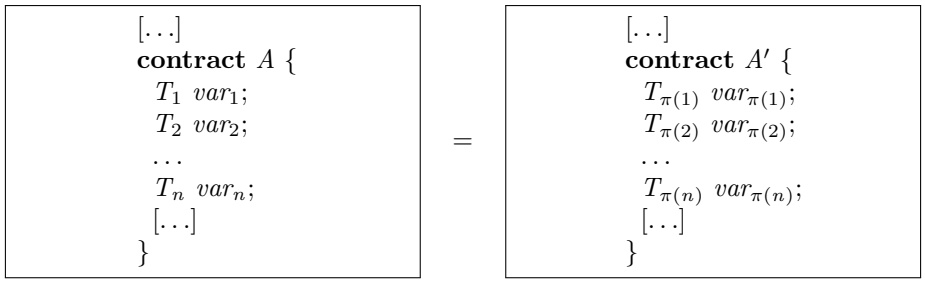
Rule 0.6 ⟨*State Variable Packing*⟩



where

var_i are state variables of the contract with types T_i for $i = 1, \ldots, n$;

π is a permutation of $\{1, 2, \ldots, n\}$ that reorders the state variables;

T_i represents types of varying sizes (e.g., **uint256**, **uint128**, **uint8**, **bool**, **address**).

provided

The permutation π optimally packs state variables to minimize the number of storage slots used;

Variables with combined size ≤ 32 bytes are grouped together in the reordered declaration;

The reordering does not affect the logical semantics or initialization order of the contract;

All state variable accesses throughout the contract remain semantically equivalent after reordering.

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

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