FACULTY OF INFORMATION TECHNOLOGY CTU IN PRAGUE

Supervisor's statement of a final thesis

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Thesis title: SOM Virtual Machine Implementation
Branch / specialization: System Programming
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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

The thesis assignment was fulfilled with two main concerns, which will be elaborated in the sections below: (1) the evaluation part of the thesis is very shallow and (2) the code quality and design can be much improved.

2. Main written part   80 / 100 (B)

The thesis is well written and covers all the work done by the student. General minor points to the writing are the lack of clear identification of the parts of design and implementation that were created by the student himself as opposed to those where the SOM specification is simply followed, inconsistency with presentation (railroads, vs grammars, etc.), and sometimes too much detail. The overall English language level is very decent. My main concern is the evaluation chapter itself. It offers only extremely limited set of microbenchmarks. It only compares execution times of student's implementation to other SOM VMs in terms of numbers. But these are just numbers without some more detailed description of what the particular VMs are doing under the hood, the numbers are almost meaningless. The C implementation, which is stated to have no optimizations implemented (and therefore should be most similar to the thesis) is missing from the evaluation altogether. The results are barely discussed and the one time they are, no reasonable conclusion is reached.

3. Non-written part, attachments   80 / 100 (B)

At the beginning, the thesis and the repository did not offer enough information to build the project correctly, but this was later clarified by the student. The code of the VM looks

reasonably clear to follow. I am a bit puzzled by some of the programming decisions (such as returning references to shared pointers). Given more time, the code could have been simplifier further, i.e. removing the dynamic casts found almost everywhere and replace them with custom rtti solution. But overall, I appreciate the effort and the result.

4. Evaluation of results, publication outputs and awards   60 /100 (D)

Although the thesis suggests that clarity of the programming is the main focus of the thesis, using it for educational purposes would require fairly thorough refactoring and addition of a lot of documentation. While certainly possible, it would be time consuming.

5. Activity of the student

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

There were prolonged period of no activity and even no contact. Even in times when the student was working on the thesis, I had to repeatedly inquire about the progress made.

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

With the rather subpar activity of the student, which greatly diminished my ability to give helpful supervision, I must commend the student for finishing the project in the state it is being handed in as it is a proof of his own aim and determination and given the very sparse consultations I have clearly feared a much worse outcome. I am very relieved that this was not the case.

The overall evaluation   80 /100 (B)

Although the student's independent work nature posed some hardships and the thesis lacks in places, the overall quality of the work is decent and the student did well. Throughout the work the student proved himself to be capable of independently design and develop reasonably complex virtual machine with the main errors being easily addressable by future revisions. Therefore I evaluate the work with B.

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.