Testing criteria

Consider the following function and answer the questions that follow.

String function(int x, int y)
{
    boolean z;
    
    if (x < y)
        z := true
    else
        z := false
    
    if (z && x+y == 10)
        result := "a"
    else
        result := "b"
}

Branch and path coverage

(a) How many branches are present?
(b) Is it possible to test every branch? Provide a set of tests to exercise as many branches as possible.
(c) How many paths are present?
(d) Which paths remain untested by your tests of (b)?
(e) Is it possible to test all the paths in (c)? If not, explain why.

Predicate coverage

(a) Write down the function's predicates.
(b) Is it possible to obtain full predicate coverage? Provide a set of tests which will obtain the highest predicate coverage.

Clause coverage

(a) Write down the clauses appearing in the function.
(b) Can we exercise full clause coverage? Write tests for maximal clause coverage.