



Supervisor's statement of a final thesis

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Thesis title: TinyGo Language
Branch / specialization: Computer Science 2021
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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

Maxim has analyzed the Go language, created a much simpler subset of the language that is more suited to educational uses and implemented compiler frontend and backend for it. My objections would be towards the features selected for the TinyGo language, the algorithms used in the compiler backend and the quality of the code, which, for educational purposes requires somewhat higher standards of clarity.

2. Main written part

60/100 (D)

I found the thesis document in itself rather hard to evaluate. On one hand the big picture is there. A simple, yet informative introduction, followed by a deeper analysis of state of the art in compiler construction and language design from the point of Go and C languages (both make excellent sense for the thesis) with the design and implementation choices (and omissions) clearly stated. In the grand scheme of things, my complaints would be towards the evaluation chapter, which seems to be rather vague.

Things get worse when reading the thesis line by line as it is full of grammatical (and even spelling) mistakes, half-baked ideas and unfinished sentences. While based on my interactions with Maxim, I do believe that those could have been eliminated almost entirely with more time given, the thesis as submitted suffers.

3. Non-written part, attachments

70 /100 (C)

The code is mostly there. There are omissions that could have been easily fixed by using appropriate tooling (sanitizers, etc.), but I would expect those at undergraduate level. Most of those too, could be fixed with a bit more time.

4. Evaluation of results, publication outputs and awards

60 /100 (D)

The thesis was never meant for publication, but as an aid to teaching compiler's course allowing students to explore how different language design choices drive the compiler's design and construction. Unfortunately, the thesis leaves a lot to be desired in this area: The TinyGo language is very simple, up to the point where its difference from the tiny C language already being used in the course is rather small. The backend implementation relies heavily on the simplicity of the Tiny86 target and ignores harder concepts such as register allocation. And finally, the code itself is not in line with current best practices, ranging from unusual project layout to actual code issues.

5. Activity of the student

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

With Maxim, this are too, was a mixed bag. When physically present at the university, interactions with him were flawless, but when absent, not much progress has been 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

Maxim certainly demonstrated ability to work independently. To our meetings, when they happened, he came always prepared with clear goals and questions.

The overall evaluation

65 /100 (D)

Overall, Maxim has fulfilled the thesis requirements. The above-mentioned issues fall into two broad categories: non enough time & very ambitious thesis goal, especially for the undergraduate level. These are connected - had the goal been less ambitious, there would be more time, and had there been more time, I have no doubts Maxim would finish even the very ambitious task he embarked upon with excellent marks. As it stands though, the thesis is certainly good enough to defend at undergraduate level as Maxim proved his practical understanding of multiple rather complex ares of CS, but also exhibits issues that prevent it from reaching a higher mark.

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.