Project 1

Instructions for writing a technical report for the course Project 1 at the Technical University of Liberec

Dr. Jan Kracik

March 25, 2024

1 Introduction

Writing a technical report can be a challenging task, especially for university students who are new to the format and structure of technical writing. Remember to always follow the requirements and guidelines provided by your lecturer. Following these guidelines will help you write a well-structured and effective technical report.

2 Understanding the purpose of the report

The main purpose of a technical report is to present research findings, propose a solution to a problem, or provide a technical analysis of a system or process. Knowing the purpose will help you structure your report and determine the appropriate content.

3 Conducting thorough research

Technical reports are based on solid research and evidence. Conduct thorough research on the topic of your report using reputable sources such as scholarly journals, textbooks, and reliable websites. Collect all the relevant information you need for your report. This may include data, research papers, case studies, and technical specifications. Make sure you use credible sources and keep track of where you found each piece of information.

4 Structure of a technical report

Once you have a clear understanding of the purpose and have gathered all the necessary information, plan the structure of your report. Always check your lecturer's requirements but **technical reports typically follow a standard structure that includes the following items.**

1. Title page
2. Summary
3. Table of contents
4. Introduction
5. Literature review
6. The main body of the report (Results&Discussion)
7. Conclusion
8. Recommendations (optional)
9. References
10. Appendices (optional)

4.1 Title page

Include title, your name, the course name and student number, the faculty and university, date of the submission.

4.2 Summary

A technical report summary (or executive summary, or abstract, or annotation) should include a brief overview of your investigation, results, and recommendations. It must include all the key information your reader needs to make a decision without having to read your full report. **Don't treat your summary as an introduction; it should act as a stand-alone document!** Write your Summary last.

Always remember to focus on the following aspects:

- Purpose - a short version of the report and a guide to the report

- Length - short, typically not more than 200 words
- Content - provide information, not just a description of the report

4.3 Table of contents

Help the readers quickly and easily find what they are looking for by using informative headings, subheadings and careful numbering of your sections and sub-sections.

4.4 Introduction

In your introduction, you must present readers the following information:

- Define the problem
- Discuss relevant previous research, if any
- Objectives and goals (what are you trying to achieve?)
- Motivation (why is it interesting and important?)
- Describe the key features of your approach and results
- Any constraints you faced

4.5 Literature Review

It is important to carry out a review of the literature to allow you to acquire an understanding of your topic. Writing a literature review you can become aware of the key issues, and relevant research that has already been done relating to your topic and find out the latest information. A literature review is a piece of academic writing (or part of another report) that critically evaluates material relevant to the research project. It demonstrates subject knowledge and an understanding of your position in relation to other academic work. A literature review examines a whole group of scholarly journal articles or books rather than just one book or one journal article.

Writing a literature review you are expected to show that:

- You can recognise the relevant and important research in your field
- You can understand this research, by organising and evaluating it
- You can see where there is a gap in the research which your study will attempt to fill

Writing a literature review requires you to establish relationships among findings from other researchers and to condense many pages of published material into shorter segments. Therefore, your ability to assimilate material and, in effect, tell your own story, becomes critical. You can always look at other technical reports in your discipline.

4.6 The main body of the report (Results and Discussion)

In this part you should:

- Present the information from your research logically under appropriate headings
- Describe interesting and important observations
- Highlight the originality of your research
- Divide into numbered and headed sections. These sections separate the different main ideas in a logical order Use diagrams, tables, figures and formulae to illustrate your point and make your report more visually appealing. Integrate them into the main body. Consider how you can present the information best for your reader. Would a table or figure help to convey your ideas more effectively than a paragraph describing the same data? An excellent tool for creating your own figures and diagrams is the open-source software Inkscape.

Figures, tables, equations, and formulae should:

- Be numbered
- Be referred to in-text, e.g. In Table 1 . . . , As shown in Fig. 1, ...
- Centred on the page
- Equations and formulae should be on a separate line
- Include a simple descriptive label

4.7 Conclusion

Conclusion should be a strong, effective, and brief summing up of the essential features of your research including:

- Whether you have achieved your main goal
- Summarise your key findings
- Focus on the most important outcomes of your research and their significance
- State the limitations of your research, recommendations for future work, or further improvements

4.8 Recommendations (optional)

In this section you should include the results of tests and experiments, specific design problems, and practical problem solutions. When giving an answer to your problem, be sure to include any limitations to your findings. Your recommendations can be presented in two ways:

- Action statements, e.g. Type approval should be issued for tunnel ventilation fans.
- Conditional statements, e.g. If fan blades are painted with an anti-corrosion coating system, it is likely that. . . , e.g. The research has found that the fan hub should be constructed from forged steel and the fan housing should be constructed from hot dipped galvanised steel, but future research. . .

4.9 References

Acknowledge all the information and ideas you've incorporated from other sources into your report using a consistent referencing style. This includes data, tables and figures. Examples of how to reference different types of resources can readily be found on the internet.

4.10 Appendices (optional)

You can include any further material which is essential for full understanding of your report in appendices. If you have data that is too detailed or lengthy to include (e.g. raw data, diagrams, comprehensive drawings, specifications) in the report itself, include it in the appendix. Your readers can then choose to refer to it if they are interested. Label your appendix with a number or a letter, a title, and refer to it the text, e.g. For a full list of construction phases, see Appendix A.

5 Some useful tips when writing a technical report

- Begin writing the main text (body), not the Introduction. Follow your outline in terms of headings and subheadings. Let the ideas flow; do not worry at this stage about style, spelling or word processing. If you get stuck, go back to your outline plan, and make more detailed preparatory notes to get the writing flowing again.
- Reference ideas and each source (tables, graphs, picture, etc.) as you go. Follow any valid citation style (e.g. Harvard style) and be consistent in using it.
- Write the Conclusion next, followed by the Introduction.
- Write the Summary at this stage.

- Table of content should be the last to create.
- Once you have completed your report, review and edit it for clarity, coherence, and accuracy. Check for grammatical errors, inconsistencies, and logical flow. Consider seeking feedback from peers, or your lecturer.