

Formula Fields – Date Math

Creating a formula field to calculate the number of days before due.

The Opportunity object has a Due Date field, and naturally, we always know what the current date is, so what if we wanted to calculate the difference? Easy!

From the Opportunity object definition screen, click the **New Formula Field** button.

The screenshot shows the 'Opportunity: Edit Field' configuration interface. At the top right are 'Save' and 'Cancel' buttons. The 'Field Properties' section includes:

- Field Type: Formula (Integer)
- Field Label: Days Left
- View Header: (empty text box)
- View Width: (empty text box) pixels or %
- Hide this field's label on UI pages
- Return Type: Integer (dropdown), with a format mask of \$###,###,###.## (dropdown)
- Decimal Places: 0 (text box)

A yellow tip box states: "Tip: Use the Formula editor below to define a value to be displayed for this Formula (Integer) field. You can use all features of the JavaScript with only a few exceptions. [Click here](#) for more information about formulas."

The 'Template Helper' section shows 'String Tokens' and a dropdown menu with 'Opportunity [ccOpportunity]' selected. Below this are two empty text boxes and a 'Server-Side API' dropdown.

The 'Formula return type: Integer' section contains a text area with the following JavaScript code:

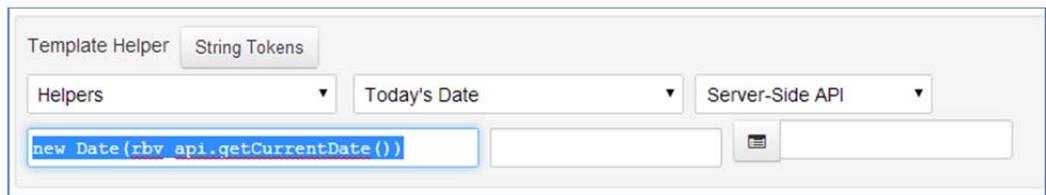
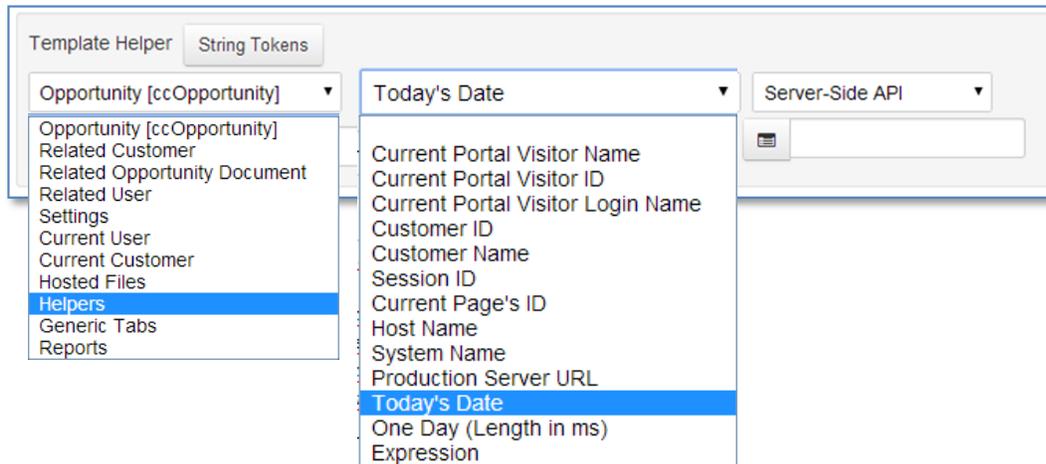
```
var nowDate = new Date(rbv_api.getCurrentDate());
var one_day = 1000*60*60*24;
var nowDate_ms = nowDate.getTime();
var dueDate = new Date("!"dueDate");
var dueDate_ms = dueDate.getTime();
var delta_ms = dueDate_ms - nowDate_ms;
return Math.round(delta_ms/one_day);
```

At the bottom are buttons for 'Validate Formula', 'Debug Formula', 'Test Query', and 'API Permissions'.

We will call this field “Days Left” and give it a Return Type of Integer. Rollbase makes it easy for us to do Javascript. In the absence of a function wrapper, Rollbase actually does it for you, which you will see a bit later when we explore the validate and debug buttons.

Javascript is a pretty easy to learn language and you can find an abundance of examples all over the internet. That being said, it seems prudent to explain what is happening on each line of code above.

The Rollbase Template Helper is a pretty powerful tool and I urge you to explore what's available. One thing we need to know in this formula is what the current date is. If you can't remember the exact syntax, Rollbase will help you do it. There are actually two ways to get the current date. One is to click Helpers under the drop down, as shown below. Once you pick "Helpers" on the left, you can then pick "Today's Date" in the middle. Doing so returns the tokens that you can copy and paste into the editor.



```
//create a date variable to hold today's date
var nowDate = new Date(rbv_api.getCurrentDate());
//create an integer variable representing the number of milliseconds in a day.
var one_day = 1000*60*60*24;
//create a variable to hold the millisecond value of today's date.
var nowDate_ms = nowDate.getTime();
//create a variable to hold the Opportunity due date.
/**IMPORTANT**, notice the double quotes around the {!dueDate} token.
//The Date() function expects a string value.
var dueDate = new Date("{!dueDate}");
//create a variable to hold the millisecond value of the due date.
var dueDate_ms = dueDate.getTime();
//create a variable to hold difference in milliseconds.
var delta_ms = dueDate_ms - nowDate_ms;
//return is a reserved word telling the system to send back the answer.
//Using the system Math object, we can round back to a whole number, which
//gives us our date difference.
return Math.round(delta_ms/one_day);
```

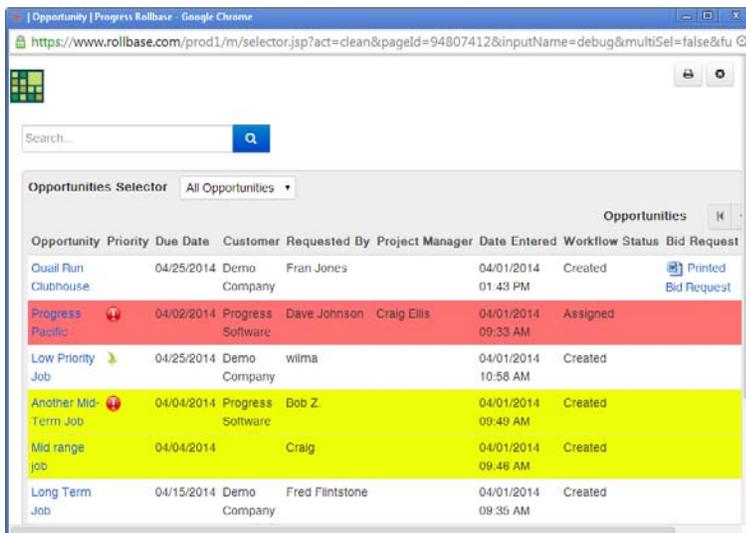
Writing Javascript in Rollbase can be frustrating at times because you don't get the expected results. A few buttons are provided to help you with your code.

Validate Formula

Debug Formula

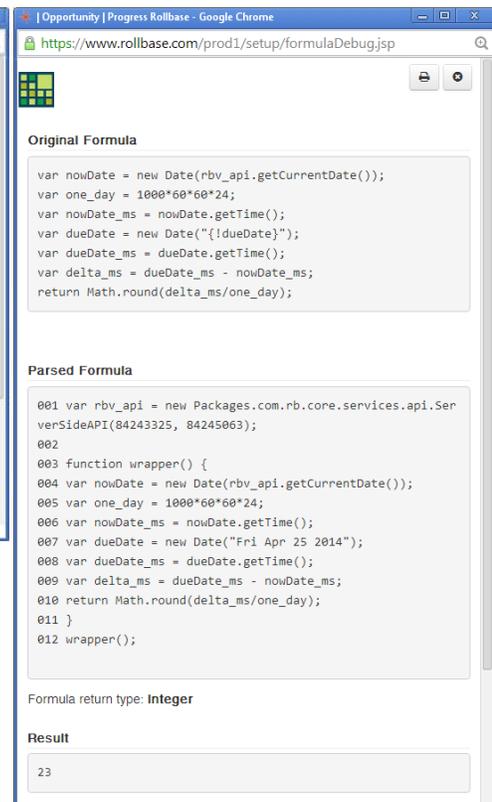
After you type your code, you can click the "Validate Formula" button to test if you made any syntax errors. If everything is good, you will see the following below your code: **Formula is valid**

If you want to actually debug the formula to make sure you have made no logical mistakes, then use the "Debug Formula" button. Before doing so, you MUST have already created some records with which to test. Clicking that button will pop up a dialog window for you to pick a record.



Opportunity	Priority	Due Date	Customer	Requested By	Project Manager	Date Entered	Workflow Status	Bid Request
Quail Run Clubhouse		04/25/2014	Demo Company	Fran Jones		04/01/2014 01:43 PM	Created	Printed Bid Request
Progress Pacific	🔴	04/02/2014	Progress Software	Dave Johnson	Craig Ellis	04/01/2014 09:33 AM	Assigned	
Low Priority Job	🟢	04/25/2014	Demo Company	wilma		04/01/2014 10:58 AM	Created	
Another Mid-Term Job	🔴	04/04/2014	Progress Software	Bob Z.		04/01/2014 09:49 AM	Created	
Mid range job		04/04/2014		Craig		04/01/2014 09:48 AM	Created	
Long Term Job		04/15/2014	Demo Company	Fred Flintstone		04/01/2014 09:35 AM	Created	

Clicking on the link for one of the records will then produce another dialog with your formula parsed and hopefully the correct result. In this particular example, the Result is 23, which is correct. April 25, 2014 is 23 days from today, April 2, 2014.



Original Formula

```
var nowDate = new Date(rbv_api.getCurrentDate());
var one_day = 1000*60*60*24;
var nowDate_ms = nowDate.getTime();
var dueDate = new Date("{!dueDate}");
var dueDate_ms = dueDate.getTime();
var delta_ms = dueDate_ms - nowDate_ms;
return Math.round(delta_ms/one_day);
```

Parsed Formula

```
001 var rbv_api = new Packages.com.rb.core.services.api.ServerSideAPI(84243325, 84245063);
002
003 function wrapper() {
004 var nowDate = new Date(rbv_api.getCurrentDate());
005 var one_day = 1000*60*60*24;
006 var nowDate_ms = nowDate.getTime();
007 var dueDate = new Date("Fri Apr 25 2014");
008 var dueDate_ms = dueDate.getTime();
009 var delta_ms = dueDate_ms - nowDate_ms;
010 return Math.round(delta_ms/one_day);
011 }
012 wrapper();
```

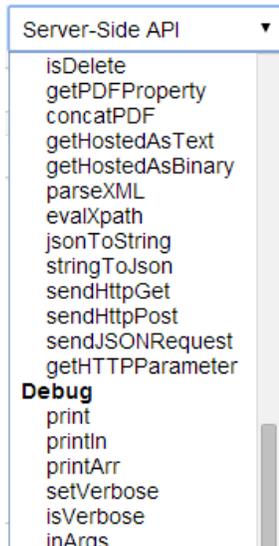
Formula return type: **Integer**

Result

23

When writing and debugging formulas, having some line-by-line feedback regarding your code is desirable. Much like you would do in other languages, Rollbase provides a similar mechanism to debug your Javascript. In the Template Helper section, Rollbase provides some Server-Side API functions for you to use, particularly its Debug functions. Using the println helper, I place the following code right before the return statement:

```
rbv_api.println("The number of days is: " +
Math.round(delta_ms/one_day).toString());
```



Server-Side API

- isDelete
- getPDFProperty
- concatPDF
- getHostedAsText
- getHostedAsBinary
- parseXML
- evalXPath
- jsonToString
- stringToJson
- sendHttpGet
- sendHttpPost
- sendJSONRequest
- getHTTPParameter

Debug

- print
- println
- printArr
- setVerbose
- isVerbose
- inArgs

If I again debug my code, not only will I get the return value, but I also get the results of my debugging, which in this case is string value with the days.

Debug

```
The number of days is: 23
```

Result

```
23
```

The Javascript explored so far is pretty simple, but date math is frequently problematic for a lot of users. As we progress through this tutorial, we will be revisiting Javascript frequently.

Now that we have our formula field, the last thing to do is add it to both of our views.

Action	Opportunity	Priority	Due Date	Days Left	Customer	Requested By	Project Manager	Date Entered	Workflow Status	Bid Request
<input type="checkbox"/> Edit Del	Quail Run Clubhouse		04/25/2014	23	Demo Company	Fran Jones		04/01/2014 01:43 PM	Created	Printed Bid Request
<input checked="" type="checkbox"/> Edit Del	Progress Pacific		04/02/2014	0	Progress Software	Dave Johnson	Craig Ellis	04/01/2014 09:33 AM	Assigned	
<input type="checkbox"/> Edit Del	Low Priority Job		04/25/2014	23	Demo Company	wilma		04/01/2014 10:58 AM	Created	
<input checked="" type="checkbox"/> Edit Del	Another Mid-Term Job		04/04/2014	2	Progress Software	Bob Z.		04/01/2014 09:49 AM	Created	
<input type="checkbox"/> Edit Del	Mid range job		04/04/2014	2		Craig		04/01/2014 09:46 AM	Created	
<input type="checkbox"/> Edit Del	Long Term Job		04/15/2014	13	Demo Company	Fred Flintstone		04/01/2014 09:35 AM	Created	
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