Introduction to Software Verification 236342, Homework 1

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

B. Incorrect. A counterexample is $x = 1, y = -1$. In this run, l_1 yields true, thus the program halts with $y = -1$, which does not satisfy the postcondition.

C. Correct. The postcondition is true, so regardless of anything else, for every input selection it will be evaluated as true.

D. Incorrect. A counterexample is $x = 1, y = 2$. In this run, l_1 evaluates true, then l_2 causes: $\sigma = \{x = -1, y = 1\}$, then l_3 evaluates true, now $\sigma = \{x = -1, y = -1\}$, next l_1 yields true, $\sigma = \{x = 0, y = 1\}$, l_3 yields true, $\sigma = \{x = 0, y = -1\}$, l_1 yields false and finally - halt. Meaning the precondition can be satisfied and the halted program does not satisfy the postcondition.

E.