Introduction to Software Verification 236342, Homework 1

Yosef Goren

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A. Correct. Since the precondition is false, the postcondition is 'always' satisfied (since it is never tested).

B. Incorrect. Counterexample $x = -100, y = -99$:

- $l_0, -100, -99$
- $l_1, -100, -99$
- $l_2, -100, -99$
- $l_3, -1, -99$
- $l_*, -1, -99$

As can be seen, precondition is satisfied and postcondition is not.

C. Correct. The postcondition is true, so regardless of anything else, for every input selection it will be evaluated as true (the program does not even have to terminate either).

D. Incorrect. Counterexample $x = 1, y = 9$:

- $l_0, 1, 9$
- $l_1, 1, 9$
- $l_2, -8, 9$
- $l_3, -8, 9$
- $l_*, -8, 9$

Postcondition is false, so it is not satisfied.

E. Incorrect. Counterexample $x = 1, y = 3$:

- $l_0, 1, 3$
- $l_1, 1, 3$

- $l_2, 1, 3$
- $l_3, -2, 3$
- $l_4, -2, 3$
- $l_1, -2, -3$
- $l_2, -2, -3$
- $l_3, -2, -3$
- $l_4, -2, -3$