5.345 set_value_precede

DESCRIPTION LINKS

Origin [258]

Constraint set_value_precede(S, T, VARIABLES)

Arguments

S	:	int
T	:	int
VARIABLES	:	collection(var−svar)

Restrictions

$\texttt{S} \neq \texttt{T}$
required(VARIABLES, var)

Purpose If there exists a set variable v_1 of VARIABLES such that S does not belong to v_1 and T does, then there also exists a set variable v_2 preceding v_1 such that S belongs to v_2 and T does not.

Example

$(2, 1, \langle \texttt{var} - \{0, 2\}, \texttt{var} - \{0, 1\}, \texttt{var} - \emptyset, \texttt{var} - \{1\}\rangle)$
$(0, 1, \langle \texttt{var} - \{0, 2\}, \texttt{var} - \{0, 1\}, \texttt{var} - \emptyset, \texttt{var} - \{1\}\rangle)$
$(0, 2, \langle \texttt{var} - \{0, 2\}, \texttt{var} - \{0, 1\}, \texttt{var} - \emptyset, \texttt{var} - \{1\}\rangle)$
$(0, 4, \langle \texttt{var} - \{0, 2\}, \texttt{var} - \{0, 1\}, \texttt{var} - \emptyset, \texttt{var} - \{1\}\rangle)$

The following examples are taken from [257, page 58]:

- The set_value_precede$(2, 1, \langle\{0, 2\}, \{0, 1\}, \{\}, \{1\}\rangle)$ constraint holds since the first occurrence of value 2 precedes the first occurrence of value 1 (i.e., the set $\{0, 2\}$ occurs before the set $\{0, 1\}$).
- The set_value_precede$(0, 1, \langle\{0, 2\}, \{0, 1\}, \{\}, \{1\}\rangle)$ constraint holds since the first occurrence of value 0 precedes the first occurrence of value 1 (i.e., the set $\{0, 2\}$ occurs before the set $\{0, 1\}$).
- The set_value_precede$(0, 2, \langle\{0, 2\}, \{0, 1\}, \{\}, \{1\}\rangle)$ constraint holds since "there is no set in $\langle\{0, 2\}, \{0, 1\}, \{\}, \{1\}\rangle$ that contains 2 but not 0".
- The set_value_precede$(0, 4, \langle\{0, 2\}, \{0, 1\}, \{\}, \{1\}\rangle)$ constraint holds since no set in $\langle\{0, 2\}, \{0, 1\}, \{\}, \{1\}\rangle$ contains value 4.

Typical

$\texttt{S} < \texttt{T}$
$|\texttt{VARIABLES}| > 1$

Arg. properties Suffix-contractible wrt. VARIABLES.

Algorithm A filtering algorithm for maintaining value precedence on a sequence of set variables is presented in [258]. Its complexity is linear to the number of variables of the collection VARIABLES.

Systems precede in **Gecode**.

See also **specialisation:** `int_value_precede` *(*`sequence` *of* `set variables` *replaced by* `sequence` *of* `domain variables`*)*.

Keywords **constraint arguments:** constraint involving set variables.

constraint type: order constraint.

symmetry: symmetry, indistinguishable values, value precedence.