

5 Formula Workshop

5.1 Chapter Outline

We introduce the formula workshop early on this course because it is one of the most powerful and widely used features in Crystal Reports. In this chapter we write a simple string formula and discuss why we need formulas and have our first visit to the formula workshop to look at some of the tools we can use there.

5.2 Why do we need formulas?

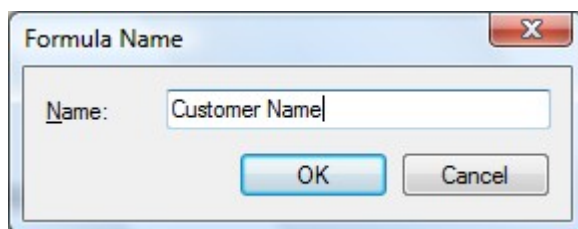
A database should contain all the fields you need, and only those fields. Anything that can be calculated from other fields in the table (or other tables) should be calculated when you need it. If you had a “Annual Salary” and a “Monthly Salary” field in your database, then your application could let you modify one field, and then update the other to the related value, but there is no guarantee that would always happen. Things go wrong with computers, so if the two numbers get out of step, we no longer know which one is correct, and we have to doubt both values until the error is fixed.

In this database the first name and last name are stored in separate fields. It would be useful to combine the Title (Mr, Mrs, etc) with the first name and last name and place that on the page rather than having a column for each.

The + operator is one way to join string fields together. We also need to insert a space between each field. The formula we want to build will be:

```
{Customer.Title} + " " +  
{Customer.FirstName} + " " +  
{Customer.LastName}
```

Select “Formulas” in the Field Explorer and Right Click “New”.



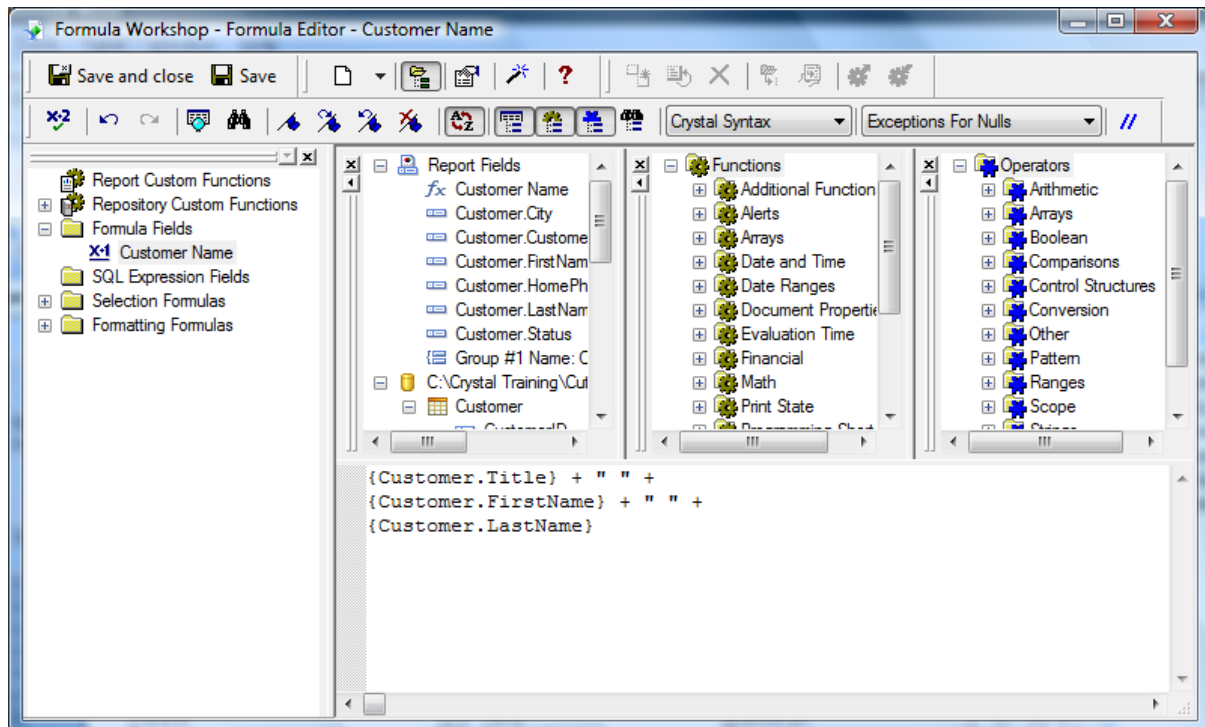
You need to give your formula a name. We have entered “Customer Name” here but you can use any name you think will make sense. Click OK.

Special Note for users of older versions. You might see a button on the form above that says “Use Expert”. This invokes the Formula Wizard used to design custom functions. You are unlikely to need that wizard. Do not click that button

You will now see the Formula Workshop form.

5.3 The Formula Workshop

Relax, Get comfortable here. You are going to spend a lot of your report design time on this form. We will return to this form every day of this course.



There is a toolbar, four list boxes and a large text box for writing your formula. While they are all resizable, moveable and dockable, we do not recommend you move them until you are sure that is what you really want and need.

Examine the toolbar. If you are only writing one formula, the “Save and Close” button is the easiest and fastest way back to report design.

If you are planning a series of formulas, you can click the save button and then “New” to stay on this form and write the next formula. That can make your formula creation a lot quicker.

There is also a useful “Check” button and an “Undo” if you make a mistake you want to undo.

The large box on the left is the “WorkShop Tree”. It gives you a list of all the formulas in the report including Formula Fields, Custom Functions, SQL Expressions, Record and Group Selection and any Conditional Formatting.

The Three similar sized boxes are the Field Tree, Function Tree and Operator Tree and these have been around since the early days of Crystal Reports formulas.

The leftmost of the three boxes is the Field Tree. This lists the Fields used in the report as well as the other fields in the database you might want to use later. Other formulas, SQL expressions, Group Names, Summaries are also in this list.

The middle of the three boxes is the Function Tree. Each version of Crystal Reports usually adds a few new functions, so with Crystal Reports 2011 there are a long list over several levels. We will look at some functions you might want to use tomorrow.

The Right hand box is the Operator Tree. This starts with the simple operators like add and subtract, and then moves on to Boolean, comparison, and range operators. On the advanced courses we do exercises that require Variable Declaration and Scope, where you can apply complex logic in your calculations.

In the large box in the bottom of the form, you can write your formula. You can type it all by hand, or you can double click from the Field Tree, Function Tree or Operator Tree to add that to the text of the formula.

The formula you want to write is:

```
{Customer.Title} + " " +  
{Customer.FirstName} + " " +  
{Customer.LastName}
```

Note the formula can be spread over several lines to make it easier to read.

Click the “Check” button and see that you haven’t made any mistake. Before you hit save and close let’s examine that formula in more detail.

Tables and Fields are specified with braces {table.field}. Because a field name is unique to a table, but not always unique in the database, you need the table and field to identify the correct field.

{Customer.Title} will select the Title field from the Customer table. This field contains value like Mr, Mrs, Miss, etc.

+ “ “ will append a space character to the title field. Make sure there is one space between the quote characters.

- {Customer.FirstName} + “ “ will append the Customer’s first name and another space.
-

{Customer.LastName} will append the Customer’s last name to the result.

Also Note that table and field names are not case sensitive.

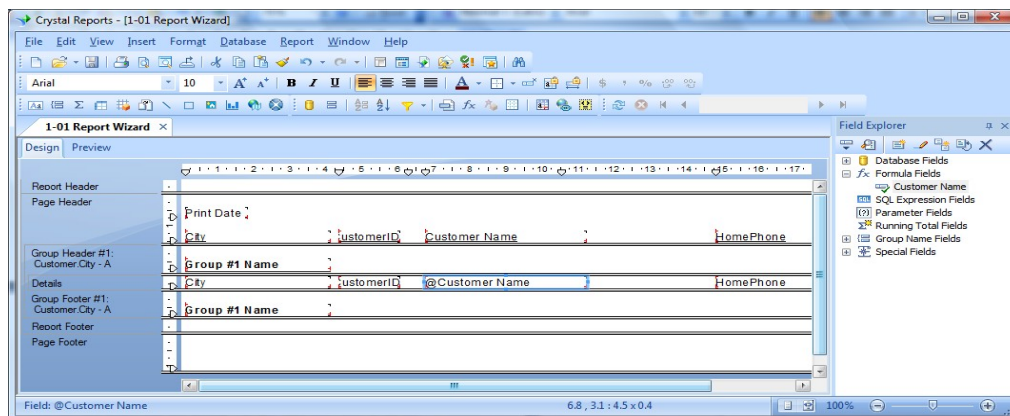
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5.4 Using the Formula in your report

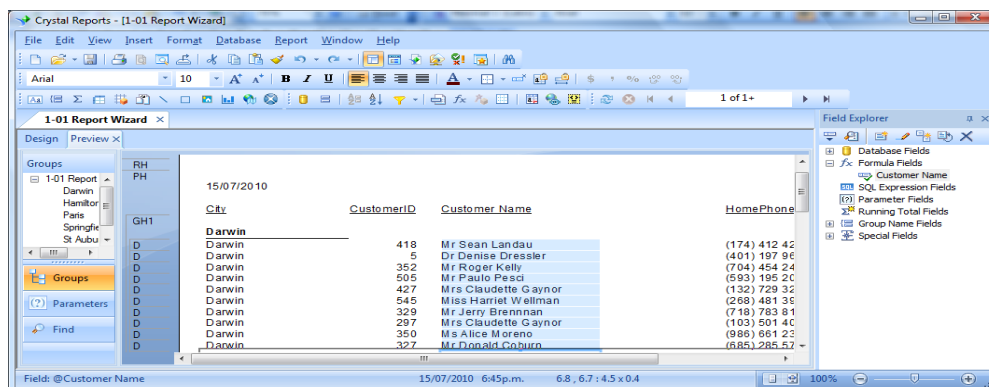
Now you have written your first formula. You can “Save and Close” to exit the Formula Workshop. Your new formula will be listed in the Field Explorer and you can drag it from there onto your report.

Make sure you are in the Design View. (While you can add a Formula to the Preview, it is difficult to identify the section you want to place the formula in).

Select the FirstName Field with the mouse and hit the delete key on your keyboard. This will also remove the field heading for the column. Do the same to the LastName Field. Then drag the Customer Name formula to the details section to replace those two columns.



Select the preview tab and see if your formula does what you expect.



5.5 Chapter Summary

The formula editor is one feature you are likely to make significant use of as you design your reports. This chapter introduces the formula workshop, so you can start getting familiar with using it.

The formula editor will be used on every day of this training course.