SUTD 2021 50.003 Quiz 2 Version 1

James Raphael Tiovalen

Q1 – Input-Sign Coverage

All 3 of the given statements are false. The correct statements are:

- A test suite obtaining 100% input-sign coverage <u>**cannot**</u> reveal all the bugs revealed by a test suite obtaining 100% path coverage.
- A test suite obtaining 100% path coverage <u>**cannot**</u> reveal all the bugs revealed by a test suite obtaining 100% input-sign coverage.
- A test suite obtaining 100% path coverage and 100% input-sign coverage <u>**cannot**</u> reveal all the bugs in an arbitrary program.

Sample program:

```
1. void main(int a) {
2.     int b = 0;
3.     if (a >= 0) {
4.         b = 1 / (a - 3);
5.     }
6.     else {
7.         b++;
8.     }
9. }
```

Test cases for each statement:

- `{a = -5, a = 5}` (Obtains path coverage but does not reveal the bug.)
- `{a = -5, a = 0, a = 5}` (Obtains input-sign coverage but does not reveal the bug.)
- `{a = -5, a = 0, a = 5}` (Obtains both path coverage and input-sign coverage but does not reveal the bug.)

A counterexample test case that reveals the bug: `{a = 3}`.