FACULTY
OF INFORMATION
TECHNOLOGY
CTU IN PRAGUE

Supervisor's statement of a final thesis

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Student:	Nilay Baranwal
Thesis title:	Structured printing framework
Branch / specialization:	Web and Software Engineering
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Evaluation criteria

1. Fulfillment of the assignment

[1] assignment fulfilled
▸ **[2] assignment fulfilled with minor objections**
[3] assignment fulfilled with major objections
[4] assignment not fulfilled

I include a list of tasks in the assignment and my evaluation.

1. Gather functional and non-functional requirements.

I am reasonably happy with the content of the use cases and non-function requirements he extracted from me.

2. Review the space of existing solutions.

The student attempted a review of the existing solutions. Given that the field of logging has never been a hot topic in computer science research, I think the student did well finding software and literature in the space of existing solutions commensurate with expectations placed on a Bachelor's candidate.

The related work section has mixed quality. Logging and WS logging software is selected and described well, but it is missing some relevant items (eg. http://www.fudgie.org/). Log management is well selected but described shallowly (eg. Nagios, LOGalyze, Fluentd, and Elastic Stack are described as difficult to configure without further explanation). Finally, applications in machine learning and cyber security are spotty.

3a. Select technologies and design an architecture.

The student selected his technologies and designed a client-server that suits the problem, and he describes this appropriately in the book.

4. Implement a prototype.

The student demonstrated the prototype to me. It worked and served the purposes described in the book acceptably.

5. Provide tests and documentation.

The student wrote documentation and included it in the book as an appendix and on the attached CD. I followed the documentation and it contained serious gaps that rendered it unusable (eg. the repository was not specified, there were errors in paths, some dependencies were not specified).

The student does not include automated tests.

6. Discuss the benefits of the solution.

The book makes a good case for the presented solution.

2. Main written part

80/100 (B)

Evaluate whether the extent of the FT is adequate to its content and scope:

1. Are all the parts of the FT contentful and necessary?

All of the parts of the thesis are either appropriate for the logical flow of the thesis or mandated by university regulations.

2. Is the submitted FT actually correct.

I have not found factual errors or inaccuracies.

3. Evaluate the logical structure of the FT.

The structure makes logical sense to me and I found the text comprehensible in general.

The thesis is reasonably well written and the language of the thesis is usually (but not always) clear. Some parts clearly got more attention than others. For instance, the Evaluation chapter contains contractions and is missing some punctuation marks and spaces are. This suggests that the chapter was edited in more haste than, say, the introduction.

I think there is one conspicuously absent item from the book: the student expended time and effort on UI design, so the UI could have been showcased in the thesis.

4. Assess whether the formal notations in the FT are used correctly.

The work does not contain a formal aspect, so there is no formal notation. This is appropriate for the topic.

5. Assess the typographic and language aspects of the FT, follow the Dean's Directive No. 26/2017, Art. 3.:

Art 3 point 1 specifies that the thesis must contain the following elements:
a) The FTA form,
b) an abstract and keywords in Czech/Slovak and in English,
c) a statement declaring that the FT is based upon the student's independent work and that the sources and references are properly cited and listed,
d) a solution to the given problem including a survey of the given topic,
e) a conclusion discussing the reached results,
f) a list of references,
g) a table of contents including a list of Appendices.

All of these elements are present and sufficiently developed.

The thesis is 77 pages, which meets the suggested length limit.

Art 3 pt 2 requires the formal elements of a technical text be present and properly used:
a) [proper] use of symbols,
b) definition of terms prior to their use,
c) inclusion of a TOC, a list of figures, a list of tables, and a list of used symbols, optionally an index,
d) properly used references to printed or other sources,
e) bibliographic list of references.

The thesis does not have formal elements, so (a) is not applicable. I am satisfied with the remainder.

The remaining points of Art 3 are advisory or administrative.

A notes outside of Art 3:

The charts in the Evaluation chapter have watermarks on them, which I find gauche and typographically unpleasant. There are many free libraries out there that can generate violin plots without watermarks, and the student should have used those instead. This is a minor complaint.

6. Evaluate whether the relevant sources are properly used, quoted and cited.

The sources are properly cited. The work shows a tendency to summarize works by directly quoting sentences from the original, but without indicating a direct quotation (eg. by using double quotes). While this is an error, I think it stems from the student's lack of experience in technical writing rather than an attempt at plagiarism. Specifically, it is always clear that the text fragment in question refers to work done by someone else.

7. Verify that all quotes are properly distinguished from the results achieved in the FT, thus, that the citation ethics has not been violated and that the citations are complete and in accordance with citation practices and standards.

The quotes are properly distinguished from the student's work. While I think the citations are occasionally clumsy (see above), I did not find any ethics violations in this thesis.

8. Finally, evaluate whether the software and other copyrighted works have been used in accordance with their license terms.

Node.js, react, redux, socket.io are licensed under the MIT license. SQLite is in public domain. Everything is in order.

3. Non-written part, attachments 60/100 (D)

The student provides repositories for the logger system. One includes the server. Another provides a Java client. To my understanding there should be another client in Kotlin, but it's not listed. I installed both on my system from GitHub. The documentation is spotty as described above, making installation difficult. Some provided resources were corrupt and needed to be regenerated.

The logger generally fulfills requirements in terms of the functionality, but I noticed some problems.

One of the requirements of the system was to observe results in real time. The system does retrieve the results in real time from the client process, but rendering is only done in response to use input.

The application is brittle. It is easy to make a mistake. For instance when configuring a graph logger, one must specify the type of graph to plot via a string, so one can make a typo or pick a plot type that is not supported. The string is also case sensitive.

If one makes a mistake, it is likely to be ignored or misreported. For the example above, if one specifies an erroneous graph type, the logger is silent, it keeps going, and the session is never rendered, so all logged messages are lost.

On the other hand, I would like to commend the student for the application behaving well when the server component is shut down and restarted: the server catches up when it boots back up.

Overall, the student application meets the requirements. However, it fails to meet some of the unstated standards we assign to all engineering work about how software is installed, how a user learns to use it, and how it performs in the face of faulty inputs.

4. Evaluation of results, publication outputs and awards 75/100 (C)

The software produced by the thesis could be deployed in practice because it solves an actual need for (some) programmers. I can see myself using it or something like it.

The browser-side of the software is reasonable in terms of usability.

However, from my analysis of the provided artifact it should be clear, that this project needs work before it can be used by others. User documentation should be significantly updated, so that an average developer can install the software without digging into the arcana of NPM package installation. The API

needs to be cleaned up and errors have to be redesigned to provide the user with the requisite information on failure. The software also should be aware of more edge cases and react to them appropriately (or at all).

5. Activity of the student

▸ [1] **excellent activity**
[2] very good activity
[3] average activity
[4] weaker, but still sufficient activity
[5] insufficient activity

The student was punctual and worked hard after an initial period of adjustment and turmoil caused by the pandemic.The student consulted me on every step and, I believe, attempted to incorporate my suggestions into his work to the best of his understanding. The student was in charge of the agenda for most meetings and was adequately prepared.

6. Self-reliance of the student

[1] excellent self-reliance
[2] very good self-reliance
▸ [3] **average self-reliance**
[4] weaker, but still sufficient self-reliance
[5] insufficient self-reliance

I think the student is capable of developing independent creative work in the narrow field of his interest and not very independent outside of it.

The overall evaluation 65 /100 (D)

I appreciate the student's hard work and drive to finish the thesis on time. I also appreciate that where I set out strict and specific requirements, these have generally been met. I is also worth noting that the student was willing to take guidance and learn throughout the process.

While this is not the most competent work I have seen on this level, and while I can point to many shortcomings along the way that could have been solved given extra time and effort, I think ultimately the work deserves positive assessment.

Instructions

Fulfillment of the assignment

Assess whether the submitted FT defines the objectives sufficiently and in line with the assignment; whether the objectives are formulated correctly and fulfilled sufficiently. In the comment, specify the points of the assignment that have not been met, assess the severity, impact, and, if appropriate, also the cause of the deficiencies. If the assignment differs substantially from the standards for the FT or if the student has developed the FT beyond the assignment, describe the way it got reflected on the quality of the assignment's fulfilment and the way it affected your final evaluation.

Main written part

Evaluate whether the extent of the FT is adequate to its content and scope: are all the parts of the FT contentful and necessary? Next, consider whether the submitted FT is actually correct – are there factual errors or inaccuracies?

Evaluate the logical structure of the FT, the thematic flow between chapters and whether the text is comprehensible to the reader. Assess whether the formal notations in the FT are used correctly. Assess the typographic and language aspects of the FT, follow the Dean's Directive No. 26/2017, Art. 3.

Evaluate whether the relevant sources are properly used, quoted and cited. Verify that all quotes are properly distinguished from the results achieved in the FT, thus, that the citation ethics has not been violated and that the citations are complete and in accordance with citation practices and standards. Finally, evaluate whether the software and other copyrighted works have been used in accordance with their license terms.

Non-written part, attachments

Depending on the nature of the FT, comment on the non-written part of the thesis. For example: SW work – the overall quality of the program. Is the technology used (from the development to deployment) suitable and adequate? HW – functional sample. Evaluate the technology and tools used. Research and experimental work – repeatability of the experiment.

Evaluation of results, publication outputs and awards

Depending on the nature of the thesis, estimate whether the thesis results could be deployed in practice; alternatively, evaluate whether the results of the FT extend the already published/known results or whether they bring in completely new findings.

Activity of the student

From your experience with the course of the work on the thesis and its outcome, review the student's activity while working on the thesis, his/her punctuality when meeting the deadlines and whether he/she consulted you as he/she went along and also, whether he/she was well prepared for these consultations.

Self-reliance of the student

From your experience with the course of the work on the thesis and its outcome, assess the student's ability to develop independent creative work.

The overall evaluation

Summarize which of the aspects of the FT affected your grading process the most. The overall grade does not need to be an arithmetic mean (or other value) calculated from the evaluation in the previous criteria. Generally, a well-fulfilled assignment is assessed by grade A.