

DataUtilities.java

```
1      /*
      =====
      =====
2      * JFreeChart : a free chart library for the Java(tm) platform
      *
3      *
      =====
      =====
4      *
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      Contributors.
6      *
7      * Project Info:  http://www.jfree.org/jfreechart/index.html
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```

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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	<u>4</u>	if (a == null) {
76	<u>1</u> <u>9</u>	return (b == null);
77		}
78	<u>4</u>	if (b == null) {
79	<u>7</u>	return false; // already know 'a' isn't null
80		}
81	<u>8</u>	if (a.length != b.length) {
82	<u>7</u>	return false;
83		}
84	<u>1</u> <u>9</u>	for (int i = 0; i < a.length; i++) {
85	<u>1</u> <u>9</u>	if (!Arrays.equals(a[i], b[i])) {
86	<u>7</u>	return false;

87		}
88		}
89	<u>8</u>	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	<u>1</u>	ParamChecks.nullNotPermitted(source, "source");
103		double[][] clone = new double[source.length][];
104	<u>1</u> <u>9</u>	for (int i = 0; i < source.length; i++) {
105	<u>9</u>	if (source[i] != null) {
106	<u>5</u>	double[] row = new double[source[i].length];

10 7	2 1	System.arraycopy(source[i], 0, row, 0, source[i].length);
10 8	5	clone[i] = row;
10 9		}
11 0		}
11 1	2	return clone;
11 2		}
11 3		
11 4		/**
11 5		* Returns the total of the values in one column of the supplied data
11 6		* table.
11 7		*
11 8		* @param data the table of values (<code>>null</code> not permitted).
11 9		* @param column the column index (zero-based).
12 0		*
12 1		* @return The total of the values in the specified column.

12 2		*/
12 3		public static double calculateColumnTotal(Values2D data, int column) {
12 4	<u>1</u>	ParamChecks.nullNotPermitted(data, "data");
12 5	<u>5</u>	double total = 0.0;
12 6	<u>1</u>	int rowCount = data.getRowCount();
12 7	<u>2</u> <u>5</u>	for (int r = 0; r < rowCount; r++) {
12 8	<u>1</u> <u>1</u>	Number n = data.getValue(r, column);
12 9	<u>4</u>	if (n != null) {
13 0	<u>1</u> <u>3</u>	total += n.doubleValue();
13 1		}
13 2		}
13 3	<u>7</u>	return total;
13 4		}
13 5		
13 6		/**

13 7		* Returns the total of the values in one column of the supplied data
13 8		* table by taking only the row numbers in the array into account.
13 9		*
14 0		* @param data the table of values (<code>>null</code> not permitted).
14 1		* @param column the column index (zero-based).
14 2		* @param validRows the array with valid rows (zero-based).
14 3		*
14 4		* @return The total of the valid values in the specified column.
14 5		*
14 6		* @since 1.0.13
14 7		*/
14 8		public static double calculateColumnTotal(Values2D data, int column,
14 9		int[] validRows) {
15 0	1	ParamChecks.nullNotPermitted(data, "data");
15 1	5	double total = 0.0;

15 2	<u>1</u>	<code>int rowCount = data.getRowCount();</code>
15 3	<u>2</u> <u>0</u>	<code>for (int v = 0; v < validRows.length; v++) {</code>
15 4	<u>1</u> <u>0</u>	<code>int row = validRows[v];</code>
15 5	<u>1</u> <u>9</u>	<code>if (row < rowCount) {</code>
15 6	<u>1</u> <u>1</u>	<code>Number n = data.getValue(row, column);</code>
15 7	<u>4</u>	<code>if (n != null) {</code>
15 8	<u>1</u> <u>3</u>	<code>total += n.doubleValue();</code>
15 9		<code>}</code>
16 0		<code>}</code>
16 1		<code>}</code>
16 2	<u>7</u>	<code>return total;</code>
16 3		<code>}</code>
16 4		
16 5		<code>/**</code>
16 6		<code>* Returns the total of the values in one row of the supplied data</code>

16 7		* table.
16 8		*
16 9		* @param data the table of values (<code>>null</code> not permitted).
17 0		* @param row the row index (zero-based).
17 1		*
17 2		* @return The total of the values in the specified row.
17 3		*/
17 4		public static double calculateRowTotal(Values2D data, int row) {
17 5	<u>1</u>	ParamChecks.nullNotPermitted(data, "data");
17 6	<u>5</u>	double total = 0.0;
17 7	<u>1</u>	int columnCount = data.getColumnCount();
17 8	<u>2</u> <u>5</u>	for (int c = 0; c < columnCount; c++) {
17 9	<u>1</u> <u>1</u>	Number n = data.getValue(row, c);
18 0	<u>4</u>	if (n != null) {
18 1	<u>1</u> <u>3</u>	total += n.doubleValue();

18 2		}
18 3		}
18 4	7	return total;
18 5		}
18 6		
18 7		/**
18 8		* Returns the total of the values in one row of the supplied data
18 9		* table by taking only the column numbers in the array into account.
19 0		*
19 1		* @param data the table of values (<code>>null</code> not permitted).
19 2		* @param row the row index (zero-based).
19 3		* @param validCols the array with valid cols (zero-based).
19 4		*
19 5		* @return The total of the valid values in the specified row.
19 6		*

19 7		* @since 1.0.13
19 8		*/
19 9		public static double calculateRowTotal(Values2D data, int row,
20 0		int[] validCols) {
20 1	1	ParamChecks.nullNotPermitted(data, "data");
20 2	5	double total = 0.0;
20 3	1	int colCount = data.getColumnCount();
20 4	2 0	for (int v = 0; v < validCols.length; v++) {
20 5	1 0	int col = validCols[v];
20 6	1 9	if (col < colCount) {
20 7	1 1	Number n = data.getValue(row, col);
20 8	4	if (n != null) {
20 9	1 3	total += n.doubleValue();
21 0		}
21 1		}

21 2		}
21 3	<u>7</u>	return total;
21 4		}
21 5		
21 6		/**
21 7		* Constructs an array of <code>Number</code> objects from an array of
21 8		* <code>double</code> primitives.
21 9		*
22 0		* @param data the data (<code>null</code> not permitted).
22 1		*
22 2		* @return An array of <code>Double</code> .
22 3		*/
22 4		public static Number[] createNumberArray(double[] data) {
22 5	<u>1</u>	ParamChecks.nullNotPermitted(data, "data");
22 6		Number[] result = new Number[data.length];

22 7	<u>1</u> <u>9</u>	for (int i = 0; i < data.length; i++) {
22 8	<u>1</u> <u>6</u>	result[i] = new Double(data[i]);
22 9		}
23 0	<u>2</u>	return result;
23 1		}
23 2		
23 3		/**
23 4		* Constructs an array of arrays of <code>Number</code> objects from a
23 5		* corresponding structure containing <code>double</code> primitives.
23 6		*
23 7		* @param data the data (<code>null</code> not permitted).
23 8		*
23 9		* @return An array of <code>Double</code> .
24 0		*/
24 1		public static Number[][] createNumberArray2D(double[][] data) {

24 2	1	<code>ParamChecks.nullNotPermitted(data, "data");</code>
24 3		<code>int l1 = data.length;</code>
24 4	5	<code>Number[][] result = new Number[l1][];</code>
24 5	2 5	<code>for (int i = 0; i < l1; i++) {</code>
24 6	1 1	<code>result[i] = createNumberArray(data[i]);</code>
24 7		<code>}</code>
24 8	2	<code>return result;</code>
24 9		<code>}</code>
25 0		
25 1		<code>/**</code>
25 2		<code> * Returns a {@link KeyedValues} instance that contains the cumulative</code>
25 3		<code> * percentage values for the data in another {@link KeyedValues} instance.</code>
25 4		<code> * <p></code>
25 5		<code> * The percentages are values between 0.0 and 1.0 (where 1.0 = 100%).</code>
25 6		<code> *</code>

25 7		* @param data the data (<code>>null</code> not permitted).
25 8		*
25 9		* @return The cumulative percentages.
26 0		*/
26 1		public static KeyedValues getCumulativePercentages(KeyedValues data) {
26 2	1	ParamChecks.nullNotPermitted(data, "data");
26 3	1	DefaultKeyedValues result = new DefaultKeyedValues();
26 4	5	double total = 0.0;
26 5	2 0	for (int i = 0; i < data.getItemCount(); i++) {
26 6	6	Number v = data.getValue(i);
26 7	4	if (v != null) {
26 8	1 3	total = total + v.doubleValue();
26 9		}
27 0		}
27 1	5	double runningTotal = 0.0;

27 2	<u>2</u> <u>0</u>	for (int i = 0; i < data.getItemCount(); i++) {
27 3	<u>6</u>	Number v = data.getValue(i);
27 4	<u>4</u>	if (v != null) {
27 5	<u>1</u> <u>3</u>	runningTotal = runningTotal + v.doubleValue();
27 6		}
27 7	<u>2</u> <u>5</u>	result.addValue(data.getKey(i), new Double(runningTotal / total));
27 8		}
27 9	<u>2</u>	return result;
28 0		}
28 1		
28 2		}

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

76

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
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

81

1. negated conditional → KILLED
2. removed conditional - replaced equality check with false → SURVIVED
3. removed conditional - replaced equality check with true → KILLED
4. equal to less than → KILLED
5. equal to less or equal → SURVIVED
6. equal to greater than → KILLED
7. equal to greater or equal → SURVIVED
8. equal to not equal → KILLED

82

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

84

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

85

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

86

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

89

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

10
2

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

10
4

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

10
5

1. negated conditional → KILLED
2. removed conditional - replaced equality check with false → KILLED
3. removed conditional - replaced equality check with true → KILLED
4. Negated integer local variable number 2 → KILLED
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

10
6

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

10
7

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
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

10
8

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

11
1

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

12
4

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

12
5

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

12
6

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

12
7

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
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 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 → TIMED_OUT
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

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

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

12
8

12
9

13
0

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

13
3

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
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

15
0

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

15
1

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

15
2

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

15
3

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
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
5. Decrementd (a--) integer local variable number 6 → TIMED_OUT
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

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 → SURVIVED
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 → KILLED
18. Decrementd (--a) integer local variable number 7 → KILLED

15
4

15
5

15
6

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
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

15
7

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

15
8

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

16
2

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
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

17
5

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

17
6

- 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

17
7

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

17
8

- 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
- 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

17
9

- 1. removed call to org/jfree/data/Values2D::getValue → KILLED
- 2. Negated integer local variable number 1 → SURVIVED

	<ul style="list-style-type: none"> 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 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
<u>18</u> <u>0</u>	<ul style="list-style-type: none"> 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
<u>18</u> <u>1</u>	<ul style="list-style-type: none"> 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
<u>18</u> <u>4</u>	<ul style="list-style-type: none"> 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 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
<u>20</u> <u>1</u>	<ul style="list-style-type: none"> 1. removed call to org/jfree/chart/util/ParamChecks::nullNotPermitted → KILLED

20
2

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

20
3

1. removed call to org/jfree/data/Values2D::getColumnCount → 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

20
4

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 (++a) integer local variable number 6 → KILLED
20. Decrementd (--a) integer local variable number 6 → KILLED

20
5

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 → TIMED_OUT
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

20
6

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 → SURVIVED
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 → KILLED
18. Decrementd (--a) integer local variable number 7 → KILLED
19. Decrementd (--a) integer local variable number 5 → KILLED

20
7

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 (++a) integer local variable number 1 → KILLED
9. Incremented (++a) integer local variable number 7 → KILLED
10. Decrementd (--a) integer local variable number 1 → KILLED
11. Decrementd (--a) integer local variable number 7 → KILLED

20
8

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

20
9

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

21
3

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

22
5

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

22
7

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. 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

22
8

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

23
0

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

24
2

1. Negated integer local variable number 1 → KILLED
 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

24
4

1. changed conditional boundary → KILLED
 2. Changed increment from 1 to -1 → KILLED

24
5

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
 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

24
6

24
8

2. mutated return of Object value for
org/jfree/data/DataUtilities::createNumberArray2D to (if (x != null)
null else throw new RuntimeException) → KILLED

26
2

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

26
3

1. removed call to org/jfree/data/DefaultKeyedValues::<init> → KILLED

26
4

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

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 4 → 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 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

26
5

26
6

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

26
7

- 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

26
8

- 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

27
1

- 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

27
2

- 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

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 8 → 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

27
3

1. removed call to org/jfree/data/KeyedValues::getValue → KILLED
2. Negated integer local variable number 8 → KILLED
3. Incremented (a++) integer local variable number 8 → 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

27
4

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

27
5

1. Replaced double addition with subtraction → KILLED
2. removed call to java/lang/Number::doubleValue → KILLED
3. Negated double local variable number 6 → 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 6 → 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 → KILLED

27
7

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 → KILLED
 12. Replaced double division with addition → KILLED
 13. Replaced double division with subtraction → KILLED
 14. Incremented (a++) integer local variable number 8 → KILLED
 15. Incremented (a++) double local variable number 6 → KILLED
 16. Incremented (a++) double local variable number 2 → KILLED
 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
 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.DataUtilitiesTest.testNullValue2DcalculateRowTotal(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testZeroValueForcalculateColumnTotalwithRegularArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.checkTwoArraysEqualEmpty(org.jfree.data.test.DataUtilitiesTest) (2 ms)
- org.jfree.data.test.DataUtilitiesTest.createNumberArrayNegativeTest(org.jfree.data.test.DataUtilitiesTest) (2 ms)
- org.jfree.data.test.DataUtilitiesTest.testPositiveValueForcalculateColumnTotalwithNegativeArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testPositiveValueForcalculateColumnTotalwithRegularArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.checkTwoArraysEqualNaN(org.jfree.data.test.DataUtilitiesTest) (3 ms)
- org.jfree.data.test.DataUtilitiesTest.calculateRowTotalForFourValues(org.jfree.data.test.DataUtilitiesTest) (6 ms)
- org.jfree.data.test.DataUtilitiesTest.testZeroValueForcalculateRowTotalwithZeroArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testDoubleArrayWithNullValue(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.createNumberArray2DNegativeTest(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testNullValue2DForcalculateColumnTotalwithArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testNullKeyedValueGetCumulativePercentages(org.jfree.data.test.DataUtilitiesTest) (2 ms)
- org.jfree.data.test.DataUtilitiesTest.createNumberArrayNullTest(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.getCumulativePercentagesPositiveIntTest(org.jfree.data.test.DataUtilitiesTest) (2 ms)

- `org.jfree.data.test.DataUtilitiesTest.testZeroValueForcalculateColumnTotalwithOutBoundIndexArray(org.jfree.data.test.DataUtilitiesTest)` (1 ms)
- `org.jfree.data.test.DataUtilitiesTest.testNegativeValueForcalculateRowTotalwithNegativeArray(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.checkTwoArraysEqualOneArrayNull(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.getCumulativePercentagesPositiveDoubleTest(org.jfree.data.test.DataUtilitiesTest)` (1 ms)
- `org.jfree.data.test.DataUtilitiesTest.testPositiveValueForcalculateRowTotalwithNegativeArray(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.testZeroValueForcalculateColumnTotalwithNegativeArray(org.jfree.data.test.DataUtilitiesTest)` (1 ms)
- `org.jfree.data.test.DataUtilitiesTest.checkTwoArraysEqualNull(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.checkTwoArraysNotEqual(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.testPositiveValueWithANullForcalculateColumnTotal(org.jfree.data.test.DataUtilitiesTest)` (1 ms)
- `org.jfree.data.test.DataUtilitiesTest.checkTwoArraysEqual(org.jfree.data.test.DataUtilitiesTest)` (4 ms)
- `org.jfree.data.test.DataUtilitiesTest.createNumberArrayMixedTest(org.jfree.data.test.DataUtilitiesTest)` (1 ms)
- `org.jfree.data.test.DataUtilitiesTest.testNullDoubleArray(org.jfree.data.test.DataUtilitiesTest)` (1 ms)
- `org.jfree.data.test.DataUtilitiesTest.testZeroValueForcalculateRowTotalwithOutBoundIndexArray(org.jfree.data.test.DataUtilitiesTest)` (1 ms)
- `org.jfree.data.test.DataUtilitiesTest.checkTwoDoubleArraysNotEqual(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.getCumulativePercentagesPositiveAndNegativeDoubleTest(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.testPositiveValueForcalculateColumnTotal(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.checkTwoArraysEqualBothNull(org.jfree.data.test.DataUtilitiesTest)` (3 ms)

- org.jfree.data.test.DataUtilitiesTest.getCumulativePercentagesNullTest(org.jfree.data.test.DataUtilitiesTest) (12 ms)
- org.jfree.data.test.DataUtilitiesTest.testNegativeValueForcalculateColumnTotalwithRegularArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.calculateRowTotalForZeroValues(org.jfree.data.test.DataUtilitiesTest) (4 ms)
- org.jfree.data.test.DataUtilitiesTest.createNumberArrayPositiveTest(org.jfree.data.test.DataUtilitiesTest) (2 ms)
- org.jfree.data.test.DataUtilitiesTest.testNegativeValueForcalculateRowTotalwithZeroArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.checkTwoArraysNotEqual2(org.jfree.data.test.DataUtilitiesTest) (3 ms)
- org.jfree.data.test.DataUtilitiesTest.createNumberArrayEmptyTest(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testZeroValueForcalculateRowTotalwithRegularArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testNullValue2DForcalculateColumnTotal(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testNegativeValueForcalculateColumnTotalwithNegativeArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.createNumberArray2DPositiveTest(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testZeroValueForcalculateRowTotalwithNegativeArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testNegativeValueForcalculateColumnTotalwithZeroArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testNegativeValueForcalculateColumnTotal(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testPositiveValueForcalculateRowTotalwithRegularArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)
- org.jfree.data.test.DataUtilitiesTest.testZeroValueForcalculateColumnTotalwithZeroArray(org.jfree.data.test.DataUtilitiesTest) (1 ms)

- `org.jfree.data.test.DataUtilitiesTest.testPostiveValueForcalculateRowTotalwithZeroArray(org.jfree.data.test.DataUtilitiesTest)` (1 ms)
- `org.jfree.data.test.DataUtilitiesTest.testDoubleArrayWithNoneNullValue(org.jfree.data.test.DataUtilitiesTest)` (1 ms)
- `org.jfree.data.test.DataUtilitiesTest.checkTwoArrayEqualSecondArrayNull(org.jfree.data.test.DataUtilitiesTest)` (4 ms)
- `org.jfree.data.test.DataUtilitiesTest.testNegativeValueForcalculateRowTotalwithRegularArray(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.getCumulativePercentagesPosAndNegIntTest(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.calculateRowTotalWithNullValues(org.jfree.data.test.DataUtilitiesTest)` (63 ms)
- `org.jfree.data.test.DataUtilitiesTest.createNumberArray2DNullTest(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.testZeroValueForcalculateColumnTotal(org.jfree.data.test.DataUtilitiesTest)` (1 ms)
- `org.jfree.data.test.DataUtilitiesTest.createNumberArray2DMixedTest(org.jfree.data.test.DataUtilitiesTest)` (3 ms)
- `org.jfree.data.test.DataUtilitiesTest.testNullValue2DForcalculateRowTotalwithArray(org.jfree.data.test.DataUtilitiesTest)` (1 ms)
- `org.jfree.data.test.DataUtilitiesTest.calculateRowTotalForTwoNegativeValues(org.jfree.data.test.DataUtilitiesTest)` (5 ms)
- `org.jfree.data.test.DataUtilitiesTest.testPostiveValueForcalculateColumnTotalwithZeroArray(org.jfree.data.test.DataUtilitiesTest)` (2 ms)
- `org.jfree.data.test.DataUtilitiesTest.calculateRowTotalForTwoPositiveValues(org.jfree.data.test.DataUtilitiesTest)` (5 ms)