Supervisor's statement of a final thesis

Czech Technical University in Prague **Faculty of Information Technology**

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Supervisor:	Ing. Miroslav Hrončok
Thesis title:	USB Flash Drive Writer
Branch of the study:	Computer engineering

Date: 12. 6. 2017

Evaluation criterion:	*The evaluation scale: 1 to 5.*
1. Difficulty and other comments on the assignment	*1 = extremely challenging assignment,* *2 = rather difficult assignment,* ***3 = assignment of average difficulty,*** *4 = easier, but still sufficient assignment,* *5 = insufficient assignment*

Criteria description:
Characterize this final thesis in detail and its relationships to previous or current projects. Comment what is difficult about this thesis (in case of a more difficult thesis, you may overlook some shortcomings that you would not in case of an easy assignment, and on the contrary, with an easy assignment those shortcomings should be evaluated more strictly.)

Comments:
The task was to design and implement a hardware device for a straightforward task. Other conditions, such as a focus on on price and "hackability", made the task slightly more difficult, but didn't made it a "rather difficult assignment".

Evaluation criterion:	*The evaluation scale: 1 to 4.*
2. Fulfilment of the assignment	***1 = assignment fulfilled,*** *2 = assignment fulfilled with minor objections,* *3 = assignment fulfilled with major objections,* *4 = assignment not fulfilled*

Criteria description:
Assess whether the thesis meets the assignment statement. In Comments indicate parts of the assignment that have not been fulfilled, completely or partially, or extensions of the thesis beyond the original assignment. If the assignment was not completely fulfilled, try to assess the importance, impact, and possibly also the reason of the insufficiencies.

Comments:
The thesis fully meets the assignment statement. It was extended beyond the original assignment by working on two versions of a prototype—one for a small computer with an operating system and one for a microcontroller (although only the first one made it to an actual working device).

Evaluation criterion:	*The evaluation scale: 1 to 4.*
3. Size of the main written part	***1 = meets the criteria,*** *2 = meets the criteria with minor objections,* *3 = meets the criteria with major objections,* *4 = does not meet the criteria*

Criteria description:
Evaluate the adequacy of the extent of the final thesis, considering its content and the size of the written part, i.e. that all parts of the thesis are rich on information and the text does not contain unnecessary parts.

Comments:
The thesis has 54 pages from "Introduction" to "Conclusion" and 87 pages in total (including all the automatically generated Tables of Contents etc.). All parts of the thesis are rich on information and the text does not contain any unnecessary parts. Chapters 5 and 6 are quite short but have all the information needed (they might have been merged if short chapters were generally bad, but I don't consider that necessary).

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
4. Factual and logical level of the thesis	*95 (A)*

Criteria description:
Assess whether the thesis is correct as to the facts or if there are factual errors and inaccuracies. Evaluate further the logical structure of the thesis, links among the chapters, and the comprehensibility of the text for a reader.

Comments:
I deem the thesis is correct as to the facts. The logical structure is excellent—the reader gets all the information in the order they needs it. Every chapter logically connects to the previous one, except chapter 5 (Interlude about USB Mass Storage), where the reasoning is explained in the first paragraph. The thesis starts with a Research and Analysis chapter which includes the rationale for the the thesis, then continues with Specification and Goals, so the reader knows exactly what is being designed and created here. Later an extensive analysis of possible solutions is presented and two solutions are considered for prototyping, those are later explained in their appropriate chapters. The text is very comprehensible and the thesis reads like a belletry book although retaining its technical and academic nature. Being "only" a Bachelor's thesis, the high quality of the textual part was quite surprising.

One small nit-pick: In the rationale the student speaks about an advantage of having this device available under the terms of a permissive license and later he publishes his work under the terms of GNU GPL, whereas the Open Source Initiative defines a permissive software license as a "non-copyleft license" and GPL is actually a copyleft license.

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
5. Formal level of the thesis	*70 (C)*

Criteria description:
Assess the correctness of formalisms used in the thesis, the typographical and linguistic aspect s, see Dean's Directive No. 14/2015, Article 3.

Comments:
Although the overall quality of typography and grammar is very good, I found several small mistakes and typos, mainly concerning some dashes, the multiplication sign and inconsistency between units (GB × GiB × plain G). I also found a missing figure reference (typical LaTeX ?? instead of figure number). On the other hand the print is very high quality and the front cover looks better than any other thesis I've seen this semester (7 so far). For those reasons, I'm willing to overlook some of the mistakes.

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
6. Bibliography	*85 (B)*

Criteria description:
Evaluate the student's activity in acquisition and use of studying materials in his thesis. Characterize the choice of the sources. Discuss whether the student used all relevant sources, or whether he tried to solve problems that were already solved. Verify that all elements taken from other sources are properly differentiated from his own results and contributions. Comment if there was a possible violation of the citation ethics and if the bibliographical references are complete and in compliance with citation standards.

Comments:
This thesis presents quite a number of facts (especially in analysis and where hardware specification is mentioned). The student cites the source every time such fact is presented in compliance with the citation ethics. For a Bachelor's thesis, this thesis bears an extraordinary number of bibliographical references (93).
Unfortunately, mistakes have been made as well. There are four occurrences of unresolved bibliographical references, rendered as bold text in square brackets. I've examined the XeLaTeX sources and found out that this is another typo, the references are present in the Biber library. Also, The Raspberry Pi Foundation is listed twice as if it were a person named Foundation.
In this amount of bibliographical references, I'm willing to overlook some of the mistakes and use a better assessment for the excellent work with various types of sources (standards, specifications, documentation, surveys but also e-shops and project pages).

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
7. Evaluation of results, publication outputs and awards	*95 (A)*

Criteria description:
Comment on the achieved level of major results of the thesis and indicate whether the main results of the thesis extend published state-of-the-art results and/or bring completely new findings. Assess the quality and functionality of hardware or software solutions. Alternatively, evaluate whether the software or source code that was not created by the student himself was used in accordance with the license terms and copyright. Comment on possible publication output or awards related to the thesis.

Comments:
The main achieved result is not just a functional prototype of the "Fedorator" device, but also a set of instructions for others to create their own instance. The nature of the device (its primary purpose) is quite revolutionary in the open source projects marketing field.

The created prototype is not flawless, but it serves its purpose and as a prototype will serve as a base for further development and improvements. The student admits the imperfection of the device and uses it as a starting point for another iteration.
For the scope of this thesis, the student created a hardware device, software for it, instructions how to build it, also a concept of using a microcontroller to write to USB Mass Storage Devices. Overall, the results is not only satisfying but it outperformed my expectations.

Evaluation criterion:	*No evaluation scale.*
8. Applicability of the results	

Criteria description:
Indicate the potential of using the results of the thesis in practice.

Comments:
The “Fedorator” project was already announced on the internal Fedora Ambassadors mailing list. Several Fedora Ambassadors have indicated that they will build their own instance. A “Build your Fedorator” workshop is planned for the annual Fedora contributor conference (called Flock) happening this August in Massachusetts.

A team of Fedora contributors successfully used the prototype on a Fedora booth at PyCon CZ, a conference about Python which happened in Prague in the beginning of June this year.

The results of this thesis are already being used in practice.

Evaluation criterion:	*The evaluation scale: 1 to 5.*
9. Activity and self-reliance of the student	*9a:* ***1 = excellent activity,*** *2 = very good activity,* *3 = average activity,* *4 = weaker, but still sufficient activity,* *5 = insufficient activity* *9b:* ***1 = excellent self-reliance,*** *2 = very good self-reliance,* *3 = average self-reliance,* *4 = weaker, but still sufficient self-reliance,* *5 = insufficient self-reliance.*

Criteria description:
Review student's activity while working on this final thesis, student's punctuality when meeting the deadlines and consulting continuously and also, student's preparedness for these consultations. Furthermore, review student's independency.

Comments:
The student was very active, bringing his own ideas, studying and testing plenty of hardware, evaluating multiple solutions and gathering pieces of hardware from everywhere. He even collected an extensive pile of flash drives so he could test how they all behave differently. On every meeting he came prepared and on time. While I guided the student with the overall thesis structure, his independency when it comes to hardware and software was outstanding. He appears to actually care about the topic rather than doing it just because somebody told him so. This enthusiasm is not so common with thesis topics selected from a list (i.e. when the topic is not the student’s own idea).

Evaluation criterion:	*The evaluation scale: 0 to 100 points (grade A to F).*
10. The overall evaluation	*90 (A)*

Criteria description:
Summarize the parts of the thesis that had major impact on your evaluation. The overall evaluation **does not** have to be the arithmetic mean or any other formula with the values from the previous evaluation criteria 1 to 9.

Comments:
The overall quality of this thesis leaves me no other choice than “excellent”. There are some typos and inconsistencies, but the work is otherwise so extensive that it could have easily passed for a Master’s thesis, so I choose to overlook them in the final evaluation.

Signature of the supervisor: