Using the Jimple Parser

Patrice Pominville patrice@sable.mcgill.ca

March 24, 2000

1 Introduction

At the heart of the Soot bytecode optimization framework is the Jimple Internal Representation. This document describes Soot's ability to read in textual Jimple files.

We have already seen Soot's ability to load Java .class files. Soot can output the Jimple representation of classes in a textual format (.jimple files) and reread this textual format back into Soot.

The ability to parsing textual .jimple files is quite handy. For example, a user could output classfiles as .jimple files, tweak these by hand, and then use Soot to parse them and output tweaked bytecode. Soot thus provides a high-level facility for editing class files. Another potential application of the .jimple files is to cache optimized classfiles for future analysis. Soot can, at a later time, read these files back in, and will not need to reoptimize the original classfile. This leads to faster compilation times. Finally, a user, or a software tool, can write a class in the Jimple textual format, use Soot to parse the Jimple, and thus create bytecode.

The Jimple format is self-explanatory. The SableCC grammar for textual Jimple can be found in the source code distribution of Soot; it is called jimple.scc. The following is an fragment of Jimple code:

```
{
    java.lang.String[] r0;
    long 10, $11, $12, $13, $14, $15, $16, $17;
    int i0, $i1, $i2, i3;
    java.io.PrintStream $r1, $r2, $r3;

r0 := @parameter0: java.lang.String[];
```

```
i0 = 0;
$i1 = 33 % 33;
$i2 = $i1 + 2;
if $i2 != 43 goto label0;
i3 = 9;
goto label1;
label0:
i3 = 4;
```

2 Producing .jimple Files

The default output format for Soot is classfiles. However, Soot can also produce output in other formats, i.e. textual Jimple. To output .jimple files, invoke Soot using the -f jimple command line option. For example,

```
java soot.Main -f jimple --app test
```

will output test and dependent classes as .jimple files.

3 Parsing .jimple Files

Out of the box, Soot will first look for a classfile to find the definition of a given class; only if this fails will it look for a .jimple definition. The command line option --src-prec jimple (source precedence) instructs Soot to preferentially resolve the class from a .jimple file, falling back on .class files. When resolving, Soot will look for .jimple files using the soot-classpath in the same manner as it does to find .class files. For example, to build on the previous example, the command

```
java soot.Main --src-prec jimple --app test
```

will read the class test from the file test.jimple, and its related classes from the other .jimple files produced in the previous step.

For more details on the -f and --src-prec options the user can refer to the Soot command line documentation.

History

- March 24, 2000: Initial version.
- \bullet May 31, 2003: Updated for Soot 2.0.