Testing and Debugging
Project 1:
Code Coverage
Forum

### All forums in Forum.ST: (309 Posts in 60 Threads)

<table>
<thead>
<tr>
<th>Forum Name/Description</th>
<th>Threads</th>
<th>Posts</th>
<th>Last Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programmierung 2 Staff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projekt 1</td>
<td>1</td>
<td>3</td>
<td>Apr 21, 2010 12:31:55 PM by roessler</td>
</tr>
<tr>
<td>Allgemein Besprechungen</td>
<td>1</td>
<td>1</td>
<td>Apr 12, 2010 1:39:10 PM by roessler</td>
</tr>
<tr>
<td>Off-Topic</td>
<td>0</td>
<td>0</td>
<td>No Posts</td>
</tr>
<tr>
<td>Programmierung 2</td>
<td>9</td>
<td>35</td>
<td>Apr 29, 2010 9:45:54 AM by s9nifisc</td>
</tr>
<tr>
<td>Allgemeine Fragen</td>
<td>22</td>
<td>177</td>
<td>Apr 29, 2010 7:13:12 AM by s9cnschi</td>
</tr>
<tr>
<td>Projekt 2</td>
<td>4</td>
<td>19</td>
<td>Apr 29, 2010 12:32:51 PM by s9aafeld</td>
</tr>
<tr>
<td>Tauschbörse für Termine in den Übungsgruppen</td>
<td>10</td>
<td>31</td>
<td>Apr 24, 2010 12:28:00 PM by s9jschaup</td>
</tr>
<tr>
<td>Übungsblatt 1</td>
<td>3</td>
<td>18</td>
<td>Apr 26, 2010 7:18:12 PM by s9dfrit</td>
</tr>
<tr>
<td>Übungsblatt 2</td>
<td>0</td>
<td>0</td>
<td>No Posts</td>
</tr>
<tr>
<td>Off-Topic</td>
<td>4</td>
<td>10</td>
<td>Apr 28, 2010 3:30:30 PM by s9mmnohm</td>
</tr>
<tr>
<td>Testing and Debugging</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Questions</td>
<td>0</td>
<td>0</td>
<td>No Posts</td>
</tr>
<tr>
<td>Project 1 Code Coverage</td>
<td>5</td>
<td>14</td>
<td>Apr 29, 2010 1:50:54 AM by nikolai.knopp</td>
</tr>
<tr>
<td>Off-Topic</td>
<td>1</td>
<td>1</td>
<td>Apr 23, 2010 8:12:20 AM by kevin.streit</td>
</tr>
</tbody>
</table>
Projects

http://www.st.cs.uni-saarland.de/edu/testingdebugging10/
Svn

- Check in early, check in often.
- Do not check in your target directory or class files.
- Eclipse configuration?
AST View Plug-in

Running Tests & Debugging

- Copy stack trace from terminal to eclipse.
- In order to debug the program, tests can be run inside Eclipse.
Stack Trace Console

Writing coverage info: target/coverage-files/coverage.ser
Stack Trace Console

```
Exception in thread "main" java.lang.RuntimeException
  at testing.debugging.project1.coverage.InsertCoverageCallsVisitor.visit(InsertCoverageCallsVisitor.java:66)
  at org.eclipse.jdt.core.dom.Block.accept0(Block.java:134)
  at org.eclipse.jdt.core.dom.ASTNode.accept(ASTNode.java:2480)
  at org.eclipse.jdt.core.dom.ASTNode.acceptChild(ASTNode.java:2528)
  at org.eclipse.jdt.core.dom.MethodDeclaration.accept0(MethodDeclaration.java:504)
  at org.eclipse.jdt.core.dom.ASTNode.accept(ASTNode.java:2480)
  at testing.debugging.project1.coverage.MethodAstVisitor.visit(MethodAstVisitor.java:66)
  at org.eclipse.jdt.core.dom.MethodDeclaration.accept0(MethodDeclaration.java:489)
  at org.eclipse.jdt.core.dom.ASTNode.accept(ASTNode.java:2480)
  at org.eclipse.jdt.core.dom.ASTNode.acceptChildren(ASTNode.java:2551)
  at org.eclipse.jdt.core.dom.TypeDeclaration.accept0(TypeDeclaration.java:484)
  at org.eclipse.jdt.core.dom.ASTNode.accept(ASTNode.java:2480)
  at org.eclipse.jdt.core.dom.ASTNode.acceptChildren(ASTNode.java:2551)
  at org.eclipse.jdt.core.domCompilationUnit.accept0(CompilationUnit.java:219)
```
Run Test in Eclipse

1. Transform file.
2. Compile file.
3. Put transformed class on classpath.
4. Run transformed class.
Transform File
$javac \
-cp target/classes:target/project1-coverage-1.0-SNAPSHOT-dist.dir/lib/junit-4.8.1.jar \
target/src-instrumented/testing/debugging/project1/coverage/integration/SimpleCoverageTest.java
Run Transformed Class
Run Transformed Class
Add to Classpath
Add to Classpath
Directory with instrumented class has to precede test directory on the classpath.
Secret Tests

- Expected coverage:
  - 1, 2, 3
- See test in forum.

1. do
2. continue;
3. while (i != 0);
Secret Tests

- Expected coverage:
  - 1,2

1. do
2. break;
3. while (i != 0);
Implementation Issues

- Sometimes blocks have to be added when new statements are inserted.
Build

• Tests do not work on Ubuntu.

| ignoreDirFormatExtensions | boolean | - | If this flag is set, the ".dir" suffix will be suppressed in the output directory name when using assembly/format == 'dir' and other formats that begin with 'dir'.
|---------------------------|---------|---| NOTE: Since 2.2-beta-3, the default-value for this is true, NOT false as it used to be.
|                           |         |   | Default value is: true.

| ignoreMissingDescriptor   | boolean | - | Set to true in order to not fail when a descriptor is missing.
|---------------------------|---------|---| Default value is: false.

| includeSite              | boolean | - | Deprecated. Please set this variable in the assembly descriptor instead.
|--------------------------|---------|---| Default value is: false.

another possible fix is to change the pom.xml:

<ignoreDirFormatExtensions>false</ignoreDirFormatExtensions>
Build

- Tests may not pass when multiple files are written by the tracer.
- We will update the `build.xml`.
- Run `svn update` to get the changes.
Direct AST Manipulation vs. ASTRewrite

while ()
++i;

while ()
{
++i;
}
Direct AST Manipulation
Direct AST Manipulation
ASTRewrite

While

ExpStmt

ExpStmt

ExpStmt

{ ... }

ExpStmt2

ExpStmt
Tree Traversal
(using the visit(...)-Methods)