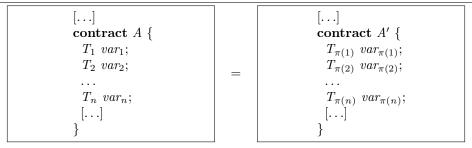
## Rule 0.6 (State Variable Packing)



## where

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

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

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

## provided

The permutation  $\pi$  optimally packs state variables to minimize the number of storage slots used;

Variables with combined size  $\leq 32$  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

$$\forall s_i, s_i' : (s_i = s_i') \to (s_f = s_f')$$