

# Abstract: JVM Code Generation

@ VUT FIT — Compiler Construction 2014

Janyš Martin (xjanys00), Branderský Gabriel (xbrand04)

## Abstract

This text deals with the study of code generation on java platform (more precisely j-- language, which is non-trivial subset of Java). We discuss phase after AST is fully analyzed, all variables and expressions are typed and any necessary tree rewriting has been done. At this moment, the time is set for code generation, which is specific for this platform and Java compiler generates byte code, which is interpreted at runtime by Java virtual machine (JVM). The rules for generating this code are important keys to understanding the byte code.

Chapter focuses on the key language structures like Generating Code for Classes and Their Members, Control and Logical Expressions, Generating Code for Message Expressions, Field Selection, and Array Access Expressions, next also Generating Code for Assignment and Similar Operations, which represent a bigger problem than it seems. Finally the focus is moved to Generating Code for String Concatenation.

Principles of byte code generation are demonstrated on practical problems and examples.

Solution is presented for each case of language structure which uses examples and demonstrations on byte code and j-- compiler.

Based on these information, it is possible to understand the problem of code generation in the context of the JVM.

## Bibliography

Campbell Bill, Iyer Swami, Akbal-Delibas Bahar. Introduction to Compiler Construction in a Java World, Chapman & Hall/CRC, 2012, ISBN 1439860882, 9781439860885