Operators (JWT expressions)

The JWT for Jira Cloud expression parser accepts the **most common comparison operators** as well as **logical operators**.

The main purpose of these operators is to construct complex logical comparisons by **linking** individual expressions.

Comparison operators

The **operators**, their **meaning** and the applicable **data types** you can use them with are listed below.

A comparison always returns a BOOLEAN value.

Overview of all case-sensitive comparison operators

All operators respect the **case** of the **characters**.

Operator	Meaning	Examples (all examples return `true`)

=	equal to	`1=1`
		`true = true`
		`[1, 2, 3] = [1, 2, 3]`
		`["blue", "red", "green"] = ["blue", "red", "green"]`
		When working with Lists, each elements' **existence** and its **order** are being evaluated.

!=	**not** equal to	`0 != 1`
		`"HELLO" != "Hello"`
		`%{issue.description} != "Hello"`
		`true != false`
		`[1, 2, 3] != [1, 3, 2]`
		`["blue", "red", "green"] != ["blue", "green", "red"]`
		When working with Lists, each elements' **existence** and its **order** are being evaluated.

<	less than	`1 < 2`
		`"abc" < "bbc"`
		`"abc" < "abcd"`

>	greater than	`2 > 1`
		`"bbc" > "abc"`
		`"abcd" > "abc"`

<=	less than or equal to	`3 <= 3`
>=	greater than or equal to	`"Hello world! Hello *" >= "Hello world"`

~	contains	`"Hello world!" ~ "world" #true. The text "world" is contained in the first text.`
		`%{issue.components.leads} ~ %{system.currentUser} #checks whether "Component leads" contains the "Current user".`
		`[1, 2, 3, 2, 2, 4] ~ [2, 1, 2] #true`
		`["blue", "red", "green", "red", "white", "red"] ~ ["red", "green", "red"] #true`
		`["green", "red"] ~ ["red", "green", "red"] #false`

!~	does **not** contain	`"world" !~ "Hello world!" #false. The text "world" is contained in the first text.`
		`%{issue.fixVersions} !~ %{issue.versions} #false if all "Affects version/s" are also selected as "Fix version/s".`
		`[1, 2, 3, 2, 2, 4] !~ [2, 1, 1, 4] #true`
		`["blue", "red", "green", "red", "red"] !~ ["red", "green", "green", "red"] #true`

in	is contained in	`[1, 1, 2] in [2, 1, 1, 1, 4] #true`
		`["blue", "red", "red"] in ["red", "green", "blue", "red", "red"] #true`
		`2 in [1, 2, 3] #true`
		`"blue" in ["red, "blue", "white"] #true`

not in	is **not** contained in	`"Hello world!" not in "world" #true`
		`[1, 1, 2, 2] not in [2, 1, 1, 1, 4] #true`
		`["blue", "red", "red", "blue"] not in ["red", "blue", "red", "red"] #true`
		`5 not in [1, 2, 3, 3, 4] #true`
		`"orange" not in ["blue", "red", "white"] #true`

any in	any element is in	`[1, 3] any in [3, 4, 5] #true`
		`["blue", "white"] any in ["black", "white", "green"] #true`

none in	**no** single element is in	`[1, 2] none in [3, 4, 5] #true`
		`["blue", "red"] none in ["black", "white", "green"] #true`

When comparing lists, the **exact number** of occurence (cardinality) per element must match.

Parser expression	Output	Description
`["blue", "red", "green", "red", "white", "red"] ~ ["red", "green", "red"]`	**`true`**	This expression returns **`true`**, since the element (text) **red** appears at least **twice** in the first list and the element (text) **green** occurs at least **once** in the first list.

`["green", "red"] ~ ["red", "green", "red"]`	**`false`**	This expression returns **`false`**, since the element (text) **red** does **not appear twice** in the first list.

Applicable data types

Below you find a comprehensive matrix of all **operators** and applicable **data types** .

Comparison Operator	BOOLEAN	NUMBER	TEXT	NUMBER LIST	TEXT LIST	ISSUE
`=`	✓	✓	✓	✓	✓	✓
`!=`	✓	✓	✓	✓	✓	✓
`<`	-	✓	✓	-	-	-
`>`	-	✓	✓	-	-	-
`<=`	-	✓	✓	-	-	-
`>=`	-	✓	✓	-	-	-
`~`	-	-	✓	✓	✓	✓
`!~`	-	-	✓	✓	✓	✓
`in`	-	-	-	✓	✓	✓
`not in`	-	-	-	✓	✓	✓
`any in`	-	-	-	✓	✓	✓
`none in`	-	-	-	✓	✓	✓

Please be aware the both operands of the respective comparison must have the **same data type**. The only exceptions are the following:

- **Automatic casting from** NUMBER **to** TEXT **:** Whenever you write a numeric term at the right-hand side of a **comparison operator** like =, and the left-hand side is occupied by a text term, the parser will automatically transform the right-hand side term into a text (e.g. "30" = 30 will be interpreted the same way as "30" = "30")
- **Single values as operand in list operations**: Operators **`~, !~, in`** and **`not in`** can be used for checking a single element **(** NUMBER **or** TEXT **)** against a NUMBER LIST or a TEXT LIST
- **Comparison with the null value:** A **field** which is not set or an empty text is interpreted as **null**. A NUMBER field, which doesn't contain a number, is also interpreted as **`null`** .

Things to remember

Remember	Examples

Operators **`~, !~, in`** and **`not in`** can be used for checking a single element **(** NUMBER **or** TEXT **)** against a NUMBER LIST or a TEXT LIST	`1 in [1, 2, 3]`
	`["blue", "red"] ~ "blue"`

Operators **`~, !~, in`** and **`not in`** when used with a **text** are useful to look for substrings in another string.	`"I love coding" ~ "love"`
	`"I don't like Mondays" !~ "Fridays"`
	`"love" in "I love coding"`
	`"Fridays" not in "I don't like Mondays"`

Operators **`~, !~, in`** and **`not in`** respect cardinality, i.e., container list must have at least the same number of elements as contained list.	`[1, 1] in [1, 1, 1]`
	`[1, 1] not in [1, 2, 3]`

Operators **`=`** and **`!=`** , when used for comparing lists, require to have the **same elements**, with the **same cardinality** and the **same order**.	`[1, 2, 3] = [1, 2, 3]`
	`[4, 5, 6] != [4, 6, 5]`

Operators **`<, >, <=`** and **`>=`** work according to lexicographical order when comparing text.	`1 < 2`
	`"abc" < "bbc"`
	`"abcd" > "abc"`

Logical operators

The table below lists all logical operators that can be used for **linking logical terms** in an expression.

They take logical terms (which return BOOLEAN values) as operands and can thus be built using:

- a boolean value
- a JWT expression parser function returning a boolean value
- a comparison
- a logical term enclosed by brackets **()**
- two logical terms connected with a logical operator, where boolean literals and comparisons themselves are logical terms.

Logical operators can only be used in **logical expressions** in the Logical mode or in combination with the conditional operator.

Overview of all logical operators

Operator	Meaning	Precedence
`NOT` or **`!`**	logical negation	1 (highest)
`AND` or **`&`**	logical conjunction	2
`OR` or **`|`**	logical disjunction	3
`XOR`	exclusive or, i.e., **`a XOR b`** is equivalent to **`a AND !b OR !a AND b`**	3
`IMPLIES` or **`IMP`**	logical implication, i.e., **`a IMPLIES b`** is equivalent to **`!a OR b`**	4
`XNOR` or **`EQV`**	logical equivalence, i.e., **`a EQV b`** is equivalent to **`a IMPLIES b AND b IMPLIES a`**	4 (lowest)

A single logical term can be enclosed by **brackets ()** in order to increase the readability of the expressions or to define a **precedence** which differs from the given one.

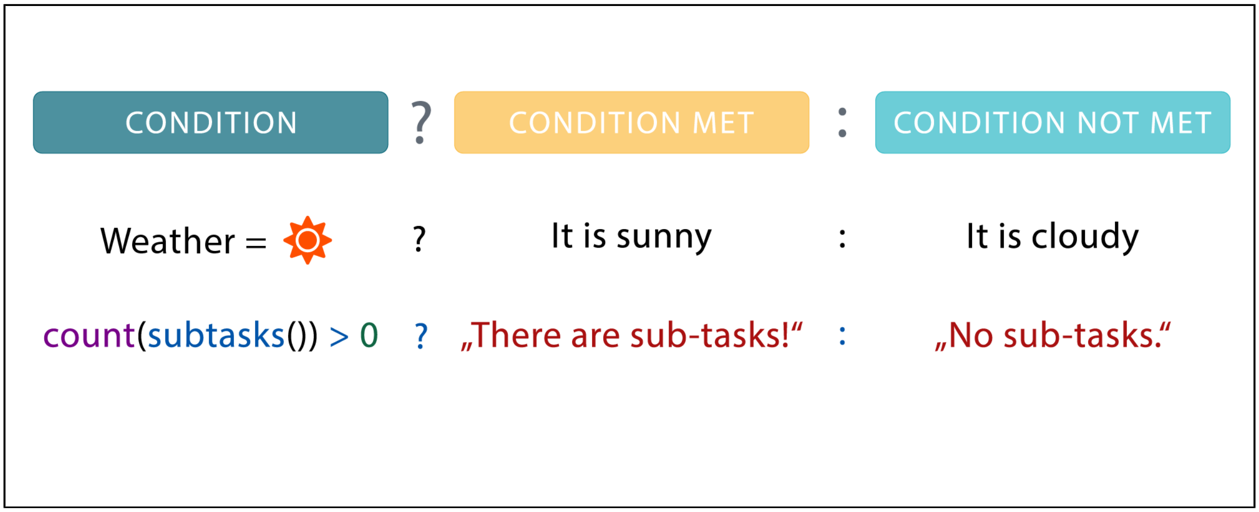
Logical operators can also be written in lower case (e.g. **`and`** , **`or`**)

Conditional operator

The conditional operator, ?-operator, is a powerful one to construct conditional expressions.

It basically allows you to construct the following expression: **IF** logical_expression **`true` THEN** term_1 **ELSE** term_2.

```
<logical_expression> ? <term_1> : <term_2>
```



CONDITION ? CONDITION MET : CONDITION NOT MET

Weather = ☀ ? It is sunny : It is cloudy

count(subtasks()) > 0 ? „There are sub-tasks!“ : „No sub-tasks.“

Examples of using the conditional operator

Expression	Description
`%{%{issue.priority} = "Highest" ? "Please have a look at this issue immediately" : "No stress, come back later"}`	**IF** the **priority** of an issue is **Blocker**, **THEN** this function will return the TEXT **"Please have a look at this issue immediately**" **ELSE** it will return the TEXT "**No stress, come back later**".
`%{{issue.dueDate} != null ? ({issue.dueDate} - {system.currentDateTime}) / HOUR : 0}`	**IF** an issue **does** have a due date set (due date is **not null**), **THEN** this function will return the NUMBER of **hours from the current date-time** to the **due date** **ELSE** it will return the NUMBER **`0`**.
`%{%{issue.somefield} = "Red" ? "Color" : "No color"}`	**IF** a custom field (e.g. a select list) has a value of **Red**, **THEN** this function will return the text **Color**, **ELSE** it will return **No color.**
`%{timePart({system.currentDateTime}, RUN_AS_LOCAL) > 21:00 OR timePart({system.currentDateTime}, RUN_AS_LOCAL) < 7:00 ? "Night" : "Day"}`	**IF** the current time is **between 21:00 and 7:00** **THEN** this function will return the TEXT "**Night**" , **ELSE** it will return the TEXT "**Day**".

If you still have questions, feel free to refer to our support team.