

Part 2 - Working with Formulas

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Intro



This is Part 2 of a 3-part tutorial series for the [Simple Expense Summary](#) scenario. It is recommended that you complete [Part 1 - Getting Started](#) before starting this section.



Following the Sample

There is a downloadable [ExcelWriter_Basic_Tutorials.zip](#) with completed templates and code. The completed example of the template is available under *templates/part2_template.xlsx*. The code for this part of the tutorial can be found in *Part2.aspx.cs*.

This part focuses on adding some Excel formulas to the template file from Part 1. Specifically, this covers combining data marker values with other text, adding a 'Total' row after imported data, and including formulas in imported data rows.

Since the formulas are native Excel functionality, we will only be modifying the template file. There are no changes to the code from Part 1.

Working with Formulas

Combining Data Markers with Text

We start with the template file as it was at the end of Part 1:

F16						
	A	B	C	D	E	F
1	%%=Header.FiscalYear					
2	%%=Header.Division					
3	%%=Header.Group					
4						
5	Top Expenses					
6	Description		Expenses			
7	%%=[Top 5 Expenses].Description		%%=[Top 5 Expenses].Expenses			
8						
9	All Expenses					
10	Description		Expenses			
11	%%=[All Expenses].Description		%%=[All Expenses].Expenses			
12						
13						
14						
15						
16						
17						
18						
19						
20						

Right now, the header is set up just to display the values for FiscalYear, Division, and Group. Let's say we want to change the labels to "Expenses Summary - <Fiscal Year>", "Division: <Division>", "Group: <Group>". Data markers must be the only content a cell, they cannot be combined with other text. To get around this, you need to build the text or formula with a reference to the cell the data marker occupies.

1. Move the data markers for `%%=Header .FiscalYear`, `%%=Header .Division`, `%%=Header .Group` to a column off to the right, say Column N.

[illegible]

2. In A1, replace `%%=Header.FiscalYear` with a formula that builds the desired string with the formula `"Expenses Summary - " & N1`.

A1		="Expenses Summary - " & N1			
	A	B	C	D	
1		Expenses Summary - %%=Header.FiscalYear			
2		%%=Header.Division			
3		%%=Header.Group			
4					
5		Top Expenses			
6		Description	Expenses		

3. In B2 and B3, replace %%=Header.Division and %%=Header.Group with similar formulas: ="Division: " & N2, ="Group: " & N3.

B3		="Group: " & N3			
	A	B	C		
1		Expenses Summary - %%=Header.FiscalYear			
2		Division: %%=Header.Division			
3		Group: %%=Header.Group			
4					
5		Top Expenses			

4. Hide column N so the extra data markers won't be visible.

5. Run the code.

In the output you will see the text combined with the values of the data markers:

K15					
	A	B	C	D	E
1		Expenses Summary - FY 2004			
2		Division: Canadian Division			
3		Group: Research and Development			
4					
5		Top Expenses			
6		Description	Expenses		
7		Standard Cost of Sales	\$ 2,860,087.46		

Using Inline Formulas

If a formula references a data marker row, ExcelWriter will update the formula to reflect that multiple rows are being inserted. In this section, we'll briefly cover how ExcelWriter handles formulas that are on the data marker row.



For more information about how ExcelWriter imports data with the ExcelTemplate object, check out [How ExcelWriter Inserts Rows](#). That article also discusses how importing data with ExcelTemplate affects formulas.

Let's say we want to generate some short labels for the Top 5 Expenses to use with the descriptions. One possibility is to add the labels to the data source (i.e. through the SQL query or modifying the data structure directly), but another way is to use Excel formulas.

Similar to the last section, we'll use the existing data markers to create a new string for the Top 5 Expenses table.

6. In Column D, create a header for the label. Update the 'Top Expenses' merged cell area to include column D.

B17		fx				
	A	B	C	D	E	F
1	Expenses Summary - %%=Header.FiscalYear					
2		Division: %%=Header.Division				
3		<i>Group: %%=Header.Group</i>				
4						
5		Top Expenses				
6		Description	Expenses	ID		
7		%%=[Top 5 Expenses].Description	%%=[Top 5 Expenses].Expenses			
8						
9		All Expenses				
10		Description	Expenses			
11		%%=[All Expenses].Description	%%=[All Expenses].Expenses			
12						
13						
14						
15						

7. In cell D7, add a formula =UPPER(LEFT(B7, 4)).

Excel's LEFT(text, N) function returns the first N characters from the text, starting from the left. In this case, the first 4 characters from cell B7. Then the UPPER function converts the characters to uppercase.

ExcelWriter will update this formula for each row of data that is added, so the formula in row 9 will read =UPPER(LEFT(B9, 4)).

8. Run the report.

You will see that the first 4 characters from the description have been set to uppercase in column D.

D9		fx		=UPPER(LEFT(B9, 4))			
	A	B	C	D	E	F	G
1	Expenses Summary - FY 2004						
2	Division: Canadian Division						
3	Group: Research and Development						
4							
5	Top Expenses						
6	Description		Expenses	ID			
7	Standard Cost of Sales		\$ 2,860,087.46	STAN			
8	Taxes		\$ 760,327.13	TAXE			
9	Salaries		\$ 641,302.20	SALA			
10	Variances		\$ 441,498.92	VARI			
11	Commissions		\$ 348,101.27	COMM			
12							

Adding a Total Row

If an aggregate formula, such as TOTAL or SUM, references a data marker row, ExcelWriter will stretch the formula to include all the rows that have been inserted. In this section, we'll cover how to add a total row.

9. Insert a new row below Top Expenses and All Expenses. Add labels for the total row and format as desired.

B25 fx				
	A	B	C	D
1	Expenses Summary - %%=Header.FiscalYear			
2		Division: %%=Header.Division		
3		Group: %%=Header.Group		
4				
5		Top Expenses		
6		Description	Expenses	ID
7		%%=[Top 5 Expenses].Description	%%=[Top 5 Expenses].	%%=[
8		Total		ALL
9				
10		All Expenses		
11		Description	Expenses	
12		%%=[All Expenses].Description	%%=[All Expenses].Expenses	
13		Total		
14				
15				
16				

10. In cell C8, add the formula =SUM(C7:C7). Add a similar formula to C13: =SUM(C12:C12). Don't forget to format C8 and C13 to use currency formatting.

When ExcelWriter imports the data, the first formula will get stretched to C7:C11. The second formula will first get updated to account for the new data inserted above it (C16:C16) and then will get stretched to C16:C44.

C13 fx =SUM(C12:C12)				
	A	B	C	D
1	Expenses Summary - %%=Header.FiscalYear			
2		Division: %%=Header.Division		
3		Group: %%=Header.Group		
4				
5		Top Expenses		
6		Description	Expenses	ID
7		%%=[Top 5 Expenses].Description	%%=[Top 5 Expenses].	%%=[
8		Total	\$ -	ALL
9				
10		All Expenses		
11		Description	Expenses	
12		%%=[All Expenses].Description	%%=[All Expenses].Expenses	
13		Total	\$ -	
14				
15				
16				

11. Run the report.

You will see that the formulas have been stretched and updated as described above.

C12							f_x	=SUM(C7:C11)
	A	B	C	D	E			
1	Expenses Summary - FY 2004							
2		Division: Canadian Division						
3		Group: Research and Development						
4								
5	Top Expenses							
6		Description	Expenses	ID				
7		Standard Cost of Sales	\$ 2,860,087.46	STAN				
8		Taxes	\$ 760,327.13	TAXE				
9		Salaries	\$ 641,302.20	SALA				
10		Variances	\$ 441,498.92	VARI				
11		Commissions	\$ 348,101.27	COMM				
12		Total	\$ 5,051,316.98	ALL				
13								

C45				=SUM(C16:C44)	
	A	B	C	D	E
28		Office Supplies	\$ 5,652.48		
29		Other Assets	\$ 2,546.37		
30		Other Expenses	\$ 3,569.10		
31		Other Travel Related	\$ 884.22		
32		Payroll Taxes	\$ 65,023.29		
33		Professional Services	\$ 6,681.27		
34		Rent	\$ 12,013.18		
35		Returns and Adjustments	\$ 274,069.61		
36		Salaries	\$ 641,302.20		
37		Standard Cost of Sales	\$ 2,860,087.46		
38		Taxes	\$ 760,327.13		
39		Telephone	\$ 90,696.48		
40		Travel Lodging	\$ 7,941.90		
41		Travel Transportation	\$ 8,734.34		
42		Utilities	\$ 12,038.95		
43		Variances	\$ 441,498.92		
44		Vehicles	\$ 8,469.20		
45		Total	\$ 5,803,082.23		
46					

Final Code



For information on writing this code, see Part 1 - Getting Started .

```
using SoftArtisans.OfficeWriter.ExcelWriter;
...
ExcelTemplate XLT = new ExcelTemplate();

XLT.Open(Page.MapPath("//templates//part1_template.xlsx"));

DataBindingProperties dataProps = XLT.CreateDataBindingProperties();

object[] valuesArray = { "FY 2004", "Canadian Division", "Research and Development" };
string[] columnNamesArray = { "FiscalYear", "Division", "Group" };

XLT.BindRowData(valuesArray, columnNamesArray, "Header", dataProps);

DataTable dtTop5 = GetCSVData(Page.MapPath("//data//Part1_Top5Expenses.csv"));
DataTable dtAll = GetCSVData(Page.MapPath("//data//Part1_AllExpenses.csv"));

XLT.BindData(dtTop5, "Top 5 Expenses", dataProps);
XLT.BindData(dtAll, "All Expenses", dataProps);

XLT.Process();

XLT.Save(Page.Response, "Part1_Output.xlsx", false);
```

Downloads

You can download the code for the Basic ExcelWriter Tutorials as a Visual Studio solution, which includes the Simple Expense Summary.

- [ExcelWriter_Basic_Tutorials.zip](#)

Next Steps

[Continue on to Part 3: Adding a Chart](#)