5.158 gcd

DESCRIPTION LINKS

Origin [137]

Constraint gcd(X, Y, Z)

Arguments

X	:	dvar
Y	:	dvar
Z	:	dvar

Restrictions

$X > 0$
$Y > 0$
$Z > 0$

Purpose Enforce the fact that Z is the greatest common divisor of X and Y.

Example $(24, 60, 12)$

The gcd constraint holds since 12 is the greatest common divisor of 24 and 60.

Typical

$X > 1$
$Y > 1$

Symmetry Arguments are permutable w.r.t. permutation (X, Y) (Z).

Arg. properties

Functional dependency: X determined by Y and Z.

Algorithm In [137] a filtering algorithm for the gcd constraint was automatically derived from the Euclidian algorithm by using constructive disjunction and abstract interpretation in order to approximate the behaviour of the while loop of the Euclidian algorithm.

See also **common keyword:** power *(abstract interpretation)*.

Keywords **constraint arguments:** ternary constraint, pure functional dependency.

constraint type: arithmetic constraint, predefined constraint.

filtering: abstract interpretation.

modelling: functional dependency.