Table 1: Teco dataset projects basic information.

Types	# projects
total	1535
single-module	1209
exist	1196
2019	77
2020	179
2021	277
2022	128

A DATASET

Table 1 shows the distribution of projects by their latest release/commit data from Teco's dataset [1] when we checked in Spring 2022.

B EXPERIMENT RESULTS

Table 2 shows the number of target statements covered by unit tests, and the number of target statements of each kind (regular experssion, string manipulation, bit manipulation and stream).

Table 3 shows the number of target statements and generated inline tests.

Table 4 lists the mutation operators used by universalmutator in our experiments.

Figure 1 shows the Venn diagram of the mutants killed by inline tests, developer-written unit tests, and Randoop-generated unit tests.

Table 5 lists the 250 mutants (from 56 target statement in 14 projects) killed by R1 but not killed by R0.

There are 4 reasons that R1 killed less mutants than R0

- coverage is line level not instruction level (3 target statements)
- group() is for the whole conditional expression, not for each condition (11 target statements)
- coverage for bit manipulation does not change (35 target statements)
- String wrapper does not override indexOf, valueOf (7 target statements)

Table 6 lists the 532 mutants (from 165 target statements in 17 projects) not killed by any kind of tests.

For the 1385 mutants that are not killed by developer-written unit tests, 897 mutants related target statements are covered by developer-written unit tests, and 488 mutants related target statements are not covered by developer-written unit tests.

For the 2711 mutants that are not killed by Randoop-generated unit tests, 1084 mutants related target statements are covered by Randoop-generated unit tests, and 1627 mutants related target statements are not covered by Randoop-generated unit tests.

Table 2: Target statements. All: Total number of target statements. T: Number of target statements covered by tests (developer-written unit tests or Randoop generated tests). T_M: Number of methods that contain the target statements covered by tests (developer-written unit tests or Randoop generated tests). DT: Number of target statements covered by developer-written unit tests. DT_M: Number of methods that contain the target statements covered by developer-written unit tests. RT: Number of target statements covered by Randoop generated tests. RT_M: Number of methods that contain the target statements covered by Randoop generated tests.

Project	# Total							# Stmts Regex				# Stmts String				# Stmts Bit				# Stmts Stream			
	All	T	T_M	DT	DT_M	RT	RT_M	All	T	DT	RT	All	T	DT	RT	All	T	DT	RT	All	T	DT	RT
Amazon-sqs-java-extended-client-lib	4	4	4	4	4	0	1	0	0	0	0	4	4	4	0	0	0	0	0	0	0	0	0
Aquarius-sdk-java	3	3	3	2	3	2	3	1	1	0	1	2	2	2	1	0	0	0	0	0	0	0	0
Build-helper-maven-plugin	24	12	22	12	12	11	22	13	12	12	11	11	0	0	0	0	0	0	0	0	0	0	0
Core	19	15	16	14	14	8	12	7	5	5	2	10	10	9	6	2	0	0	0	0	0	0	0
Cyclonedx-core-java	4	3	4	2	3	3	4	0	0	0	0	0	0	0	0	0	0	0	0	4	3	2	3
Elasticsearch-analysis-pinyin	3	3	3	3	3	1	2	0	0	0	0	0	0	0	0	3	3	3	1	0	0	0	0
Email-ext-plugin	14	13	13	13	13	2	4	2	2	2	0	11	10	10	2	0	0	0	0	1	1	1	0
Extclassgenerator	5	2	4	2	4	1	2	0	0	0	0	5	2	2	1	0	0	0	0	0	0	0	0
Fabric-sdk-java	22	19	21	19	21	4	5	7	7	7	1	11	8	8	2	3	3	3	1	1	1	1	0
Geoip-api-java	22	21	21	21	21	0	0	0	0	0	0	0	0	0	0	22	21	21	0	0	0	0	0
Gerrit-rest-java-client	17	14	14	12	12	7	7	4	4	4	0	8	8	7	5	5	2	1	2	0	0	0	0
Java-asana	247	246	246	25	25	241	241	0	0	0	0	247	246	25	241	0	0	0	0	0	0	0	0
Jopenfst	7	4	4	4	4	0	0	0	0	0	0	2	2	2	0	5	2	2	0	0	0	0	0
Jproc	2	2	2	2	2	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
Jscep	4	4	4	2	2	2	4	1	1	1	0	1	1	1	0	2	2	0	2	0	0	0	0
Liquibase-oracle	4	2	2	0	0	2	2	0	0	0	0	4	2	0	2	0	0	0	0	0	0	0	0
Logstash-gelf	54	37	40	37	39	19	28	8	8	8	2	33	23	23	14	13	6	6	3	0	0	0	0
Maven-site-fixer	1	1	1	1	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
Messageml-utils	43	40	42	40	41	25	31	5	5	5	3	22	20	20	14	1	1	1	1	15	14	14	7
Mp3agic	34	34	34	34	34	31	32	0	0	0	0	6	6	6	6	28	28	28	25	0	0	0	0
Nfe	251	44	234	37	37	33	228	25	25	24	24	222	16	10	8	0	0	0	0	4	3	3	1
Ognl	179	138	174	136	169	40	105	1	1	1	1	26	22	22	7	152	115	113	32	0	0	0	0
Pdfcompare	10	9	10	9	10	4	4	4	4	4	0	2	1	1	0	1	1	1	1	3	3	3	3
Ph-pdf-layout	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0	0
Properties-maven-plugin	6	6	6	6	6	0	0	0	0	0	0	6	6	6	0	0	0	0	0	0	0	0	0
Property-loader	5	4	5	4	5	2	4	2	1	1	1	3	3	3	1	0	0	0	0	0	0	0	0
Restfb	24	20	21	19	20	12	17	4	3	3	2	13	11	10	5	4	4	4	4	3	2	2	1
Sherdog-parser	9	9	9	8	8	9	9	0	0	0	0	5	5	4	5	0	0	0	0	4	4	4	4
Trema-core	10	9	10	9	9	5	6	1	1	1	0	9	8	8	5	0	0	0	0	0	0	0	0
Velocity-config-tool	2	2	2	2	2	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	0	0	0
Visearch-sdk-java	4	4	4	4	4	4	4	0	0	0	0	4	4	4	4	0	0	0	0	0	0	0	0
Total	1035	726	977	485	530	471	780	86	81	79	49	671	424	191	329	243	190	185	74	35	31	30	19

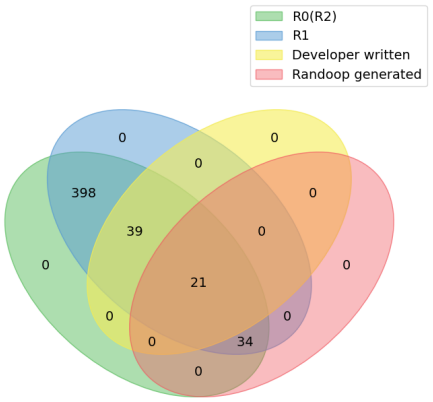
Table 3: Generated and reduced inline tests. # target stmts: Total number of target statements that are covered by initial inline tests. # Values ITs: Total number of unique inline tests collected in memory. # R0 ITs: Total number of inline tests without reduction. # R1 ITs: Total number of round 1 reduced inline tests. # R2 ITs: Total number of round 2 reduced inline tests.

PID	# target stmts	# Values ITs	# R0 ITs	# R1 ITs	# R2 ITs
P1	4	67	67	4	4
P2	3	19	19	4	3
P3	12	305	254	46	14
P4	11	83	83	17	11
P5	3	52	52	5	3
P6	3	115	84	11	7
P7	4	36	22	7	5
P8	2	24	15	3	2
P9	17	100	100	29	18
P10	16	1765	442	34	30
P11	9	749	146	13	11
P12	245	1000	1000	253	248
P13	2	21	21	2	3
P14	2	60	26	3	2
P15	3	428	214	6	3
P16	2	10	10	2	2
P17	35	16388	1537	61	47
P18	1	1	1	1	1
P19	17	10378	446	37	22
P20	32	11308	1738	46	43
P21	40	1120	956	74	53
P22	128	5828	2272	294	151
P23	5	36	36	14	5
P24	2	524	133	2	3
P25	6	72	72	6	6
P26	3	31	25	3	2
P27	19	1496	809	34	22
P28	4	36524	451	7	6
P29	7	128	50	9	10
P30	1	6	6	1	2
P31	4	8	4	4	4
Total	642	88682	11091	1032	743

Table 4: Summary of mutation operators

Mutation operators	original	mutated
absolute val of negative val '-'	-n	n
boolean *and* with true	bool1 && bool2	true && bool2 bool1 && true
boolean *or* with false	bool1 || bool2	false || bool2 bool1 || false
change += to =+	val1 += val2	val1 =+ val2
change binary arithmetic operator	+, -, *, /, %	+, -, *, /, %
change binary logical bitwise operator	val1 | val2 val1 & val2	val1 & val2 val1 | val2
change binary logical operator	bool1 || bool2 bool1 && bool2	bool1 && bool2 bool1 || bool2
change comparator	>, <, !=, >=, <=, ==	>, <, !=, >=, <=, ==
change constant	n	-1, 0, 1, (n-1), (n+1)
delete repeating function	obj.func(x).func(y)	obj.func(x)
delete string	"..."	""
negate if-statement	if(...) if(!...)	if(!...) if(!(!(...)))
remove else	else if(...)	if(...)
remove unary operator	!boolean	boolean
reverse increment/decrement	val++ val--	val-- val++
reverse max/min	max(...) min(...)	min(...) max(...)
swap argument order	function(x, y)	function(y, x)

(a) aquarius-sdk-java



(b) java-asana

(c) maven-site-fixer

(d) velocity-config-tool

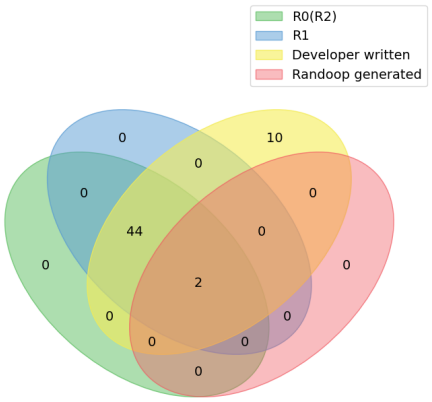
(e) cyclonedx-core-java

(f) property-loader

(g) amazon-sqs-java-extended-client-lib

(h) core

(i) jproc

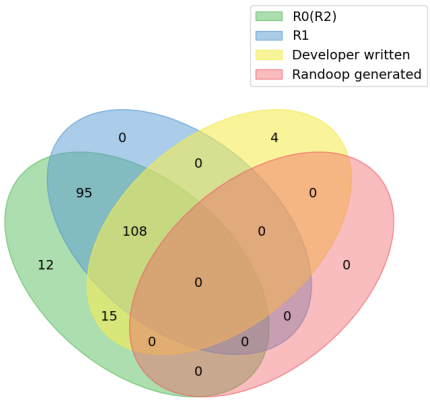


(j) fabric-sdk-java

(k) email-ext-plugin

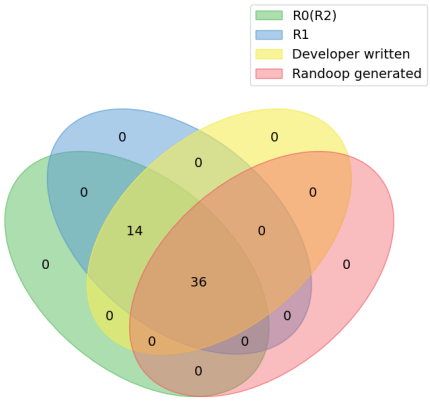
(l) jscep

(m) sherdog-parser



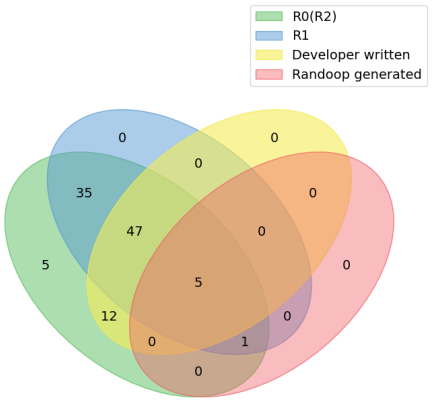
(n) geoip-api-java

(o) elasticsearch-analysis-pinyin

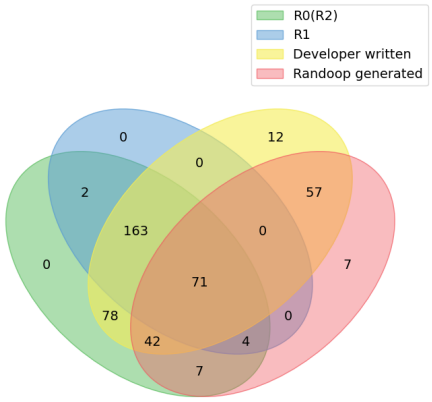


(p) build-helper-maven-plugin

(q) properties-maven-plugin



(r) logstash-gelf



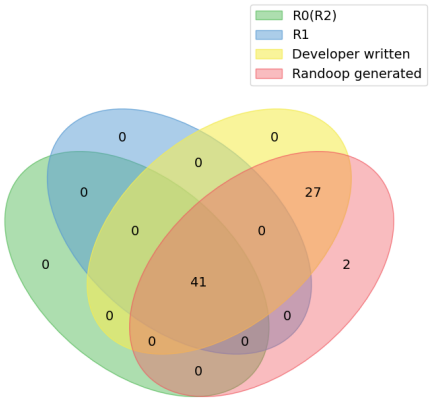
(s) mp3agic

(t) trema-core

(u) ph-pdf-layout

(v) extclassgenerator

(w) pdfcompare



(x) restfb

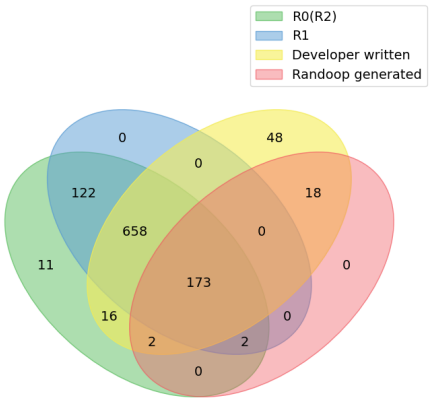
(y) jopenfst

(z) messageml-utils

(aa) gerrit-rest-java-client

(ab) visearch-sdk-java

(ac) nfe



(ad) ognl

Figure 1: Sets of mutants killed by inline tests and unit tests.

Table 5: R1 tests missed mutants that are killed by R0 tests.

Target stmt	Original code	Mutated code	Reason
velocity-config-tool ConfigTool 288	`corrected = text.replace('/', '-').replace ('\\', '-').replace('.', '-')`	`corrected = text.replace('/', '-').replace ('\\', '-').replace('.', '%')`	coverage is line level not instruction level.
email-ext-plugin ExtendedEmailPublisherDescriptor 498	`if (value.matches("@[A-Za-z0-9.\\-]+") || Util.fixEmptyAndTrim(value)==null)`	`if (value.matches("") || Util. fixEmptyAndTrim(value)==null)`	group() is for the whole conditional expression, not for each condition.
geoip-api-java LookupService 549	`if (read == 3 && (delim[0] & 0xFF) == 255`	`if (read == 3 && (delim[(0+1)] & 0xFF) == 255`	group() is for the whole conditional expression, not for each condition.
geoip-api-java LookupService 882	`int bMask = 1 << (bnum & 7 ^ 7);`	`int bMask = 1 << (bnum & (7-1) ^ 7);`	coverage for bit manipulation is not enough.
geoip-api-java LookupService 883	`if ((v6vec[idx] & bMask) > 0) {`	`if ((v6vec[idx] & bMask) > 1) {`	coverage for bit manipulation is not enough.
geoip-api-java LookupService 917	`if ((ipAddress & (1 << depth)) > 0) {`	`if ((ipAddress | (1 << depth)) > 0) {`	coverage for bit manipulation is not enough.
geoip-api-java LookupService 958	`x[i] += (y << (j * 8));`	`x[i] += (y << (j * -1));`	coverage for bit manipulation is not enough.
geoip-api-java LookupService 977	`ipnum += y << ((3 - i) * 8);`	`ipnum =+ y << ((3 - i) * 8);`	coverage for bit manipulation is not enough.

elasticsearch-analysis-pinyin PinyinAlphabetTokenizer 59	`if (lastWord & sb.length()>0) {`	`if (lastWord & sb.length()>(0+1)) {`	coverage for bit manipulation is not enough.
properties-maven-plugin ExpansionBuffer 35	`int prefixPos = unresolved.indexOf( "${" ) ;`	`int prefixPos = unresolved.indexOf( "" );`	String wrapper does not override indexOf.
properties-maven-plugin ExpansionBuffer 36	`int suffixPos = unresolved.indexOf( "}", prefixPos + 2 );`	`int suffixPos = unresolved.indexOf( "}", prefixPos * 2 );`	String wrapper does not override indexOf.
properties-maven-plugin ExpansionBuffer 98	`int propertyPrefixPos = unresolved.indexOf ( "${" );`	`int propertyPrefixPos = unresolved.indexOf ( "" );`	String wrapper does not override indexOf.
properties-maven-plugin ExpansionBuffer 104	`int propertyPrefixPos = unresolved.indexOf ( "${" );`	`int propertyPrefixPos = unresolved.indexOf ( "" );`	String wrapper does not override indexOf.
logstash-gelf RuntimeContainer 121	`if (hostname.indexOf('.') != -1 && !fqdn) {`	`if (hostname.indexOf('.') != -(1+1) && ! fqdn) {`	coverage for bit manipulation is not enough.
logstash-gelf StackTraceFilter 440	`if (endsWithNewLine && AT_PATTERN.matcher( toWrite).find()) {`	`if (endsWithNewLine || AT_PATTERN.matcher( toWrite).find()) {`	group() is for the whole conditional expression, not for each condition.
logstash-gelf ValueDiscovery 46	`numbersOnly &= (c >= '0' && c <= '9');`	`numbersOnly &= (c <= '0' && c <= '9');`	coverage for bit manipulation is not enough.

mp3agic BufferTools 90	`newByte = (byte) (b & (~((byte) 0x01 << bitPosition)));`	`newByte = (byte) (b & (~((byte) 0x0 << bitPosition)));`	coverage for bit manipulation is not enough.
mp3agic BufferTools 116	`bytes[2] = (byte) ((i >> 8) & 0xff);`	`bytes[2] = (byte) ((i >> (8-1)) & 0xff);`	coverage for bit manipulation is not enough.
mp3agic BufferTools 117	`bytes[1] = (byte) ((i >> 16) & 0xff);`	`bytes[1] = (byte) ((i >> -1) & 0xff);`	coverage for bit manipulation is not enough.
mp3agic BufferTools 124	`value += shiftByte((byte) (b3 & 0x7f), -7);`	`value += shiftByte((byte) (b3 & 0x1f), -7);`	coverage for bit manipulation is not enough.
mp3agic BufferTools 125	`value += shiftByte((byte) (b2 & 0x7f), -14);`	`value += shiftByte((byte) (b2 & 0x7f), 14);`	coverage for bit manipulation is not enough.
mp3agic BufferTools 126	`value += shiftByte((byte) (b1 & 0x7f), -21);`	`value += shiftByte((byte) (b1 & 0x7f), 21);`	coverage for bit manipulation is not enough.
mp3agic BufferTools 137	`bytes[offset + 3] = (byte) (i & 0x7f);`	`bytes[offset + 3] = (byte) (i & 0x1f);`	coverage for bit manipulation is not enough.
mp3agic BufferTools 138	`bytes[offset + 2] = (byte) ((i >> 7) & 0x7f);`	`bytes[offset + 2] = (byte) ((i >> 7) & 0x1f);`	coverage for bit manipulation is not enough.

mp3agic BufferTools 139	`bytes[offset + 1] = (byte) ((i >> 14) & 0 x7f);`	`bytes[offset + 1] = (byte) ((i >> (14-1)) & 0x7f);`	coverage for bit manipulation is not enough.
mp3agic BufferTools 140	`bytes[offset + 0] = (byte) ((i >> 21) & 0 x7f);`	`bytes[offset + 0] = (byte) ((i >> 21) & 0 x0f);`	coverage for bit manipulation is not enough.
mp3agic BufferTools 160	`if (bytes[i] == (byte) 0xff && ((bytes[i + 1] & (byte) 0xe0) == (byte) 0xe0 || bytes[i + 1] == 0)) {`	`if (bytes[i] == (byte) 0xff && ((bytes[i * 1] & (byte) 0xe0) == (byte) 0xe0 || bytes[i + 1] == 0)) {`	group() is for the whole conditional expression, not for each condition.
mp3agic BufferTools 178	`if (bytes[i] == (byte) 0xff && ((bytes[i + 1] & (byte) 0xe0) == (byte) 0xe0 || bytes[i + 1] == 0)) {`	`if (bytes[i] == (byte) 0xff && ((bytes[i + 1] & (byte) 0xe0) == (byte) 0xe0 || bytes[i + 1] == 1)) {`	group() is for the whole conditional expression, not for each condition.
mp3agic BufferTools 192	`if (bytes[i] == (byte) 0xff && bytes[i + 1] == 0 && ((bytes[i + 2] & (byte) 0 xe0) == (byte) 0xe0 || bytes[i + 2] == 0)) {`	`if (bytes[i] == (byte) 0xff && bytes[i + 1] == 0 && ((bytes[i + 2] & (byte) 0 xe0) == (byte) 0xe0 || bytes[i + (2+1)] == 0)) {`	group() is for the whole conditional expression, not for each condition.
mp3agic BufferTools 210	`if (bytes[i] == (byte) 0xff && bytes[i + 1] == 0 && ((bytes[i + 2] & (byte) 0 xe0) == (byte) 0xe0 || bytes[i + 2] == 0)) {`	`if (bytes[i] == (byte) 0xff && bytes[i + 1] == 0 && ((bytes[i + 2] & (byte) 0 xe0) == (byte) 0xe0 || bytes[i + (2+1)] == 0)) {`	group() is for the whole conditional expression, not for each condition.
mp3agic MpegFrame 92	`if (((bitMask >> i) & 1) != 0) {`	`if (((bitMask >> i) & (1+1)) != 0) {`	coverage for bit manipulation is not enough.

trema-core HtmlLineBreakConverter 21	`String newValue = StringUtils.replace(value, "\\r\\n", REPLACEMENT);`	`String newValue = StringUtils.replace(value, REPLACEMENT, "\\r\\n");`	coverage is line level not instruction level.
trema-core HtmlLineBreakConverter 23	`newValue = StringUtils.replace(newValue, "\\r", REPLACEMENT);`	`newValue = StringUtils.replace(newValue, "", REPLACEMENT);`	coverage is line level not instruction level.
ph-pdf-layout LoadedFont 74	`ret <<= 8;`	`ret <<= 1;`	coverage for bit manipulation is not enough.
ph-pdf-layout LoadedFont 75	`ret |= (b + 256) % 256;`	`ret |= (b % 256) % 256;`	coverage for bit manipulation is not enough.
jopenfst IndexWeight 66	`result = 31 * result + (int) (temp ^ (temp >>> 32));`	`result = 0 * result + (int) (temp ^ (temp >>> 32));`	coverage for bit manipulation is not enough.
messageml-utils DateInterval 57	`if(Arrays.stream(daysOfWeek).anyMatch(d -> d < 0 || d > 6)){`	`if(Arrays.stream(daysOfWeek).anyMatch(d -> d < 0 || d >= 6)){`	group() is for the whole conditional expression, not for each condition.
gerrit-rest-java-client StandardKeyEncoder 81	`if (e.indexOf('%') < 0) {`	`if (e.indexOf('/') < 0) {`	String wrapper does not override indexOf.
nfe DFUtils 107	`final String nDigResult = String.valueOf(digito1) + digito2;`	`final String nDigResult = String.valueOf(digito1) + digito1;`	String wrapper does not override valueOf.

nfe DFBigDecimalValidador 83	`if (valor.toPlainString().length() > tamanho || StringUtils.split(valor.toPlainString(), ".")[0].length() > (tamanho - (posicaoPontoFlutuante + 1)) || valor.scale() > posicaoPontoFlutuante) {`	`if (valor.toPlainString().length() > tamanho || StringUtils.split(valor.toPlainString(), ".")[0].length() >= (tamanho - (posicaoPontoFlutuante + 1)) || valor.scale() > posicaoPontoFlutuante) {`	group() is for the whole conditional expression, not for each condition.
nfe NFVerificaChave 35	`valorTemp = Integer.parseInt(String.valueOf(valores[i - 1]));`	`valorTemp = Integer.parseInt(String.valueOf(valores[i - (1+1)]));`	String wrapper does not override valueOf.
ognl OgnlParserTokenManager 100	`if ((active0 & 0x201c4055d555540L) != 0L)`	`if ((active0 & 0x201c1d555540L) != 0L)`	coverage for bit manipulation is not enough.
ognl OgnlParserTokenManager 655	`if ((0x3ff000000000000L & l) != 0L)`	`if ((0x0ff000000000000L & l) != 0L)`	coverage for bit manipulation is not enough.
ognl OgnlParserTokenManager 665	`if ((0x3fe000000000000L & l) != 0L)`	`if ((0x0fe000000000000L & l) != 0L)`	coverage for bit manipulation is not enough.
ognl OgnlParserTokenManager 697	`if ((0x3ff000000000000L & l) == 0L)`	`if ((0x0ff000000000000L & l) == 0L)`	coverage for bit manipulation is not enough.
ognl OgnlParserTokenManager 730	`if ((0x3ff000000000000L & l) != 0L)`	`if ((0x0ff000000000000L & l) != 0L)`	coverage for bit manipulation is not enough.
ognl OgnlParserTokenManager 748	`if ((0x3ff000000000000L & l) != 0L)`	`if ((0x0ff000000000000L & l) != 0L)`	coverage for bit manipulation is not enough.

ognl OgnlParserTokenManager 763	`if ((0x3ff000000000000L & l) != 0L)`	`if ((0x0ff000000000000L & l) != 0L)`	coverage for bit manipulation is not enough.
ognl OgnlParserTokenManager 799	`if ((0x7fffffe87fffffeL & l) != 0L)`	`if ((0x7fffffe0fffffeL & l) != 0L)`	coverage for bit manipulation is not enough.
ognl OgnlParserTokenManager 809	`if ((0x7fffffe87fffffeL & l) == 0L)`	`if ((0x7fffffe0fffffeL & l) == 0L)`	coverage for bit manipulation is not enough.
ognl OgnlParserTokenManager 1072	`if ((0xffffff7fffffffffL & l) != 0L && kind > 72)`	`if ((0xffffff0fffffffffL & l) != 0L && kind > 72)`	coverage for bit manipulation is not enough.
ognl OgnlParserTokenManager 1130	`long l1 = 1L << (hiByte & 077);`	`long l1 = 1L << (hiByte & (077-1));`	coverage for bit manipulation is not enough.
ognl OgnlParserTokenManager 1132	`long l2 = 1L << (curChar & 077);`	`long l2 = 1L << (curChar & (077-1));`	coverage for bit manipulation is not enough.
ognl OgnlParserTokenManager 1229	`long l = 1L << (curChar & 077);`	`long l = 1L << (curChar & (077-1));`	coverage for bit manipulation is not enough.
ognl JavaCharStream 300	`if ((c == 'u') && ((backSlashCnt & 1) == 1))`	`if ((c >= 'u') && ((backSlashCnt & 1) == 1))`	group() is for the whole conditional expression, not for each condition.
ognl OgnlParser 3209	`if ((jj_la1_1[i] & (1<<j)) != 0) {`	`if ((jj_la1_1[i] & ((1+1)<<j)) != 0) {`	group() is for the whole conditional expression, not for each condition.

Table 6: R0, developer-written unit tests, and Randoop generated tests missed mutants.

Target stmt	Original code	Mutated code
maven-site-fixer SiteTool 376	`texts = text.split("-", 2);`	`texts = text.split("-", -1);`
velocity-config-tool ConfigTool 288	`corrected = text.replace('/', '-').replace ('\\', '-').replace('.', '-')`	`corrected = text.replace('%', '-').replace ('\\', '-').replace('.', '-')`
property-loader VariableResolvingFilter 20	`int endIndex = value.indexOf( VARIABLE_SUFFIX, startIndex + VARIABLE_PREFIX.length());`	`int endIndex = value.indexOf( VARIABLE_SUFFIX, startIndex / VARIABLE_PREFIX.length());`
amazon-sqs-java-extended-client-lib AmazonSQSExtendedClient 340	`largeMessagePointer = largeMessagePointer. replace("com.amazon.sqs.javamessaging. MessageS3Pointer", "software.amazon. payloadoffloading.PayloadS3Pointer");`	`largeMessagePointer = largeMessagePointer. replace("com.amazon.sqs.javamessaging. MessageS3Pointer", "");`
amazon-sqs-java-extended-client-lib AmazonSQSExtendedClient 891	`int secondOccurence = receiptHandle. indexOf(marker, firstOccurence + 1);`	`int secondOccurence = receiptHandle. indexOf(marker, firstOccurence + (1+1));`
core ReplaceSubstringUrlTransformer 51	`String result = url.replace( substringToReplace, replacement);`	`String result = url.replace( replacement, substringToReplace);`
fabric-sdk-java ChaincodeEndorsementPolicy 90	`if (match.matches() && match.groupCount() == 1) {`	`if (match.matches() && match.groupCount() >= 1) {`

fabric-sdk-java ChaincodeCollectionConfiguration 289	`if (match.matches() && match.groupCount() == 1) {`	`if (match.matches() && match.groupCount() >= 1) {`
fabric-sdk-java Endpoint 345	`if (match.matches() && match.groupCount() == 1) {`	`if (match.matches() && match.groupCount() >= 1) {`
geoip-api-java LookupService 549	`if (read == 3 && (delim[0] & 0xFF) == 255`	`if (read <= 3 && (delim[0] & 0xFF) == 255`
geoip-api-java LookupService 304	`if ((dboptions & GEOIP_CHECK_CACHE) != 0) {`	`if ((dboptions & GEOIP_CHECK_CACHE) < 0) {`
geoip-api-java LookupService 374	`if ((dboptions & GEOIP_MEMORY_CACHE) == 1) {`	`if ((dboptions & GEOIP_MEMORY_CACHE) >= 1) {`
geoip-api-java LookupService 977	`ipnum += y << ((3 - i) * 8);`	`ipnum += y <<= ((3 - i) * 8);`
geoip-api-java LookupService 382	`if ((dboptions & GEOIP_INDEX_CACHE) != 0) {`	`if ((dboptions & GEOIP_INDEX_CACHE) > 0) {`
geoip-api-java LookupService 473	`if (file == null && (dboptions & GEOIP_MEMORY_CACHE) == 0) {`	`if (file != null && (dboptions & GEOIP_MEMORY_CACHE) == 0) {`

geoip-api-java LookupService 584	`if ((dboptions & GEOIP_CHECK_CACHE) != 0) {`	`if ((dboptions & GEOIP_CHECK_CACHE) < 0) {`
geoip-api-java LookupService 492	`if (file == null && (dboptions & GEOIP_MEMORY_CACHE) == 0) {`	`if (file != null && (dboptions & GEOIP_MEMORY_CACHE) == 0) {`
geoip-api-java LookupService 747	`if ((dboptions & GEOIP_MEMORY_CACHE) == 1) {`	`if ((dboptions & GEOIP_MEMORY_CACHE) >= 1) {`
geoip-api-java LookupService 883	`if ((v6vec[idx] & bMask) > 0) {`	`if ((v6vec[idx] & bMask)!= 0) {`
geoip-api-java LookupService 917	`if ((ipAddress & (1 << depth)) > 0) {`	`if ((ipAddress & (1 << depth))!= 0) {`
geoip-api-java LookupService 939	`} else if ((dboptions & GEOIP_INDEX_CACHE) != 0) {`	`} else if ((dboptions & GEOIP_INDEX_CACHE) > 0) {`
geoip-api-java LookupService 936	`if ((dboptions & GEOIP_MEMORY_CACHE) == 1) {`	`if ((dboptions & GEOIP_MEMORY_CACHE) >= 1) {`
geoip-api-java LookupService 958	`x[i] += (y << (j * 8));`	`x[i] += (y <<= (j * 8));`

elasticsearch-analysis-pinyin PinyinTokenizer 201	`if (config.keepSeparateFirstLetter & pinyin.length() > 1) {`	`if (config.keepSeparateFirstLetter & pinyin.length() > 0) {`
elasticsearch-analysis-pinyin PinyinTokenFilter 145	`if (config.keepSeparateFirstLetter & pinyin.length() > 1) {`	`if (config.keepSeparateFirstLetter & pinyin.length() > -1) {`
build-helper-maven-plugin VersionInformation 70	`if ( matcher.group( 7 ) != null )`	`if ( matcher.group( (7-1) ) != null )`
build-helper-maven-plugin VersionInformation 75	`if ( matcher.group( 9 ) != null )`	`if ( matcher.group( (9-1) ) != null )`
properties-maven-plugin ExpansionBuffer 36	`int suffixPos = unresolved.indexOf( "}", prefixPos + 2 );`	`int suffixPos = unresolved.indexOf( "}", prefixPos + 1 );`
logstash-gelf RuntimeContainer 121	`if (hostname.indexOf('.') != -1 && !fqdn) {`	`if (hostname.indexOf('.') > -1 && !fqdn) {`
logstash-gelf StackTraceFilter 360	`index = traceElement.indexOf(INDENT, index + 1);`	`index = traceElement.indexOf(INDENT, index + (1+1));`
logstash-gelf StackTraceFilter 440	`if (endsWithNewLine && AT_PATTERN.matcher( toWrite).find()) {`	`if (true && AT_PATTERN.matcher(toWrite). find()) {`

logstash-gelf JsonWriter 295	`int hi = (charToEscape >> 8) & 0xFF;`	`int hi = (charToEscape >>= 8) & 0xFF;`
logstash-gelf ReusableGzipOutputStream 134	`buf[offset + 1] = (byte) ((s >> 8) & 0xff);`	`buf[offset - 1] = (byte) ((s >> 8) & 0xff);`
logstash-gelf GelfMessage 655	`result = 31 * result + (int) (javaTimestamp ^ (javaTimestamp >>> 32));`	`result = 31 * result + (int) (javaTimestamp ^ (javaTimestamp >>> (32+1)));`
logstash-gelf ValueDiscovery 72	`} else if (doublePattern.matcher(value).matches()) {`	`} if (doublePattern.matcher(value).matches()) {`
logstash-gelf ValueDiscovery 70	`} else if (longPattern.matcher(value).matches()) {`	`} if (longPattern.matcher(value).matches()) {`
logstash-gelf JulLogEvent 74	`if (message.indexOf('{') != -1) {`	`if (message.indexOf('{') > -1) {`
mp3agic BufferTools 210	`if (bytes[i] == (byte) 0xff && bytes[i + 1] == 0 && ((bytes[i + 2] & (byte) 0xe0) == (byte) 0xe0 || bytes[i + 2] == 0)) {`	`if (bytes[i] == (byte) 0xff && bytes[i + 1] == 0 && ((bytes[i + 2] & (byte) 0xe0) == (byte) 0xe0 || bytes[i + 1] == 0)) {`
mp3agic ID3v2ChapterTOCFrameData 42	`if ((flags & 0x01) == 0x01) {`	`if ((flags & 0x01) >= 0x01) {`

mp3agic BufferTools 178	`if (bytes[i] == (byte) 0xff && ((bytes[i + 1] & (byte) 0xe0) == (byte) 0xe0 || bytes[i + 1] == 0)) {`	`if (bytes[i] == (byte) 0xff && ((bytes[i + 1] & (byte) 0xe0) == (byte) 0xe0 || bytes[i + 1] <= 0)) {`
mp3agic ID3v2ChapterTOCFrameData 45	`if ((flags & 0x02) == 0x02) {`	`if ((flags & 0x02) >= 0x02) {`
mp3agic ID3v2ChapterTOCFrameData 96	`b |= 0x01;`	`b |= 0x1;`
mp3agic BufferTools 88	`newByte = (byte) (b | ((byte) 0x01 << bitPosition));`	`newByte = (byte) (b | ((byte) 0x1 << bitPosition));`
mp3agic BufferTools 90	`newByte = (byte) (b & (~((byte) 0x01 << bitPosition)));`	`newByte = (byte) (b & (~((byte) 0x1 << bitPosition)));`
mp3agic BufferTools 140	`bytes[offset + 0] = (byte) ((i >> 21) & 0x7f);`	`bytes[offset + 0] = (byte) ((i >>= 21) & 0x7f);`
mp3agic BufferTools 192	`if (bytes[i] == (byte) 0xff && bytes[i + 1] == 0 && ((bytes[i + 2] & (byte) 0xe0) == (byte) 0xe0 || bytes[i + 2] == 0)) {`	`if (bytes[i] == (byte) 0xff && bytes[i + 1] == 0 && ((bytes[i + 2] & (byte) 0xe0) == (byte) 0xe0 || bytes[i + 1] == 0)) {`

mp3agic BufferTools 160	`if (bytes[i] == (byte) 0xff && ((bytes[i + 1] & (byte) 0xe0) == (byte) 0xe0 || bytes[i + 1] == 0)) {`	`if (bytes[i] == (byte) 0xff && ((bytes[i + 1] & (byte) 0xe0) <= (byte) 0xe0 || bytes[i + 1] == 0)) {`
mp3agic BufferTools 118	`bytes[0] = (byte) ((i >> 24) & 0xff);`	`bytes[0] = (byte) ((i >>= 24) & 0xff);`
mp3agic MpegFrame 92	`if (((bitMask >> i) & 1) != 0) {`	`if (((bitMask >> i) & 1) > 0) {`
pdfcompare Exclusions 153	`} else if ("cm".equals(matcher.group(2))) {`	`} if ("cm".equals(matcher.group(2))) {`
pdfcompare Exclusions 155	`} else if ("pt".equals(matcher.group(2))) {`	`} if ("pt".equals(matcher.group(2))) {`
jopenfst MutableArc 124	`result = (int) (temp ^ (temp >>> 32));`	`result = (int) (temp ^ (temp >>>= 32));`
jopenfst IndexWeight 66	`result = 31 * result + (int) (temp ^ (temp >>> 32));`	`result = 31 * result + (int) (temp ^ (temp >>>= 32));`
messageml-utils DateInterval 57	`if(Arrays.stream(daysOfWeek).anyMatch(d -> d < 0 || d > 6)){`	`if(Arrays.stream(daysOfWeek).anyMatch(d -> false || d > 6)){`

gerrit-rest-java-client StandardKeyEncoder 81	`if (e.indexOf('%') < 0) {`	`if (e.indexOf('%') < (0+1)) {`
ognl OgnlParserTokenManager 100	`if ((active0 & 0x201c4055d555540L) != 0L)`	`if ((active0 & 0x0c4055d555540L) != 0L)`
ognl OgnlParserTokenManager 105	`if ((active0 & 0x4000000000000000L) != 0L)`	`if ((active0 & 0x0L) != 0L)`
ognl OgnlParserTokenManager 107	`if ((active0 & 0x10000000000000L) != 0L)`	`if ((active0 & 0x0L) != 0L)`
ognl OgnlParserTokenManager 109	`if ((active0 & 0x80000000000L) != 0L)`	`if ((active0 & 0x0L) != 0L)`
ognl OgnlParserTokenManager 113	`if ((active0 & 0x201c00550045500L) != 0L)`	`if ((active0 & 0x0c00550045500L) != 0L)`
ognl OgnlParserTokenManager 122	`if ((active0 & 0x4000d510040L) != 0L)`	`if ((active0 & 0x4000d510040L) > 0L)`
ognl OgnlParserTokenManager 310	`if ((active0 & 0x80L) != 0L)`	`if ((active0 & 0x80L) > 0L)`
ognl OgnlParserTokenManager 314	`if ((active0 & 0x20000000L) != 0L)`	`if ((active0 & 0x20000000L) > 0L)`

ognl OgnlParserTokenManager 324	`else if ((active0 & 0x2000000L) != 0L)`	`if ((active0 & 0x2000000L) != 0L)`
ognl OgnlParserTokenManager 322	`else if ((active0 & 0x800000L) != 0L)`	`if ((active0 & 0x800000L) != 0L)`
ognl OgnlParserTokenManager 320	`else if ((active0 & 0x20000L) != 0L)`	`if ((active0 & 0x20000L) != 0L)`
ognl OgnlParserTokenManager 318	`if ((active0 & 0x8000L) != 0L)`	`if ((active0 & 0x8000L) > 0L)`
ognl OgnlParserTokenManager 328	`if ((active0 & 0x80000000L) != 0L)`	`if ((active0 & 0x80000000L) > 0L)`
ognl OgnlParserTokenManager 341	`if ((active0 & 0x8000000L) != 0L)`	`if ((active0 & 0x8000000L) > 0L)`
ognl OgnlParserTokenManager 350	`if ((active0 & 0x10000L) != 0L)`	`if ((active0 & 0x10000L) > 0L)`
ognl OgnlParserTokenManager 354	`if ((active0 & 0x40L) != 0L)`	`if ((active0 & 0x40L) > 0L)`
ognl OgnlParserTokenManager 365	`else if ((active0 & 0x400000L) != 0L)`	`if ((active0 & 0x400000L) != 0L)`

ognl OgnlParserTokenManager 360	`if ((active0 & 0x100000L) != 0L)`	`if ((active0 & 0x100000L) > 0L)`
ognl OgnlParserTokenManager 374	`if ((active0 & 0x20L) != 0L)`	`if ((active0 & 0x20L) > 0L)`
ognl OgnlParserTokenManager 384	`if (((active0 &= old0)) == 0L)`	`if (((active0 &= old0)) <= 0L)`
ognl OgnlParserTokenManager 394	`if ((active0 & 0x200000000L) != 0L)`	`if ((active0 & 0x200000000L) > 0L)`
ognl OgnlParserTokenManager 398	`if ((active0 & 0x100L) != 0L)`	`if ((active0 & 0x100L) > 0L)`
ognl OgnlParserTokenManager 404	`else if ((active0 & 0x4000000L) != 0L)`	`if ((active0 & 0x4000000L) != 0L)`
ognl OgnlParserTokenManager 402	`if ((active0 & 0x1000000L) != 0L)`	`if ((active0 & 0x1000000L) > 0L)`
ognl OgnlParserTokenManager 410	`if ((active0 & 0x40000000L) != 0L)`	`if ((active0 & 0x40000000L) > 0L)`
ognl OgnlParserTokenManager 418	`if ((active0 & 0x40000L) != 0L)`	`if ((active0 & 0x40000L) > 0L)`

ognl OgnlParserTokenManager 426	`else if ((active0 & 0x100000000L) != 0L)`	`if ((active0 & 0x100000000L) != 0L)`
ognl OgnlParserTokenManager 424	`else if ((active0 & 0x1000L) != 0L)`	`if ((active0 & 0x1000L) != 0L)`
ognl OgnlParserTokenManager 422	`if ((active0 & 0x400L) != 0L)`	`if ((active0 & 0x400L) > 0L)`
ognl OgnlParserTokenManager 432	`if ((active0 & 0x10000000L) != 0L)`	`if ((active0 & 0x10000000L) > 0L)`
ognl OgnlParserTokenManager 438	`if ((active0 & 0x2000000000000000L) != 0L)`	`if ((active0 & 0x2000000000000000L) > 0L)`
ognl OgnlParserTokenManager 448	`if (((active0 &= old0)) == 0L)`	`if (((active0 &= old0)) <= 0L)`
ognl OgnlParserTokenManager 458	`if ((active0 & 0x4000L) != 0L)`	`if ((active0 & 0x4000L) > 0L)`
ognl OgnlParserTokenManager 462	`if ((active0 & 0x4000000000000L) != 0L)`	`if ((active0 & 0x4000000000000L) > 0L)`
ognl OgnlParserTokenManager 468	`if ((active0 & 0x1000000000000L) != 0L)`	`if ((active0 & 0x1000000000000L) > 0L)`

ognl OgnlParserTokenManager 474	`if ((active0 & 0x400000000L) != 0L)`	`if ((active0 & 0x400000000L) > 0L)`
ognl OgnlParserTokenManager 488	`if (((active0 &= old0)) == 0L)`	`if (((active0 &= old0)) <= 0L)`
ognl OgnlParserTokenManager 500	`if ((active0 & 0x800000000000L) != 0L)`	`if ((active0 & 0x800000000000L) > 0L)`
ognl OgnlParserTokenManager 504	`if ((active0 & 0x2000000000000L) != 0L)`	`if ((active0 & 0x2000000000000L) > 0L)`
ognl OgnlParserTokenManager 508	`if ((active0 & 0x4000000000000L) != 0L)`	`if ((active0 & 0x4000000000000L) > 0L)`
ognl OgnlParserTokenManager 518	`if (((active0 &= old0)) == 0L)`	`if (((active0 &= old0)) <= 0L)`
ognl OgnlParserTokenManager 536	`if (((active0 &= old0)) == 0L)`	`if (((active0 &= old0)) <= 0L)`
ognl OgnlParserTokenManager 554	`if (((active0 &= old0)) == 0L)`	`if (((active0 &= old0)) <= 0L)`
ognl OgnlParserTokenManager 572	`if (((active0 &= old0)) == 0L)`	`if (((active0 &= old0)) <= 0L)`

ognl OgnlParserTokenManager 590	`if (((active0 &= old0)) == 0L)`	`if (((active0 &= old0)) <= 0L)`
ognl OgnlParserTokenManager 600	`if ((active0 & 0x40000000000L) != 0L)`	`if ((active0 & 0x40000000000L) > 0L)`
ognl OgnlParserTokenManager 655	`if ((0x3ff0000000000000L & l) != 0L)`	`if ((0x3ff0000000000000L & l) > 0L)`
ognl OgnlParserTokenManager 665	`if ((0x3fe0000000000000L & l) != 0L)`	`if ((0x3fe0000000000000L & l) > 0L)`
ognl OgnlParserTokenManager 679	`if ((0x3ff0010000000000L & l) == 0L)`	`if ((0x3ff0010000000000L & l) <= 0L)`
ognl OgnlParserTokenManager 686	`if ((0x41000000000L & l) != 0L)`	`if ((0x41000000000L & l) > 0L)`
ognl OgnlParserTokenManager 697	`if ((0x3ff0000000000000L & l) == 0L)`	`if ((0x3ff0000000000000L & l) <= 0L)`
ognl OgnlParserTokenManager 708	`if ((0x3ff0000000000000L & l) == 0L)`	`if ((0x3ff0000000000000L & l) <= 0L)`
ognl OgnlParserTokenManager 730	`if ((0x3ff0000000000000L & l) != 0L)`	`if ((0x3ff0000000000000L & l) > 0L)`

ognl OgnlParserTokenManager 741	`if ((0x3ff0000000000000L & l) == 0L)`	`if ((0x3ff0000000000000L & l) <= 0L)`
ognl OgnlParserTokenManager 748	`if ((0x3ff0000000000000L & l) != 0L)`	`if ((0x3ff0000000000000L & l) > 0L)`
ognl OgnlParserTokenManager 752	`if ((0x2800000000000L & l) != 0L)`	`if ((0x2800000000000L & l) != -1L)`
ognl OgnlParserTokenManager 756	`if ((0x3ff0000000000000L & l) == 0L)`	`if ((0x3ff0000000000000L & l) <= 0L)`
ognl OgnlParserTokenManager 763	`if ((0x3ff0000000000000L & l) != 0L)`	`if ((0x3ff0000000000000L & l) > 0L)`
ognl OgnlParserTokenManager 774	`if ((0xff0000000000000L & l) == 0L)`	`if ((0xff0000000000000L & l) <= 0L)`
ognl OgnlParserTokenManager 781	`if ((0x3ff0000000000000L & l) == 0L)`	`if ((0x3ff0000000000000L & l) <= 0L)`
ognl OgnlParserTokenManager 793	`long l = 1L << (curChar & 077);`	`long l = 1L << (curChar & -1);`
ognl OgnlParserTokenManager 799	`if ((0x7fffffe87fffffeL & l) != 0L)`	`if ((0x7fffffe87fffffeL & l) > 0L)`

ognl OgnlParserTokenManager 809	`if ((0x7fffffe87fffffeL & l) == 0L)`	`if ((0x7fffffe87fffffeL & l) <= 0L)`
ognl OgnlParserTokenManager 820	`if ((0x1000000040000000L & l) != 0L)`	`if ((0x1000000040000000L & l) > 0L)`
ognl OgnlParserTokenManager 828	`if ((0x110000001100L & l) != 0L && kind > 80)`	`if ((0x110000001100L & l) != 0L && kind > 1)`
ognl OgnlParserTokenManager 832	`if ((0x2000000020L & l) != 0L)`	`if ((0x2000000020L & l) > 0L)`
ognl OgnlParserTokenManager 836	`if ((0x5400000054L & l) != 0L && kind > 81)`	`if ((0x5400000054L & l) != 0L && kind > 1)`
ognl OgnlParserTokenManager 840	`if ((0x2000000020L & l) != 0L)`	`if ((0x2000000020L & l) > 0L)`
ognl OgnlParserTokenManager 844	`if ((0x1000000001000000L & l) != 0L)`	`if ((0x1000000001000000L & l) > 0L)`
ognl OgnlParserTokenManager 848	`if ((0x7e0000007eL & l) == 0L)`	`if ((0x7e0000007eL & l) <= 0L)`
ognl OgnlParserTokenManager 971	`long l = 1L << (curChar & 077);`	`long l = 1L << (curChar & -1);`

ognl OgnlParserTokenManager 977	`if ((0xfffffffeefffffffL & l) != 0L)`	`if ((0xfffffffeefffffffL & l) != 1L)`
ognl OgnlParserTokenManager 1072	`if ((0xffffff7fffffffffL & l) != 0L && kind > 72)`	`if ((0xffffff7fffffffffL & l) != 0L && kind > 1)`
ognl OgnlParserTokenManager 1076	`if ((0x8400000000L & l) != 0L && kind > 71)`	`if ((0x8400000000L & l) !=1 && kind > 71)`
ognl OgnlParserTokenManager 1080	`if ((0xf000000000000L & l) != 0L)`	`if ((0xf000000000000L & l) > 0L)`
ognl OgnlParserTokenManager 1084	`if ((0xff000000000000L & l) == 0L)`	`if ((0xff000000000000L & l) <= 0L)`
ognl OgnlParserTokenManager 1091	`if ((0xff000000000000L & l) != 0L && kind > 71)`	`if ((0xff000000000000L | l) != 0L && kind > 71)`
ognl OgnlParserTokenManager 1100	`long l = 1L << (curChar & 077);`	`long l = 1L << (curChar & -1);`
ognl OgnlParserTokenManager 1106	`if ((0xfffffffefffffffL & l) != 0L)`	`if ((0xfffffffefffffffL & l) > 0L)`

ognl OgnlParserTokenManager 1115	`if ((0x14404510000000L & l) != 0L && kind > 71)`	`if ((0x14404510000000L & l) != 0L && kind > 1)`
ognl OgnlParserTokenManager 1129	`int i1 = hiByte >> 6;`	`int i1 = hiByte >>= 6;`
ognl OgnlParserTokenManager 1130	`long l1 = 1L << (hiByte & 077);`	`long l1 = 1L << (hiByte & -1);`
ognl OgnlParserTokenManager 1132	`long l2 = 1L << (curChar & 077);`	`long l2 = 1L << (curChar & -1);`
ognl OgnlParserTokenManager 1201	`if ((0xfffffffbffffffffL & l) != 0L && kind > 78)`	`if ((0xfffffffbffffffffL & l) != -1L && kind > 78)`
ognl OgnlParserTokenManager 1205	`if ((0x8400000000L & l) != 0L && kind > 77)`	`if ((0x8400000000L & l) !=1 && kind > 77)`
ognl OgnlParserTokenManager 1209	`if ((0xf000000000000L & l) != 0L)`	`if ((0xf000000000000L & l) > 0L)`
ognl OgnlParserTokenManager 1213	`if ((0xff000000000000L & l) == 0L)`	`if ((0xff000000000000L & l) <= 0L)`

ognl OgnlParserTokenManager 1220	`if ((0xff000000000000L & l) != 0L && kind > 77)`	`if ((0xff000000000000L | l) != 0L && kind > 77)`
ognl OgnlParserTokenManager 1229	`long l = 1L << (curChar & 077);`	`long l = 1L << (curChar & -1);`
ognl OgnlParserTokenManager 1235	`if ((0xfffffffffeffffffL & l) != 0L)`	`if ((0xfffffffffeffffffL & l) > 0L)`
ognl OgnlParserTokenManager 1244	`if ((0x14404510000000L & l) != 0L && kind > 77)`	`if ((0x14404510000000L & l) != 0L && kind > 1)`
ognl OgnlParserTokenManager 1257	`int hiByte = (int)(curChar >> 8);`	`int hiByte = (int)(curChar >> (8+1));`
ognl OgnlParserTokenManager 1258	`int i1 = hiByte >> 6;`	`int i1 = hiByte >> (6+1);`
ognl OgnlParserTokenManager 1259	`long l1 = 1L << (hiByte & 077);`	`long l1 = 1L << (hiByte & -1);`
ognl OgnlParserTokenManager 1261	`long l2 = 1L << (curChar & 077);`	`long l2 = 1L << (curChar & (077-1));`
ognl OgnlParserTokenManager 1318	`if ((jjbitVec7[i1] & l1) != 0L)`	`if ((jjbitVec0[i1] & l1) != 0L)`

ognl OgnlParserTokenManager 1537	`else if ((jjtoSkip[jjmatchedKind >> 6] & (1L << (jjmatchedKind & 077))) != 0L)`	`else if ((jjtoSkip[jjmatchedKind >> (6+1)] & (1L << (jjmatchedKind & 077))) != 0L)`
ognl OgnlParserTokenManager 1529	`if ((jjtoToken[jjmatchedKind >> 6] & (1L << (jjmatchedKind & 077))) != 0L)`	`if ((jjtoToken[jjmatchedKind >> 6] & (1L << (jjmatchedKind & 077))) > 0L)`
ognl IntHashMap 177	`int index = (key & 0x7FFFFFFF) % table.length;`	`int index = (key & 0x1FFFFFFF) % table.length;`
ognl IntHashMap 201	`int index = ( key & 0x7FFFFFFF ) % table.length;`	`int index = ( key & 0x1FFFFFFF ) % table.length;`
ognl JavaCharStream 300	`if ((c == 'u') && ((backSlashCnt & 1) == 1))`	`if ((c == 'u') && ((backSlashCnt | 1) == 1))`
ognl DefaultClassResolver 61	`if (className.indexOf('.') > -1) {`	`if (className.indexOf('.')!= -1) {`
ognl ASTAdd 226	`if (expr.indexOf('\'') >= 0)`	`if (expr.indexOf('\'') == 0)`
ognl ASTAdd 244	`if (expr.indexOf("&quot;") >= 0)`	`if (expr.indexOf("&quot;") >= 1)`

ognl OgnlParser 3206	`if ((jj_la1_0[i] & (1<<j)) != 0) {`	`if ((jj_la1_0[i] & (1<<j)) > 0) {`
ognl OgnlParser 3209	`if ((jj_la1_1[i] & (1<<j)) != 0) {`	`if ((jj_la1_1[i] & (1<<j)) > 0) {`
ognl OgnlParser 3212	`if ((jj_la1_2[i] & (1<<j)) != 0) {`	`if ((jj_la1_2[i] & (1<<j)) > 0) {`
ognl ExpressionCompiler 549	`if (body.indexOf("..") >= 0)`	`if (body.indexOf("..") >= (0+1))`
ognl ExpressionCompiler 590	`if (body.indexOf("..") >= 0)`	`if (body.indexOf("..") >= (0+1))`
ognl ExpressionCompiler 639	`if (body.indexOf("..") >= 0)`	`if (body.indexOf("..") >= (0+1))`

REFERENCES

[1] Pengyu Nie, Rahul Banerjee, Junyi Jessy Li, Raymond J. Mooney, and Milos Gligoric. 2023. Learning deep semantics for test completion. In *ICSE*. 1–12.