Advanced Grouping and Nesting

Introduced in build 7.0.0.1261

Starting in version 7.1 of ExcelWriter, you can use grouping and nesting markers to display flat data in a grouped and nested format using the ExcelTemplate object.

Introduction

The previous tutorial, Using Grouping and Nesting with ExcelTemplate, showed how to use the new **%%group** marker to group hierarchical data from a flat data set. In this tutorial, we expand upon the concept by introducing advanced features: headers and footers for each group, the **%%value()** marker to show data values in headers and footers, the **(hide)** modifier to hide data that is already shown in a header or footer, and formatting options.

Setup

This tutorial uses the same code and data as the previous tutorial, Using Grouping and Nesting with ExcelTemplate. The template used in this tutorial starts where the previous tutorial left off.

Adding Headers

Headers in ExcelWriter grouping and nesting are repeated for every new value in a grouped column. The beginning of a header block is indicated by a **%%header** marker, while the end of the block is marked by the next **%%header** block (if you have nested headers) or the data marker row.

The following template has a simple row of blue cells as the header for the Territory Name group:

When it is processed using the ExcelTemplate object, a row of blue cells is added above each new Territory Name block:

	Territory Name	Salesperson	Product Category	Product Subcategory	Color	Unit Price	Order Qty
7	Canada	José Saraiva	Accessories	Helmets	Black	$20.19	
8					Blue	$20.19	
9					Blue	$20.19	
10					Red	$20.19	
11			Bikes	Mountain Bikes	Black	$2,024.99	
12					Black	$2,024.99	
13					Black	$2,024.99	
14					Black	$2,024.99	
15					Silver	$2,039.99	
16				Road Bikes	Red	$2,146.96	
17					Red	$2,146.96	
18					Red	$2,146.96	
19					Red	$874.79	
20					Red	$874.79	
21					Red	$874.79	

Using the %%value marker

While the above example helps to separate the different regions from each other in nested output, you can also add content to the headers. Any text that you place within header rows will be repeated as well for each header.

Static text within the header will be repeated unchanged for every header. You can dynamically add in data from the data rows using the **%%value** data marker. In the example below, we place each Territory Name in the header for each Territory Name by placing **%%value([AdventureWorks].[TerritoryName])** in the header. The text within the %%value() marker is the data marker you'd like to display, without the "%%=":

	Territory Name	Salesperson	Product Category	Product Subcategory	Color	Unit Price	Order Qty
	Territory Sales Report						
6	%%group	%%group	%%group	%%group			
7	%%header						
8	%%value([AdventureWorks].[TerritoryName])						
9	%%=[AdventureW⊂	%%=[AdventureV	%%=[AdventureW	%%=[AdventureWor	%%=[Adventure	%%=[Adventu	%%=[Adven
10	%%endgroup						
11	**Grand Total**						

Each header will now feature the Territory Name of its group:

	Territory Name	Salesperson	Product Category	Product Subcategory	Color	Unit Price	Order Qty
	Territory Sales Report						
63					Red	$356.90	
64					Red	$356.90	
65	**Central**						
66	Central	Jillian Carson	Bikes	Mountain Bikes	Black	$2,024.99	
67					Black	$2,024.99	
68					Silver	$2,039.99	
69			Clothing	Socks	White	$5.70	
70	**Northwest**						
71	Northwest	David Campbell	Accessories	Helmets	Blue	$20.19	
72					Red	$20.19	
73			Bikes	Mountain Bikes	Black	$2,024.99	
74					Black	$2,024.99	
75					Black	$2,024.99	

Using the (hide) data marker modifier

In the example above, we were able to place the Territory Name values in the header using the **%%value** marker. However, the Territory Name values are repeated still in the data rows. You can hide the repeated values in the data marker row by appending the **(hide)** data marker modifier to the end of the **%%=[AdventureWorks].[TerritoryName]** data marker in the data marker row:

	A	B	C	D	E	F	G
		PostOne					
1							
2							
3							
4	Territory Sales Report						
5	Territory Name	Salesperson	Product Category	Product Subcategory	Color	Unit Price	Order Qty
6	%%group	%%group	%%group	%%group			
7	%%header						
8	%%value([AdventureWorks].[TerritoryName])						
9	yName](hide)	%%=[AdventureW	%%=[AdventureW	%%=[AdventureWor	%%=[Adventure	%%=[Adventu	%%=[Adver
10	%%endgroup						
11	Grand Total						

When the data is bound to the template, the Territory Name field is omitted from the data rows, while it is preserved in the headers:

	A	B	C	D	E	F	G

Territory Sales Report

Territory Name	Salesperson	Product Category	Product Subcategory	Color	Unit Price	Order Qty
				Red	$183.94	
				Red	$183.94	
				Red	$183.94	
				Red	$356.90	
				Red	$356.90	
Central						
	Jillian Carson	Bikes	Mountain Bikes	Black	$2,024.99	
				Black	$2,024.99	
				Silver	$2,039.99	
		Clothing	Socks	White	$5.70	
Northwest						
	David Campbell	Accessories	Helmets	Blue	$20.19	
				Red	$20.19	
		Bikes	Mountain Bikes	Black	$2,024.99	
				Black	$2,024.99	
				Black	$2,024.99	
				Black	$2,024.99	

Nesting Headers

In the examples above, we define a header for the top field in the hierarchy directly above the data marker rows. You can further organize your data using headers for nested fields. To do so, add a **%%header** marker to the field's column in the row directly below the header that precedes it. In the example below, we add a header to the Salesperson field. The header has a green background and includes the value of the field. We've also removed that value from the data rows using the **(hide)** data marker modifier:

	Territory Name	Salesperson	Product Category	Product Subcategory	Color	Unit Price	Order Qty
6	%%group	%%group	%%group	%%group			
7	%%header						
8	%%value([AdventureWorks].[TerritoryName])						
9		%%header					
10		%%value([AdventureWorks].[SalesPerson])					
11	%%=[AdventureW(erson](hide)	%%=[AdventureW	%%=[AdventureWor	%%=[Adventure	%%=[Adventu	%%=[Adver
12	%%endgroup						
13	**Grand Total**						

When the template is filled, the Salesperson headers are repeated for every Salesperson within their corresponding Territory groups:

	A	B	C	D	E	F	G
		PostOne					
1							
2							
3							
4	Territory Sales Report						
5	**Territory Name**	**Salesperson**	**Product Category**	**Product Subcategory**	**Color**	**Unit Price**	**Order Qty**
67							
68							
69	**Central**						
70		**Jillian Carson**					
71			Bikes	Mountain Bikes	Black	$2,024.99	
72					Black	$2,024.99	
73					Silver	$2,039.99	
74			Clothing	Socks	White	$5.70	
75	**Northwest**						
76		**David Campbell**					
77			Accessories	Helmets	Blue	$20.19	
78					Red	$20.19	
79			Bikes	Mountain Bikes	Black	$2,024.99	
80					Black	$2,024.99	
81					Black	$2,024.99	
82					Black	$2,024.99	

Adding Footers

The **%%footer** marker allows you to add a footer for your groups. The first footer should be placed directly below the data row and will end with either the next **%%footer** marker or the **%%endgroup** marker. Everything in the footer will be repeated below the data for each value in the given field. In the example below, we've added a footer to the Salesperson field. It contains two rows: a blank row and a row in color blue using the formula **="Total Sales For " & B10** in cell B13 and the formula **=SUBTOTAL(9, H11:H11)** in cell H13.

First screenshot

Territory Sales Report

	Territory Name	Salesperson	Product Category	Product Subcategory	Color	Unit Price	Order Qty	Line Total
6	%%group	%%group	%%group	%%group				
7	%%header							
8	%%value([AdventureWorks].[TerritoryName])							
9		%%header						
10		%%value([AdventureWorks].[SalesPerson])						
11	%%=[AdventureWc	%%=[Adventure\	%%=[AdventureW	%%=[AdventureWor	%%=[Adventure	%%=[Adventu	%%=[Adventt	%%=[AdventureWork
12		%%footer						
13		Total Sales for %%value([AdventureWorks].[SalesPerson])						$0.00
14								
15	%%endgroup							
16	Grand Total							$0.00

The formula in cell B13 will evaluate to say "Total Sales For [Salesperson]" for each salesperson. The formula in cell H13 will subtotal the sums of each Line Total for each salesperson:

Second screenshot

Territory Sales Report

	Territory Name	Salesperson	Product Category	Product Subcategory	Color	Unit Price	Order Qty	Line Total
66								
67	Total Sales for Canada							$85,612.87
68								
69	Central							
70		Jillian Carson						
71			Bikes	Mountain Bikes	Black	$2,024.99	1	$2,024.99
72					Black	$2,024.99	1	$2,024.99
73					Silver	$2,039.99	1	$2,039.99
74			Clothing	Socks	White	$5.70	3	$17.10
75		Total Sales for Jillian Carson						$6,107.08
76								
77	Northwest							
78		David Campbell						
79			Accessories	Helmets	Blue	$20.19	2	$40.37
80					Red	$20.19	1	$20.19
81			Bikes	Mountain Bikes	Black	$2,024.99	2	$4,049.99
82					Black	$2,024.99	1	$2,024.99
83					Black	$2,024.99	2	$4,049.99

Nesting Footers

Just as with headers, footers can be nested within each other. If you place a **%%footer** marker for another column, the results will be nested within each other just as they were with the headers. In this case, we will add a footer for the Territory Name column directly below the Salesperson footer. This time, cell A16 will have the formula **="Total Sales for " & A8** and cell H16 will have formula **=SUBTOTAL(9, H11:H11)** :

	A	B	C	D	E	F	G	H
	PostOne							
1								
2								
3								
4	Territory Sales Report							
5	Territory Name	Salesperson	Product Category	Product Subcategory	Color	Unit Price	Order Qty	Line Total
6	%%group	%%group	%%group	%%group				
7	%%header							
8	%%value([AdventureWorks].[TerritoryName])							
9		%%header						
10		%%value([AdventureWorks].[SalesPerson])						
11	%%=[AdventureWo	%%=[AdventureW	%%=[AdventureW	%%=[AdventureWor	%%=[Adventure	%%=[Adventu	%%=[Adventu	%%=[AdventureWorks
12		%%footer						
13		Total Sales for %%value([AdventureWorks].[SalesPerson])						$0.00
14								
15	%%footer							
16	Total Sales for %%value([AdventureWorks].[TerritoryName])							$0.00
17								
18	%%endgroup							
19	Grand Total							$0.00

Column A of the footer will evaluate to say "Total Sales for [Territory Name]", while column H of the footer will subtotal the values of each Line Total for each Territory Name. Because we used the **SUBTOTAL** formula instead of the **SUM** formula, the subtotals of our Salesperson footer will not be included in the sum:

Territory Sales Report

Territory Name	Salesperson	Product Category	Product Subcategory	Color	Unit Price	Order Qty	Line Total
Total Sales for Canada							**$85,612.87**
Central							
	Jillian Carson						
		Bikes	Mountain Bikes	Black	$2,024.99	1	$2,024.99
				Black	$2,024.99	1	$2,024.99
				Silver	$2,039.99	1	$2,039.99
		Clothing	Socks	White	$5.70	3	$17.10
	Total Sales for Jillian Carson						**$6,107.08**
Total Sales for Central							**$6,107.08**
Northwest							
	David Campbell						