**FACULTY
OF INFORMATION
TECHNOLOGY
CTU IN PRAGUE**

Supervisor's statement of a final thesis

Student:	Narek Vardanjan
Supervisor:	Ing. Filip Křikava, Ph.D.
Thesis title:	An actor model implementation for the OCaml programming language
Branch of the study:	Web and Software Engineering

Date: 15. 6. 2020

Evaluation criterion:	The evaluation scale: 1 to 4.
1. Fulfilment of the assignment	**_1 = assignment fulfilled,_** _2 = assignment fulfilled with minor objections,_ _3 = assignment fulfilled with major objections,_ _4 = assignment not fulfilled_

Criteria description:
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.

Comments:
The thesis delivers a functional implementation of an actor model for the Ocaml programming language.

Evaluation criterion:	The evaluation scale: 0 to 100 points (grade A to F).
2. Main written part	_80 (B)_

Criteria description:
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.

Comments:
The written part is well structured and contains all the relevant information including a comparison to other actor model flavors and frameworks. However I would have wished for at least one more editorial pass to fix formatting issues and typos making the text more readable. It would have been also nice to include some performance related metrics, just to give a rough idea about the scalability of the solution.

Evaluation criterion:	The evaluation scale: 0 to 100 points (grade A to F).
3. Non-written part, attachments	_95 (A)_

Criteria description:
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.

Comments:
The framework implements all the required features. The code is well structured and written in a lightweight functional way giving a good use to ML modules, algebraic data types and pattern matching. The code is tested and contains some explanatory comments in the interfaces following the good software engineering practices.
One point for a future work would be to abstract away the details of Libuv and bin_prot allowing one to use other backends.

Evaluation criterion:	The evaluation scale: 0 to 100 points (grade A to F).
4. Evaluation of results, publication outputs and awards	_95 (A)_

Criteria description:
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.

Comments:

The result is functional and it does what it should. This style of actors that are modeled closely to Akka is new to Ocaml and thus there is a path towards a publication in a venue such as ML workshop (ICFP) of ADORE workshop (OOPSLA). I hope that the student will extend the work and write a paper.

Evaluation criterion:	The evaluation scale: 1 to 5.
5. Activity and self-reliance of the student	*5a:* *__1 = excellent activity,__* *2 = very good activity,* *3 = average activity,* *4 = weaker, but still sufficient activity,* *5 = insufficient activity* *5b:* *__1 = excellent self-reliance,__* *2 = very good self-reliance,* *3 = average self-reliance,* *4 = weaker, but still sufficient self-reliance,* *5 = insufficient self-reliance.*

Criteria description:
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 (5a). Assess the student's ability to develop independent creative work (5b).

Comments:

Narek managed to get familar with the actor model and Ocaml very quickly. He was always prepared on each meeting.

Evaluation criterion:	The evaluation scale: 0 to 100 points (grade A to F).
6. The overall evaluation	*90 (A)*

Criteria description:
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.

Comments:

This thesis designs and implements an actor model for Ocaml. The resulting framework additionally supports supervision, monitoring and location transparency allowing one to build a fully distributed and resilient application.

Signature of the supervisor: