citation

LaTeX:

The academic honesty policy included severe punishments for violations of the honor code~\cite{du2007policy}.

Output:

The academic honesty policy included severe punishments for violations of the honor code [1].

Alternative Citation

LaTeX:

```
The academic honesty policy included severe punishments for violations of the honor code~\cite[DU 2007]{du2007policy}.
```

Output:

The academic honesty policy included severe punishments for violations of the honor code [1, DU 2007].

Generating the Bibliography

- \bibliographystyle{plain} – `.bst` will be added
- \bibliography{databasefile} – `.bib` will be added

References

[1] University of Denver. The university of denver honor code. http://www.du.edu/ccs/honorcode.html, 2007.

Literature Search

Why do we need references?

- All text must be justified, either based on previous research or your own results!
- Scientific texts must make it clear what the information is based on.
- The cited sources must also be scientific.

Sources

- Primary sources: articles in conferences and journals, technical reports, theses
- Secondary sources (avoid): textbooks, encyclopedias, glossaries
- Last resort: transient information (webpages)

Make sure that you read what you cite.

Reading

- Reading is an iterative process
- First pass: quickly see if the article is useful
- Second pass: What is the main contribution? What is important for you?
- Third pass (and beyond): Try to understand everything, be critical!

How to find Sources?

- http://scholar.google.com/
- http://dl.acm.org/
- http://www.citeseer.org/
- http://dblp.uni-trier.de/

The Document

- The main document you write must have the extension `.tex`
- Just like the bibliography, the document must be in ASCII
- The document must declare its type on the first line
- The basic template for LaTeX is on the next page

A Minimal Template

```
\documentclass[11pt]{article}
\usepackage[ansinew]{inputenc}
\begin{document}
Text goes here!
\end{document}
```

Text in LaTeX

The percent-sign % starts a comment – the rest of the line is ignored. An empty line starts a new paragraph.

The \ is used for LaTeX commands. Use the \noindent to start a new paragraph without indentation.

Example

```
\noindent
The percent-sign \% starts a comment -- the rest
of the line is ignored.  An empty line starts a
new paragraph.

The $\backslash$ is used for \LaTeX{} commands.
Use the $\backslash$noindent to start a new
paragraph without indentation.
```

Compilation

- $ latex doc.tex $\Rightarrow$ doc.dvi
- $ bibtex doc $\Rightarrow$ doc.bbl
- $ latex doc.tex $\Rightarrow$ doc.dvi
- $ dvips doc.dvi -o documentname.ps $\Rightarrow$ doc.ps
- $ pdflatex doc.tex $\Rightarrow$ doc.pdf

`kile` can do most of this for you!

Compile Error!

If you make a syntax error, you might get a message like this:

```
! Undefined control sequence.
l.296 \foo

?
```

\foo is not a valid LaTeX command, but `latex` found it on line 296. Press CTRL-D or `x` to abort compilation.

Viewing and Printing

- $ xdvi doc.dvi
- $ xpdf doc.pdf
- $ acroread doc.pdf
- $ lpr -Pprintername doc.ps
- $ lpstat -a – lists printer names!

Document Structure

- \chapter – for books only!
- \section
- \subsection
- \subsubsection

Cross-references

- You can put a \label{a:label} into any chapter, section, table, figure or enumerated list
- You can then refer to the label using \ref{a:label}
- You will need to run LaTeX twice – the first run will pick up the labels, the second one can then use them
- LaTeX will warn you if you use the same label twice or refer to an undefined label

Questions

?

Exercise

Start writing your CV in LaTeX. Begin with a skeleton document containing the various sections that you envision to have (Personal information, Objective(s), Biography, Education, etc.). Then start writing a paragraph with a brief biography.

Make sure to compile your document frequently so that you spot problems early on! Bring a printout of your existing CV (if you have one) for next class!