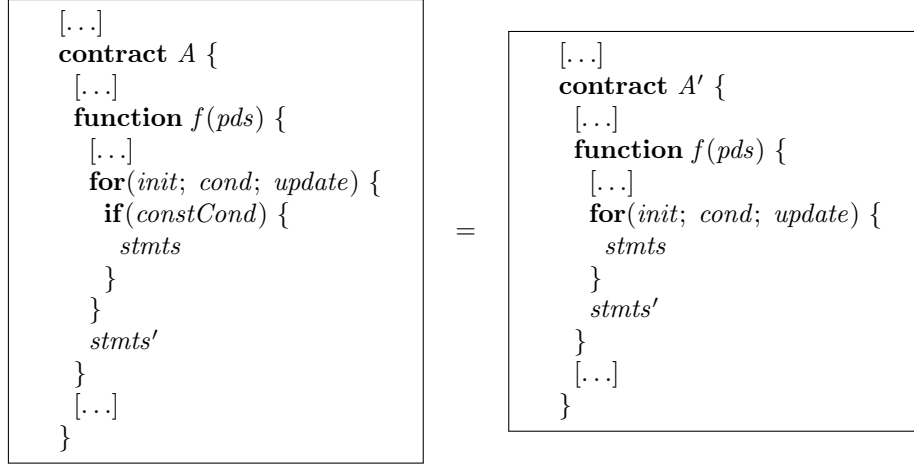

Rule 0.3 *⟨Refactoring Loops with Constant Comparison⟩*



where

constCond is a boolean condition that always evaluates to *true* within the loop;
init, *cond*, and *update* are the loop initialization, condition, and update expressions;
stmts represents statements inside the conditional block;
stmts' represents statements following the loop.

provided

constCond is provably constant and evaluates to *true* for all loop iterations;
The loop variables and context do not affect the truth value of *constCond*;
No side effects in *constCond* evaluation;
stmts does not contain control flow statements that would alter loop execution (e.g., **break**, **continue**).

Invariant:

Let s_i and s'_i be the initial state of A and A' , respectively.

Let s_f and s'_f be the state reached by A and A' , respectively, after $A.f()$ and $A'.f()$ are executed from s_i and s'_i , respectively.

Then, the coupling invariant is

$$\forall s_i, s'_i . (s_i = s'_i) \rightarrow (s_f = s'_f)$$
