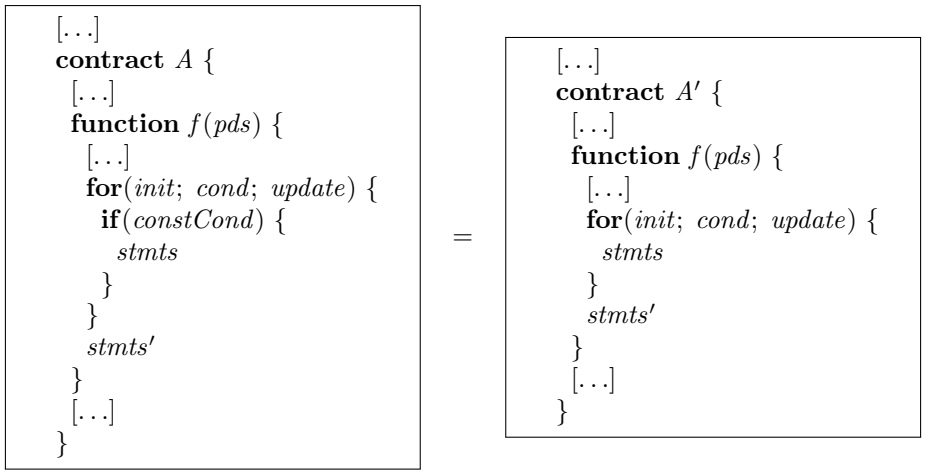
Rule 0.3 ⟨*Refactoring Loops with Constant Comparison*⟩



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

$$\forall\, s_i, s_i' \;.\; (s_i = s_i') \rightarrow (s_f = s_f')$$