

# Advanced Formula Configuration

A number of interesting metrics would have a formula that involves sums of other formulas. For example, to calculate the % of bugs in a sub-tree, we'll need to divide the total number of bugs (calculated as a formula) by the total number of issues (also calculated as a formula).

It is possible to do that with the Formula column, but it's a bit tricky. You will need to use temporary additional Formula columns. The following instruction walks you through the creation of the BugFix % column, mentioned above, so that you can solve similar tasks.



We're aiming to make this instruction obsolete in a future version, where we'll introduce hierarchy aggregates right into the Expr language.

## Creating and Advanced Formula Column

In this walk-through, we will create a column that shows the % of bugs in a subtree. The formula is going to be something like `(total number of bugs) / (total number of issues)`.

### 1. Main Formula

Create a new Formula column and define the main formula. We're using **total\_bugs** and **total\_issues** as variable names, but they really could be anything.

A few things to note:

- We don't have **total\_bugs** and **total\_issues** defined at the moment, so they are marked red. That's OK.
- We use `IF( )` function to avoid dividing by zero.
- We don't use Sum option because this is a ration. The summing is going to happen when **total\_bugs** and **total\_issues** are calculated.

**Bugs %**

Name: Bugs %

Type: Formula

Formula: `IF(total_issues > 0;  
total_bugs / total_issues)`

Variables: ! total\_issues, ! total\_bugs  
2 variables used. Click a variable to define it.

Options: ☐ Sum over sub-items

Edit

### 2. Temporary Column with Total Number of Bugs

Now let's define a new column that shows the value of **total\_bugs**. That is quite easy with the formula column.

- For an individual row, we use `IF( )` function to check if the issue type is "Bug", and produce **1** as the result in that case.
- The values are summed up, with duplicate items excluded.
- **type** variable is automatically mapped to the Issue Type attribute

Name

Number of Bugs

Type

Formula

Formula

IF(type='bug';1)

Variables

type

One variable used. Click the variable to define it.

Options

☒ Sum over sub-items
 ☒ Exclude duplicates
 ☐ After filtering

Number of Bugs	Bugs %
1250	
256	
265	
257	

3. Temporary Column with Total Number of Issues

In the manner we create another temporary column that shows total number of issues.

- Note that we still have to use IF() , because items in the sub-tree could be folders or of other non-issue types.

Name

Number of Issues

Type

Formula

Formula

IF(itemtype='issue';1)

Variables

itemtype

One variable used. Click the variable to define it.

Options

☒ Sum over sub-items
 ☒ Exclude duplicates
 ☐ After filtering

Number of Issu	Number of Bugs	Bugs %
4		
8040	1250	
1621	256	
1666	265	
1623	257	
1		
1		
1		
1		
1		

4. Define Main Formula Variables

Now it's time to map the main formula's variables to the values calculated in the temporary columns.

Go back to the main column configuration and click **total\_issues** variable. In the attribute selector, scroll down to **Used in Columns** section and select "Formula" entry with the name of the temporary column in parentheses.

Repeat the same for **total\_bugs**.

	Number of Issues	Number of Bugs	Bugs %
Name	Bugs %		
Type	Formula		
Formula	$\text{IF}(\text{total\_issues} > 0; \frac{\text{total\_bugs}}{\text{total\_issues}})$		
Variables	<a href="#">&lt; Back to Variable List</a> <b>total_issues</b> <div> <input type="text" value="Select attribute..."/> </div>		
Options	<b>Used in Columns</b> <div> <div>Formula (in Bugs %)</div> <div>Σ! Formula (in Number of Bugs)</div> <div style="background-color: #0056b3; color: white;">Σ! Formula (in Number of Issues)</div> </div>		
Format	<b>Standard Attributes</b> <div> <div>Affects Version/s</div> <div>Assignee</div> </div>		
	<div> <div>Remove column</div> <div>Edit</div> </div>		



Please note that if you're selecting an attribute defined in another column (from the "Used in Columns" section of the attribute selection drop-down), you **copy** the attribute definition from another column at that moment, rather than creating a link to that column. That means that even if the other column is removed or if its content is changed, the Formula configuration will keep using the attribute as it was defined at the moment you configured the variable.

So if you need to change the formula in the temporary column, you can do it, but then you'll need to open the main formula configuration again and re-select the attribute for the variable.

## 5. Final Steps

Select Percent as the number format and it's all done!

As a final clean-up, you can remove the temporary columns from the grid. Our Bugs % column has all the information it needs to do the calculation.

	Number of Issues	Number of Bugs	Bugs %
Name	Bugs %		0.0%
Type	Formula		15.5%
Formula	IF(total_issues > 0; total_bugs / total_issues)		15.8%
			15.9%
			15.8%
			0.0%
			0.0%
			0.0%
			0.0%
			0.0%
			0.0%
			0.0%
			0.0%
			0.0%
			100.0%

Variables total\_issues  
 total\_bugs

2 variables used. Click a variable to define it.

Options ☐ Sum over sub-items

Format Percentage

Rounding 1 decimal places

Remove column Revert changes