UPEI CO-OPERATIVE EDUCATION PROGRAM

Work Term Technical Report Guidelines

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1 Introduction

1.1 The Importance of Reports

Success at the work site demands effective communication skills. Unless you can communicate effectively, the knowledge and skills you acquire are of little use to others. You have to be able to collect information, organize it, and present it in a logical and concise form. Your unique proposal for a new software package or marketing scheme will only survive on the drawing board if you convince others of its potential.

Most workplace communication is written. To grab attention, it must concisely articulate a clear, interesting message. An involving topic, an organized text and a readable style increase the likelihood of your work being noticed and taken seriously. Often, written work such as reports, assessments and memos are the first and only impression upper management receives of you. Your writing becomes your sole representative and reflects your daily work activities' quality, accuracy and professionalism.

Successful completion of Work Term Reports is an academic requirement for the co-operative education program. These guidelines will guide you through the process.

1.2 The Purpose of a Technical Work Report

A Work Term Technical Report contains an *analytical element*, relating your academic knowledge to your practical experience. Its purpose is to help you develop your written and analytical skills; you will gather information and interpret, organize and present it clearly and understandably.

It also allows you to examine aspects of a project or the organization you did not have the opportunity to study during your daily work. Ideally, the report will be of practical benefit to your employer.

Finally, the Work Term Technical Report is a permanent record of your work and, if well done, serves faculty, other Co-op students and potential employers as an example of your abilities.

1.3 Main Objectives

1. To develop technical writing skills.

2. To learn how to communicate your research findings to a professional/scientific audience.

3. To craft a document that will be useful for your employer and future co-op students.

2 Work Report Subjects

Choosing a subject is the most important and perhaps most difficult aspect of your WorkTerm Report. Managers or supervisors may help in topic selection, which can assist in selecting a topic that would be of direct use to the organization you are working for.

Your work report must have an identifiable analytic component. A report that compares and evaluates several items or alternatives using various criteria is analytical. A report on a single topic can be analytic *if it discusses advantages and disadvantages*. The topic should be related to your employer, the line of work undertaken by the organization or business practices employed at their site. For example, you could evaluate how the company implements R&D or wage incentive plans. You might write a report to outline methods to improve communication in your company or the processing of information or samples; you could develop an instructional tool to explain how to carry out the tasks you did in your position or compare methodologies used in the company with those described in research articles. While all these topics are somewhat descriptive, if you analyze your situation *using peer-reviewed literature and academic course materials* (e.g., textbooks, journal articles, handouts) or integrate concepts from the published literature in your explanations, your report will have an analytical component.

A report is unacceptable if it only contains a narrative, if it is simply a users' guide or other documentation, or if you simply summarize your work term tasks. An analytic report contains constructive criticism, conclusions and recommendations. If you cannot identify conclusions, you likely need more analytic content.

One of the easiest ways to discover topics that may work for you is to consult with your supervisor. Often, employers will have activities they would like to undertake but cannot seem to find an appropriate amount of time to do the work. This is a perfect opportunity for you to investigate one of these activities as a topic for your work term report. Might there be an opportunity for you to analyze a business practice that could reduce the amount of time it takes to manufacture the company's product? Perhaps there may be an opportunity to recommend a way to reduce costs or save resources. Present an evaluation of your employer's software development/maintenance methodology. You might be able to write a new curriculum for in-house training sessions or external client seminars. The list is almost endless and is limited only by your own creativity. If you are having difficulty finalizing your topic, you may wish to email your Academic Director *with proposed topic ideas*, however, it is your responsibility to begin the process of identifying topics within your work term.

Although the topic does not have to be your idea, the report must be your own work. The work report is evaluated as a professional document. Your work report grade is based on the factual content and accuracy of the report, as well as its presentation and clarity.

The topic for your technical report must be pre-approved by your program's Academic Director. We recommend selecting your topic (in consultation with your work term supervisor) and engaging in a dialogue (email, phone, or in person) with your Academic Director to finalize your topic, which must be submitted via the Moodle Dropbox by October 12th. Your topic proposal should be between 250 and 500 words and include a description of the subject you intend to analyze, why it is relevant and identify any potential academic references you intend to use. Please submit your proposal in PDF format using the following file naming structure - First initial, Last name, TechReportProposal.pdf, Ex. MMacLeanTechReportProposal.pdf.

Note: Expect to research and prepare your work report on your own time. Employers are *not obligated to provide you with the time* to work on your report. If the employer assigns you the report and it will benefit the organization, your supervisor may allow you to work on it during your paid hours.

3 Submission and Evaluation

Technical reports contribute to your overall grade of Pass or Fail in your work term course. Technical reports contribute to your overall grade of Pass or Fail in your work term course. Technical reports are due on the date specified in the course outline.

Note that your employer must review your report prior to your submission, which must be accompanied by the 'Employer Review Form' found in your work term moodle course. This is to ensure that there is no information included in your report that should be kept private.

Reports are submitted by uploading your final version of your technical report in PDF format through your appropriate work term course Moodle site.

Reports will be evaluated by your program's Academic Director, placing equal emphasis on content and literary quality. Reports receive grades of Pass or Fail. If you have no grade, you get some comments and must revise the report accordingly; failing to address the comments in your feedback for the same report may result in failure of the work term.

4 Report Style

Single column, 12 pt. Times New Roman, with page numbers, saved in PDF format.

Consistency is key – be consistent in your page numbering, formatting section headings, style of references, figures, and tables.

Target Length: 2500-3000 words (7–10 pages), and must include a title page. Not included in word count: Title Page, Letter of Transmittal, Table of Contents, List of Figures and Tables, Executive Summary, Figures and Tables, References, and Appendices The report must satisfy these general points:

- Concise, organized and logical
- Accurate, consistent and complete
- Professional and readable

4.1 Employer's report / other possibilities

If your employer asks for a format different from these styles, check with your Director. You could do a poster, website, Wiki or video. Notable "outliers" in this category are work where the student writes supporting documentation, creates content for the employer or works on a computer program. In these cases, there will inevitably be things that you cannot include (such as graphs or materials and methods for example). In writing such a report, you need to report on the work that has been done. Ask yourself who your audience is and how to structure the report so that your audience benefits from it! If you have questions, you are welcome to send it over(Via moodle) to your Academic Director for proofreading(notify your Director by email about your subbmission). Depending on the nature of your work, these could include samples of your writing, computer code samples, an explanation of the challenges you have faced, how you approached them, which tools you've learned and used etc. If you have done theoretical or computational research, you could include more detailed derivations and computational code in an appendix.

Recommended Section Headings:

- Title Page*
- Letter of Transmittal*
- Table of Contents
- List of Figures (if applicable)*
- List of Tables (if applicable)*
- Executive Summary/Abstract*
- Introduction
- Materials and Methods
- Results & Discussion
- Conclusions
- Recommendations/Future Work (if applicable)
- References*
- Appendix (if applicable)

*Samples available in attached Appendices for your reference

In the event of confidentiality of project topics, methods, or results where you are unable to write in any detail about the work you've been completing as part of your work term, the report should be an analytical review of literature on a subject related in some way to your work term.

Contact your Academic Director to secure permission to write an alternate report.

Alternate Report, Recommended Section Headings:

- Title Page
- Letter of Transmittal
- Table of Contents
- List of Figures (if applicable)
- List of Tables (if applicable)

- Executive Summary/Abstract
- Introduction
- Background Information
- Discussion
- Conclusions
- Recommendations/Future Work (if applicable)
- References
- Appendix (if applicable)

5 Some Details about Report Content

Use Passive voice and past tense: For reports which are scientific in nature, it is customary to use the passive voice in the past tense. That is, "The sample was analyzed using gravimetric analysis..." is better than "I analyzed the sample..."

Mathematical equations: All equations should be centered horizontally between lines of text with double spacing above and below and numbered. In latex equations are formatted automatically[1].

Tables: Each table should have a title and should be referred to in the text of the report[2].

Illustrations and graphs: Each figure should have a number and a clear title and should be referred to in the text of the report[3].

Footnotes: You can include footnotes to elaborate on or give background to material without interrupting the main flow of thought. Footnotes should appear at the bottom of the page, separated from the main text by a solid line from margin to margin, and be single-spaced[4].

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[1] In LaTeXequations are formatted automatically and you can use two `$` signs, or `\begin{\equation} \end{equation}` or other similar constructs.

[2] In LaTeXyou need to label them with `\label` and refere to them with `\ref{}` .

[3] In LaTeXyou need to label them with `\label` and refere to them with `\ref{}`. The figure environment is figure `\begin{\figure}\end{figure}`

[4] In LaTeXfootnotes are declared with `\footnote{text of the footnote}` .

5.1 A note on confidential reports

There are often cases where either a part or all of your work is deemed classified by the employer. In this case, your report may be partly or fully confidential. Consult your employer about this – many employers already have established guidelines for their coop reports. In the event that some of the information is classified, you may omit those portions from the report and make a note of that. Provide an explanation of what you've done, but leave out the "how", or provide simple examples to illustrate the concepts.

6 Tools Usefull to Write Your Reports

Of course, you can use any word processor, such as Microsoft Word, LibreOffice, WordPerfect, Calligra Words, or Pages. Still, in the case of Mathematics, Statistics, and Computer Science, we have to include equations, tables, figures, or other designs in our documents. For all of these, the best tool is LATEX . Academic dissertations, doctoral theses, and research papers should all be written in LATEX . The reference system is automatic and efficient, the table of contents is also automatic, and any changes in LaTeX can be made using simple text editors like UNIX vi. Working on gigantic projects allows you to focus on the content of the project, not on the looks because most of the formatting is automatic and follows all the typographic rules. For word processors, you have to implement all these rules by hand, and that's a very time-consuming process.

To get Latex yo can use the official sources: https://www.latex-project.org/get/ and get a tex distribution foer your operating system.

You also have sme online options which available on the same page: https://www.latex-project.org/get/#tex-distributions.

The documentation on LATEX can be found olso on the same page: https://www.latex-project.org/help/documentation/.

7 Appendices

7.1 Appendix A - Sample Title Page

UNIVERSITY OF PRINCE EDWARD ISLAND

Computer Science Co-operative Education Program

Work Term Report

May 1 - August 31, 2023

Implementing the IDEAL System Testing Framework at SummitWare Corporation

Performed at:
SummitWare Corporation
123 Chip Street
Techtown, PE
By
Able Smith

In partial fulfillment of the requirements of the Computer Science
Co-operative
Education Program

July 31, 2023

7.2 Appendix B - Sample Letter of Transmittal

September 9, 2016

[Co-op Academic Director - input name]
School of Mathematical and Computational Sciences
University of Prince Edward Island
Charlottetown, PE, C1A 4P3

Dear Professor [insert name],

I am submitting the enclosed report, "Implementing the IDEAL System Testing Framework at SummitWare Corporation", in partial fulfillment of the requirements of a work term in the Computer Science Co-operative Education program.

The IDEAL system testing framework developed by the Software Development Institute, is an organizational model that serves as a road map for initiating, planning, and implementing improvements within the software testing process.

To meet the certification requirements, SummitWare is adopting a Quality Assurance Model based approach. The report provides detailed analysis of the challenges in implementing this system testing framework.

Please contact me by email, asmith@upei.ca, if you have any questions concerning the report.

Sincerely,
Able Smith

Enclosure

7.3 Appendix C - Sample Executive Summary

Executive Summary

This report analyzes implementing the IDEAL system testing framework within the Quality Assurance Model (QAM) to improve software testing procedures.

The system testing processes at SummitWare are described. A description of each of the IDEAL phases and their relevance to the QAM model, is presented. The results of implementing IDEAL are shown, conclusions drawn and recommendations made.

It was concluded that, although IDEAL provides a usable, understandable approach to software testing by outlining the steps necessary to improve testing procedures, the short-term benefits are limited. However, it does establish the foundation for a long-term improvement strategy.

It is recommended that SummitWare continues to adhere to the new model to get the promised rewards and that a longer term study be done to evaluate the outcomes.

7.4 Appendix D - Sample Table of Contents

Implementing the IDEAL System Testing Framework at Summit-Ware Corporation

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7.6 Appendix F - Sample Acknowledgments

Acknowledgments

This research was conducted at the SummitWare Research labs with partial support from the Natural Sciences and Engineering Research Council (NSERC) and the Software Development Institute.

My supervisor, Kevin Dower, has been particularly helpful in explaining the principles of software testing and in providing guidelines for quality assurance models.

7.7 Appendix G - Sample References

Bibliography (and any in-text) references should follow standard practices.

- For APA style guidelines, refer to [1].
- For a Web source referencing style, use [3].

Note: The books written by Ronald Blicq and Lisa Morretto [4] are good reference manuals for improving your writing.

The best way to manage references is to use LaTeXtypesetting in combination with BibTeX. MIT provides an excellent online guide "Citation Management and Writing Tools: LaTeXand BibTeX", [2] for this purpose.

References

[1] Apa references. URL: http://www.wisc.edu/writing/Handbook/DocAPAReferences.html.

[2] Citation Management and Writing Tools: LaTeX and BibTeX. URL: https://libguides.mit.edu/cite-write/bibtex.

[3] Style guide. URL: http://www.westwords.com/guffey/apa.html.

[4] Ronald S. Blicq and Lisa A. Moretto. *Guidelines for Report Writing*. Pearson Education Canada/AbeBooks, 4th edition, 2009.

7.8 Appendix H - Sample Bibliography Page

7.8.1 Bibliography

[1] Ronald S. Blicq and Lisa A. Moretto. *Guidelines for Report Writing*. 4th edition. Pearson Education Canada/AbeBooks. ISBN 0130145998. 2009.

[2] Ronald S. Blicq and Lisa A. Moretto. *Technically-Write!*. 6th edition. Prentice-Hall. 2004.

[3] *APA References*, http://www.wisc.edu/writing/Handbook/DocAPAReferences.html.

[4] Cristian Calude and Ion Chiţescu. Representability of recursive P. Martin-Löf tests. *Kybernetika*, 19(6):526–536, 1983.

[5] *Style Guide*. http://www.westwords.com/guffey/apa.html.

[6] *Citation Management and Writing Tools: LaTeXand BibTeX*. https://libguides.mit.edu/cite-write/bibtex. CC BY-NC 4.0 license.

[7] *Software Testing Life Cycle*. Wikipedia. http://enwikipedia.org/wiki/Software_testing_life_cycle. Retrieved June 23, 2011.