ANTLR4EMF
Project proposal

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Software developers and engineers often have to deal with modernization of legacy code as part of the maintenance life cycle phase for software products. MDE (Model-driven engineering) promises to support software builders with approaches, models, tools and processes to simplify this task by using automation. The scientific term for migration of software with the help of MDE is called "Model-Driven Software Modernization" (MDSM) [1]. When the source of an application should be converted from one programming language to another, e.g. from Delphi to Java, it is first necessary to import the existing code from text files into a model which has a meta-model of the input programming language. This first step is called Text-to-Model (T2M). There exist domain-specific language (DSL) tools which can be used or extended for simpler general-purpose programming languages. But when it comes to dealing with complex grammars, these tools reach their limits. In [2], the authors discuss the existing problems, evaluate various existing approaches and propose a new language to bridge the gap between grammar-ware and Model-Driven Development (MDD).

But why invent another language. Is it really necessary? With the advent of compiler-generators, Yacc/Bison [3], JavaCC, Coco/R [4] and ANTLR [5] for example, it has gotten easier then ever to describe grammars in an explicit, programmatic form. Collections of grammar files for different programming languages, like [6] and [7], have arisen. Wouldn't it be nice if they could just be used, as they are, for T2M projects?

References

[1] K. Kowalczyk and A. Kwiecinska, "Model-driven software modernization," Master's thesis, , School of Computing, 2009.

[2] J. L. C. Izquierdo and J. G. Molina, "Extracting models from source code in software modernization," *Software & Systems Modeling*, vol. 13, no. 2, pp. 713–734, 2014.

[3] "Gnu bison website," https://www.gnu.org/software/bison/, last visited: 2016-05-09. [Online]. Available: https://www.gnu.org/software/bison/

[4] "Coco/r," http://ssw.jku.at/Research/Projects/Coco/, last visited: 2016-05-09. [Online]. Available: http://ssw.jku.at/Research/Projects/Coco/

[5] T. Parr, "Antlr website," http://www.antlr.org/, 2016, last visited: 2016-05-11. [Online]. Available: http://www.antlr.org/

[6] "Grammar zoo," https://github.com/grammarware/slps/tree/master/topics/grammars, last visited: 2016-05-09. [Online]. Available: https://github.com/grammarware/slps/tree/master/topics/grammars

[7] T. Parr, "antlr/grammars-v4," https://github.com/antlr/grammars-v4/, 2015. [Online]. Available: https://github.com/antlr/grammars-v4/