

Workflow Expression Reference

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# Document Information

## Step Expression Reference

As part the HP.Core framework the Workflow feature is a decision based expression system designed to provide the designer with a flexible system of expressions to decide on a actions based on validation checks.

Each Step is comprised of a series of one or more expressions that are applied if a validation expression evaluates to true. The goal of a step expression is to perform the specified action.

## Expression Reference

### Basic Expression Structure

An expression is made up of a sequence of characters refered to as the ***target***, that when translated return an Action reference. The action reference is implemented in the calling component as a dynamic function. This allows the workflow parser to pass along the execution of actions to the designer. If the contents of the target column value will not be tested against an expression like those seen in 1.2.2 then the **this** keyword should be used. This will instruct the expression validator to apply any actions if any are present to the current value being validated.

**Syntax**

*For typical if/then expression*

|  |  |
| --- | --- |
|  | [ *target|T() => A()* ] |

*For typical action expression*

|  |  |
| --- | --- |
|  | [ *target|A()* ] |

|  |
| --- |
| **Example** *For typical if/then expression* |
| |  |  | | --- | --- | |  | [ this | eq(10) => set(projectStatus, 4) ] | |

Example explained:

**[ … ]** are the brackets that denote an expression. What is contained will be evaluated to a conditional action or simple action based on the **target**.

**eq( 10 )** is an expression to be evaluated against the value of “this” as a boolean. If the check evaluates to true then what is to the right of the **=>**, **set ( projectStatus, 4 )**, will be evaluated and executed.

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| --- |
| **Example** *For typical simple action expression* |
| |  |  | | --- | --- | |  | [ this | set(projectStatus, 4) ] | |

Example explained:

Just as in the if/then example, the **[ … ]** are the brackets that denote an expression. What is contained will be evaluated to a simple action based. What is to the right of the pipe, “|”, **set ( projectStatus, 4 )**, will be evaluated and executed without any conditions.

*Note: If an action has not been implemented in the calling component then there is no execution.*

### Expressions

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Tests**  All test expressions must include the “else” side of the test with the following syntax:  ***[this | t() => a() ]*** | |  |  |  |  | | --- | --- | --- | --- | | Action | | Description | Syntax | |  | eq | Equal To | [this | eq( ## ) … | |  | gt | Greater Than | [this | gt( ## ) … | |  | lt | Less Than | [this | lt( ## ) … | |  | gte | Greater than or Equal To | [this | gte( ## ) … | |  | lte | Less Than or Equal To | [this | lte( ## ) … | |  | btw | Between | [this | btw( ##, ## ) … | |  | In | In | [this | in( ##, ##, ## ) … | |  | len | Length | [this | len(##) … | |
| **Actions** | |  |  |  |  | | --- | --- | --- | --- | | Action | | Description | Syntax | |  | set |  | [this | eq( ## )] | |  | email | Greater Than | [this | gt( ## )] | |  | wf | Execute workflow | [this | lt( ## )] | |  | each | Greater than or Equal To | [this | gte( ## )] |   % is used to evaluate as a “contains”.   |  |  | | --- | --- | |  | [ %”FRANCE” ] |   “” is used to evaluate the contents of the quotes against the contents of the column.   |  |  | | --- | --- | |  | [ =“FRANCE” ] evaluates to only return true if the column value is exactly FRANCE.  [ !=”FRANCE” ] evalues to only return true if the column value is NOT exactly FRANCE. | |
| **Combined Expressions** | Expressions can be strung together to accomplish AND and OR conditions.   |  |  | | --- | --- | | **&&** | [ =”FRANCE” ]&&[=”BELGIUM”] applies both expressions with an AND *{ && }* | | **||** | [ =”FRANCE” ]||[=”BELGIUM”] applies both expressions with an OR *{ || }* | |
| **Grouped Expressions** | Expressions can be grouped to create more complex expressions.   |  |  | | --- | --- | |  | ( [ =”FR” ]||[=”BE”] ) && ( [ !=””] ) | |

### Tests

A test is defined as a validation expression that evaluates to a true or false and then performs the associated action in the case of a true result. Tests are comprised of two expressions and are separated by the => symbol. To the left of the => symbol is the test portion of the expression, and to the right is the action portion of the expression. The value of the target is validated against the expression, and in the case of a true outcome the action is evaluated.

Since the Workflow component inherits from the HP.Core.Validation component all it’s [validation expressions](#_HP.Core.Validation_Expression) are available here in the workflow expression component. Below is a list of additional test expression available within the workflow expression component.

|  |  |
| --- | --- |
| | eom() | Applied to a date value it tests if the target value is greater than the end-of-the-current-month. |
| | eoq() | Applied to a date value it tests if the target value is greater than the evaluated end-of-current-quarter date. |
| | eofy() | Applied to a date value it tests if the target value is greater than the end-of-the-fiscal-year date. |

### Actions

An action is defined as an expression that results in an modification task of the action’s target. Actions can be configured alone or as the action portion of a test expression.

|  |  |
| --- | --- |
| | start() | **Start()**: This action is mainly a placeholder to designate where the workflow starts. It will always complete. |
| | eom() | **End of Month():** Applied to a date value it sets the target value to the evaluated end-of-the-current-month value. |
| | eoq() | **End of Quarter():** Applied to a date value it sets the target value to the evaluated end-of-current-quarter date. |
| | eofy() | **End of Fiscal Year():** Applied to a date value it sets the target value to the evaluated end-of-fiscal-year date. |
| | set(n1) | **Set(n):** Sets the target’s value equal to the value of **N**. |
| | email(*to*, *cc*, *bcc, [tn])* | **Email(*to, cc, bcc, template name):***Executes the delegate action set for email with. The template name is optional and can be used in the delegate action to get the content of the email. |
| | wf( [id | name] ) | **Workflow( numeric key or name ):** Executes the delegate action set for workflow. This is best used to chain workflows.  *Note: A workflow executed from another workflow causes the calling workflow to pause until the chained workflow is complete.* |

### Action Results

Each action will return a result to the overall step.

### Sample Workflow Expression

### HP.Core.Validation Expression

Modifiers are used to extend the expression. They must be contained within the expression’s brackets and must follow the expressions target.

|  |  |
| --- | --- |
| | u | Upper Case: Applied to a string expression and the evaluation will compare the column and expressions’s upper case values |
| | l | Lower Case: Applied to a string expression and the evaluation will compare the column and expression’s lower case values. |
| | i | Case Insensitive: Applied to a string expression and the evaluation will compare the column and expression’s values regardless of their case.  *[ Any string expression, by default, uses this modifier.]* |
| | ru | Round Up: Applied to a numeric expression and the evaluation will compare column’s rounded value. |
| | rd | Round Down: Applied to a numeric expression and the evaluation will compare column’s rounded value. |
| | mx(n) | **Max (n):** Text Based - When applied to a text value this will validate that the value is not greater than **N**.  Number Based – When applied to a numeric value this will validate that the value is not greater than **N**. |
| | mn(n) | **Min (n):** Text Based - When applied to a text value this will validate that the value’s **length** is less than **N**.  Number Based – When applied to a numeric value this will validate that the value is less than **N**. |
| | b(n1,n2) | **Between (n1, n2):** Applied to a numeric expression and the evaluation will apply a **between** comparison using **n1** and **n2** |
| | in(n1, …) | **In(n1, *n2, n3, …)***: Applied to a Numeric or text based expression and the evaluation will test if the target is one of the values in the parameter list. |
| | e | **Email**: Applied to a string expression and the evaluation will consider the target to be an email address, and will validate it accordingly. |
| | r | **Required**: Used after or a modifier or used alone this will set the main expression to require a value.  Example: The following expression, [ this | mn(5), r ], will require the column being valiated to have a value.  Alternative Method: This modifier will have the same effect using the minimum modifier set to mn(1) for a text based column. However the **r** modifier is more reliable when going between text based and number based values. |

### Flags

Flags are used as options for the modifiers. They must be contained within the expression’s brackets and must follow the expressions modifier separated by commas. As of this document’s version there is only one flag.

|  |  |
| --- | --- |
| , f | **Force**: Used within a string based expression this will force the main modifier to apply to the value instead of just validating against it.  Example: The following expression, [ this | u, f ], will force the value of ***this*** to be in upper case. |