Writing a Chapter Summary

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Formal Requirements

Content

Process

Structure

Style

Formatting

Academic Integrity

Additional Resources

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Formal Requirements

7000–14000 characters (ca. 3–5 pages), excluding bibliography.

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German or English.

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Goal of a Summary

Officially: provide a shorter version of the chapter, discussing the chapter's main ideas.

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Officially: provide a shorter version of the chapter, discussing the chapter's main ideas.

Inofficially: convince me that you have thoroughly understood the chapter.

Content of a Summary

Main ideas from the chapter.

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Examples, ideally novel.

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Main ideas from the chapter.

Examples, ideally novel.

Optional: connections to other chapters or other topics from computer science.

Target Audience

The target audience is your fellow students.

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They are familiar with

- chapters Basics, Induction, Lists, Poly, Tactics, Logic, IndProp
- all chapters before yours for which we have a presentation (see Moodle)

In particular, they know any Coq syntax and tactics introduced in these chapters.

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   - big changes: add or remove content, split a section, move a section, move content between sections

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4. get feedback, revise again
5. treat this as an exercise for your BSc. thesis (and all your future emails, chats, technical docs, …)

Peer Feedback

Pair up and give feedback on each other’s drafts.

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Receiving and giving(!) careful feedback helps a lot.

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After the lecture, I’ll make a thread on Zulip where you can pair up.

Teacher Feedback

I offer to give feedback on parts of your drafts.

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I offer to give feedback on parts of your drafts.

Limitations:

- at most 1 page
- reasonable time before deadline
- draft should be somewhat polished

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— Steven Pinker, The Sense of Style

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Symptoms:

- omitting important background information

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Document Level

1. Titlepage
2. Table of Contents
3. Introduction (0.5–1 pages)
4. Background (0.5–1 pages, optional)
5. Main Idea 1
6. ...
7. Main Idea n
8. Conclusion (0.5 pages)
9. Acknowledgements (1 paragraph, optional)
10. Bibliography (does not count towards character limit)

Titlepage

Title, author, title of seminar.

Introduction

Which problems does the chapter address? Short examples help immensely.

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Why are the problems important?

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Why are the problems important?

Briefly: which solutions to these problem does the chapter present?

Background

What background information is necessary for your audience to understand the main ideas?

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What background information is necessary for your audience to understand the main ideas?

Do not include material that

- is not necessary to understand the main ideas
- is better explained at the point where it is used

Main Ideas

Select the most important ideas from the chapter.

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For each idea, describe the problem and the solution in (more) detail.

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Give examples. Your own examples are worth much more than examples taken from the chapter.

Optionally, draw connections to other chapters or problems from computer science.

Conclusion

Very briefly summarise the main ideas again.

Acknowledgements

Briefly acknowledge everyone who substantially helped you.

If you used AI tools, briefly describe how and for what.

Paragraph Topics

Each paragraph should have one topic.

The first few sentences of a paragraph announce the topic. The remainder of the paragraph expands on the topic.

The topic sentences alone should provide a decent outline of the section.

Paragraph Topics: Example

Austria-Hungary […] had by contrast been self-sufficient in the major foodstuffs before 1914. The fact that wartime deprivation was greater than in Germany […] thus requires some explanation. Three factors were responsible for negating the initial Habsburg advantage. First, the foundations of the disaster were laid already in 1914, with the Russian invasion of Galicia and Bukovina.
[…]
Second, agriculture in the rest of the Empire suffered similar problems to those experienced by farmers in Germany […].
[…]
Hungary's agriculture was less badly damaged […].
[…]
The third factor […] was the lack of solidarity between the two halves of the Empire.[1]

[1] Alexander Watson, Ring of Steel

Flow

Each sentence in a paragraph should have a logical connection to the previous sentence.

[2] Example from Benjamin C. Pierce and Rajeev Alur, Writing and Speaking with Style

Flow

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Bad:

There are a number of efficient sorting algorithms. Recursion is easy to reason about, so merge sort is particularly straightforward to get right.[2]

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There are a number of efficient sorting algorithms. Recursion is easy to reason about, so merge sort is particularly straightforward to get right.[2]

Better:

There are a number of efficient sorting algorithms. Of these, merge sort is particularly straightforward to get right, since recursion is easy to reason about.

[2] Example from Benjamin C. Pierce and Rajeev Alur, Writing and Speaking with Style

Topic and Stress

Start of a sentence: *topic position*. Announces the topic of the sentence; often connects to previous material.

End of a sentence: *stress position*. Contains the most important new information.

Topic and Stress: Example

Second, agriculture in the rest of the Empire suffered similar problems to those experienced by farmers in Germany, not only making it impossible to replace Galician production, but actually resulting in an **even larger food deficit**. There was the same shortage of animal and human labour: the Habsburg army took 814,000 horses, about a fifth of all those in the country, **on mobilization**. **Millions of men were conscripted**. The dung and fertilizer needed to regenerate the soil were also in **short supply**. Statistics for food production in the region that at the war's end became the Austrian Republic illustrate how severely war affected **even land untouched by military action** [...].[3]

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Connections: Example

Second, agriculture in the rest of the Empire suffered **similar** problems to those experienced by farmers in Germany, not only making it impossible to replace Galician production, but actually resulting in an **even larger** food deficit. There was **the same** shortage of animal and human labour: the Habsburg army took 814,000 horses, about a fifth of all those in the country, on mobilization. Millions of men were conscripted. The dung and fertilizer needed to regenerate the soil were **also** in short supply. Statistics for food production in the region that at the war's end became the Austrian Republic illustrate how severely war affected even land untouched by military action [...].

Other connectives: however, nonetheless, further, in contrast, ...

Sentence Length

Prefer short sentences.

Use some longer sentences for variety.

Dependent Clauses

Avoid long or nested dependent clauses (*Nebensätze*).

[4] Example from Pierce and Alur.

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The observation that Dijkstra's algorithm might be implemented using a priority queue is of note to computer scientists because it represents a significant opportunity to improve performance.[4]

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Dependent Clauses

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The observation that Dijkstra's algorithm might be implemented using a priority queue is of note to computer scientists because it represents a significant opportunity to improve performance.[4]

Better:

Dijkstra's algorithm might be implemented using a priority queue. This is noteworthy to computer scientists because it represents a significant opportunity to improve performance.

[4] Example from Pierce and Alur.

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Even better:

Dijkstra's algorithm can be implemented with a priority queue. This greatly improves its performance.

[4] Example from Pierce and Alur.

Concision

Omit needless words.
— William Strunck Jr.

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Bad:

A moderate amount of repetition is fine.

Better:

Some repetition is fine.

Concision

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Bad:

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Better:

Some repetition is fine.

Bad:

For a summary, it’s fine if the reference list contains exactly one work.

Better:

The bibliography of a summary may well have only one entry.

Active and Passive

Prefer the active voice over the passive voice.

[5] Example from Pierce and Alur.

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Bad:

There is opposition among many voters to nuclear power plants based on X.[5]

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Bad:

There is opposition among many voters to nuclear power plants based on X.[5]

Better:

Many voters oppose nuclear power plants based on X.

[5] Example from Pierce and Alur.

Nominalisation

Prefer verbs over nouns. Humans like to read about people doing things.

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The design of the new roller coaster was more of a struggle for the engineers than had been their expectation.

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Premature optimisation diagnoses are difficult to get right.[6]

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It is difficult to diagnose premature optimisation.

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The design of the new roller coaster was more of a struggle for the engineers than had been their expectation.

Better:

The engineers struggled more with the design of the new roller coaster than they had expected.

---

[6] Examples from Pierce and Alur.

First Person

First person is fine.

- *I* summarise
- to *my* knowledge

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If you use first person a lot, stop describing your journey and describe the chapter instead.

First Person Plural

First person plural is often used to refer collectively to the author and the reader.

- *we* see
- *we* can conclude

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First person plural is often used to refer collectively to the author and the reader.

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But only use this when it makes sense. Not:

- in this paper, *we* summarise

Second Person

Do not use second person, referring to the reader as *you*.

Formality

Do not use contractions: isn’t, would’ve.

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Do not use big words because they sound more formal.

Parallelism

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Some repetition is fine. If you use different terms for the same thing, you may create more confusion than variety.

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Still bad but less confusing:

Merge sort is a sorting algorithm. The algorithm is implemented by recursion. This means the algorithm requires certain compiler optimisations to become efficient.

These Are All Just Rules of Thumb

Omitting too many words hurts clarity.

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Passive constructions can direct the reader’s focus.

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Omitting too many words hurts clarity.

Passive constructions can direct the reader’s focus.

Excessive repetition sounds strange.

Formatting

See slides by David Sabel (translated by Luca Maio) in the course repository.

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- takes care of mundane formatting (references, figures, code highlighting, ...)

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TCS provides a template for BSc and MSc theses which you can adapt.

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Headings Should Use the So-Called Title Case.

Very roughly: capitalise every word except ‘minor words’: of, and, the, etc. Different style guides disagree on what exactly is a minor word.

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Use `titlecaseconverter.com`.

Accessibility

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Write useful captions for graphical elements.

Academic Integrity

IFI guidelines (only in German for some reason):

www.medien.ifi.lmu.de/lehre/Plagiate-IfI.pdf

Citations

Cite every paper/document that introduces an idea which is not common knowledge and which is used in your work.

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For indirect (paraphrased) quotes:

- Make it clear what part of the text is an indirect quote.
- Cite the source once per indirect quote.
- In a summary: okay to cite the summarised work only once.

Editing

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Editors should be acknowledged.

AI Tools (ChatGPT)

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AI tools may be useful for drafting and to improve your English. But beware of factual errors, imprecision and waffling.

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- Benjamin Pierce and Rajeev Alur, Writing and Speaking with Style
  Lecture notes for a writing course for computer scientists. Covers many of the themes I've discussed in more detail. Nice exercises.
- Steven Pinker, The Sense of Style
  Book about nonfiction writing. Pierce and Alur's slides are partly based on this book, as are mine.
- Joseph M. Williams and Joseph Bizup, Style: Lessons in Clarity and Grace
  Another book about nonfiction writing. Recommended by Pierce and Alur for its exercises.