FACULTY OF INFORMATION TECHNOLOGY CTU IN PRAGUE

Supervisor's statement of a final thesis

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Thesis title:	Desktop agnostic power manager for Linux
Branch / specialization:	Computer Science
Created on:	30 May 2022

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

The assignment is fulfilled.

2. Main written part

71 /100 (C)

The written part does not do good for the project. There is number of things that could have been improved, for example:
- The motivation as to why this project is essential for DIY desktops and the background of the existing solutions is dry and disengaging. This thesis has a straightforward story, but it does not read well in its current form.
- The extensive code listings are hard to follow. It would be better to split them into shorter ones and guide the readers through them.
- It is not easy to do a proper evaluation, but it should have been more formalized, and the questionnaire recorded and included in an appendix. In the current form, it feels just like a bunch of numbers.
- There are typographical errors (e.g., missing spaces after footnote, wrong citation format).

One more editing pass would catch most of these problems, improving the overall perception of the text. Unfortunately, as is often the case, the implementation was prioritized over the writing schedule.

(A quick note about the assessment and brightness of external monitors: while it is true that there is no general solution, most modern monitors support DDC/CI interface, and thus it is possible to control it programmatically. Moreover, there is a dkms module for ddcci which exposes the interfaces into sysfs).

3. Non-written part, attachments 91 /100 (A)

This thesis involved extensive implementation work. Most of which came from accidental complexities. Integrating the different components (systemd, logind, dbus, upower, X11) is tricky. The API is not straightforward, the documentation is sparse, and there is a steep learning curve to figure out how they are meant to be used. The student did a very good job in figuring this out and providing a reasonable abstraction for them to use in the project.

Having completed the first implementation, I think it would be good to revise it and simplify it. For instance, I tried to create a new brightness effector, which would not need an active logind session, but use direct access to sysfs, only realizing that there is quite a bit of a coupling of the modules. Essentially, this should be as simple as creating a new effector and rewiring the configuration.

Finally, I wonder if the use of traits objects instead of bounded polymorphism would simplify some of the type signatures in traits like DependencyProvider?

4. Evaluation of results, publication outputs and awards 91 /100 (A)

I installed energia on a Arch Linux and used it in a dwm-based desktop. It works and it was a pleasure to dump the brittle, hacked-solution from before which relied on bash scripts. There is some polishing work remaining before it could be generally usable, but otherwise it could really simply the life of people that use DIY desktops. Once the polishing is done, I expect dissemination on HackerNews, reddit, Arch forum, ...

5. Activity of the student

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

cf. 7

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

cf. 7

The overall evaluation

91 /100 (A)

While this thesis started early, it was interrupted by Robert going to CERN for an internship and resuming the work was rather slow. If we would have kept the momentum from the beginning I'm sure the result would be excellent. Needless to say, it was a pleasure to work with Robert, he was active, worked on his own and most importantly he knows his stuff - he has proved that he understands the problem, can think critically, and knows how to hack. I only would have wished that he had listened when I told him that writing a solid report requires time.

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. 52/2021, 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.