**FACULTY
OF INFORMATION
TECHNOLOGY
CTU IN PRAGUE**

Review report of a final thesis

Reviewer: Sebastián Krynski, MSc.
Student: Bc. Adam Plodek
Thesis title: Out of process byte-code copiler for the R programming language
Branch / specialization: System Programming
Created on: 27 May 2024

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 and the goals are met. The implementation is well done and the numbers in the evaluation are encouraging, leaving the door open for future work.

2. Main written part   80 / 100 (B)

The text accurately describes the work that was done. It also provides precise background context on the original implementation of the R compiler. The work is then evaluated on correctness and performance against the original GNU R implementation. The text itself has room for improvement, - grammar, typos, and several paragraphs need attention.

3. Non-written part, attachments   90 / 100 (A)

The implementation is well organized and thought through.

4. Evaluation of results, publication outputs and awards   90 / 100 (A)

It shows that having a separate baseline compiler written in a different language than R could lead to a significantly more performant implementation. The code written in Rust may prove more reliable in the long-term, in terms of maintenance and further improvements.

The overall evaluation   90 /100 (A)

The assignment is well-fulfilled. The implementation and design decisions are sound. The text explains the implementation process and what is required to understand the code. It has a nice explanation of the GNU R compiler.

Questions for the defense

What are the main benefits of having a separate implementation of the compiler, compared to the default one written in R?
What would be the next steps forward in your implementation?

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.

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.