Review report of a final thesis

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Reviewer:	Ing. Jan Trávníček, Ph.D.
Thesis title:	DET language IDE
Branch of the study:	Computer Science

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 task was to analyze existing editors of the DET language and to implement its improved editor with usual modern assisting features. The task was fully fulfiled.

Evaluation criterion:	The evaluation scale: 0 to 100 points (grade A to F).
2. Main written part	_72 (C)_

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 text is written in English, and the use of the language is on a high level, however, proofreading would greatly improve the overall text impression.
Some language errors:
 - (section 1.5.1) terminal symbol are,
 - (section 1.7) Parsing is transforming of ...,
 - (page 24 line 1) return vs returns,
 - Oxford comma, sometimes present, sometimes missing.

The typography of the text is a bit not ideal:
 - the abstract is split between pages,
 - there are forward references in sections 1.3.1 and others,
 - missing (or exceeding) interpunction,
 - some abbreviations are not listed in the abbreviations appendix (VScode, IDE ...),
 - some tool names are typed in various ways (code::blocks vs Code::Blocks),
 - section 1.10.2 seems to be introduced by a paragraph in section 1.10.1.1,
 - the text typesetting seems to be for standard double-sided printing, however, the text is printed using the single-sided scheme,
 - sometimes the text overflows horizontally to the right, sometimes it vertically underflows.

Factual inaccuracies include:
 - many vague definitions (nonterminal symbol, AST, parse tree definition does not mention epsilon),
 - confusing relation between terms derivation and parse,
 - grammar classifications are informal, for instance, the grammar type 1 would, as I understand it, generate only finite languages, grammar type 2 does not mention the rules' right-hand side constraints, grammar type 3 doesn't seem to be defined at all,
 - BNF and EBNF seem to be missing the specification of the initial symbol,
 - it is initially unspecified which version of ANTLR is referred to,
 - ANTLR is not introduced in more details (what is its approach to parsing?, etc),
 - the text does not contain any exact specification of the DET language, only that it is based on Java (I would expect the differences to be highlighted).

The selected editor (Monaco) is mentioned before the actual editor selection is made.
The last paragraph of page 12 is by my option not necessary.
The testing seems to be only about usability tests, although, in my opinion, the quality of the syntax highlighting can be evaluated more exactly.
Can you provide a reference to support the claim that ANTLR grammars need to undergo left factoring and corner substitution (section 4.3.3)?

The editor actually supports more functionality than claimed, for example, code completion of syntax constructs like for, if, or other statements is present.

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 implementation works correctly. IDE assisting features are implemented as described in the text.

Errors reported by the IDE are raw which should be improved in a future version.

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 new DET language editor/IDE (prototype) is provided as a web-based tool, therefore, it is highly accessible from multiple platforms. It (partially) supports more functionality than the original editor. On the other hand, it is just a prototype.

Evaluation criterion:	*No evaluation scale.*
5. Questions for the defence	

Criteria description:
Formulate questions that the student should answer during the Presentation and defence of the FT in front of the SFE Committee (use a bullet list).

Questions:

Have you designed some unit tests to check whether the implementation of a parser is correct?

Evaluation criterion:	The evaluation scale: 0 to 100 points (grade A to F).
6. The overall evaluation	*85 (B)*

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:

The implementation works according to expectation, however, the text decreases the overall impression of the thesis. All in all, I recommend the thesis for defence and recommend to grade it as B (very good).

Signature of the reviewer: