

Assignment 5

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Introduction to Software Testing (Edition 2): Book by Jeff Offutt and Paul Amman

Exercise 6.2, Number 5. (Page 91)

Characteristics	Block 1	Block 2	Block 3	Block 4
Value 1	< 0	0	> 0	
Value 2	< 0	0	> 0	
Operation	+	-	x	/ (division)

a) Tests to satisfy ECC (Each Choice Criterion)

ECC states that one value from each block for each characteristic must be used in at least one test case.

4 tests would be required:

Value 1	Value 2	Operation
- 5	- 5	+
0	0	-
5	5	x
5	5	/

b) Tests to satisfy BCC (Base Choice Criterion). Base choices: Value 1 = > 0 ; Value 2 = > 0 ; Operation = +

BSS states that base test is formed using base choice of each characteristic. Other tests are chosen by holding all but one base choice constant and using each non-base choice in each other characteristic.

Total **8 tests** would be required:

Value 1	Value 2	Operation
5	5	+
5	- 5	+
5	0	+
- 5	5	+
0	5	+
5	5	-
5	5	x

5	5	/
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c) Number of tests needed to satisfy ACoC (All Combinations Coverage)

ACoC states that all combinations of blocks from all characteristics must be used.

Value 1 can be chosen in 3 ways, Value 2 can be chosen in 3 ways and Operation can be chosen in 4 ways.

So, $3 \times 3 \times 4 = 36 \Rightarrow$ **36 tests**

d) Tests to satisfy PWC (Pair Wise Coverage Criterion)

PWC states that a value from each block for each characteristic must be combined with a value from every block for each other characteristic.

Min **12 tests** would be required (product of two largest characteristics).

Value 1	Value 2	Operation
-5	-5	+
-5	0	-
-5	5	x
-5	5	/
0	0	+
0	5	-
0	-5	x
0	0	/
-5	5	+
5	-5	-
0	0	x
-5	5	/

Larger set of tests:

Value 1	Value 2	Operation
-5	-5	+
-5	0	-
-5	5	x
-5	---	/

Value 1	Value 2	Operation
-5	-5	-
0	0	-
5	5	-

-5	-5	+
0	-5	-
5	-5	x
---	-5	/
-5	-5	+
0	0	+
5	5	+
0	-5	+
0	0	-
0	5	x
0	---	/
-5	0	+
0	0	-
5	0	x
---	0	/

5	-5	+
5	0	-
5	5	x
5	---	/
-5	5	+
0	5	-
5	5	x
---	5	/
-5	-5	x
0	0	x
5	5	x
-5	-5	/
0	0	/
5	5	/