

5.269 period_except_0

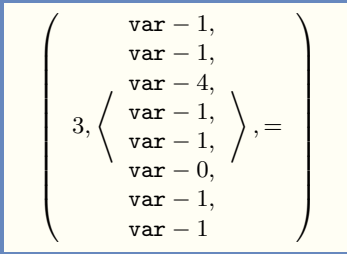

| | DESCRIPTION | LINKS |
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| Origin | Derived from period . | |
| Constraint | <code>period_except_0(PERIOD, VARIABLES, CTR)</code> | |
| Arguments | PERIOD : dvar VARIABLES : collection(var-dvar) CTR : atom | |
| Restrictions | $PERIOD \geq 1$ $PERIOD \leq VARIABLES $ required (VARIABLES, var) $CTR \in [=, \neq, <, \geq, >, \leq]$ | |
| Purpose | Let us note V_0, V_1, \dots, V_{m-1} the variables of the VARIABLES collection. PERIOD is the <i>period</i> of the sequence $V_0 V_1 \dots V_{m-1}$ according to constraint CTR. This means that PERIOD is the smallest natural number such that $V_i \text{ CTR } V_{i+PERIOD} \vee V_i = 0 \vee V_{i+PERIOD} = 0$ holds for all $i \in 0, 1, \dots, m - PERIOD - 1$. | |
| Example |  <p>The <code>period_except_0</code> constraint holds since, as depicted by Figure 5.496, its first argument PERIOD = 3 is equal (i.e., since CTR is set to =) to the period of the sequence 1 1 4 1 1 0 1 1; value 0 is assumed to be equal to any other value.</p>  | |
| Symmetries | <ul style="list-style-type: none"> Items of VARIABLES can be reversed. Items of VARIABLES can be shifted. All occurrences of two distinct values of VARIABLES.var that are both different from 0 can be swapped; all occurrences of a value of VARIABLES.var that is different from 0 can be renamed to any unused value that is also different from 0. | |

Figure 5.496: A sequence that has a period of 3 when we assume that value 0 can be equal to any other value

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| Usage | Useful for timetabling problems where a person should repeat some work pattern over an over except when he is unavailable for some reason. The value 0 represents the fact that he is unavailable, while the other values are used in the work pattern. |
| Algorithm | See [50]. |
| See also | hard version: period . implied by: period . |
| Keywords | characteristic of a constraint: joker value . combinatorial object: periodic , sequence . constraint type: predefined constraint , timetabling constraint , scheduling constraint . |