Truffle/C Interpreter

Master thesis for Manuel Rigger
Matr.-Nr.: 0956329
Email: manuel.rigger@chello.at

Truffle is a novel modeling language for implementing managed languages in Java. The language implementer writes an abstract syntax tree (AST) interpreter, which is integrated into the Truffle framework.

The goal of the Truffle/C project is to write a C interpreter for Truffle. This thesis focuses on creating a Truffle Interpreter for the C language.

It should identify which elements of the interpreter can be modeled in Java and run on any virtual machine and which are platform independent. The interpreter should use the Clang parser written in C++ to generate a simplified representation of a C source file.

This thesis should also determine the set of nodes that is needed for modeling a useful part of the C language.

Specific sub goals are:

- Applying object-oriented design techniques when modeling the interpreter.

- Implementing a subset of C such that the interpreter can be tested on established C benchmarks.

- Exploring which Java language constructs are convenient for implementing a scripting language interpreter.

- Using Clang to generate a simplified representation of a C file.

Explicit non goals are:

- Completeness with respect to the C specification.

- Peak performance of executed code comparable to current C compilers.

The work's progress should be discussed with the supervisor at least every 2 weeks. Please note the guidelines of the Institute for System Software when preparing the written thesis.

Supervisor: Dipl.-Ing. Lukas Stadler