

## predication

[/Reference manual/Z-related commands/In situ replacement commands](#)

The *predication* command extracts the property that is implicit in a declaration, leaving the declaration unchanged (unlike *normalization*).

$$\begin{aligned} \dots; i : e; \dots \mid p &\implies \dots; i : e; \dots \mid i \in e \wedge p \\ \dots; i == e; \dots \mid p &\implies \dots; i == e; \dots \mid i = e \wedge p \\ \dots; e; \dots \mid p &\implies \dots; e; \dots \mid e \wedge p \end{aligned}$$

In the first two rules, it must be the name of the declaration that is inspected. In the last rule, that of a schema inclusion declaration, it must be the schema inclusion declaration that is inspected, not the schema expression within it—an extra click of button 1 is needed. The extracted property is that schema expression used as a predicate.

The *predication* command can also be applied to declarations in the hypothesis part of a goal, the new predicate being generated as the first antecedent.

The *predication* command also makes some expressions used as predicates become predicates involving smaller expressions used as predicates.

$$\begin{array}{lll}
 [ds \mid p] & \Longrightarrow & pred(ds) \wedge p \\
 \neg e & \Longrightarrow & \neg e \\
 e_1 \wedge e_2 & \Longrightarrow & e_1 \wedge e_2 \\
 e_1 \vee e_2 & \Longrightarrow & e_1 \vee e_2 \\
 e_1 \Rightarrow e_2 & \Longrightarrow & e_1 \Rightarrow e_2 \\
 e_1 \Leftrightarrow e_2 & \Longrightarrow & e_1 \Leftrightarrow e_2 \\
 e_1 \underline{\vee} e_2 & \Longrightarrow & e_1 \underline{\vee} e_2 \\
 \forall s \bullet e & \Longrightarrow & \forall s \bullet e \\
 \exists s \bullet e & \Longrightarrow & \exists s \bullet e \\
 \exists_1 s \bullet e & \Longrightarrow & \exists_1 s \bullet e
 \end{array}$$

In the above rules, the predicates on the left are schema expressions used as predicates, formed from logical operations on schema expressions, whereas the predicates on the right are logical predicates, formed from logical operations on schema expressions used as predicates.

## 1. Tactic example

*“predication”*  $d_1 \ d_2$

This example applies the *predication* command to declarations  $d_1$  and  $d_2$ .

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