

SE 3I03 Fall 2004

02 Writing Technical Documents

Instructor: W. M. Farmer

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Differences between Oral and Written

- The listeners of an oral presentation are a captured audience unlike the readers of a written presentation
 - The speaker controls the pace and order of a talk
 - The reader can choose how to read a paper
- Oral presentations use:
 - Language as it is spoken
 - Emotion and voice modulation to convey meaning
 - A wide range of audio and visual aids
- Written presentations use:
 - Language as it is written
 - Capitalization, punctuation, and italicization to convey meaning
 - A narrow range of visual aids

Kinds of Technical Documents

- System specifications and descriptions
- User manuals
- Executable code
- Feasibility studies
- Proposals
- Research papers
- Position papers
- Letters and memorandums

Components of a Technical Document

- Title page
- Abstract
- Introduction
- MAIN BODY
- Conclusion
- Acknowledgments
- Footnotes, endnotes, etc. (optional)
- Appendices (optional)
- References

Title Page

- Should always contain:
 - Title
 - Authors and their affiliations
 - Date
- How should the authors be ordered?
 - Order of importance
(common in science and engineering)
 - Alphabetical order
(common in computer science and mathematics)
- The relative contributions of the authors can be described in the text

Who Should Author a Paper?

- Choose coauthors who:
 - Are good writers
 - Are the major participants in the work
 - Will bring attention to the paper
- The coauthors should not include anyone who did not participate in the work
 - Examples: Laboratory directors and supervisors
- People who made minor contributions to the paper can be mentioned in an acknowledgments section

Abstract

- Microversion of the paper
- Serves as a gateway to your paper
- Should be very widely understandable
- One short, self-contained paragraph is best
 - Avoid technical jargon
 - Avoid special fonts, symbols, and notation
 - Avoid references

Introduction

- State the purpose of the paper
- Present the background needed for the paper
- Explain what knowledge will be assumed
 - Give references if possible
- Give an overview of the paper

Conclusion

- Different possible forms:
 - Summary
 - Set of conclusions
 - Set of recommendations
 - Pointer to related or future work
- Use the paper as a springboard for the conclusion

Notes

- These are notes that the author, for one reason or another, does not want to include in the main text of the document
- They can appear:
 - At the foot of a page (footnotes)
 - At the end of the document (endnotes)
 - In the margins (margin notes)
 - On a Web site (Web notes)
- The text of the document is linked with the notes using **note markers**
 - They are usually small, raised numbers
 - They may also be special symbols, sequentially ordered
- Notes are sometimes confused with references

References

- References are the **sources** on which the document is based
 - They establish the context for the document
 - The set of references is called the **bibliography**
- The references should appear at the very end of the paper ordered alphabetically by the authors' last names
- The text of the document is linked with the references using **reference markers**
- Three main styles of reference markers:
 - Note markers (not recommended)
 - [3], [3-5,7], [3, pp. 45-79]
 - [Turing 1936], [Church, Turing 1938], [Tur36], [TC38]

What should be Referenced?

- Previous and current related work
- Sources of terminology, notation, etc.
- Sources of quotations, tables, pictures, etc.
- Ideas and conclusions that are not the author's
- Avoid references that are:
 - Not readily accessible (e.g., written in Gaelic)
 - Unpublished manuscripts
 - On Web sites

What should a Reference Contain?

- Each reference, if possible, should contain:
 - Author's name
 - Title of document
 - Publication details
- Web page references should contain:
 - Author's or organization's name
 - Title of the Web page
 - Name of the Web site
 - URL in angle brackets or typewriter font
 - Date information was last updated
 - Date information was accessed
- References should be written in a uniform, concise style

References: Recommendations

- Be careful to reference the work of others
- List references alphabetically
- Avoid inaccessible and unpublished references
- Be careful using Web references
- Examine all the sources you reference

Grammar, Spelling, Capitalization, And Punctuation

- Never release a document that has grammar, spelling, capitalization, or punctuation mistakes
- Use American, British, or Canadian English spelling, but not a mixture
- As much as possible, follow standard conventions for capitalization and punctuation
 - Whether you adopt a style or develop your own style, be conservative and consistent

Text

- Use a standard 11pt or 12pt font for the main text
 - Use other fonts sparingly
 - Use bold face for headings, but avoid using it in the main text
 - Avoid using colored text
- A typical line should contain 10–15 words
- Use italics instead of underlining

Linguistic Distinctions

Be careful when distinguishing between:

- Expressions and their values
 356 (string) vs. 356 (number)
- Expressions with and without syntactic variables
 $x < 2$ (simple expression) vs. $A < 2$ (schema)
- Inputted text and outputted text
 $(17 + 31)$ vs. $\rightarrow 48$
- Unisymbol variables and multisymbol variables
 val (name) vs. val (3 variables)

Writing Approaches

- Incremental development
 - Write pieces of the paper as the work is being done
- Successive refinement
 - First write an outline
 - Then expand the outline into a full paper
- Spiral approach
 - Write sections in the order 1, 2, 1, 2, 3, 1, 2, 3, 4, ...
- Seed approach
 - First write the most important or best understood part of the paper
 - Then expand this part into a full paper

Final Tips

- Find a writing style that works for you
 - Start with a conventional approach
 - Be conservative
- Find a way to make your paper interesting—something people will want to read