

I. IDENTIFIKAČNÍ ÚDAJE

Název práce:	DSL-specific IDE generation
Jméno autora:	Pavel Pakhomov
Typ práce:	bakalářská
Fakulta/ústav:	Fakulta elektrotechnická (FEL)
Katedra/ústav:	Katedra počítačů
Vedoucí práce:	Ing. Jan Trávníček, Ph.D.
Pracoviště vedoucího práce:	Katedra teoretické informatiky (FIT)

II. HODNOCENÍ JEDNOTLIVÝCH KRITÉRIÍ

Zadání	průměrně náročné
<i>Hodnocení náročnosti zadání závěrečné práce.</i>	
The assignment goal is to transfer a useful helper tool XText from Eclipse IDE to IntelliJ IDEA IDE. The task requires the student to study formal aspects behind the original tool, i.e. formal definitions of languages, compilers, and more, and also to study practical aspects of IntelliJ IDE plugin development. Both are in my opinion reasonable pieces of knowledge required from a bachelor graduate, therefore I believe the assignment is of mediocre complexity.	

Splnění zadání	splněno
<i>Posuďte, zda předložená závěrečná práce splňuje zadání. V komentáři případně uveďte body zadání, které nebyly zcela splněny, nebo zda je práce oproti zadání rozšířena. Nebylo-li zadání zcela splněno, pokuste se posoudit závažnost, dopady a případně i příčiny jednotlivých nedostatků.</i>	
The goals of the thesis are fulfilled. The non-textual attachment was unfortunately incomplete, but upon request a complete attachment was provided by the student.	

Zvolený postup řešení	správný
<i>Posuďte, zda student zvolil správný postup nebo metody řešení.</i>	
I reckon the approach to solving the assignment is correct.	

Odborná úroveň	B - velmi dobře
<i>Posuďte úroveň odbornosti závěrečné práce, využití znalostí získaných studiem a z odborné literatury, využití podkladů a dat získaných z praxe.</i>	
Regarding the correctness of the text from the formal point of view, the most formal chapter is "Language definition" which I believe should be longer. I particularly miss regular languages, regular grammars, finite automata, and possibly regular expressions since these are fundamental for the construction of a practically applicable lexer; definition of at least nondeterministic top down parser since the concept is important for the implementation of a parser (not all but definitely the one used in the thesis).	
Some factual issues:	
- "N is a finite set of non-terminal symbols that is disjoint with the strings formed from G." - A set of symbols vs. set of strings? (The bullet point on terminal symbols is correct, though.).	
- "That is, each rule maps one string of symbols to another." - What symbols? Also, it would be better to have a sentential form defined at this point.	
- In the section 2.4.1, does the result of the sequence of derivations "acbbaBabcccacbbabbabccc" intentionally contain a nonterminal?	
- The table of EBNF syntax denotes the notation of "definition" as "=", however it actually is "::-=". The description of "-" only by exception allows for multiple interpretations (set of symbols except another, or literal raise of exception).	
- In the first paragraph on page 11, I would argue that "full-time" is a keyword opposed to just "full".	
- "This analysis (note: lexical analysis) is usually implemented by using the syntax of regular expressions." Actually, it is	

implemented using finite automata; regular expressions are commonly used to describe what the lexer is supposed to do.

- The text seems to avoid precise formulae/technical terms in some places and as such it is sometimes somewhat vague.
- The AST may also contain epsilons at its leaf nodes.
- Left recursion that is mentioned in section 9.4.1 should have been introduced and explained in chapter Language definition as part of the completely missing section about parsing.

The rest of the text nicely guides the reader through the development process of the final plugin and more or less lessens the impact of the above mentioned issues.

The testing chapter is formulated more like a user documentation rather than testing itself. The scenarios defined in the chapter, more likely less complicated (based on the knowledge of the original Xtext), would serve better as scenarios of usability testing.

Formální a jazyková úroveň, rozsah práce

B - velmi dobře

Posudte správnost používání formálních zápisů obsažených v práci. Posudte typografickou a jazykovou stránku.

The text is written in a very good English with seldom occurring language issues, some of which are mentioned below:

- There are some articles and commas missing in the text, however, not in an amount that would make the text unreadable or hard to understand.
- The text is sometimes non-technical – e.g. "... the work cannot really be considered finished ...", "Let's now evaluate the results ...".
- Typo (Ones -> Once) – "Ones the new instance of Eclipse is launched".

The text is otherwise structured well and it is of an appropriate length.

Some typography issues that I have identified in the text:

- A strange gap between lines in the first paragraph of section 2.1.
- Missing period in the end of the the first bullet point in section 2.2.
- Missing space between "infinite language" and parenthesis in section 2.3, similar occurrences appear relatively commonly in the text.
- Tables usually have captions above.
- The elipsis is typed in two different ways in the Table 2.1, and there are sometimes extra spaces in the notation column.
- Very high number of figures (e.g. 3.1, ..., 9.7, 9.8, 9.9, 9.10, 9.11, 9.12, etc.) could be in a vector format (on the other hand the bitmaps are in a reasonable resolution so it more or less does not make a difference).
- Figure 9.13 is in fact an algorithm and it would be better to see it typeset with appropriate means.
- The text in at least one occurrence overflowed the right text boundary.

Výběr zdrojů, korektnost citací

B - velmi dobře

Vyjádřete se k aktivitě studenta při získávání a využívání studijních materiálů k řešení závěrečné práce. Charakterizujte výběr pramenů. Posudte, zda student využil všechny relevantní zdroje. Ověřte, zda jsou všechny převzaté prvky řádně odlišeny od vlastních výsledků a úvah, zda nedošlo k porušení citační etiky a zda jsou bibliografické citace úplné a v souladu s citačními zvyklostmi a normami.

Citations were chosen correctly and appropriately. The number of citations is relatively low but somewhat expected. It would increase with abovementioned extension of the Chapter „Language definition“ so all in all ok.

Další komentáře a hodnocení

Vyjádřete se k úrovni dosažených hlavních výsledků závěrečné práce, např. k úrovni teoretických výsledků, nebo k úrovni a funkčnosti technického nebo programového vytvořeného řešení, publikačním výstupům, experimentální zručnosti apod.

Vložte komentář (nepovinné hodnocení).

III. CELKOVÉ HODNOCENÍ, OTÁZKY K OBHAJOBĚ, NÁVRH KLASIFIKACE

The goals of the thesis were fulfilled; the student showed an ability to combine theoretical and practical aspects of the creation of a programmable language support plugin for a very complex platform the IntelliJ IDEA surely is; the text is written in English and it proves the student's ability to document what has been done and why. All in all the thesis is of a very good quality and I recommend grading it as such.

Předloženou závěrečnou práci hodnotím klasifikačním stupněm B - velmi dobře.

Datum: 27.8.2021

Podpis: