The Patches of the Nopol Automatic Repair System on the Bugs of Defects4J version 1.1.0
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The Patches of the Nopol Automatic Repair System on the Bugs of Defects4J version 1.1.0

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Technical report hal-01480084
https://hal.archives-ouvertes.fr/hal-01480084

This report lists the test-suite adequate patches found by the Nopol automatic repair system [3] on version 1.1.0 of the Defects4J benchmark of bugs [2]. In total, Nopol finds a test-suite adequate patches for 103 different bugs, as shown in Table 1.

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We the Oracle JDK 1.7.0_7 to run Nopol and OpenJDK 1.8.0 for compiling the project Mockito. We give a time budget of three hours to Nopol to find a patch. The experiment has been conducted on machines that are equipped of Xeon X3440 Quad-core processor and 15GB RAM, the machines are part of the Grid5000 infrastructure [1].

Reproduction information:

• Nopol source code: https://github.com/SpoonLabs/nopol/
  Commit used: 473961c2d5c668517bd45be1d878074858cb934f
• Defects4j version: https://github.com/rjust/defects4j/releases/tag/v1.1.0/
• Execution traces: https://github.com/Spirals-Team/defects4j-repair/tree/master/results/2017-march/

1 Chart

Nopol repairs 9 bugs in the project Chart.

1.1 Chart 3

--- /tmp/chart_3_Nopol/source/org/jfree/data/time/TimeSeries.java
+++ /tmp/chart_3_Nopol/source/org/jfree/data/time/TimeSeries.java
@@ -884,3 +884,3 @@
  }
-    if (removed) {
+    if (removed) {

Table 1: The number of synthesized test-suite adequate patches for each project.

<table>
<thead>
<tr>
<th>Project</th>
<th># Patches</th>
<th># Bugs</th>
<th>Repair Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chart</td>
<td>9</td>
<td>26</td>
<td>37%</td>
</tr>
<tr>
<td>Closure</td>
<td>56</td>
<td>133</td>
<td>42%</td>
</tr>
<tr>
<td>Lang</td>
<td>4</td>
<td>65</td>
<td>6%</td>
</tr>
<tr>
<td>Math</td>
<td>24</td>
<td>106</td>
<td>22%</td>
</tr>
<tr>
<td>Mockito</td>
<td>2</td>
<td>38</td>
<td>5%</td>
</tr>
<tr>
<td>Time</td>
<td>8</td>
<td>27</td>
<td>29%</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>395</td>
<td>26%</td>
</tr>
</tbody>
</table>

Listing 1: "The generated patch for the bug Chart 3"

Number of tests that execute the patch: 86
Execution time: 50 seconds

1.2 Chart 4

Listing 2: "The generated patch for the bug Chart 4"

Number of tests that execute the patch: 18
Execution time: 7 minutes, 32 seconds

1.3 Chart 5

Listing 3: "The generated patch for the bug Chart 5"

Number of tests that execute the patch: 6
Execution time: 38 seconds

1.4 Chart 9

Listing 4: "The generated patch for the bug Chart 9"

Number of tests that execute the patch: 4
Execution time: 34 seconds

1.5 Chart 13
1.6 Chart 17

Listing 5: "The generated patch for the bug Chart 13"

Number of tests that execute the patch: 2
Execution time: 42 seconds

1.7 Chart 21

Listing 6: "The generated patch for the bug Chart 17"

Number of tests that execute the patch: 4
Execution time: 33 seconds

1.8 Chart 25

Listing 7: "The generated patch for the bug Chart 21"

Number of tests that execute the patch: 12
Execution time: 37 seconds
/**
 * 
 */
else if (orientation == PlotOrientation.VERTICAL) {
    drawVerticalItem(g2, state, dataArea, plot, domainAxis, rangeAxis,
    statData, row, column);
}

Listing 8: "The generated patch for the bug Chart 25"

Number of tests that execute the patch: 10
Execution time: 33 seconds

1.9 Chart 26

--- /tmp/chart_26_Nopol/source/org/jfree/chart/plot/CategoryPlot.java
+++ /tmp/chart_26_Nopol/source/org/jfree/chart/plot/CategoryPlot.java
@@ -2537,3 +2537,3 @@
    boolean b2 = (area.getHeight() <= MINIMUM_HEIGHT_TO_DRAW);
-    if (b1 || b2) {
+    if (org.jfree.chart.plot.CategoryPlot.DEFAULT_CROSSHAIR_STROKE != null) {
        return;
    }

Listing 9: "The generated patch for the bug Chart 26"

Number of tests that execute the patch: 48
Execution time: 1 minute, 40 seconds

2 Closure

Nopol repairs 56 bugs in the project Closure.

2.1 Closure 1

--- /tmp/closure_1_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_1_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1410,7 +1410,9 @@
    if (diff != null) {
-        return "Node tree inequality:" +
-            "\nTree1: \n" + toStringTree() +
-            "\nTree2: \n" + node2.toStringTree() +
-            "\nSubtree1: " + diff.nodeA.toStringTree() +
-            "\nSubtree2: " + diff.nodeB.toStringTree();
+        if ((node2.type) != (com.google.javascript.rhino.Node.this.type)) {
+            return "Node tree inequality:" +
+                "\nTree1: \n" + toStringTree() +
+                "\nTree2: \n" + node2.toStringTree() +
+                "\nSubtree1: " + diff.nodeA.toStringTree() +
+                "\nSubtree2: " + diff.nodeB.toStringTree();
+    }

Listing 10: "The generated patch for the bug Closure 1"

Number of tests that execute the patch: 15
Execution time: 2 minutes, 4 seconds

2.2 Closure 2

--- /tmp/closure_2_Nopol/src/com/google/javascript/jscomp/TypeCheck.java
+++ /tmp/closure_2_Nopol/src/com/google/javascript/jscomp/TypeCheck.java
@@ -1663,4 +1663,6 @@
    currentProperties.clear();
    checkInterfaceConflictProperties(t, n, functionPrivateName,
    properties, currentProperties, interfaceType);
+    if (com.google.jscomp.jscomp.TypeCheck.this.unknownCount < com.google.jscomp.
+        jscomp.TypeCheck.this.typedCount) {
+        checkInterfaceConflictProperties(t, n, functionPrivateName,
+            properties, currentProperties, interfaceType);
    }
    properties.putAll(currentProperties);

Listing 11: "The generated patch for the bug Closure 2"

Number of tests that execute the patch: 17
Execution time: 2 minutes, 7 seconds

2.3 Closure 3
### Listing 12: "The generated patch for the bug Closure 3"

Number of tests that execute the patch: 10  
Execution time: 7 minutes, 8 seconds

### Closure 5

### Listing 13: "The generated patch for the bug Closure 5"

Number of tests that execute the patch: 8  
Execution time: 1 minute, 51 seconds

### Closure 7

### Listing 14: "The generated patch for the bug Closure 7"

Number of tests that execute the patch: 358  
Execution time: 3 minutes, 26 seconds

### Closure 8
Listing 15: "The generated patch for the bug Closure 8"

Number of tests that execute the patch: 8
Execution time: 2 minutes, 28 seconds

2.7 Closure 10

Listing 16: "The generated patch for the bug Closure 10"

Number of tests that execute the patch: 8
Execution time: 4 minutes, 28 seconds

2.8 Closure 12

Listing 17: "The generated patch for the bug Closure 12"

Number of tests that execute the patch: 8
Execution time: 7 minutes, 35 seconds

2.9 Closure 14

Listing 18: "The generated patch for the bug Closure 14"

Number of tests that execute the patch: 7
### 2.10 Closure 15

```java
--- /tmp/closure_15_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_15_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1429,7 +1429,9 @@
 if (diff != null) {
     return "Node tree inequality:"
     + "\nTree1:\n" + toStringTree() +
-    "\nTree2:\n" + node2.toStringTree() +
-    "\nSubtree1: " + diff.nodeA.toStringTree() +
-    "\nSubtree2: " + diff.nodeB.toStringTree();
+    if (com.google.javascript.rhino.Node.this.type < 32) {
+        return "Node tree inequality:"
+        + "\nTree1:\n" + toStringTree() +
+        + "\nTree2:\n" + node2.toStringTree() +
+        + "\nSubtree1: " + diff.nodeA.toStringTree() +
+        + "\nSubtree2: " + diff.nodeB.toStringTree();
+    }
 }
```

Listing 19: "The generated patch for the bug Closure 15"

Number of tests that execute the patch: 8

Execution time: 7 minutes, 28 seconds

### 2.11 Closure 16

```java
--- /tmp/closure_16_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_16_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1445,3 +1445,5 @@
 if (!isEquivalentTo(node2, false, false)) {
     return new NodeMismatch(this, node2);
+    if (com.google.javascript.rhino.Node.this.sourcePosition <= 1) {
+        return new NodeMismatch(this, node2);
+    }
 }
```

Listing 20: "The generated patch for the bug Closure 16"

Number of tests that execute the patch: 12

Execution time: 4 minutes, 12 seconds

### 2.12 Closure 17

```java
--- /tmp/closure_17_Nopol/src/com/google/javascript/jscomp/TypedScopeCreator.java
+++ /tmp/closure_17_Nopol/src/com/google/javascript/jscomp/TypedScopeCreator.java
@@ -1294,3 +1294,5 @@
     // then we can safely use that.
     return rValue.getJSType();
+    if (!(com.google.javascript.jscomp.TypedScopeCreator.DELEGATE_PROXY_SUFFIX.
+        length() == -1 + com.google.javascript.jscomp.TypedScopeCreator.this.
+        functionAnalysisResults.size().size())) {
+        return rValue.getJSType();
+    }
 } else if (rValue.isOr()) {
```

Listing 21: "The generated patch for the bug Closure 17"

Number of tests that execute the patch: 25

Execution time: 2 minutes, 1 second

### 2.13 Closure 18

```java
--- /tmp/closure_18_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_18_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1429,7 +1429,9 @@
 if (diff != null) {
     return "Node tree inequality:"
     + "\nTree1:\n" + toStringTree() +
-    "\nTree2:\n" + node2.toStringTree() +
-    "\nSubtree1: " + diff.nodeA.toStringTree() +
-    "\nSubtree2: " + diff.nodeB.toStringTree();
+    if (com.google.javascript.rhino.Node.this.type <= com.google.javascript.rhino.Node.IS_DISPATCHER) {
+        return "Node tree inequality:"
+        + "\nTree1:\n" + toStringTree() +
+        + "\nTree2:\n" + node2.toStringTree() +
+        + "\nSubtree1: " + diff.nodeA.toStringTree() +
```

7
Listing 22: "The generated patch for the bug Closure 18"

Number of tests that execute the patch: 8
Execution time: 1 minute, 51 seconds

2.14 Closure 20

Listing 23: "The generated patch for the bug Closure 20"

Number of tests that execute the patch: 8
Execution time: 2 minutes

2.15 Closure 21

Listing 24: "The generated patch for the bug Closure 21"

Number of tests that execute the patch: 2
Execution time: 1 minute, 59 seconds

2.16 Closure 22

Listing 25: "The generated patch for the bug Closure 22"

Number of tests that execute the patch: 3
Execution time: 2 minutes, 24 seconds

2.17 Closure 26

Listing 26: "The generated patch for the bug Closure 26"

Number of tests that execute the patch: 14
Execution time: 3 minutes, 34 seconds

2.18 Closure 28

Listing 27: "The generated patch for the bug Closure 28"

Number of tests that execute the patch: 8
Execution time: 1 minute, 55 seconds

2.19 Closure 29

Listing 28: "The generated patch for the bug Closure 29"

Number of tests that execute the patch: 12
Execution time: 2 minutes

2.20 Closure 30
Listing 29: "The generated patch for the bug Closure 30"

Number of tests that execute the patch: 5
Execution time: 1 minute, 45 seconds

2.21 Closure 31

Listing 30: "The generated patch for the bug Closure 31"

Number of tests that execute the patch: 3
Execution time: 1 minute, 54 seconds

2.22 Closure 33

Listing 31: "The generated patch for the bug Closure 33"

Number of tests that execute the patch: 8
Execution time: 1 minute, 52 seconds

2.23 Closure 35
if ((fieldName.length()) != 5) {
    if (builder.addProperty(fieldName, fieldType, fieldNameNode) == null) {
        // Duplicate field name, warning and skip
        reporter.warning("Duplicate record field " + fieldName,
                       sourceName,
                       n.getLineno(), fieldNameNode.getCharno());
    }
}

Listing 32: "The generated patch for the bug Closure 35"

Number of tests that execute the patch: 26
Execution time: 2 minutes, 43 seconds

2.24 Closure 36

--- /tmp/closure_36_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_36_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1416,7 +1416,9 @@
 if (diff != null) {
     return "Node tree inequality:" +
     "\nTree1:\n" + toStringTree() +
-    "\nTree2:\n" + node2.toStringTree() +
+    "\nSubtree1:" + diff.nodeA.toStringTree() +
+    "\nSubtree2:" + diff.nodeB.toStringTree();
+        IS_DISPATCHER) { +
+        return "Node tree inequality:" +
+        "\nTree1:\n" + toStringTree() +
+        "\nTree2:\n" + node2.toStringTree() +
+        "\nSubtree1:" + diff.nodeA.toStringTree() +
+        "\nSubtree2:" + diff.nodeB.toStringTree();
+    }
}

Listing 33: "The generated patch for the bug Closure 36"

Number of tests that execute the patch: 3
Execution time: 1 minute, 48 seconds

2.25 Closure 38

--- /tmp/closure_38_Nopol/src/com/google/javascript/jscomp/CodeConsumer.java
+++ /tmp/closure_38_Nopol/src/com/google/javascript/jscomp/CodeConsumer.java
@@ -244,3 +244,3 @@
 boolean negativeZero = isNegativeZero(x);
 - if (x < 0 && prev == '-') {
 -
+ if ((prev == '-')) {
+     add(" ");

Listing 34: "The generated patch for the bug Closure 38"

Number of tests that execute the patch: 1665
Execution time: 3 minutes, 11 seconds

2.26 Closure 40

--- /tmp/closure_40_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_40_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1411,7 +1411,9 @@
 if (diff != null) {
     return "Node tree inequality:" +
     "\nTree1:\n" + toStringTree() +
-    "\nTree2:\n" + node2.toStringTree() +
-    "\nSubtree1:" + diff.nodeA.toStringTree() +
-    "\nSubtree2:" + diff.nodeB.toStringTree();
+    if (com.google.javascript.rhino.Node.this.type < 32) { +
+        return "Node tree inequality:" +
+        "\nTree1:\n" + toStringTree() +
+        "\nTree2:\n" + node2.toStringTree() +
+        "\nSubtree1:" + diff.nodeA.toStringTree() +
+        "\nSubtree2:" + diff.nodeB.toStringTree();
+    }
}

Listing 35: "The generated patch for the bug Closure 40"
Number of tests that execute the patch: 3
Execution time: 2 minutes, 7 seconds

### 2.27 Closure 45

```java
--- /tmp/closure_45_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_45_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1403,7+1403,9 @@
    if (diff != null) {
        if (com.google.javascript.rhino.Node.this.type < 32) {
            return "Node tree inequality:
```

Listing 36: "The generated patch for the bug Closure 45"

Number of tests that execute the patch: 3
Execution time: 1 minute, 41 seconds

### 2.28 Closure 49

```java
--- /tmp/closure_49_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_49_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1566,7+1566,9 @@
    if (diff != null) {
        if (com.google.javascript.rhino.Node.this.type <= com.google.javascript.rhino.
```

Listing 37: "The generated patch for the bug Closure 49"

Number of tests that execute the patch: 68
Execution time: 1 minute, 47 seconds

### 2.29 Closure 50

```java
--- /tmp/closure_50_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_50_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1566,7+1566,9 @@
    if (diff != null) {
```

Listing 38: "The generated patch for the bug Closure 50"

Number of tests that execute the patch: 4
Execution time: 1 minute, 50 seconds
Number of tests that execute the patch: 11
Execution time: 2 minutes, 14 seconds

2.31 Closure 60

Number of tests that execute the patch: 31
Execution time: 12 minutes, 12 seconds

2.32 Closure 61

Number of tests that execute the patch: 4
Execution time: 1 minute, 39 seconds

2.33 Closure 62
if (error != null) {
    for (int i = 0; i < charno; i++) {
Listing 42: "The generated patch for the bug Closure 62"

Number of tests that execute the patch: 5
Execution time: 1 minute, 32 seconds

2.34 Closure 63

--- /tmp/closure_63_Nopol/src/com/google/javascript/jscomp/LightweightMessageFormatter.java
+++ /tmp/closure_63_Nopol/src/com/google/javascript/jscomp/LightweightMessageFormatter.java
@@ -96,4 +96,3 @@
    // at the end of the line
    - if (excerpt.equals(LINE))
    - & & 0 <= charno & & charno < sourceExcerpt.length()) {
    + if (error != null) {
    for (int i = 0; i < charno; i++) {
Listing 43: "The generated patch for the bug Closure 63"

Number of tests that execute the patch: 5
Execution time: 1 minute, 31 seconds

2.35 Closure 66

--- /tmp/closure_66_Nopol/src/com/google/javascript/jscomp/TypeCheck.java
+++ /tmp/closure_66_Nopol/src/com/google/javascript/jscomp/TypeCheck.java
@@ -821,3 +821,5 @@
    if (type == null) {
    - nullCount ++;
    + if (com.google.javascript.jscomp.TypeCheck.this.inExterns) {
    + nullCount ++;
    + }
    } else if (type.isUnknownType()) {
Listing 44: "The generated patch for the bug Closure 66"

Number of tests that execute the patch: 166
Execution time: 2 minutes, 21 seconds

2.36 Closure 67

--- /tmp/closure_67_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_67_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1384,7 +1384,9 @@
    if (diff != null) {
        return "Node tree inequality:" +
        "\nTree1:\n" + toStringTree() +
Listing 45: "The generated patch for the bug Closure 67"

Number of tests that execute the patch: 2
Execution time: 1 minute, 37 seconds

2.37 Closure 72

--- /tmp/closure_72_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_72_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1381,7 +1381,9 @@
    if (diff != null) {
        return "Node tree inequality:" +
        "\nTree1:\n" + toStringTree() +
Listing 46: "The generated patch for the bug Closure 72"
Listing 46: "The generated patch for the bug Closure 72"

Number of tests that execute the patch: 2
Execution time: 1 minute, 32 seconds

2.38 Closure 75

Listing 47: "The generated patch for the bug Closure 75"

Number of tests that execute the patch: 3164
Execution time: 24 minutes, 1 second

2.39 Closure 76

Listing 48: "The generated patch for the bug Closure 76"

Number of tests that execute the patch: 5
Execution time: 1 minute, 30 seconds

2.40 Closure 78

Listing 49: "The generated patch for the bug Closure 78"

Number of tests that execute the patch: 1
Execution time: 1 minute, 25 seconds

2.41 Closure 111
if (message != null) {
    return;
}

Listing 50: "The generated patch for the bug Closure 111"

Number of tests that execute the patch: 381
Execution time: 2 minutes, 49 seconds

2.42 Closure 113

--- /tmp/closure_113_Nopol/src/com/google/javascript/jscomp/ProcessClosurePrimitives.java
+++ /tmp/closure_113_Nopol/src/com/google/javascript/jscomp/ProcessClosurePrimitives.java
@@ -328,3 +328,3 @@
    // let them be caught in the subsequent run.
    - if (provided != null) {
    + if ((provided != null) || (!(ns.length() < 10)) ) {
        parent.detachFromParent();
    }

Listing 51: "The generated patch for the bug Closure 113"

Number of tests that execute the patch: 26
Execution time: 2 minutes, 22 seconds

2.43 Closure 114

--- /tmp/closure_114_Nopol/src/com/google/javascript/jscomp/Rhino/Node.java
+++ /tmp/closure_114_Nopol/src/com/google/javascript/jscomp/Rhino/Node.java
@@ -1429,7 +1429,9 @@
    if (diff != null) {
        if (node2.type < com.google.javascript.rhino.Node.JSDOC_INFO_PROP) {
            return "Node tree inequality:" +
            "\nTree1:\n" + toStringTree() +
            "\nSubtree1: " + diff.nodeA.toStringTree();
        }
    }

Listing 52: "The generated patch for the bug Closure 114"

Number of tests that execute the patch: 8
Execution time: 2 minutes, 14 seconds

2.44 Closure 115

--- /tmp/closure_115_Nopol/src/com/google/javascript/jscomp/Rhino/Node.java
+++ /tmp/closure_115_Nopol/src/com/google/javascript/jscomp/Rhino/Node.java
@@ -1429,7 +1429,9 @@
    if (diff != null) {
        if (node2.type < com.google.javascript.rhino.Node.JSDOC_INFO_PROP) {
            return "Node tree inequality:" +
            "\nTree1:\n" + toStringTree() +
            "\nSubtree1: " + diff.nodeA.toStringTree();
        }
    }

Listing 53: "The generated patch for the bug Closure 115"

Number of tests that execute the patch: 14
Execution time: 2 minutes, 18 seconds

2.45 Closure 116

--- /tmp/closure_116_Nopol/src/com/google/javascript/jscomp/Rhino/Node.java
+++ /tmp/closure_116_Nopol/src/com/google/javascript/jscomp/Rhino/Node.java
@@ -1429,7 +1429,9 @@
    if (diff != null) {
        return "Node tree inequality:" +
        "\nTree1:\n" + toStringTree() +
        "\nSubtree1: " + diff.nodeA.toStringTree();
    }

Listing 54: "The generated patch for the bug Closure 116"
Number of tests that execute the patch: 13
Execution time: 2 minutes, 13 seconds

2.46 Closure 119
--- /tmp/closure_119_Nopol/src/com/google/javascript/jscomp/GlobalNamespace.java
+++ /tmp/closure_119_Nopol/src/com/google/javascript/jscomp/GlobalNamespace.java
@@ -690,3 +690,5 @@
     if (((com.google.javascript.jscomp.GlobalNamespace.this.externsRoot != null) && ((-1) !=
         ((2) - (com.google.javascript.jscomp.GlobalNamespace.this.globalNames.size()))) || (!((com.
             google.javascript.jscomp.GlobalNamespace.this.externsScope != null))) { 
+         handleGet(module, scope, n, parent, name, type);
         +
     }
}

Listing 54: "The generated patch for the bug Closure 116"

Number of tests that execute the patch: 2
Execution time: 2 minutes, 13 seconds

2.47 Closure 120
--- /tmp/closure_120_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_120_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1429,7 +1429,9 @@
     if (diff != null) {
         return "Node tree inequality:" +
         "\n\nTree1:\n" + toStringTree() +
-         "\n\nTree2:\n" + node2.toStringTree() +
+         "\n\nTree2:\n" + node2.toStringTree() +
         "\n\nSubtree1: " + diff.nodeA.toStringTree() +
-         "\n\nSubtree2: " + diff.nodeB.toStringTree();
     } else {
         handleGet(module, scope, n, parent, name, type);
+         handleGet(module, scope, n, parent, name, type);
     }
}

Listing 55: "The generated patch for the bug Closure 119"

Number of tests that execute the patch: 394
Execution time: 32 minutes, 2 seconds

2.48 Closure 121
--- /tmp/closure_121_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_121_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1429,7 +1429,9 @@
     if (diff != null) {
         return "Node tree inequality:" +
         "\n\nTree1:\n" + toStringTree() +
-         "\n\nTree2:\n" + node2.toStringTree() +
+         "\n\nTree2:\n" + node2.toStringTree() +
         "\n\nSubtree1: " + diff.nodeA.toStringTree() +
-         "\n\nSubtree2: " + diff.nodeB.toStringTree();
     } else {
         handleGet(module, scope, n, parent, name, type);
+         handleGet(module, scope, n, parent, name, type);
     }
}

Listing 56: "The generated patch for the bug Closure 120"

Number of tests that execute the patch: 8
Execution time: 2 minutes, 11 seconds
Listing 57: "The generated patch for the bug Closure 121"

Number of tests that execute the patch: 8
Execution time: 2 minutes, 12 seconds

2.49 Closure 124

```
--- /tmp/closure_124_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_124_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1427,7 +1427,9 @@
     if (diff != null) {
         return "Node tree inequality:" +
             "\nTree1:\n" + toStringTree() +
-     "\n\nTree2:\n" + node2.toStringTree() +
-     "\n\nSubtree1: " + diff.nodeA.toStringTree() +
-     "\n\nSubtree2: " + diff.nodeB.toStringTree();
+     if (node2.type < com.google/javascript.rhino.Node.SIDE_EFFECT_FLAGS) {
+         return "Node tree inequality:" +
+             "\nTree1:\n" + toStringTree() +
+             "\n\nTree2:\n" + node2.toStringTree() +
+             "\n\nSubtree1: " + diff.nodeA.toStringTree() +
+             "\n\nSubtree2: " + diff.nodeB.toStringTree();
+     }
     }
```

Listing 58: "The generated patch for the bug Closure 124"

Number of tests that execute the patch: 8
Execution time: 17 minutes, 49 seconds

2.50 Closure 126

```
--- /tmp/closure_126_Nopol/src/com/google/javascript/jscomp/MinimizeExitPoints.java
+++ /tmp/closure_126_Nopol/src/com/google/javascript/jscomp/MinimizeExitPoints.java
@@ -142,3 +142,5 @@
           Node finallyBlock = n.getLastChild();
            tryMinimizeExits(finallyBlock, exitType, labelName);
+        if (0 == 1) {
+            tryMinimizeExits(finallyBlock, exitType, labelName);
+        }
```

Listing 59: "The generated patch for the bug Closure 126"

Number of tests that execute the patch: 2
Execution time: 2 minutes, 1 second

2.51 Closure 127

```
--- /tmp/closure_127_Nopol/src/com/google/javascript/rhino/Node.java
+++ /tmp/closure_127_Nopol/src/com/google/javascript/rhino/Node.java
@@ -1427,7 +1427,9 @@
     if (diff != null) {
         return "Node tree inequality:" +
             "\nTree1:\n" + toStringTree() +
-     "\n\nTree2:\n" + node2.toStringTree() +
-     "\n\nSubtree1: " + diff.nodeA.toStringTree() +
-     "\n\nSubtree2: " + diff.nodeB.toStringTree();
+     if (node2.type < com.google.js.rhino.Node.SIDE_EFFECT_FLAGS) {
+         return "Node tree inequality:" +
+             "\nTree1:\n" + toStringTree() +
+             "\n\nTree2:\n" + node2.toStringTree() +
+             "\n\nSubtree1: " + diff.nodeA.toStringTree() +
+             "\n\nSubtree2: " + diff.nodeB.toStringTree();
+     }
     }
```

Listing 60: "The generated patch for the bug Closure 127"

Number of tests that execute the patch: 13
Execution time: 2 minutes, 4 seconds

2.52 Closure 129
Listing 61: "The generated patch for the bug Closure 129"

Number of tests that execute the patch: 8
Execution time: 2 minutes, 18 seconds

2.53 Closure 130

Listing 62: "The generated patch for the bug Closure 130"

Number of tests that execute the patch: 8
Execution time: 2 minutes, 3 seconds

2.54 Closure 131

Listing 63: "The generated patch for the bug Closure 131"

Number of tests that execute the patch: 9
Execution time: 2 minutes, 21 seconds

2.55 Closure 132
if (diff != null) {
    return "Node tree inequality:" +
    "\nTree1:\n" + toStringTree() +
    "\nTree2:\n" + node2.toStringTree() +
    "\nSubtree1: " + diff.nodeA.toStringTree() +
    "\nSubtree2: " + diff.nodeB.toStringTree();
} else {
    return "Node tree inequality:" +
    "\nTree1:\n" + toStringTree() +
    "\nTree2:\n" + node2.toStringTree() +
    "\nSubtree1: " + diff.nodeA.toStringTree() +
    "\nSubtree2: " + diff.nodeB.toStringTree();
}

Listing 64: "The generated patch for the bug Closure 132"

Number of tests that execute the patch: 8
Execution time: 2 minutes, 25 seconds

2.56 Closure 133

--- /tmp/closure_133_Nopol/src/com/google/javascript/jscomp/parsing/JsDocInfoParser.java
+++ /tmp/closure_133_Nopol/src/com/google/javascript/jscomp/parsing/JsDocInfoParser.java
@@ -1412,4 +1412,3 @@
-     if (token == JsDocToken.EOC || token == JsDocToken.EOL || token == JsDocToken.EOF) {
+     if (com.google.javascript.jscomp.parsing.JsDocInfoParser.this.unreadToken != null) {
         return new ExtractionInfo("", token);
     }

Listing 65: "The generated patch for the bug Closure 133"

Number of tests that execute the patch: 254
Execution time: 4 minutes, 22 seconds

3 Lang

Nopol repairs 4 bugs in the project Lang.

3.1 Lang 44

--- /tmp/lang_44_Nopol/src/java/org/apache/commons/NumberUtils.java
+++ /tmp/lang_44_Nopol/src/java/org/apache/commons/NumberUtils.java
@@ -192,5 +192,3 @@
     case 'L':
     -     if (dec == null
     -         & exp == null
     -         & (numeric.charAt(0) == '-' & isDigits(numeric.substring(1))) ||
-     +     if (((dec == null) & (exp == null))) {
         try {
             return createBigInteger(numeric);
         }
Listing 66: "The generated patch for the bug Lang 44"

Number of tests that execute the patch: 3
Execution time: 29 seconds

3.2 Lang 51

--- /tmp/lang_51_Nopol/src/java/org/apache/commons/BooleanUtils.java
+++ /tmp/lang_51_Nopol/src/java/org/apache/commons/BooleanUtils.java
@@ -676,6 +676,6 @@
 } }
-    if (ch == 'Y') {
+    if (str!=null) {
        return
        (str.charAt(1) == 'E' || str.charAt(1) == 'e') &
        (str.charAt(2) == 'S' || str.charAt(2) == 's');
Listing 66: "The generated patch for the bug Lang 51"
Listing 67: "The generated patch for the bug Lang 51"

Number of tests that execute the patch: 1
Execution time: 28 seconds

3.3 Lang 53

Listing 68: "The generated patch for the bug Lang 53"

Number of tests that execute the patch: 6
Execution time: 35 seconds

3.4 Lang 58

Listing 69: "The generated patch for the bug Lang 58"

Number of tests that execute the patch: 3
Execution time: 10 minutes, 26 seconds

4 Math

Nopol repairs 24 bugs in the project Math.

4.1 Math 2

Listing 70: "The generated patch for the bug Math 2"

Number of tests that execute the patch: 63
Execution time: 6 minutes, 18 seconds

4.2 Math 4
Listing 71: "The generated patch for the bug Math 4"

Number of tests that execute the patch: 24
Execution time: 6 minutes, 7 seconds

4.3 Math 7

Listing 72: "The generated patch for the bug Math 7"

Number of tests that execute the patch: 14
Execution time: 20 minutes, 6 seconds

4.4 Math 24

Listing 73: "The generated patch for the bug Math 24"

Number of tests that execute the patch: 2
Execution time: 9 minutes, 53 seconds

4.5 Math 28

Listing 74: "The generated patch for the bug Math 28"

Number of tests that execute the patch: 4
Execution time: 10 minutes, 31 seconds

4.6 Math 33
Listing 75: "The generated patch for the bug Math 33"

Number of tests that execute the patch: 5
Execution time: 9 minutes, 59 seconds

4.7 Math 39

Listing 76: "The generated patch for the bug Math 39"

Number of tests that execute the patch: 101
Execution time: 6 minutes, 49 seconds

4.8 Math 40

Listing 77: "The generated patch for the bug Math 40"

Number of tests that execute the patch: 19
Execution time: 10 minutes, 33 seconds

4.9 Math 41

Listing 78: "The generated patch for the bug Math 41"

Number of tests that execute the patch: 6
Execution time: 4 minutes, 31 seconds

4.10 Math 42
Listing 79: "The generated patch for the bug Math 42"

Number of tests that execute the patch: 16
Execution time: 4 minutes, 39 seconds

4.11 Math 44

```java
--- /tmp/math_44_Nopol/src/main/java/org/apache/commons/math/ode/AbstractIntegrator.java
+++ /tmp/math_44_Nopol/src/main/java/org/apache/commons/math/ode/AbstractIntegrator.java
@@ -286,3 +286,5 @@
     }
- statesInitialized = true;
+ if (1 == org.apache.commons.math.ode.AbstractIntegrator.this.stepHandlers.size)
+     statesInitialized = true;
     }
```

Listing 80: "The generated patch for the bug Math 44"

Number of tests that execute the patch: 137
Execution time: 7 minutes, 10 seconds

4.12 Math 49

```java
--- /tmp/math_49_Nopol/src/main/java/org/apache/commons/math/linear/OpenMapRealVector.java
+++ /tmp/math_49_Nopol/src/main/java/org/apache/commons/math/linear/OpenMapRealVector.java
@@ -666,3 +666,5 @@
     } else if (entries.containsKey(index)) {
         entries.remove(index);
-        if (org.apache.commons.math.linear.OpenMapRealVector.DEFAULT_ZERO_TOLERANCE == org.apache.commons.math.linear.OpenMapRealVector.this.epsilon) {
+        if (org.apache.commons.math.linear.OpenMapRealVector.DEFAULT_ZERO_TOLERANCE == org.apache.commons.math.linear.OpenMapRealVector.this.epsilon) {
```

Listing 81: "The generated patch for the bug Math 49"

Number of tests that execute the patch: 3
Execution time: 3 minutes, 18 seconds

4.13 Math 50

```java
--- /tmp/math_50_Nopol/src/main/java/org/apache/commons/math/analysis/solvers/BaseSecantSolver.java
+++ /tmp/math_50_Nopol/src/main/java/org/apache/commons/math/analysis/solvers/BaseSecantSolver.java
@@ -236,15 +236,17 @@
         switch (allowed) {
             case ANY_SIDE:
             return x1;
-            case LEFT_SIDE:
-                return inverted ? x1 : x0;
-            case RIGHT_SIDE:
-                return inverted ? x0 : x1;
-            case BELOW_SIDE:
-                return (f1 <= 0) ? x1 : x0;
-            case ABOVE_SIDE:
-                return (f1 >= 0) ? x1 : x0;
-            default:
-                throw new MathInternalError();
+            if ((((atol) != (org.apache.commons.math.analysis.solvers.BaseSecantSolver.DEFAULT_ABSOLUTE_ACCURACY)) && (org.apache.commons.math.analysis.solvers.BaseSecantSolver.this.method!=null)) || (0 <= atol)) {
+                switch (allowed) {
+                    case ANY_SIDE:
+                        return x1;
+                    case LEFT_SIDE:
+                        return inverted ? x1 : x0;
+                    case RIGHT_SIDE:
+                        return inverted ? x0 : x1;
+                    case BELOW_SIDE:
+                        return (f1 <= 0) ? x1 : x0;
+                    case ABOVE_SIDE:
+                        return (f1 >= 0) ? x1 : x0;
+                    default:
+```

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4.14 Math 57

Listing 83: "The generated patch for the bug Math 57"
Number of tests that execute the patch: 5
Execution time: 3 minutes, 10 seconds

4.15 Math 58

Listing 84: "The generated patch for the bug Math 58"
Number of tests that execute the patch: 10
Execution time: 2 minutes, 54 seconds

4.16 Math 69

Listing 85: "The generated patch for the bug Math 69"
Number of tests that execute the patch: 11
Execution time: 33 seconds

4.17 Math 73

Listing 86: "The generated patch for the bug Math 73"
Listing 86: "The generated patch for the bug Math 73"

Number of tests that execute the patch: 5
Execution time: 34 seconds

4.18 Math 78

Listing 87: "The generated patch for the bug Math 78"

Number of tests that execute the patch: 116
Execution time: 15 minutes, 41 seconds

4.19 Math 80

Listing 88: "The generated patch for the bug Math 80"

Number of tests that execute the patch: 1
Execution time: 39 seconds

4.20 Math 81

Listing 89: "The generated patch for the bug Math 81"

Number of tests that execute the patch: 4
Execution time: 40 seconds

4.21 Math 85
- if (fa * fb >= 0.0 ) {
+ if (maximumIterations == initial) {
    throw new ConvergenceException(
        "number of iterations={0} , maximum iterations={1} , " +
        "initial={2} , lower bound={3} , upper bound={4} , final a value={5} , " +
        "final b value={6} , f(a)={7} , f(b)={8}" ,
        numIterations , maximumIterations , initial ,
        lowerBound , upperBound , a , b , fa , fb);
+ "number of iterations={0} , maximum iterations={1} , " +
+ "initial={2} , lower bound={3} , upper bound={4} , final a value={5} , " +
+ "final b value={6} , f(a)={7} , f(b)={8}" ,
+ numIterations , maximumIterations , initial ,
+ lowerBound , upperBound , a , b , fa , fb);
}

Listing 90: "The generated patch for the bug Math 85"

Number of tests that execute the patch: 17
Execution time: 37 seconds

4.22 Math 87

--- /tmp/math_87_Nopol/src/java/org/apache/commons/math/optimization/linear/SimplexTableau.java
+++ /tmp/math_87_Nopol/src/java/org/apache/commons/math/optimization/linear/SimplexTableau.java
@@ -160 ,4 +160 ,6 @@
+ if ((1) != (constraints.size())) {
+     matrix[row][getSlackVariableOffset () - 1] =
+     getInvertedCoefficientSum (constraint.getCoefficients ());
+ }
}

Listing 91: "The generated patch for the bug Math 87"

Number of tests that execute the patch: 12
Execution time: 50 seconds

4.23 Math 88

--- /tmp/math_88_Nopol/src/java/org/apache/commons/math/optimization/linear/SimplexTableau.java
+++ /tmp/math_88_Nopol/src/java/org/apache/commons/math/optimization/linear/SimplexTableau.java
@@ -338 ,3 +338 ,5 @@
+ if (org.apache.commons.math.optimization.linear.SimplexTableau.this .
+     numDecisionVariables) {
+     coefficients[i] = 0;
+ } else {
+     tableaus.getEntry (basicRow , j) == 1) {
+         if (y <= x) {
+             ybar = y;
+         } else {
+             xbar = x;
+             ybar = y;
+         }
+     }
+ }

Listing 92: "The generated patch for the bug Math 88"

Number of tests that execute the patch: 3
Execution time: 23 seconds

4.24 Math 105

--- /tmp/math_105_Nopol/src/java/org/apache/commons/math/stat/regression/SimpleRegression.java
+++ /tmp/math_105_Nopol/src/java/org/apache/commons/math/stat/regression/SimpleRegression.java
@@ -107 ,3 +107 ,5 @@
+ if (y <= x) {
+     ybar = y;
+ } else {
+     xbar = x;
+     ybar = y;
+ }

Listing 93: "The generated patch for the bug Math 105"

Number of tests that execute the patch: 9
Execution time: 35 seconds

5 Mockito

Nopol repairs 2 bugs in the project Mockito.
5.1 Mockito 29

Listing 94: "The generated patch for the bug Mockito 29"

Number of tests that execute the patch: 5
Execution time: 18 seconds

5.2 Mockito 38

Listing 95: "The generated patch for the bug Mockito 38"

Number of tests that execute the patch: 173
Execution time: 3 minutes, 12 seconds

6 Time

Nopol repairs 8 bugs in the project Time.

6.1 Time 4

Listing 96: "The generated patch for the bug Time 4"

Number of tests that execute the patch: 75
Execution time: 56 seconds

6.2 Time 7

Listing 97: "The generated patch for the bug Time 7"

Number of tests that execute the patch: 84
Execution time: 43 seconds

6.3 Time 11
Listing 98: "The generated patch for the bug Time 11"

Number of tests that execute the patch: 18
Execution time: 53 seconds

6.4 Time 12

Listing 99: "The generated patch for the bug Time 12"

Number of tests that execute the patch: 159
Execution time: 1 minute, 29 seconds

6.5 Time 14

Listing 100: "The generated patch for the bug Time 14"

Number of tests that execute the patch: 63
Execution time: 37 seconds

6.6 Time 16
Listing 101: "The generated patch for the bug Time 16"

Number of tests that execute the patch: 54
Execution time: 40 seconds

6.7 Time 18

--- /tmp/time_18_Nopol/src/main/java/org/joda/time/chrono/BasicChronology.java
+++ /tmp/time_18_Nopol/src/main/java/org/joda/time/chrono/BasicChronology.java
@@ -604 ,3 +604 ,5 @@
   FieldUtils.verifyValueBounds(DateTimeFieldType.monthOfYear(), monthOfYear, 1,
   getMaxMonth(year));
-  FieldUtils.verifyValueBounds(DateTimeFieldType.dayOfMonth(), dayOfMonth, 1,
+  if (!(10 == monthOfYear)) && (((31) - (2)) != (dayOfMonth)) {
+    FieldUtils.verifyValueBounds(DateTimeFieldType.dayOfMonth(), dayOfMonth, 1,
   getDaysInYearMonth(year, monthOfYear));
+  } else {
   return getYearMonthDayMillis(year, monthOfYear, dayOfMonth);

Listing 102: "The generated patch for the bug Time 18"

Number of tests that execute the patch: 3456
Execution time: 7 minutes, 48 seconds

6.8 Time 19

--- /tmp/time_19_Nopol/src/main/java/org/joda/time/DateTimeZone.java
+++ /tmp/time_19_Nopol/src/main/java/org/joda/time/DateTimeZone.java
@@ -899 ,3 +899 ,3 @@
 } else if (offsetLocal > 0) {
 } else if (org.joda.time.DateTimeZone.this.iID != null) { long prev = previousTransition(instantAdjusted);

Listing 103: "The generated patch for the bug Time 19"

Number of tests that execute the patch: 2139
Execution time: 3 minutes, 24 seconds

References

