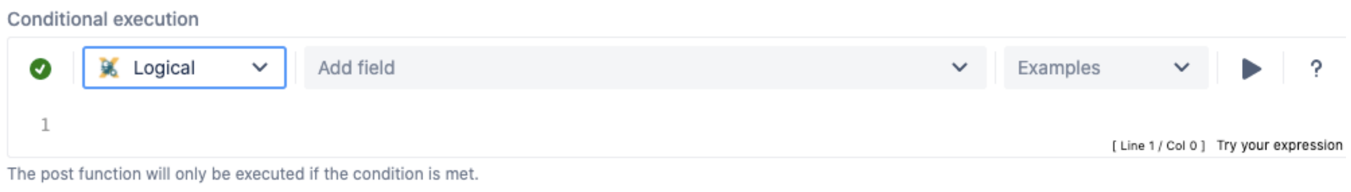
Logical mode

The **logical** parsing mode is used to construct **logical expressions**.

To construct these logical expressions, you can combine different **elements**, such as field codes, JWT expression parser functions and operators. The result must always return one of two distinct BOOLEAN values: `true` or `false`.

Currently the only place where you can use the logical mode is the **conditional execution** parameter in Post functions.

Compared to the General mode, the logical parsing mode is quite more powerful since next to field codes and JWT expression parser functions it also supports the most common Operators (JWT expressions) which can be used to **compare values**.



The post function will only be executed if the condition is met.

Example expressions

Parser expression	Description
`3 < 5`	This example returns: `true`
`3 > 5`	This example returns: `false`

Expressions can be **combined** or linked using operators to construct complex logical comparisons.

Parser expression	Description
`3 < 5 AND 7 > 5`	This example returns: `true`
`%{issue.assignee} = %{issue.reporter}`	This example returns: `true` if the current assignee has also reported the issue, `false` otherwise

Additional examples

Parser expression	Description

`false`	Simply returns **false**. You can use this expression for "switching off" a specific post function.
`{parent.votes} > 5`	A numerical comparison which returns **true** if the parent issue has more than **5** votes.

`%{issue.assignee} = %{issue.project.lead} and %{issue.issueType} = "Bug"`
 	
`(%{issue.assignee} = %{issue.project.lead}) and (%{issue.issueType} = "Bug")`
	A logical conjunction which takes two comparisons as operands.
	
	It returns **true** when the **assignee** of the issue is the **project lead** and if it's a **Bug**.
	
	The second expression has the same meaning but due to use of brackets may be more readable.

`%{issue.assignee} = null`	Returns **true** if the issue does **not** have an assignee. This expression uses the **null** value as an operator.

`%{issue.priority} IN ["Blocker", "Critical"]`
 	
`%{issue.priority} = "Blocker" OR %{issue.priority} = "Critical"`
	Returns **true** if the Priority has the value "**Blocker**" or "**Critical**". The first expressions uses a list whereas the second one uses single comparisons connected via the logical operator **OR**.

`%{issue.issueType} = "Bug" IMPLIES %{issue.versions} != null`	Returns **true** if **Affects version/s** is set whenever the issue type equals "**Bug**".
`%{issue.priority} IN ["Blocker", "Critical", "Major"] IMPLIES (%{issue.assignee} != null AND %{issue.duedate} != null)`	Returns **true** if **Priority** is "**Blocker**", "**Critical**" or "**Major**", the issue is assigned and **Due date** is set.
`%{issue.labels} ~ ["Blocker", "Critical", "Major"]`	Returns **true** if **Labels** (which is a field holding a TEXT LIST) contains "**Blocker**", "**Critical**" or "**Major**".

In the logical parsing mode **only** field codes have to be enclosed by **`%{}`** and **`{}`** respectively. JWT expression parser functions can be used **without** enclosing **brackets**.

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, 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 appe ar 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 **c omparison 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.

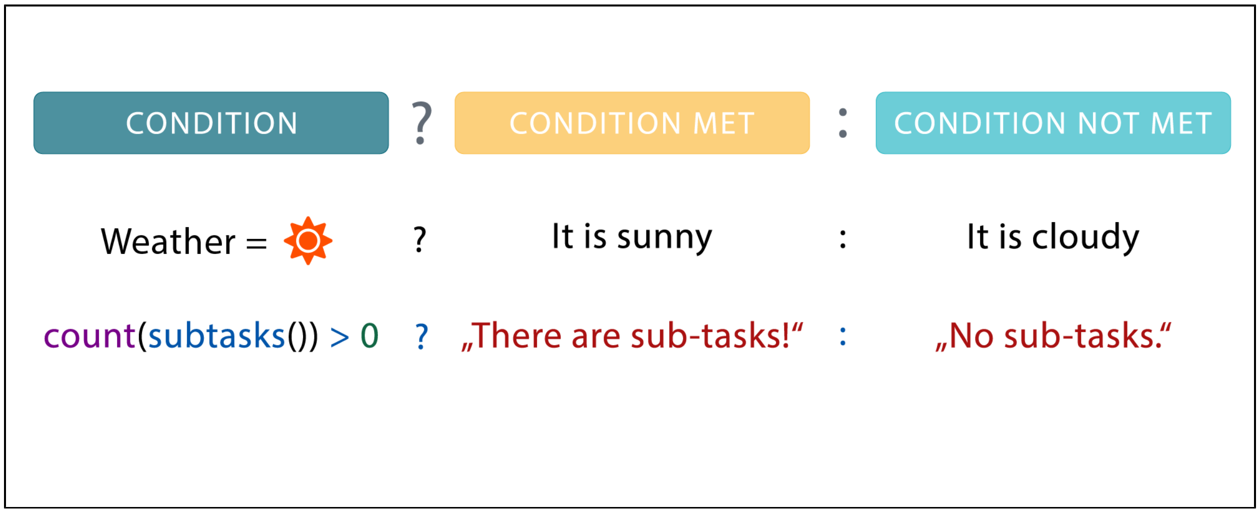
Logical operators can also be written in lower case (e.g. `and` , `or`)

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>
```



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.