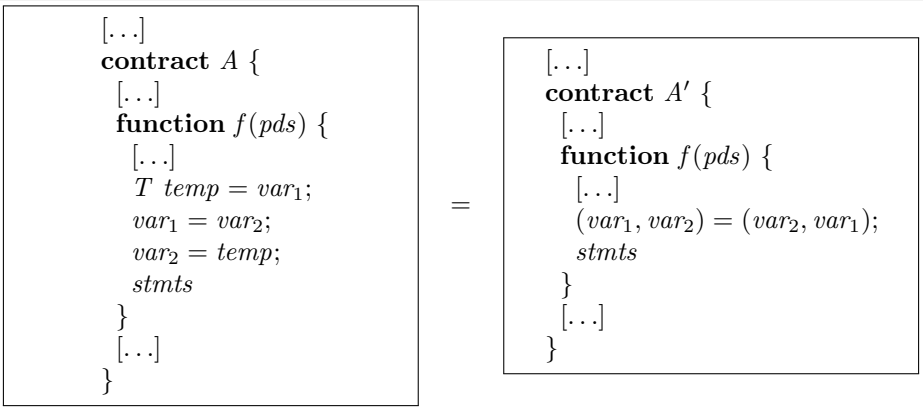
Rule 0.18 ⟨*Use Single-Line Variable Swapping*⟩



where

var_1 and var_2 are variables of type T being swapped;

temp is a temporary variable of type T used for the traditional swap;

T is the type of the variables being swapped;

pds are the parameter declarations of function f;

stmts represents the sequence of statements following the swap.

provided

The variables var_1 and var_2 are of the same type T;

The traditional three-step swap pattern is used in contract A;

The temporary variable *temp* is used only for the swap operation;

No side effects occur during the evaluation of var_1 and var_2;

The tuple assignment maintains the same semantics as the traditional swap.

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

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