CompSci 725
A Process for Writing Reports

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Woodford's 25 Steps for Report Writing [1] (reduced to 18)

1. Decide on a topic
2. Write the title & synopsis
3. Review requirements
4. Decide on the basic form of the article
5. …

[1] F. Peter Woodford, *Scientific Writing for Graduate Students*. New York: Rockefeller University Press, 1968.

"Construct the list of references as you go along"

- If you find something interesting, record its bibliographic information carefully!
  - Try Refworks (http://www.library.auckland.ac.nz/refworks/index.htm)
- When we mark your paper, we'll retrieve your sources to see if you're using (and citing) them accurately.
- Recommendation: if you're headed for a Master's degree, take this opportunity to learn LaTeX & bibtex.
  - Non-academics find Word or OpenOffice easier to use.

Citation Style for COMPSCI 725

- We recommend the <u>IEEE style</u>
  - You may use ACM style (<u>www.acm.org/publications/submissions</u>) or **any other well-defined style**, if you prefer.
  - See <u>www.library.auckland.ac.nz/study-skills/referencing</u>.
  - Be consistent: **all your references must be in one style**!
- Your report must include a References section.
  - Number your references (1, 2, 3, ...), or assign acronyms (e.g. CT99 for a paper by Collberg and Thomborson that was published in 1999).
  - Every item in your reference list **must** be cited somewhere in your report.
  - Use the first author's name (or up to two authors' names) when making a citation in your report, for example "Collberg [CT99] proposed …"

Citations to Web-Based Documents

- You should cite the "archival source" of a journal or conference article.
  - You should not rely on author's preprints or on versions that someone has webposted – because these may differ greatly from the archival version.
  - Cite and access with a DOI, if possible! URLs are unstable.
- If you are relying on a technical report or white paper that you find on the web, your citation should include the name of the publisher, the URL, and your date of accession. Example from the IEEE style manual:

  [1] Apple Inc., Palo Alto, CA, USA, "Apple iPhone," Available: http://apple.com/iphone/. Accessed: Feb. 26, 2013.
  - Warning: Web pages have a very short half-life!   See https://web.archive.org/web/*/http://apple.com/iphone/

A Case Study in Versioning

- An author's self-published version of a conference article:
  - http://sumanj.info/docs/suman_pwdmgr.pdf
  - 16 pp., 46 references, last modified "6/09/2014 11:49:09pm"
- The archival version of this article:
  - https://www.usenix.org/system/files/conference/usenixsecurity14/sec14-paper-silver.pdf, 17 pp., 45 references, last modified "24/07/2014 2:52:46pm"
- Be sure to clarify which version you are using, as there may be important corrections in the later version.
  - As at 2018-08-14, Google Scholar lists "about 13" versions: https://scholar.google.co.nz/scholar?cluster=15931648403141673277&hl=en&as_sdt=0,5

Even more confusing…

- As at 14 Aug 2018, Google Scholar reports <u>937 citations to 12 versions</u> of Fred Cohen's ground-breaking work on <u>computer viruses</u>:
  - Four versions are his 1987 journal article, <u>DOI 10.1016/0167-4048(87)90122-2</u>, 14 pp.
  - One of these versions appeared in a CRC reference book (<u>http://dl.acm.org/citation.cfm?id=164474</u>)
- On August 2015, Google Scholar had reported 1042 citations to "about 23" versions.
  - Some of these citations were to his 1984 conference article (<u>http://dl.acm.org/citation.cfm?id=21059</u>).
  - Other citations were to his 1986 PhD dissertation, either
    - a self-published version <u>http://all.net/books/Dissertation.pdf</u>, or
    - the deposited version (ProQuest ID 752264021)

2. Topic, Title, Synopsis

- A topic is a "subject that people think, write or talk about." [Thorndike-Barnhard Dictionary, 1952].
  - Woodford thinks a scientific topic should be in question-answer format: "What question [have you] asked, and what are [your] conclusions?"
- Have you chosen a topic for your term paper?
  - **You're falling behind…**
- A title should be "… an effective guide for scientists rapidly scanning lists of titles for information relevant to their interests." (Woodford's Step 22, p. 104)
- A synopsis is an explanation of your "projected paper in definite and concise terms, as though to a friend who asks [you] at some chilly street corner what [you] have been up to recently." (Woodford's Step 5, p. 15)
- Writing a draft title and synopsis at an early stage will "… clarify [your] aims and intentions."

Abstracts vs. Synopses

- An abstract "… must stand alone and be intelligible without reference to the text." (Woodford's Step 22, p. 105.)
- Your final title and abstract must be written "… from the reader's point of view."
  - What is the audience for your draft title and synopsis?
- A synopsis is written in a less formal style than an abstract.
  - The audience for a synopsis is immediate and intimate.
  - The audience for an abstract is archival and formal.
- I'd strongly encourage you to finalise your title, synopsis and references before the end of this week!
  - I will endeavour to respond within two weeks of your submission.

Sample Titles & Abstracts

- The next two slides contain titles & abstracts from term papers written by students in a prior offering of CompSci 725.

  – What question did they ask, and what are their conclusions?

- Is it likely that

  – Each title is "… a fitting and worthy representative of the [term paper's] contents"?

  – Each abstract "within the space allowed, … convey[s] the purpose, general experimental design, conclusions, and if possible, significance" of the student's term paper?

- Note: term papers don't really have an "experimental design." Instead you will use library research, rather than scientific experimentation, to discover "an answer" to your topic question.

Software-Based Interlocks for Software Tamper-Detection

By Andrew Paxie

Software-based interlocks may be used to improve the tamper-detection of software. Interlocks ensure that undesirable conditions are avoided or that events are correctly sequenced. Three example interlocks – batons, Aucsmith's integrity verification protocol, and Kerberos authentication – illustrate the concept in relation to software tamper-detection.

Question? Conclusions?

Slide Date: 18 October 2000

The Linux 2.4.0 Capability Security System

Colin Coghill, October 2000

The UNIX operating system "setuid" security feature is inadequate for modern demands. I provide some background to this claim, then present the results of my investigation into a solution implemented in the latest development version (2.4.0-test9) of the Linux operating system. I finish with some some ideas for future work.

Question? Conclusions?

Starting to Write your Term Paper: Review of Steps 1 to 4

1. Decide on a topic (= Woodford's Step 2)
2. Write the title & synopsis:
   - Woodford's Step 5, just discussed
3. Review requirements
   - This is a combination of Woodford's Step 6 and 7
   - (See http://www.cs.auckland.ac.nz/courses/compsci725s2c/lectures/reports1.pptx ;-)
4. Decide on the basic form of your paper
   - (This is Woodford's Step 8.)

The "Murder Mystery"

- In a well-written murder mystery novel, the reader is in suspense until the last page.

- "In suspense" means held in doubt and expectation.

- **Don't** write a technical report that keeps your reader in suspense until the last page.

  – Who wants to read a mysterious report?

  – When you write as a technical professional, your reader "needs first and foremost to understand the structure or path of your argument." [A. Eisenberg, *Writing Well for the Technical Professions*, Harper & Row, 1989. Recommended reading: pp. 39-40 and 46-51]

Comparison and Contrast Format

- The topic sentence of a "comparison and contrast" paper, section or paragraph should set forth alternatives for doing something (e.g. growing crystals).

- Each section of a comparison and contrast paper should discuss the similarities (comparisons) and differences (contrasts) in the alternative methods.

- The first and last sections should give an overview.

- The middle sections should each discuss different points of comparison or contrast.

- For example, the section on "Preparing a Saturated Solution" contrasts the two methods. Another section, on "Preparing a Seed Crystal" discusses a similarity.

Problem – Solution Format

- First, state the "problem" – what is the question being answered by your paper?

- Next, outline a "solution" – how the problem can be solved.

- Give details of your solution.

- Give applications or examples.

- End your paper with a critical & appreciative analysis. Is the problem adequately "solved" in all contexts? What "similar questions" might be answered by "similar answers"?

Main Idea – Significance Format

- First, explain "what" – your central idea.

- Next, explain "so what" – why should anyone care about your idea?

- Now that you have the readers' interest, you can discuss the details. Define your terms carefully, and explain their relationships in a way that illuminates your idea.

Mix and Match!

- Don't be afraid to combine patterns.

- Problem-solution + compare-contrast =
  a paper that discusses two (or more)
  solutions to a problem, and advises
  the reader on which solution to adopt.

- Main idea-significance + problem-solution =
  a paper that solves a significant problem.

Woodford's Recommendation: The Scientific Article

1. Introduction
2. Materials and Methods
3. Results
4. Discussion

This is suitable for any experimental study.

Question: Which of Eisenberg's formats is the "best match" to Woodward's form?