

## Invariant

An invariant is a *predicate* which evaluates to **true** independently (no matter) of which instruction is being executed as part of a  $P$  program's phase. For instance, a loop invariant  $P(I)$  will always be true at the beginning and at the end in the loop's execution timeline.

$$\Rightarrow i_1^{\{P(I) \rightarrow true\}}, \dots, i_n^{\{P(I) \rightarrow true\}}$$

where  $i_j$  is the  $j$ th iteration of the loop.

Invariants are used to determine *program correctness*.