

ECE 322

Lab Report 1

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Introduction

The purpose of this lab was to serve as a practical introduction to rudimentary black-box testing techniques. The testing methods introduced were dirty testing, error guessing, and partition-based testing. It should be noted that numerous other black-box testing methods exist. The idea of black-box testing is that tests are carried out with no knowledge of how the software internally works. In other words, the implementation details are a “black box” as the name would suggest.

Part 1 - Failure/Dirty Testing, Error Guessing

For task one in this lab, we had to be creative, as is the nature of Failure/Dirty testing, and error guessing. The purpose was to test the functionality of a calculator program.

Part 2 - Partition Testing

Triangle Equivalence Classes

Valid

1. $a + b > c$
2. Equilateral
3. Isosceles
4. Scalene
5. 3 arguments
6. separated by one space

7. positive integers

Invalid

1. $a + b = c$
2. $a + b < c$
3. < 3 arguments
4. > 3 arguments
5. separated by more than one space
6. negative argument
7. argument with the number '0'
8. decimal argument

Appendix

A Calculator Test Cases

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	134078079299425970995740 249982058461274793658205 923933777235614437217640 300735469768018742981669 034276900318581864860508 537538828119465699464336 49006084096	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	$2^{\wedge-512}$	7.4583407312002067432909 653154629338373764715346 004068942715183332062783 850701183049361748904004 278033615116032558361014 534127280952253026604861 648295920846914812607923 187813774952040742664352 629414465543650639147654 142172605885071200316868 230032227422975636992653 502153372060583365166286 460036129274335518469686 573264990081533198917895 78832685947418212890625 $\times 10^{\wedge-155}$	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	$2^3(3) + 2^3(3)$	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