Operators

Operators in expressions

The following tables show operand types and results of arithmetical and logical operations.

- arithmetical operators
- logical operators
- relational operators

When evaluating any expressions, there holds that if any operand in a calculation is invalid, the result is also invalid. However, an exception is an eval tag, if the parameter "Replace Invalid values with 0" is set. Then it is evaluated as it is mentioned here.

See also the topic Order of operators by the priority

Arithmetical operators

<table>
<tr><th>Operator</th><th>Operation</th><th>Description</th><th>Operand types</th><th>Result type</th></tr>
<tr><td>+</td><td>addition</td><td>The difference between two absolute times is calculated this way:
ATime - BTime = %SubTimeLocal(ATime, BTime)

All others combination of absolute and relative times with operators + and - are calculated this way:
ATime + RTime = %AddTimeLocal(ATime, RTime)

or

ATime - RTime = %AddTimeLocal(ATime, -RTime)</td><td>integer
real
boolean
time interval</td><td>integer
real
boolean
time interval</td></tr>
<tr><td></td><td></td><td></td><td><table><tr><th>Operand 1</th><th>Operand 2</th></tr><tr><td>absolute time</td><td>integer
real
relative time</td></tr><tr><td>integer
real
relative time</td><td>absolute time</td></tr></table></td><td>absolute time</td></tr>
<tr><td>-</td><td>subtraction</td><td>The difference between two absolute times is calculated this way:
ATime - BTime = %SubTimeLocal(ATime, BTime)

All others combination of absolute and relative times with operators + and - are calculated this way:
ATime + RTime = %AddTimeLocal(ATime, RTime)

or

ATime - RTime = %AddTimeLocal(ATime, -RTime)</td><td>integer
real
boolean
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real
relative time</td></tr></table></td><td>absolute time</td></tr>
<tr><td>*</td><td>multiplication</td><td></td><td>integer
real
boolean</td><td>integer
real
integer</td></tr>
<tr><td>/</td><td>division</td><td></td><td>integer
real
boolean</td><td>real
real
integer</td></tr>
<tr><td>-</td><td>unary operator</td><td></td><td>integer
real</td><td>integer
real</td></tr>
</table>

In mathematical operations, operands of Boolean type are converted to Integer type as follows:

- TRUE -> 1
- FALSE-> 0

Note

- The result of a function of Boolean type may be converted to other types by multiplying by a constant of the particular type. For example *%Flag (Object,@A)*1* gives a numerical type of the result value, i.e. Integer, Real.

Logical operators

operator	operation	operand types	result type

&	logical multiplication	boolean integer	boolean integer
|	logical addition	boolean	boolean
!	negation	boolean	boolean

Logical multiplication of two operands of **INTEGER** type represents a decadic form of logical multiplication performed between the corresponding bits of binary forms of both operands.

Example

179 & 217 = 145

1	0	1	1	0	0	1	1		179
1	1	0	1	1	0	0	1		217
1	**0**	**0**	**1**	**0**	**0**	**0**	**1**		**145**

Relational operators

operator	operation	operand types	result type
=	equal	integer real absolute time time interval	boolean
#	unequal	integer real absolute time time interval	boolean
>	greater	integer real absolute time time interval	boolean
<	less than	integer real absolute time time interval	boolean
>=	greater or equal	integer real absolute time time interval	boolean
<=	less or equal	integer real absolute time time interval	boolean