Testid	description	Expected	Actual
1	1+1	2	2
2	0+1	1	1
3	9223372036854775807 + 9223372036854775807	18446744073709551614	1.84E+19
4	9 + 10	19	
5	4294967295 + 4294967295	8589934590	8.59E+09
6	1-1	0	0
7	-1	-1	-1
8	$	NaN	NaN
9	2^4	16	16
10	2^512	13407807929942597099574024998205846127479316582059239333777235614437217640300735469768018742298166903427690031858186486050853753388281194656993464336490060840960	NaN
11	NaN + 2	NaN	NaN
12	entering nothing		0
13	60 - 0 (with a space between 60 and -)	60	NaN
14	60 * 0	0	0
15	5 - 2	3	NaN
16	Robert'); DROP TABLE STUDENTS; --	NaN	NaN
17	80/4*5	100	4
18	(80/4)*5	100	100.0
19	5*80/4	100	100.0
20	5*(80/4)	100	100.0
21	80/(4*5)	4	4.0
22	2&1	NaN	NaN
23	16 ^^ 2	NaN	1.0
24	3443 ^^^^ 23	NaN	1.0
25	1/0	NaN	NaN
26	0/1	0	0.0
27	0.1 + 0.2 (checking for ieee 754 floating point error)	0.3	0.3
28	1+	NaN	NaN
29	/1	NaN	0.0
30	1/	NaN	NaN
31	1*	NaN	NaN
32	*1	NaN	0.0
33	((((1+1))))	2	2.0
34	5--2	7	NaN
35	2^3 + 2	10	32.0
36	2^1 + 2 + 3	7	64.0
37	2^(3) + 1	9	16.0
38	(2^3) + 1	9	9.0
39	+ 1	NaN	1.0
40	(2^3)-3	5	NaN
41	(2^3)+3*(8-6)	14	14.0
42	(2^3)+3(8-6)	14	40
43	3(2)	6	32.0
44	(1)(1)	1	11.0
45	2^2^2	16	16.0
46	2^(2-3)	0.5	0.5
47	1-2^2+3	0	1.0
48	2^-512	7.458340731200206743290965315462933837376471534600406894271518333206278385070118304936174890400427803361511603255836101453412728095225302660486164829592084691481260792318781377495204074266435262941446554365063914765414217260588507120031686823003222742297563699265350215337206058336516628646003612927433551846968657326499008153319891789578832685947418212890625 × 10^-155	0
49	1.0 + 2	3	3.0
50	(-1)^(0.5)	NaN or i	NaN
51	2**2	NaN	0.0
52	2++++++++2	NaN	4.0
53	()	NaN	NaN
54	(1+2 missing bracket	NaN	NaN
55	1+()	NaN	NaN
56	1(-1)	-1	NaN
57	2-(-2)	4	NaN
58	2--2	4	4
59	2//2	NaN	NaN
60	(1 + (2 + 3))	6	6.0
61	3+*3	NaN	3
62	2^3 + 2^3	16	32768.0
63	2^(3) + 2^(3)	16	32768
64	2(^3)	NaN	20
65	(^0)	NaN	1
66	0^0	1	1
67	(^0)^2	NaN	1
68	(+ 1 2)	NaN	12
69	1 2 3	NaN	123
70	(+* 1 2)	NaN	0.0

71 testing the buttons - delete results in a error stack trace when the input is already empty	don't do anything	Exception in thread "AWT-EventQueue-0" java.lang.StringIndexOutOfBoundsException: begin 0, end -1, length 0 at java.base/java.lang.String.checkBoundsBeginEnd(String.java:3410) at java.base/java.lang.String.substring(String.java:1883) at MainFrame$22.actionPerformed(MainFrame.java:245) at java.desktop/javax.swing.AbstractButton.fireActionPerformed(AbstractButton.java:1967) at java.desktop/javax.swing.AbstractButton$Handler.actionPerformed(AbstractButton.java:2308) at java.desktop/javax.swing.DefaultButtonModel.fireActionPerformed(DefaultButtonModel.java:405) at java.desktop/javax.swing.DefaultButtonModel.setPressed(DefaultButtonModel.java:262) at java.desktop/javax.swing.plaf.basic.BasicButtonListener.mouseReleased(BasicButtonListener.java:279) at java.desktop/java.awt.Component.processMouseEvent(Component.java:6632) at java.desktop/javax.swing.JComponent.processMouseEvent(JComponent.java:3342) at java.desktop/java.awt.Component.processEvent(Component.java:6397) at java.desktop/java.awt.Container.processEvent(Container.java:2263) at java.desktop/java.awt.Component.dispatchEventImpl(Component.java:5008) at java.desktop/java.awt.Container.dispatchEventImpl(Container.java:2321) at java.desktop/java.awt.Component.dispatchEvent(Component.java:4840) at java.desktop/java.awt.LightweightDispatcher.retargetMouseEvent(Container.java:4918) at java.desktop/java.awt.LightweightDispatcher.processMouseEvent(Container.java:4547) at java.desktop/java.awt.LightweightDispatcher.dispatchEvent(Container.java:4488) at java.desktop/java.awt.Container.dispatchEventImpl(Container.java:2307) at java.desktop/java.awt.Window.dispatchEventImpl(Window.java:2762) at java.desktop/java.awt.Component.dispatchEvent(Component.java:4840) at java.desktop/java.awt.EventQueue.dispatchEventImpl(EventQueue.java:772) at java.desktop/java.awt.EventQueue$4.run(EventQueue.java:721) at java.desktop/java.awt.EventQueue$4.run(EventQueue.java:715) at java.base/java.security.AccessController.doPrivileged(AccessController.java:389) at java.base/java.security.ProtectionDomain$JavaSecurityAccessImpl.doIntersectionPrivilege(ProtectionDomain.java:85) at java.base/java.security.ProtectionDomain$JavaSecurityAccessImpl.doIntersectionPrivilege(ProtectionDomain.java:95) at java.desktop/java.awt.EventQueue$5.run(EventQueue.java:745) at java.desktop/java.awt.EventQueue$5.run(EventQueue.java:743) at java.base/java.security.AccessController.doPrivileged(AccessController.java:389) at java.base/java.security.ProtectionDomain$JavaSecurityAccessImpl.doIntersectionPrivilege(ProtectionDomain.java:85) at java.desktop/java.awt.EventQueue.dispatchEvent(EventQueue.java:742) at java.desktop/java.awt.EventDispatchThread.pumpOneEventForFilters(EventDispatchThread.java:203) at java.desktop/java.awt.EventDispatchThread.pumpEventsForFilter(EventDispatchThread.java:124) at java.desktop/java.awt.EventDispatchThread.pumpEventsForHierarchy(EventDispatchThread.java:113) at java.desktop/java.awt.EventDispatchThread.pumpEvents(EventDispatchThread.java:109) at java.desktop/java.awt.EventDispatchThread.pumpEvents(EventDispatchThread.java:101) at java.desktop/java.awt.EventDispatchThread.run(EventDispatchThread.java:90)

Table 1: Test cases carried out against the calculator program. Failed test cases are highlighted in red.