ISSN: 1391-8796
Abstracts of Presentations
1st Ruhuna International Science & Technology Conference
University of Ruhuna, Matara, Sri Lanka
January 22-23, 2014

Using software engineering approach to construct a light-weight Java compiler

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In early days, compiler development has been a tedious and time consuming task requiring experts such as computer scientists and engineers. For instance, it is said that the development of the first FORTRAN complier has consumed almost 18 man years. Traditionally all phases from lexical analysis to code generation had to be coded for each compiler from the scratch. However, complier development has now become a software engineering task where a compiler developer can use various software tools to build and test a compiler within few weeks. These days, some application developers have also motivated to construct their own compilers before starting software solutions for specific problems. This research study uses the software engineering approach to develop a light-weight Java compiler. We have studied various tools for compiler construction and chosen a tool set comprising JFLEX, JAVA CUP and ASM. It was found that a specific light-weight Java compiler could be structured in few weeks. This project delivered a light-weight Java complier of size less than 1MB, which would require 15MB 1.2_Java compiler otherwise. It can be concluded that the software engineering approach to compiler construction allows the compiler developers to customize or extend an existing compiler to produce a specific purpose light-weight compiler in an efficient and effective manner.

Key words**:** Compilation, intermediate code, Java, software engineering

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