



Supervisor's statement of a final thesis

Supervisor: Ing. Daniel Sedlák
Student: Ondřej Polanecký
Thesis title: Sharing HTTP cache summaries between web servers
Branch / specialization: Software Engineering 2021
Created on: 7 June 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

Student got familiar with the provided infrastructure, researched various bloom filter types, and implemented everything correctly. However, the evaluation lacks details and could be tested on more than just one server for a longer duration than a few hours to evaluate the behavior of the implemented summary algorithm properly.

2. Main written part

50/100 (E)

Student's English is average at best. Many sentences are incomprehensible and hard to grasp, missing verbs and nouns, inconsistent typography, premature ending of sentences, spelling issues, and jumping from subjects back and forth. For example, the sentence: "Origin server is the server the source of the content" does not make sense. Furthermore, the student uses multiple abbreviations that are not explained, like WAF, DDOS, LB, ..., where a reader has to guess them based on the context.

Chapters 1 and 2 promised a future work and improvements section, but it was not delivered.

Chapter 2 is chaotic, and it could be improved by researching more existing solutions to the problem of sharing and computing cache summaries.

In chapter 3, it is hard to follow some bloom filter formulas because they are not rigorously defined. For example, in 3.3.1.1, the student starts to use a $\$i\$$ variable; however, what it represents is unclear.

Chapters 4 and 5 have many typographic mistakes like not starting with a capital letter at the beginning of the sentence, overflowing text in listings, and small and unreadable figures.

Chapter 5 could greatly benefit from elaborating more on the NGINX internals.

Chapter 6 contains a sloppy evaluation, and it would help to extend it with more plots. Also, the solution was tested only on one server, which is not statistically representative.

Overall, the thesis is intertwined with jargon that is not suitable for a technical thesis.

3. Non-written part, attachments 85 /100 (B)

The code overall demonstrates high quality with the appropriate technologies used. However, the code itself contained some unhandled edge cases that could result in incorrect behavior in the solution.

4. Evaluation of results, publication outputs and awards 80 /100 (B)

The solution implemented in this thesis is, with some modifications, directly used as part of the worldwide CDN service.

5. Activity of the student

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

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

The overall evaluation 70 /100 (C)

The thesis introduces the non-trivial development of the solution that needs to withstand the production environment of a worldwide CDN company. The author had to study and understand a lot of different technologies and algorithms at a detailed level. Based on the reasons written above, I do recommend the thesis for defense and acceptance.

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.