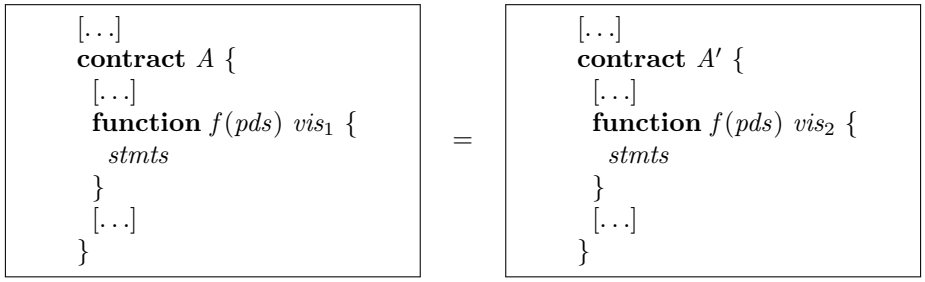
Rule 0.12 ⟨*Use Appropriate Function Visibility*⟩



where

f is a function with visibility modifier vis_1 in contract A;

vis_1 is the original visibility modifier (e.g., **public**);

vis_2 is the optimized visibility modifier (e.g., **external** or **internal**);

pds are the parameter declarations of function f;

$stmts$ represents the function body statements.

provided

If $vis_1 =$ **public** and f is only called externally, then $vis_2 =$ **external**;

If $vis_1 =$ **public** and f is only called internally, then $vis_2 =$ **internal**;

The visibility change does not break the contract's interface or functionality;

All callers of f remain valid under the new visibility vis_2;

The function f with visibility vis_2 provides the most restrictive appropriate access level.

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

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