

# DataUtilities.java

```

1  /* =====
2  * JFreeChart : a free chart library for the Java(tm) platform
3  * =====
4  *
5  * (C) Copyright 2000-2013, by Object Refinery Limited and Contributors.
6  *
7  * Project Info:  http://www.jfree.org/jfreechart/index.html
8  *
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10 * under the terms of the GNU Lesser General Public License as published by
11 * the Free Software Foundation; either version 2.1 of the License, or
12 * (at your option) any later version.
13 *
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22 * USA.
23 *
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26 *
27 * -----
28 * DataUtilities.java
29 * -----
30 * (C) Copyright 2003-2013, by Object Refinery Limited and contributors.
31 *
32 * Original Author:  David Gilbert (for Object Refinery Limited);
33 * Contributor(s):   Peter Kolb (patch 2511330);
34 *
35 * Changes
36 * -----
37 * 05-Mar-2003 : Version 1 (DG);
38 * 03-Mar-2005 : Moved createNumberArray() and createNumberArray2D() methods
39 *               from the DatasetUtilities class (DG);
40 * 17-May-2005 : Added calculateColumnTotal() and calculateRowTotal()
41 *               methods (DG);
42 * 28-Jan-2009 : Added equal(double[][], double[][]) method (DG);
43 * 28-Jan-2009 : Added clone(double[][]) method (DG);
44 * 04-Feb-2009 : Added calculateColumnTotal/RowTotal variants (PK);
45 * 03-Jul-2013 : Use ParamChecks (DG);
46 *
47 */
48
49 package org.jfree.data;
```

```

50
51 import java.util.Arrays;
52 import org.jfree.chart.util.ParamChecks;
53 import org.jfree.data.general.DatasetUtilities;
54
55 /**
56  * Utility methods for use with some of the data classes (but not the datasets,
57  * see {@link DatasetUtilities}).
58  */
59 public abstract class DataUtilities {
60
61     /**
62      * Tests two arrays for equality. To be considered equal, the arrays must
63      * have exactly the same dimensions, and the values in each array must also
64      * match (two values that are both NaN or both INF are considered equal
65      * in this test).
66      *
67      * @param a the first array (<code>null</code> permitted).
68      * @param b the second array (<code>null</code> permitted).
69      *
70      * @return A boolean.
71      *
72      * @since 1.0.13
73      */
74     public static boolean equal(double[][] a, double[][] b) {
75         4 if (a == null) {
76         19 return (b == null);
77     }
78     4 if (b == null) {
79     7 return false; // already know 'a' isn't null
80     }
81     8 if (a.length != b.length) {
82     7 return false;
83     }
84     19 for (int i = 0; i < a.length; i++) {
85     19 if (!Arrays.equals(a[i], b[i])) {
86     7 return false;
87     }
88     }
89     8 return true;
90     }
91
92     /**
93      * Returns a clone of the specified array.
94      *
95      * @param source the source array (<code>null</code> not permitted).
96      *
97      * @return A clone of the array.
98      *
99      * @since 1.0.13
100     */
101     public static double[][] clone(double[][] source) {
102     1 ParamChecks.nullNotPermitted(source, "source");

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103         double[][] clone = new double[source.length][];
104 19         for (int i = 0; i < source.length; i++) {
105 9             if (source[i] != null) {
106 5                 double[] row = new double[source[i].length];
107 21                 System.arraycopy(source[i], 0, row, 0, source[i].length);
108 5                 clone[i] = row;
109             }
110         }
111 2         return clone;
112     }
113
114     /**
115      * Returns the total of the values in one column of the supplied data
116      * table.
117      *
118      * @param data the table of values (<code>>null</code> not permitted).
119      * @param column the column index (zero-based).
120      *
121      * @return The total of the values in the specified column.
122      */
123     public static double calculateColumnTotal(Values2D data, int column) {
124 1         ParamChecks.nullNotPermitted(data, "data");
125 5         double total = 0.0;
126 1         int rowCount = data.getRowCount();
127 25         for (int r = 0; r < rowCount; r++) {
128 11             Number n = data.getValue(r, column);
129 4             if (n != null) {
130 13                 total += n.doubleValue();
131             }
132         }
133 7         return total;
134     }
135
136     /**
137      * Returns the total of the values in one column of the supplied data
138      * table by taking only the row numbers in the array into account.
139      *
140      * @param data the table of values (<code>>null</code> not permitted).
141      * @param column the column index (zero-based).
142      * @param validRows the array with valid rows (zero-based).
143      *
144      * @return The total of the valid values in the specified column.
145      *
146      * @since 1.0.13
147      */
148     public static double calculateColumnTotal(Values2D data, int column,
149         int[] validRows) {
150 1         ParamChecks.nullNotPermitted(data, "data");
151 5         double total = 0.0;
152 1         int rowCount = data.getRowCount();
153 20         for (int v = 0; v < validRows.length; v++) {
154 10             int row = validRows[v];
155 19             if (row < rowCount) {

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156 11         Number n = data.getValue(row, column);
157 4         if (n != null) {
158 13             total += n.doubleValue();
159         }
160     }
161 }
162 7     return total;
163 }
164
165 /**
166  * Returns the total of the values in one row of the supplied data
167  * table.
168  *
169  * @param data the table of values (<code>>null</code> not permitted).
170  * @param row the row index (zero-based).
171  *
172  * @return The total of the values in the specified row.
173  */
174 public static double calculateRowTotal(Values2D data, int row) {
175 1     ParamChecks.nullNotPermitted(data, "data");
176 5     double total = 0.0;
177 1     int columnCount = data.getColumnCount();
178 25     for (int c = 0; c < columnCount; c++) {
179 11         Number n = data.getValue(row, c);
180 4         if (n != null) {
181 13             total += n.doubleValue();
182         }
183     }
184 7     return total;
185 }
186
187 /**
188  * Returns the total of the values in one row of the supplied data
189  * table by taking only the column numbers in the array into account.
190  *
191  * @param data the table of values (<code>>null</code> not permitted).
192  * @param row the row index (zero-based).
193  * @param validCols the array with valid cols (zero-based).
194  *
195  * @return The total of the valid values in the specified row.
196  *
197  * @since 1.0.13
198  */
199 public static double calculateRowTotal(Values2D data, int row,
200     int[] validCols) {
201 1     ParamChecks.nullNotPermitted(data, "data");
202 5     double total = 0.0;
203 1     int colCount = data.getColumnCount();
204 20     for (int v = 0; v < validCols.length; v++) {
205 10         int col = validCols[v];
206 19         if (col < colCount) {
207 11             Number n = data.getValue(row, col);
208 4             if (n != null) {

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209 13                total += n.doubleValue();
210                }
211            }
212        }
213 7        return total;
214    }
215
216    /**
217     * Constructs an array of Number objects from an array of
218     * double primitives.
219     *
220     * @param data the data (null not permitted).
221     *
222     * @return An array of Double.
223     */
224    public static Number[] createNumberArray(double[] data) {
225 1        ParamChecks.nullNotPermitted(data, "data");
226        Number[] result = new Number[data.length];
227 19        for (int i = 0; i < data.length; i++) {
228 16            result[i] = new Double(data[i]);
229        }
230 2        return result;
231    }
232
233    /**
234     * Constructs an array of arrays of Number objects from a
235     * corresponding structure containing double primitives.
236     *
237     * @param data the data (null not permitted).
238     *
239     * @return An array of Double.
240     */
241    public static Number[][] createNumberArray2D(double[][] data) {
242 1        ParamChecks.nullNotPermitted(data, "data");
243        int l1 = data.length;
244 5        Number[][] result = new Number[l1][];
245 25        for (int i = 0; i < l1; i++) {
246 11            result[i] = createNumberArray(data[i]);
247        }
248 2        return result;
249    }
250
251    /**
252     * Returns a {@link KeyedValues} instance that contains the cumulative
253     * percentage values for the data in another {@link KeyedValues} instance.
254     * <p>
255     * The percentages are values between 0.0 and 1.0 (where 1.0 = 100%).
256     *
257     * @param data the data (null not permitted).
258     *
259     * @return The cumulative percentages.
260     */
261    public static KeyedValues getCumulativePercentages(KeyedValues data) {

```

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262 1      ParamChecks.nullNotPermitted(data, "data");
263 1      DefaultKeyedValues result = new DefaultKeyedValues();
264 5      double total = 0.0;
265 20     for (int i = 0; i < data.getItemCount(); i++) {
266 6         Number v = data.getValue(i);
267 14         if (v != null&& (int)v>=0) {
268 13             total = total + v.doubleValue();
269         }
270     }
271 5     double runningTotal = 0.0;
272 20     for (int i = 0; i < data.getItemCount(); i++) {
273 6         Number v = data.getValue(i);
274 14         if (v != null&& (int)v>=0) {
275 13             runningTotal = runningTotal + v.doubleValue();
276         }
277 25         result.addValue(data.getKey(i), new Double(runningTotal / total));
278     }
279 2     return result;
280 }
281
282 }

```

## Mutations

- 75
1. negated conditional → KILLED
  2. removed conditional - replaced equality check with false → KILLED
  3. removed conditional - replaced equality check with true → KILLED
  4. not equal to equal → KILLED
  1. replaced boolean return with false for org/jfree/data/DataUtilities::equal → KILLED
  2. replaced boolean return with true for org/jfree/data/DataUtilities::equal → KILLED
  3. Substituted 1 with 0 → KILLED
  4. Substituted 0 with 1 → KILLED
  5. negated conditional → KILLED
  6. removed conditional - replaced equality check with false → KILLED
  7. removed conditional - replaced equality check with true → KILLED
  8. replaced return of integer sized value with (x == 0 ? 1 : 0) → KILLED
- 76
9. replaced return of integer sized value with (x == 0 ? 1 : 0) → KILLED
  10. Substituted 0 with 1 → KILLED
  11. Substituted 1 with 0 → KILLED
  12. Substituted 1 with -1 → SURVIVED
  13. Substituted 0 with -1 → KILLED
  14. Substituted 1 with -1 → SURVIVED
  15. Substituted 1 with 2 → KILLED
  16. Substituted 0 with 1 → KILLED
  17. Substituted 1 with 0 → KILLED
  18. Substituted 0 with -1 → KILLED
  19. not equal to equal → KILLED
- 78
1. negated conditional → KILLED
  2. removed conditional - replaced equality check with false → KILLED
  3. removed conditional - replaced equality check with true → KILLED
  4. not equal to equal → KILLED
- 79
1. replaced boolean return with true for org/jfree/data/DataUtilities::equal → KILLED
  2. Substituted 0 with 1 → KILLED
  3. replaced return of integer sized value with (x == 0 ? 1 : 0) → KILLED
  4. Substituted 0 with 1 → KILLED
  5. Substituted 0 with -1 → KILLED

6. Substituted 0 with 1 → KILLED  
 7. Substituted 0 with -1 → KILLED  
 1. negated conditional → KILLED  
 2. removed conditional - replaced equality check with false → KILLED  
 3. removed conditional - replaced equality check with true → KILLED  
 4. equal to less than → KILLED  
 5. equal to less or equal → KILLED  
 6. equal to greater than → KILLED  
 7. equal to greater or equal → SURVIVED  
 8. equal to not equal → KILLED  
 1. replaced boolean return with true for org/jfree/data/DataUtilities::equal → KILLED  
 2. Substituted 0 with 1 → KILLED  
 3. replaced return of integer sized value with (x == 0 ? 1 : 0) → KILLED  
 4. Substituted 0 with 1 → KILLED  
 5. Substituted 0 with -1 → KILLED  
 6. Substituted 0 with 1 → KILLED  
 7. Substituted 0 with -1 → KILLED  
 1. changed conditional boundary → KILLED  
 2. Substituted 0 with 1 → KILLED  
 3. negated conditional → KILLED  
 4. removed conditional - replaced comparison check with false → KILLED  
 5. removed conditional - replaced comparison check with true → KILLED  
 6. Negated integer local variable number 2 → KILLED  
 7. Substituted 0 with 1 → KILLED  
 8. Substituted 0 with -1 → KILLED  
 9. Substituted 0 with 1 → KILLED  
 10. Substituted 0 with -1 → KILLED  
 11. Less than to less or equal → KILLED  
 12. Less than to greater than → KILLED  
 13. Less than to greater or equal → KILLED  
 14. Less than to equal → KILLED  
 15. Less than to not equal → SURVIVED  
 16. Incremented (a++) integer local variable number 2 → KILLED  
 17. Decrementd (a--) integer local variable number 2 → KILLED  
 18. Incremented (++a) integer local variable number 2 → KILLED  
 19. Decrementd (--a) integer local variable number 2 → KILLED  
 1. negated conditional → KILLED  
 2. removed call to java/util/Arrays::equals → KILLED  
 3. removed conditional - replaced equality check with false → KILLED  
 4. removed conditional - replaced equality check with true → KILLED  
 5. Negated integer local variable number 2 → KILLED  
 6. Negated integer local variable number 2 → KILLED  
 7. not equal to less than → KILLED  
 8. not equal to less or equal → KILLED  
 9. not equal to greater than → SURVIVED  
 10. not equal to greater or equal → KILLED  
 11. not equal to equal → KILLED  
 12. Incremented (a++) integer local variable number 2 → KILLED  
 13. Incremented (a++) integer local variable number 2 → SURVIVED  
 14. Decrementd (a--) integer local variable number 2 → KILLED  
 15. Decrementd (a--) integer local variable number 2 → TIMED\_OUT  
 16. Incremented (++a) integer local variable number 2 → KILLED  
 17. Incremented (++a) integer local variable number 2 → KILLED  
 18. Decrementd (--a) integer local variable number 2 → KILLED  
 19. Decrementd (--a) integer local variable number 2 → KILLED  
 1. replaced boolean return with true for org/jfree/data/DataUtilities::equal → KILLED  
 2. Substituted 0 with 1 → KILLED  
 3. replaced return of integer sized value with (x == 0 ? 1 : 0) → KILLED  
 4. Substituted 0 with 1 → KILLED  
 5. Substituted 0 with -1 → KILLED  
 6. Substituted 0 with 1 → KILLED  
 7. Substituted 0 with -1 → KILLED

1. replaced boolean return with false for org/jfree/data/DataUtilities::equal → KILLED
2. Substituted 1 with 0 → KILLED
3. replaced return of integer sized value with (x == 0 ? 1 : 0) → KILLED
4. Substituted 1 with 0 → KILLED
5. Substituted 1 with -1 → SURVIVED
6. Substituted 1 with -1 → SURVIVED
7. Substituted 1 with 2 → KILLED
8. Substituted 1 with 0 → KILLED
- [102](#) 1. removed call to org/jfree/chart/util/ParamChecks::nullNotPermitted → KILLED
1. changed conditional boundary → KILLED
2. Substituted 0 with 1 → KILLED
3. negated conditional → KILLED
4. removed conditional - replaced comparison check with false → KILLED
5. removed conditional - replaced comparison check with true → KILLED
6. Negated integer local variable number 2 → KILLED
7. Substituted 0 with 1 → KILLED
8. Substituted 0 with -1 → KILLED
9. Substituted 0 with 1 → KILLED
- [104](#) 10. Substituted 0 with -1 → KILLED
11. Less than to less or equal → KILLED
12. Less than to greater than → KILLED
13. Less than to greater or equal → KILLED
14. Less than to equal → KILLED
15. Less than to not equal → SURVIVED
16. Incremented (a++) integer local variable number 2 → KILLED
17. Decrementd (a--) integer local variable number 2 → KILLED
18. Incremented (++a) integer local variable number 2 → KILLED
19. Decrementd (--a) integer local variable number 2 → KILLED
1. negated conditional → KILLED
2. removed conditional - replaced equality check with false → KILLED
3. removed conditional - replaced equality check with true → SURVIVED
4. Negated integer local variable number 2 → KILLED
- [105](#) 5. equal to not equal → KILLED
6. Incremented (a++) integer local variable number 2 → KILLED
7. Decrementd (a--) integer local variable number 2 → KILLED
8. Incremented (++a) integer local variable number 2 → KILLED
9. Decrementd (--a) integer local variable number 2 → KILLED
1. Negated integer local variable number 2 → KILLED
2. Incremented (a++) integer local variable number 2 → KILLED
- [106](#) 3. Decrementd (a--) integer local variable number 2 → KILLED
4. Incremented (++a) integer local variable number 2 → KILLED
5. Decrementd (--a) integer local variable number 2 → KILLED
1. Substituted 0 with 1 → KILLED
2. Substituted 0 with 1 → KILLED
3. removed call to java/lang/System::arraycopy → KILLED
4. Negated integer local variable number 2 → KILLED
5. Negated integer local variable number 2 → KILLED
6. Substituted 0 with 1 → KILLED
7. Substituted 0 with 1 → KILLED
8. Substituted 0 with -1 → KILLED
9. Substituted 0 with -1 → KILLED
10. Substituted 0 with 1 → KILLED
- [107](#) 11. Substituted 0 with 1 → KILLED
12. Substituted 0 with -1 → KILLED
13. Substituted 0 with -1 → KILLED
14. Incremented (a++) integer local variable number 2 → KILLED
15. Incremented (a++) integer local variable number 2 → KILLED
16. Decrementd (a--) integer local variable number 2 → KILLED
17. Decrementd (a--) integer local variable number 2 → KILLED
18. Incremented (++a) integer local variable number 2 → KILLED
19. Incremented (++a) integer local variable number 2 → KILLED
20. Decrementd (--a) integer local variable number 2 → KILLED
21. Decrementd (--a) integer local variable number 2 → KILLED
- [108](#) 1. Negated integer local variable number 2 → KILLED



2. Incremented (a++) integer local variable number 2 → KILLED  
 3. Decrementd (a--) integer local variable number 2 → TIMED\_OUT  
 4. Incremented (++a) integer local variable number 2 → KILLED  
 5. Decrementd (--a) integer local variable number 2 → KILLED

111 1. replaced return value with null for org/jfree/data/DataUtilities::clone → KILLED  
 2. mutated return of Object value for org/jfree/data/DataUtilities::clone to ( if (x != null) null else throw new RuntimeException ) → KILLED

124 1. removed call to org/jfree/chart/util/ParamChecks::nullNotPermitted → SURVIVED

125 1. Substituted 0.0 with 1.0 → KILLED  
 2. Substituted 0.0 with 1.0 → KILLED  
 3. Substituted 0.0 with -1.0 → KILLED  
 4. Substituted 0.0 with 1.0 → KILLED  
 5. Substituted 0.0 with -1.0 → KILLED

126 1. removed call to org/jfree/data/Values2D::getRowCount → KILLED

1. changed conditional boundary → KILLED  
 2. Changed increment from 1 to -1 → KILLED  
 3. Substituted 0 with 1 → KILLED  
 4. negated conditional → KILLED  
 5. removed conditional - replaced comparison check with false → KILLED  
 6. removed conditional - replaced comparison check with true → KILLED  
 7. Negated integer local variable number 5 → KILLED  
 8. Negated integer local variable number 4 → KILLED  
 9. Substituted 0 with 1 → KILLED  
 10. Substituted 0 with -1 → KILLED  
 11. Substituted 0 with 1 → KILLED  
 12. Substituted 0 with -1 → KILLED

127 13. Less than to less or equal → KILLED  
 14. Less than to greater than → KILLED  
 15. Less than to greater or equal → KILLED  
 16. Less than to equal → KILLED  
 17. Less than to not equal → SURVIVED  
 18. Incremented (a++) integer local variable number 5 → KILLED  
 19. Incremented (a++) integer local variable number 4 → KILLED  
 20. Decrementd (a--) integer local variable number 5 → KILLED  
 21. Decrementd (a--) integer local variable number 4 → KILLED  
 22. Incremented (++a) integer local variable number 5 → KILLED  
 23. Incremented (++a) integer local variable number 4 → KILLED  
 24. Decrementd (--a) integer local variable number 5 → KILLED  
 25. Decrementd (--a) integer local variable number 4 → KILLED

128 1. removed call to org/jfree/data/Values2D::getValue → KILLED  
 2. Negated integer local variable number 5 → KILLED  
 3. Negated integer local variable number 1 → KILLED  
 4. Incremented (a++) integer local variable number 5 → KILLED  
 5. Incremented (a++) integer local variable number 1 → KILLED  
 6. Decrementd (a--) integer local variable number 5 → KILLED  
 7. Decrementd (a--) integer local variable number 1 → KILLED  
 8. Incremented (++a) integer local variable number 5 → KILLED  
 9. Incremented (++a) integer local variable number 1 → KILLED  
 10. Decrementd (--a) integer local variable number 5 → KILLED  
 11. Decrementd (--a) integer local variable number 1 → KILLED

129 1. negated conditional → KILLED  
 2. removed conditional - replaced equality check with false → KILLED  
 3. removed conditional - replaced equality check with true → KILLED  
 4. equal to not equal → KILLED

130 1. Replaced double addition with subtraction → KILLED  
 2. removed call to java/lang/Number::doubleValue → KILLED  
 3. Negated double local variable number 2 → KILLED  
 4. Replaced double operation with first member → KILLED  
 5. Replaced double operation by second member → KILLED  
 6. Replaced double addition with subtraction → KILLED  
 7. Replaced double addition with multiplication → KILLED  
 8. Replaced double addition with division → KILLED  
 9. Replaced double addition with modulus → KILLED

10. Incremented (a++) double local variable number 2 → SURVIVED  
 11. Decrementd (a--) double local variable number 2 → SURVIVED  
 12. Incremented (++a) double local variable number 2 → KILLED  
 13. Decrementd (--a) double local variable number 2 → KILLED  
 1. replaced double return with 0.0d for  
 org/jfree/data/DataUtilities::calculateColumnTotal → KILLED  
 2. replaced return of double value with -(x + 1) for  
 org/jfree/data/DataUtilities::calculateColumnTotal → KILLED  
 133 3. Negated double local variable number 2 → KILLED  
 4. Incremented (a++) double local variable number 2 → SURVIVED  
 5. Decrementd (a--) double local variable number 2 → SURVIVED  
 6. Incremented (++a) double local variable number 2 → KILLED  
 7. Decrementd (--a) double local variable number 2 → KILLED  
 150 1. removed call to org/jfree/chart/util/ParamChecks::nullNotPermitted → SURVIVED  
 1. Substituted 0.0 with 1.0 → KILLED  
 2. Substituted 0.0 with 1.0 → KILLED  
 151 3. Substituted 0.0 with -1.0 → KILLED  
 4. Substituted 0.0 with 1.0 → KILLED  
 5. Substituted 0.0 with -1.0 → KILLED  
 152 1. removed call to org/jfree/data/Values2D::getRowCount → KILLED  
 1. changed conditional boundary → KILLED  
 2. Changed increment from 1 to -1 → KILLED  
 3. Substituted 0 with 1 → KILLED  
 4. negated conditional → KILLED  
 5. removed conditional - replaced comparison check with false → KILLED  
 6. removed conditional - replaced comparison check with true → KILLED  
 7. Negated integer local variable number 6 → KILLED  
 8. Substituted 0 with 1 → KILLED  
 9. Substituted 0 with -1 → KILLED  
 153 10. Substituted 0 with 1 → KILLED  
 11. Substituted 0 with -1 → KILLED  
 12. Less than to less or equal → KILLED  
 13. Less than to greater than → KILLED  
 14. Less than to greater or equal → KILLED  
 15. Less than to equal → KILLED  
 16. Less than to not equal → SURVIVED  
 17. Incremented (a++) integer local variable number 6 → KILLED  
 18. Decrementd (a--) integer local variable number 6 → KILLED  
 19. Incremented (++a) integer local variable number 6 → KILLED  
 20. Decrementd (--a) integer local variable number 6 → KILLED  
 1. Negated integer local variable number 6 → KILLED  
 2. Negated integer array field → KILLED  
 3. Incremented (a++) integer local variable number 6 → KILLED  
 4. Incremented (a++) integer array field → SURVIVED  
 154 5. Decrementd (a--) integer local variable number 6 → KILLED  
 6. Decrementd (a--) integer array field → SURVIVED  
 7. Incremented (++a) integer local variable number 6 → KILLED  
 8. Incremented (++a) integer array field → KILLED  
 9. Decrementd (--a) integer local variable number 6 → KILLED  
 10. Decrementd (--a) integer array field → KILLED  
 155 1. changed conditional boundary → SURVIVED  
 2. negated conditional → KILLED  
 3. removed conditional - replaced comparison check with false → KILLED  
 4. removed conditional - replaced comparison check with true → KILLED  
 5. Negated integer local variable number 7 → KILLED  
 6. Negated integer local variable number 5 → KILLED  
 7. greater or equal to less than → KILLED  
 8. greater or equal to less or equal → KILLED  
 9. greater or equal to greater than → SURVIVED  
 10. greater or equal to equal → KILLED  
 11. greater or equal to not equal → KILLED  
 12. Incremented (a++) integer local variable number 7 → KILLED  
 13. Incremented (a++) integer local variable number 5 → SURVIVED  
 14. Decrementd (a--) integer local variable number 7 → KILLED

15. Decrementd (a--) integer local variable number 5 → KILLED  
 16. Incremented (++a) integer local variable number 7 → KILLED  
 17. Incremented (++a) integer local variable number 5 → SURVIVED  
 18. Decrementd (--a) integer local variable number 7 → KILLED  
 19. Decrementd (--a) integer local variable number 5 → KILLED  
 1. removed call to org/jfree/data/Values2D::getValue → KILLED  
 2. Negated integer local variable number 7 → KILLED  
 3. Negated integer local variable number 1 → KILLED  
 4. Incremented (a++) integer local variable number 7 → SURVIVED  
 5. Incremented (a++) integer local variable number 1 → KILLED  
 156 6. Decrementd (a--) integer local variable number 7 → SURVIVED  
 7. Decrementd (a--) integer local variable number 1 → KILLED  
 8. Incremented (++a) integer local variable number 7 → KILLED  
 9. Incremented (++a) integer local variable number 1 → KILLED  
 10. Decrementd (--a) integer local variable number 7 → KILLED  
 11. Decrementd (--a) integer local variable number 1 → KILLED  
 1. negated conditional → KILLED  
 157 2. removed conditional - replaced equality check with false → KILLED  
 3. removed conditional - replaced equality check with true → SURVIVED  
 4. equal to not equal → KILLED  
 1. Replaced double addition with subtraction → KILLED  
 2. removed call to java/lang/Number::doubleValue → KILLED  
 3. Negated double local variable number 3 → KILLED  
 4. Replaced double operation with first member → KILLED  
 5. Replaced double operation by second member → KILLED  
 6. Replaced double addition with subtraction → KILLED  
 158 7. Replaced double addition with multiplication → KILLED  
 8. Replaced double addition with division → KILLED  
 9. Replaced double addition with modulus → KILLED  
 10. Incremented (a++) double local variable number 3 → SURVIVED  
 11. Decrementd (a--) double local variable number 3 → SURVIVED  
 12. Incremented (++a) double local variable number 3 → KILLED  
 13. Decrementd (--a) double local variable number 3 → KILLED  
 1. replaced double return with 0.0d for  
 org/jfree/data/DataUtilities::calculateColumnTotal → KILLED  
 2. replaced return of double value with -(x + 1) for  
 org/jfree/data/DataUtilities::calculateColumnTotal → KILLED  
 162 3. Negated double local variable number 3 → KILLED  
 4. Incremented (a++) double local variable number 3 → SURVIVED  
 5. Decrementd (a--) double local variable number 3 → SURVIVED  
 6. Incremented (++a) double local variable number 3 → KILLED  
 7. Decrementd (--a) double local variable number 3 → KILLED  
 1. removed call to org/jfree/chart/util/ParamChecks::nullNotPermitted →  
 SURVIVED  
 175 1. Substituted 0.0 with 1.0 → KILLED  
 2. Substituted 0.0 with 1.0 → KILLED  
 176 3. Substituted 0.0 with -1.0 → KILLED  
 4. Substituted 0.0 with 1.0 → KILLED  
 5. Substituted 0.0 with -1.0 → KILLED  
 1. removed call to org/jfree/data/Values2D::getColumnCount → KILLED  
 177 1. changed conditional boundary → KILLED  
 178 2. Changed increment from 1 to -1 → KILLED  
 3. Substituted 0 with 1 → KILLED  
 4. negated conditional → KILLED  
 5. removed conditional - replaced comparison check with false → KILLED  
 6. removed conditional - replaced comparison check with true → KILLED  
 7. Negated integer local variable number 5 → KILLED  
 8. Negated integer local variable number 4 → KILLED  
 9. Substituted 0 with 1 → KILLED  
 10. Substituted 0 with -1 → KILLED  
 11. Substituted 0 with 1 → KILLED  
 12. Substituted 0 with -1 → KILLED  
 13. Less than to less or equal → KILLED  
 14. Less than to greater than → KILLED  
 15. Less than to greater or equal → KILLED

16. Less than to equal → KILLED  
 17. Less than to not equal → SURVIVED  
 18. Incremented (a++) integer local variable number 5 → KILLED  
 19. Incremented (a++) integer local variable number 4 → KILLED  
 20. Decrementd (a--) integer local variable number 5 → KILLED  
 21. Decrementd (a--) integer local variable number 4 → KILLED  
 22. Incremented (++a) integer local variable number 5 → KILLED  
 23. Incremented (++a) integer local variable number 4 → KILLED  
 24. Decrementd (--a) integer local variable number 5 → KILLED  
 25. Decrementd (--a) integer local variable number 4 → KILLED  
 1. removed call to org/jfree/data/Values2D::getValue → KILLED  
 2. Negated integer local variable number 1 → KILLED  
 3. Negated integer local variable number 5 → KILLED  
 4. Incremented (a++) integer local variable number 1 → KILLED  
 5. Incremented (a++) integer local variable number 5 → KILLED  
 179 6. Decrementd (a--) integer local variable number 1 → KILLED  
 7. Decrementd (a--) integer local variable number 5 → KILLED  
 8. Incremented (++a) integer local variable number 1 → KILLED  
 9. Incremented (++a) integer local variable number 5 → KILLED  
 10. Decrementd (--a) integer local variable number 1 → KILLED  
 11. Decrementd (--a) integer local variable number 5 → KILLED  
 1. negated conditional → KILLED  
 180 2. removed conditional - replaced equality check with false → KILLED  
 3. removed conditional - replaced equality check with true → KILLED  
 4. equal to not equal → KILLED  
 1. Replaced double addition with subtraction → KILLED  
 2. removed call to java/lang/Number::doubleValue → KILLED  
 3. Negated double local variable number 2 → KILLED  
 4. Replaced double operation with first member → KILLED  
 5. Replaced double operation by second member → KILLED  
 6. Replaced double addition with subtraction → KILLED  
 181 7. Replaced double addition with multiplication → KILLED  
 8. Replaced double addition with division → KILLED  
 9. Replaced double addition with modulus → KILLED  
 10. Incremented (a++) double local variable number 2 → SURVIVED  
 11. Decrementd (a--) double local variable number 2 → SURVIVED  
 12. Incremented (++a) double local variable number 2 → KILLED  
 13. Decrementd (--a) double local variable number 2 → KILLED  
 1. replaced double return with 0.0d for  
 org/jfree/data/DataUtilities::calculateRowTotal → KILLED  
 2. replaced return of double value with -(x + 1) for  
 org/jfree/data/DataUtilities::calculateRowTotal → KILLED  
 184 3. Negated double local variable number 2 → KILLED  
 4. Incremented (a++) double local variable number 2 → SURVIVED  
 5. Decrementd (a--) double local variable number 2 → SURVIVED  
 6. Incremented (++a) double local variable number 2 → KILLED  
 7. Decrementd (--a) double local variable number 2 → KILLED  
 1. removed call to org/jfree/chart/util/ParamChecks::nullNotPermitted →  
 201 SURVIVED  
 1. Substituted 0.0 with 1.0 → KILLED  
 2. Substituted 0.0 with 1.0 → KILLED  
 202 3. Substituted 0.0 with -1.0 → KILLED  
 4. Substituted 0.0 with 1.0 → KILLED  
 5. Substituted 0.0 with -1.0 → KILLED  
 1. removed call to org/jfree/data/Values2D::getColumnCount → KILLED  
 203 1. changed conditional boundary → KILLED  
 204 2. Changed increment from 1 to -1 → KILLED  
 3. Substituted 0 with 1 → KILLED  
 4. negated conditional → KILLED  
 5. removed conditional - replaced comparison check with false → KILLED  
 6. removed conditional - replaced comparison check with true → KILLED  
 7. Negated integer local variable number 6 → KILLED  
 8. Substituted 0 with 1 → KILLED  
 9. Substituted 0 with -1 → KILLED  
 10. Substituted 0 with 1 → KILLED

11. Substituted 0 with -1 → KILLED  
 12. Less than to less or equal → KILLED  
 13. Less than to greater than → KILLED  
 14. Less than to greater or equal → KILLED  
 15. Less than to equal → KILLED  
 16. Less than to not equal → SURVIVED  
 17. Incremented (a++) integer local variable number 6 → KILLED  
 18. Decrementd (a--) integer local variable number 6 → KILLED  
 19. Incremented (++) integer local variable number 6 → KILLED  
 20. Decrementd (--a) integer local variable number 6 → KILLED  
 1. Negated integer local variable number 6 → KILLED  
 2. Negated integer array field → KILLED  
 3. Incremented (a++) integer local variable number 6 → KILLED  
 4. Incremented (a++) integer array field → SURVIVED  
 5. Decrementd (a--) integer local variable number 6 → KILLED  
 6. Decrementd (a--) integer array field → SURVIVED  
 7. Incremented (++) integer local variable number 6 → KILLED  
 8. Incremented (++) integer array field → KILLED  
 9. Decrementd (--a) integer local variable number 6 → KILLED  
 10. Decrementd (--a) integer array field → KILLED  
 1. changed conditional boundary → KILLED  
 2. negated conditional → KILLED  
 3. removed conditional - replaced comparison check with false → KILLED  
 4. removed conditional - replaced comparison check with true → KILLED  
 5. Negated integer local variable number 7 → KILLED  
 6. Negated integer local variable number 5 → KILLED  
 7. greater or equal to less than → KILLED  
 8. greater or equal to less or equal → KILLED  
 9. greater or equal to greater than → KILLED  
 10. greater or equal to equal → KILLED  
 11. greater or equal to not equal → KILLED  
 12. Incremented (a++) integer local variable number 7 → KILLED  
 13. Incremented (a++) integer local variable number 5 → SURVIVED  
 14. Decrementd (a--) integer local variable number 7 → KILLED  
 15. Decrementd (a--) integer local variable number 5 → KILLED  
 16. Incremented (++) integer local variable number 7 → KILLED  
 17. Incremented (++) integer local variable number 5 → KILLED  
 18. Decrementd (--a) integer local variable number 7 → KILLED  
 19. Decrementd (--a) integer local variable number 5 → KILLED  
 1. removed call to org/jfree/data/Values2D::getValue → KILLED  
 2. Negated integer local variable number 1 → KILLED  
 3. Negated integer local variable number 7 → KILLED  
 4. Incremented (a++) integer local variable number 1 → KILLED  
 5. Incremented (a++) integer local variable number 7 → SURVIVED  
 6. Decrementd (a--) integer local variable number 1 → KILLED  
 7. Decrementd (a--) integer local variable number 7 → SURVIVED  
 8. Incremented (++) integer local variable number 1 → KILLED  
 9. Incremented (++) integer local variable number 7 → KILLED  
 10. Decrementd (--a) integer local variable number 1 → KILLED  
 11. Decrementd (--a) integer local variable number 7 → KILLED  
 1. negated conditional → KILLED  
 2. removed conditional - replaced equality check with false → KILLED  
 3. removed conditional - replaced equality check with true → SURVIVED  
 4. equal to not equal → KILLED  
 1. Replaced double addition with subtraction → KILLED  
 2. removed call to java/lang/Number::doubleValue → KILLED  
 3. Negated double local variable number 3 → KILLED  
 4. Replaced double operation with first member → KILLED  
 5. Replaced double operation by second member → KILLED  
 6. Replaced double addition with subtraction → KILLED  
 7. Replaced double addition with multiplication → KILLED  
 8. Replaced double addition with division → KILLED  
 9. Replaced double addition with modulus → KILLED  
 10. Incremented (a++) double local variable number 3 → SURVIVED  
 11. Decrementd (a--) double local variable number 3 → SURVIVED



12. Incremented (++a) double local variable number 3 → KILLED  
 13. Decrementd (--a) double local variable number 3 → KILLED

213 1. replaced double return with 0.0d for  
 org/jfree/data/DataUtilities::calculateRowTotal → KILLED  
 2. replaced return of double value with -(x + 1) for  
 org/jfree/data/DataUtilities::calculateRowTotal → KILLED  
 3. Negated double local variable number 3 → KILLED  
 4. Incremented (a++) double local variable number 3 → SURVIVED  
 5. Decrementd (a--) double local variable number 3 → SURVIVED  
 6. Incremented (++a) double local variable number 3 → KILLED  
 7. Decrementd (--a) double local variable number 3 → KILLED

225 1. removed call to org/jfree/chart/util/ParamChecks::nullNotPermitted → SURVIVED  
 1. changed conditional boundary → KILLED  
 2. Substituted 0 with 1 → KILLED  
 3. negated conditional → KILLED  
 4. removed conditional - replaced comparison check with false → KILLED  
 5. removed conditional - replaced comparison check with true → KILLED  
 6. Negated integer local variable number 2 → KILLED  
 7. Substituted 0 with 1 → KILLED  
 8. Substituted 0 with -1 → KILLED  
 9. Substituted 0 with 1 → KILLED

227 10. Substituted 0 with -1 → KILLED  
 11. Less than to less or equal → KILLED  
 12. Less than to greater than → KILLED  
 13. Less than to greater or equal → KILLED  
 14. Less than to equal → KILLED  
 15. Less than to not equal → SURVIVED  
 16. Incremented (a++) integer local variable number 2 → KILLED  
 17. Decrementd (a--) integer local variable number 2 → KILLED  
 18. Incremented (++a) integer local variable number 2 → KILLED  
 19. Decrementd (--a) integer local variable number 2 → KILLED

228 1. removed call to java/lang/Double::<init> → KILLED  
 2. Negated integer local variable number 2 → KILLED  
 3. Negated integer local variable number 2 → KILLED  
 4. Negated double array field → KILLED  
 5. Incremented (a++) integer local variable number 2 → KILLED  
 6. Incremented (a++) integer local variable number 2 → KILLED  
 7. Incremented (a++) double array field → SURVIVED  
 8. Decrementd (a--) integer local variable number 2 → KILLED  
 9. Decrementd (a--) integer local variable number 2 → TIMED\_OUT  
 10. Decrementd (a--) double array field → SURVIVED  
 11. Incremented (++a) integer local variable number 2 → KILLED  
 12. Incremented (++a) integer local variable number 2 → KILLED  
 13. Incremented (++a) double array field → KILLED  
 14. Decrementd (--a) integer local variable number 2 → KILLED  
 15. Decrementd (--a) integer local variable number 2 → KILLED  
 16. Decrementd (--a) double array field → KILLED

230 1. replaced return value with null for  
 org/jfree/data/DataUtilities::createNumberArray → KILLED  
 2. mutated return of Object value for  
 org/jfree/data/DataUtilities::createNumberArray to ( if (x != null) null else  
 throw new RuntimeException ) → KILLED

242 1. removed call to org/jfree/chart/util/ParamChecks::nullNotPermitted → SURVIVED  
 1. Negated integer local variable number 1 → KILLED

244 2. Incremented (a++) integer local variable number 1 → KILLED  
 3. Decrementd (a--) integer local variable number 1 → KILLED  
 4. Incremented (++a) integer local variable number 1 → KILLED  
 5. Decrementd (--a) integer local variable number 1 → KILLED

245 1. changed conditional boundary → KILLED  
 2. Changed increment from 1 to -1 → KILLED  
 3. Substituted 0 with 1 → KILLED  
 4. negated conditional → KILLED  
 5. removed conditional - replaced comparison check with false → KILLED

6. removed conditional - replaced comparison check with true → KILLED  
 7. Negated integer local variable number 3 → KILLED  
 8. Negated integer local variable number 1 → KILLED  
 9. Substituted 0 with 1 → KILLED  
 10. Substituted 0 with -1 → KILLED  
 11. Substituted 0 with 1 → KILLED  
 12. Substituted 0 with -1 → KILLED  
 13. Less than to less or equal → KILLED  
 14. Less than to greater than → KILLED  
 15. Less than to greater or equal → KILLED  
 16. Less than to equal → KILLED  
 17. Less than to not equal → SURVIVED  
 18. Incremented (a++) integer local variable number 3 → KILLED  
 19. Incremented (a++) integer local variable number 1 → KILLED  
 20. Decrementd (a--) integer local variable number 3 → KILLED  
 21. Decrementd (a--) integer local variable number 1 → KILLED  
 22. Incremented (++a) integer local variable number 3 → KILLED  
 23. Incremented (++a) integer local variable number 1 → KILLED  
 24. Decrementd (--a) integer local variable number 3 → KILLED  
 25. Decrementd (--a) integer local variable number 1 → KILLED  
 1. removed call to org/jfree/data/DataUtilities::createNumberArray → KILLED  
 2. Negated integer local variable number 3 → KILLED  
 3. Negated integer local variable number 3 → KILLED  
 4. Incremented (a++) integer local variable number 3 → KILLED  
 5. Incremented (a++) integer local variable number 3 → KILLED  
 246 6. Decrementd (a--) integer local variable number 3 → KILLED  
 7. Decrementd (a--) integer local variable number 3 → TIMED\_OUT  
 8. Incremented (++a) integer local variable number 3 → KILLED  
 9. Incremented (++a) integer local variable number 3 → KILLED  
 10. Decrementd (--a) integer local variable number 3 → KILLED  
 11. Decrementd (--a) integer local variable number 3 → KILLED  
 1. replaced return value with null for  
 org/jfree/data/DataUtilities::createNumberArray2D → KILLED  
 248 2. mutated return of Object value for  
 org/jfree/data/DataUtilities::createNumberArray2D to ( if (x != null) null else  
 throw new RuntimeException ) → KILLED  
 262 1. removed call to org/jfree/chart/util/ParamChecks::nullNotPermitted → KILLED  
 263 1. removed call to org/jfree/data/DefaultKeyedValues::<init> → KILLED  
 1. Substituted 0.0 with 1.0 → KILLED  
 2. Substituted 0.0 with 1.0 → KILLED  
 264 3. Substituted 0.0 with -1.0 → KILLED  
 4. Substituted 0.0 with 1.0 → KILLED  
 5. Substituted 0.0 with -1.0 → KILLED  
 1. changed conditional boundary → KILLED  
 2. Substituted 0 with 1 → SURVIVED  
 3. negated conditional → KILLED  
 4. removed call to org/jfree/data/KeyedValues::getItemCount → KILLED  
 5. removed conditional - replaced comparison check with false → KILLED  
 6. removed conditional - replaced comparison check with true → KILLED  
 7. Negated integer local variable number 4 → KILLED  
 8. Substituted 0 with 1 → SURVIVED  
 9. Substituted 0 with -1 → KILLED  
 265 10. Substituted 0 with 1 → SURVIVED  
 11. Substituted 0 with -1 → KILLED  
 12. Less than to less or equal → KILLED  
 13. Less than to greater than → KILLED  
 14. Less than to greater or equal → KILLED  
 15. Less than to equal → KILLED  
 16. Less than to not equal → SURVIVED  
 17. Incremented (a++) integer local variable number 4 → KILLED  
 18. Decrementd (a--) integer local variable number 4 → KILLED  
 19. Incremented (++a) integer local variable number 4 → KILLED  
 20. Decrementd (--a) integer local variable number 4 → KILLED  
 266 1. removed call to org/jfree/data/KeyedValues::getValue → KILLED  
 2. Negated integer local variable number 4 → KILLED

3. Incremented (a++) integer local variable number 4 → KILLED  
 4. Decrementd (a--) integer local variable number 4 → TIMED\_OUT  
 5. Incremented (++a) integer local variable number 4 → KILLED  
 6. Decrementd (--a) integer local variable number 4 → KILLED  
 1. changed conditional boundary → SURVIVED  
 2. negated conditional → KILLED  
 3. negated conditional → KILLED  
 4. removed call to java/lang/Integer::intValue → KILLED  
 5. removed conditional - replaced equality check with false → KILLED  
 6. removed conditional - replaced equality check with true → KILLED  
 267 7. removed conditional - replaced comparison check with false → KILLED  
 8. removed conditional - replaced comparison check with true → KILLED  
 9. Less than to less or equal → SURVIVED  
 10. Less than to greater than → KILLED  
 11. Less than to greater or equal → KILLED  
 12. Less than to equal → KILLED  
 13. equal to not equal → KILLED  
 14. Less than to not equal → KILLED  
 1. Replaced double addition with subtraction → KILLED  
 2. removed call to java/lang/Number::doubleValue → KILLED  
 3. Negated double local variable number 2 → SURVIVED  
 4. Replaced double operation with first member → KILLED  
 5. Replaced double operation by second member → SURVIVED  
 268 6. Replaced double addition with subtraction → KILLED  
 7. Replaced double addition with multiplication → KILLED  
 8. Replaced double addition with division → KILLED  
 9. Replaced double addition with modulus → KILLED  
 10. Incremented (a++) double local variable number 2 → SURVIVED  
 11. Decrementd (a--) double local variable number 2 → SURVIVED  
 12. Incremented (++a) double local variable number 2 → SURVIVED  
 13. Decrementd (--a) double local variable number 2 → KILLED  
 1. Substituted 0.0 with 1.0 → KILLED  
 2. Substituted 0.0 with 1.0 → KILLED  
 271 3. Substituted 0.0 with -1.0 → KILLED  
 4. Substituted 0.0 with 1.0 → KILLED  
 5. Substituted 0.0 with -1.0 → KILLED  
 1. changed conditional boundary → KILLED  
 2. Substituted 0 with 1 → KILLED  
 3. negated conditional → KILLED  
 4. removed call to org/jfree/data/KeyedValues::getItemCount → KILLED  
 5. removed conditional - replaced comparison check with false → KILLED  
 6. removed conditional - replaced comparison check with true → KILLED  
 7. Negated integer local variable number 8 → KILLED  
 8. Substituted 0 with 1 → KILLED  
 9. Substituted 0 with -1 → KILLED  
 272 10. Substituted 0 with 1 → KILLED  
 11. Substituted 0 with -1 → KILLED  
 12. Less than to less or equal → KILLED  
 13. Less than to greater than → KILLED  
 14. Less than to greater or equal → KILLED  
 15. Less than to equal → KILLED  
 16. Less than to not equal → SURVIVED  
 17. Incremented (a++) integer local variable number 6 → KILLED  
 18. Decrementd (a--) integer local variable number 8 → KILLED  
 19. Incremented (++a) integer local variable number 8 → KILLED  
 20. Decrementd (--a) integer local variable number 6 → KILLED  
 1. removed call to org/jfree/data/KeyedValues::getValue → SURVIVED  
 2. Negated integer local variable number 8 → KILLED  
 273 3. Incremented (a++) integer local variable number 6 → KILLED  
 4. Decrementd (a--) integer local variable number 8 → KILLED  
 5. Incremented (++a) integer local variable number 8 → KILLED  
 6. Decrementd (--a) integer local variable number 6 → KILLED  
 274 1. changed conditional boundary → SURVIVED  
 2. negated conditional → KILLED  
 3. negated conditional → KILLED



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4. removed call to java/lang/Integer::intValue → KILLED
5. removed conditional - replaced equality check with false → SURVIVED
6. removed conditional - replaced equality check with true → KILLED
7. removed conditional - replaced comparison check with false → SURVIVED
8. removed conditional - replaced comparison check with true → KILLED
9. Less than to less or equal → SURVIVED
10. Less than to greater than → KILLED
11. Less than to greater or equal → KILLED
12. Less than to equal → KILLED
13. equal to not equal → KILLED
14. Less than to not equal → SURVIVED
1. Replaced double addition with subtraction → KILLED
2. removed call to java/lang/Number::doubleValue → SURVIVED
3. Negated double local variable number 6 → SURVIVED
4. Replaced double operation with first member → SURVIVED
5. Replaced double operation by second member → SURVIVED
275 6. Replaced double addition with subtraction → KILLED
7. Replaced double addition with multiplication → SURVIVED
8. Replaced double addition with division → SURVIVED
9. Replaced double addition with modulus → SURVIVED
10. Incremented (a++) double local variable number 4 → SURVIVED
11. Decrementd (a--) double local variable number 6 → SURVIVED
12. Incremented (++a) double local variable number 6 → KILLED
13. Decrementd (--a) double local variable number 4 → SURVIVED
1. removed call to java/lang/Double::<init> → KILLED
2. Replaced double division with multiplication → KILLED
3. removed call to org/jfree/data/KeyedValues::getKey → KILLED
4. removed call to org/jfree/data/DefaultKeyedValues::addValue → KILLED
5. Negated integer local variable number 8 → KILLED
6. Negated double local variable number 6 → KILLED
7. Negated double local variable number 2 → KILLED
8. Replaced double operation with first member → KILLED
9. Replaced double operation by second member → KILLED
10. Replaced double division with multiplication → KILLED
11. Replaced double division with modulus → SURVIVED
12. Replaced double division with addition → KILLED
277 13. Replaced double division with subtraction → KILLED
14. Incremented (a++) integer local variable number 6 → SURVIVED
15. Incremented (a++) double local variable number 4 → KILLED
16. Incremented (a++) double local variable number 2 → SURVIVED
17. Decrementd (a--) integer local variable number 8 → TIMED_OUT
18. Decrementd (a--) double local variable number 6 → KILLED
19. Decrementd (a--) double local variable number 2 → KILLED
20. Incremented (++a) integer local variable number 8 → KILLED
21. Incremented (++a) double local variable number 6 → KILLED
22. Incremented (++a) double local variable number 2 → KILLED
23. Decrementd (--a) integer local variable number 6 → KILLED
24. Decrementd (--a) double local variable number 4 → KILLED
25. Decrementd (--a) double local variable number 2 → KILLED
1. replaced return value with null for
org/jfree/data/DataUtilities::getCumulativePercentages → KILLED
279 2. mutated return of Object value for
org/jfree/data/DataUtilities::getCumulativePercentages to ( if (x != null) null
else throw new RuntimeException ) → KILLED

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## Active mutators

- ABS\_MUTATOR
- AOD\_1\_MUTATOR
- AOD\_2\_MUTATOR
- AOR\_1\_MUTATOR
- AOR\_2\_MUTATOR
- AOR\_3\_MUTATOR
- AOR\_4\_MUTATOR
- ARGUMENT\_PROPAGATION\_MUTATOR

- BOOLEAN\_FALSE\_RETURN
- BOOLEAN\_TRUE\_RETURN
- CONDITIONALS\_BOUNDARY\_MUTATOR
- CONSTRUCTOR\_CALL\_MUTATOR
- CRCR\_1\_MUTATOR
- CRCR\_2\_MUTATOR
- CRCR\_3\_MUTATOR
- CRCR\_4\_MUTATOR
- CRCR\_5\_MUTATOR
- CRCR\_6\_MUTATOR
- EMPTY\_RETURN\_VALUES
- EXPERIMENTAL\_BIGINTEGER\_MUTATOR
- EXPERIMENTAL\_MEMBER\_VARIABLE\_MUTATOR
- EXPERIMENTAL\_REMOVE\_SWITCH\_MUTATOR\_[0-99]
- EXPERIMENTAL\_SWITCH\_MUTATOR
- INCREMENTS\_MUTATOR
- INLINE\_CONSTANT\_MUTATOR
- INVERT\_NEGS\_MUTATOR
- MATH\_MUTATOR
- NAKED\_RECEIVER
- NEGATE\_CONDITIONALS\_MUTATOR
- NON\_VOID\_METHOD\_CALL\_MUTATOR
- NULL\_RETURN\_VALUES
- OBBN\_1\_MUTATOR
- OBBN\_2\_MUTATOR
- OBBN\_3\_MUTATOR
- PRIMITIVE\_RETURN\_VALS\_MUTATOR
- REMOVE\_CONDITIONALS\_EQUAL\_ELSE\_MUTATOR
- REMOVE\_CONDITIONALS\_EQUAL\_IF\_MUTATOR
- REMOVE\_CONDITIONALS\_ORDER\_ELSE\_MUTATOR
- REMOVE\_CONDITIONALS\_ORDER\_IF\_MUTATOR
- REMOVE\_INCREMENTS\_MUTATOR
- RETURN\_VALS\_MUTATOR
- ROR\_1\_MUTATOR
- ROR\_2\_MUTATOR
- ROR\_3\_MUTATOR
- ROR\_4\_MUTATOR
- ROR\_5\_MUTATOR
- UOI\_1\_MUTATOR
- UOI\_2\_MUTATOR
- UOI\_3\_MUTATOR
- UOI\_4\_MUTATOR
- VOID\_METHOD\_CALL\_MUTATOR

## Tests examined

- org.jfree.data.test.createNumberArr2DTest.testZzero(org.jfree.data.test.createNumberArr2DTest) (1 ms)
- org.jfree.data.test.createNumberArr2DTest.testEmpty2D(org.jfree.data.test.createNumberArr2DTest) (1 ms)
- org.jfree.data.test.DataUtilitiesCalcRowTotalTest.calculateRowTotalOnBoundary (org.jfree.data.test.DataUtilitiesCalcRowTotalTest) (3 ms)
- org.jfree.data.test.DataUtilitiesCalcRowTotalTest.calcRowNullTest (org.jfree.data.test.DataUtilitiesCalcRowTotalTest) (1 ms)
- org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest.testCCTAEmptyValidRows (org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest) (2 ms)
- org.jfree.data.test.createNumberArr2DTest.testValid2D(org.jfree.data.test.createNumberArr2DTest) (1 ms)
- org.jfree.data.test.TestDataUtilitiesCumulativePercentages.testNonSequentialList (org.jfree.data.test.TestDataUtilitiesCumulativePercentages) (1 ms)
- org.jfree.data.test.DataUtilitiesClone.testNull(org.jfree.data.test.DataUtilitiesClone) (1 ms)
- org.jfree.data.test.TestDataUtilitiesCumulativePercentages.testSequentialListWithNegativeValues (org.jfree.data.test.TestDataUtilitiesCumulativePercentages) (2 ms)
- org.jfree.data.test.TestDataUtilitiesCumulativePercentages.testNullDataReturn (org.jfree.data.test.TestDataUtilitiesCumulativePercentages) (1 ms)
- org.jfree.data.test.DataUtilitiesCalcRowTotalTest.calculateRowTotalOutOfBounds (org.jfree.data.test.DataUtilitiesCalcRowTotalTest) (2 ms)
- org.jfree.data.test.DataUtilitiesTestEqual.testABNull(org.jfree.data.test.DataUtilitiesTestEqual) (0 ms)
- org.jfree.data.test.testColumnTotal.nullColTest(org.jfree.data.test.testColumnTotal) (1 ms)

- org.jfree.data.test.testColumnTotal.testBoundary(org.jfree.data.test.testColumnTotal) (1 ms)
- org.jfree.data.test.testColumnTotal.nullCell(org.jfree.data.test.testColumnTotal) (1 ms)
- org.jfree.data.test.testColumnTotal.testOutsideBoundary(org.jfree.data.test.testColumnTotal) (2 ms)
- org.jfree.data.test.DataUtilitiesClone.testSymmetrical(org.jfree.data.test.DataUtilitiesClone) (0 ms)
- org.jfree.data.test.rowTotalWithArray.negativeValidCols(org.jfree.data.test.rowTotalWithArray) (1 ms)
- org.jfree.data.test.createNumberArr2DTest.testPartialEmpty2D(org.jfree.data.test.createNumberArr2DTest) (1 ms)
- org.jfree.data.test.DataUtilitiesCalcRowTotalTest.calculateRowTotalNegativeRows  
(org.jfree.data.test.DataUtilitiesCalcRowTotalTest) (1 ms)
- org.jfree.data.test.createNumberArrayTest.zeroTest(org.jfree.data.test.createNumberArrayTest) (1 ms)
- org.jfree.data.test.DataUtilitiesCalcRowTotalTest.testNullEntry  
(org.jfree.data.test.DataUtilitiesCalcRowTotalTest) (2 ms)
- org.jfree.data.test.TestDataUtilitiesCumulativePercentages.testSequentialList  
(org.jfree.data.test.TestDataUtilitiesCumulativePercentages) (2 ms)
- org.jfree.data.test.testColumnTotal.testValidParameters(org.jfree.data.test.testColumnTotal) (2 ms)
- org.jfree.data.test.rowTotalWithArray.allValid(org.jfree.data.test.rowTotalWithArray) (1 ms)
- org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest.testCCTAValid  
(org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest) (0 ms)
- org.jfree.data.test.createNumberArrayTest.PositiveTest(org.jfree.data.test.createNumberArrayTest) (1 ms)
- org.jfree.data.test.rowTotalWithArray.emptyValidCols(org.jfree.data.test.rowTotalWithArray) (2 ms)
- org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest.testCCTAExtraValidRows  
(org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest) (1 ms)
- org.jfree.data.test.createNumberArr2DTest.testNull2D(org.jfree.data.test.createNumberArr2DTest) (1 ms)
- org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest.testCCTAENegativeValidValues  
(org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTestEqual.testEqualSimple(org.jfree.data.test.DataUtilitiesTestEqual) (1 ms)
- org.jfree.data.test.DataUtilitiesCalcRowTotalTest.calcRowNoValues  
(org.jfree.data.test.DataUtilitiesCalcRowTotalTest) (37 ms)
- org.jfree.data.test.DataUtilitiesTestEqual.testNotEqualSimple(org.jfree.data.test.DataUtilitiesTestEqual) (1 ms)
- org.jfree.data.test.testColumnTotal.testEmpty(org.jfree.data.test.testColumnTotal) (1 ms)
- org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest.testCCTANullData  
(org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest) (1 ms)
- org.jfree.data.test.rowTotalWithArray.nullTest(org.jfree.data.test.rowTotalWithArray) (1 ms)
- org.jfree.data.test.DataUtilitiesTestEqual.testANull(org.jfree.data.test.DataUtilitiesTestEqual) (0 ms)
- org.jfree.data.test.createNumberArrayTest.nullTester(org.jfree.data.test.createNumberArrayTest) (1 ms)
- org.jfree.data.test.testColumnTotal.testNegative(org.jfree.data.test.testColumnTotal) (1 ms)
- org.jfree.data.test.DataUtilitiesClone.testAssymetrical(org.jfree.data.test.DataUtilitiesClone) (5 ms)
- org.jfree.data.test.rowTotalWithArray.nullValidCols(org.jfree.data.test.rowTotalWithArray) (1 ms)
- org.jfree.data.test.DataUtilitiesCalcRowTotalTest.calculateRowTotalTwoValid  
(org.jfree.data.test.DataUtilitiesCalcRowTotalTest) (2 ms)
- org.jfree.data.test.TestDataUtilitiesCumulativePercentages.testDataThrowsUnexpectedException  
(org.jfree.data.test.TestDataUtilitiesCumulativePercentages) (13 ms)
- org.jfree.data.test.rowTotalWithArray.greaterValidCols(org.jfree.data.test.rowTotalWithArray) (1 ms)
- org.jfree.data.test.createNumberArr2DTest.testValid2DNegatives(org.jfree.data.test.createNumberArr2DTest) (1 ms)
- org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest.testCCTAOutOfBoundsColumn  
(org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest) (1 ms)
- org.jfree.data.test.DataUtilitiesCalcRowTotalTest.calcRowTotalWithNegatives  
(org.jfree.data.test.DataUtilitiesCalcRowTotalTest) (1 ms)
- org.jfree.data.test.rowTotalWithArray.onBound(org.jfree.data.test.rowTotalWithArray) (2 ms)
- org.jfree.data.test.DataUtilitiesTestEqual.testBNull(org.jfree.data.test.DataUtilitiesTestEqual) (1 ms)
- org.jfree.data.test.DataUtilitiesTestEqual.testLengthsUnequal(org.jfree.data.test.DataUtilitiesTestEqual) (1 ms)
- org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest.testCCTABoundaryColumn  
(org.jfree.data.test.DataUtilitiesCalculateColumnTotalArrayTest) (1 ms)
- org.jfree.data.test.TestDataUtilitiesCumulativePercentages.testNullArgPassed  
(org.jfree.data.test.TestDataUtilitiesCumulativePercentages) (0 ms)
- org.jfree.data.test.rowTotalWithArray.negativeRowCalc(org.jfree.data.test.rowTotalWithArray) (1 ms)
- org.jfree.data.test.createNumberArrayTest.negativeTest(org.jfree.data.test.createNumberArrayTest) (1 ms)

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