Crystal Reports 9.0 Power User Workshop

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This course covers Crystal Reports® 9.0

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Introduction

Introduction Objectives

This manual is written to give you a step-by-step guide for your classroom training and a handy reference for your daily work. In this Introduction, you will learn how to use this training guide effectively. This section covers the following topics:

- An introduction to the Crystal Reports application
- Pre-Qualification Exercise
- Class objectives
- Help with using this training guide
- Information on how to start the program

About Crystal Reports

In today's information intensive environment, every business has a database of some sort. After all, business today is all about information and databases give you a handle on the massive amounts of information you must deal with. Therefore, your business has a database and from that database, you need reports. The problem is, most reporting capabilities that come with database programs are limited. They only report on data from that program. Many users need to report on data from multiple sources, even databases that are in SQL (Structured Query Language), such as Oracle, Microsoft SQL Server, Informix or Sybase.

Crystal Reports is one of the most powerful reporting programs available with the ability to pull data from all types of data sources. You can use Crystal Reports to generate reports from any of the standard PC database programs, Access, Paradox, or FoxPro, as well as from a mainframe or server database. Crystal also has a powerful web-reporting server that allows you to distribute your reports over the web.

Crystal Reports is bundled with more than 160 other programs including Visual Basic, some medical applications, many accounting packages and several ERP solutions. It makes report generation easy without requiring you to be a programmer or a database expert. If you know how to work in a Windows environment and are familiar with the data you want to use, you can create a Crystal Report that looks professional and makes sense.

Training Philosophy

Studies show that people retain 10% of information they see, 20% of information they hear, 50% of what they see and hear, and 80% of what they see, hear and do. In line with this, this class utilizes a hands-on method of training. You will see the effects of new procedures on the screen, hear the instructor explain how and why to use features, and perform the actions yourself as you learn.

In addition, this class focuses on your ability to perform tasks using the most productive techniques. The manual may contain several methods of accomplishing a certain task. However, class time does not allow for practice of all methods for each task. Your instructor will guide you in the most effective method of performing a task, but inform you of other methods that are available.

Questions are encouraged. While we give our best effort to explain new concepts in understandable terms, you may need to hear the concept again or have it explained more thoroughly. Please let the instructor know when you need more information!

Pre-Qualification Exercise for the Power User Workshop

Why Should You Pre-qualify Yourself for the Power User Workshop?

The Crystal Reports Power User Workshop is designed for the experienced Crystal Reports user. It covers the more complex and powerful features of the program. The class discusses very technical issues and includes several fast-paced, comprehensive exercises. Our instructors have years of experience helping students to get the most out of their training. However, it is not always possible in a high level workshop to assist students with basic tasks.

In order to maximize the benefit you receive from the Crystal Reports Power User Workshop, you should come into the training with a certain skill level. We assume all students who sign up for this workshop have a comfortable level of understanding regarding relational databases. Students should also be able to perform the following tasks in Crystal Reports:

- Create a new report, insert fields, save the report and refresh the data.
- Add multiple tables to the report using the Data Explorer.
- Use the select expert to pull only the data needed from the database.
- Insert groups and summarize fields within the group.
- Perform formatting tasks.
- Create, save and use formulas in the report.

If you would like to evaluate for yourself whether this is the correct level course, take our self-evaluation exercise. The exercise consists of writing a report in Crystal Reports. When you are finished, compare your report to the one our experts have done to see how well you understand the basic features of Crystal Reports. You can obtain the exercise and the results report from the VisionHarvest web site, www.visionharvest.com, or by e-mailing us at training@visionharvest.com.

If you have trouble creating the report or getting the correct results, or if you cannot perform some of the above-mentioned tasks, then we strongly recommend that you take the Crystal Reports Quick Start Workshop before attending the Power User Workshop. By assuring that you are well prepared for the Power User Workshop, you maximize the benefits you receive from this in-depth look at advanced report writing.

Pre-qualification Exercise

Using the Xtreme sample database that ships with Crystal Reports, create a report that invoices customers for each order. The report needs to show the customer billing address, the PO#, the sales person, the order date, the requested date, the ship date and company that shipped the order. The Details section should list the product ID, the product name, the description, the unit price, the quantity, and the line item total.

Select only those orders with an Order Amount greater than zero and with a ship date between January 1, 2001 and March 31, 2001. Group on the Customer ID, then on the Order ID. Display each order on its own page. Sum the line item total amount for each Order ID. Calculate the sales tax for the order at 6% and total the subtotal and sales tax.

You will need to pull data from the following tables:

Customer	Product
Orders	Product Type
Orders Detail	Employee

You will need to create the following formulas:

Line Item Total that multiplies the unit price times the quantity for each product ordered.
Sales Tax that multiplies the sum of each line item total times 6%.
Order Total that adds the sum of each line item total and the sales tax.
Product Description that contains nested *if…then….else* statements to show the Size field if the Color field is empty, the Color field if the Size field is empty, and both fields, separated by a comma, if both contain data.

You will need to create the following text boxes:
An address box with the text **To:** then the company name, the address, the city, region postal code and country.
An employee box with the employee first name, a space, then the last name.

Format the report to look like the illustrations on the following pages:

Invoice

Date: December 27, 2002
Invoice Number: 1143

Xtreme Mountain Bikes

To: City Cyclists
7464 South Kingsway
Suite 2006
Sterling Heights, MI 48358
USA

Order Date:	January 6, 2001
Required Date:	January 9, 2001
Ship Date:	January 8, 2001
Ship Via:	FedEx

Sales person: Nancy Davolio

Product	Product Name	Description	Unit Price	Quantity	Line Total
4102	InFlux Crochet Glove	med	$12.83	1	$12.83
1107	Active Outdoors Lycra Glove	xsm	$16.50	3	$49.50
				Subtotal:	**$62.33**
				Sales Tax:	**$4.05**
				Order Total:	**$66.38**

Invoice

Date: December 27, 2002
Invoice Number: 1246

Mountain Bikes

To: City Cyclists
7464 South Kingsway
Suite 2006
Sterling Heights, MI 48358
USA

Order Date: January 30, 2001
Required Date: January 30, 2001
Ship Date: January 30, 2001
Ship Via: Pickup

Sales person: Margaret Peacock

Product	Product Name	Description	Unit Price	Quantity	Line Total
1108	Active Outdoors Lycra Glove	sm	$14.85	3	$44.55
103151	Endorphin	15	$899.85	1	$899.85
101152	Descent	15	$2,939.85	1	$2,939.85

Subtotal:	**$3,884.25**
Sales Tax:	**$252.48**
Order Total:	**$4,136.73**

Class Objectives

This class is a performance based instructional system. It is geared to provide you with the tools you need to build and distribute reports the quickest, most efficient way. After completing this course, you will be able to perform the following tasks:

- Plan and organize a report
- Create a new report
- Save and preview a report
- Navigate through the report
- Format and edit report objects
- Use a report style for formatting
- Add text objects to reports
- Add lines, boxes, and graphics images to reports
- Select specific data from a database
- Group, sort and summarize reports
- Use a Report Expert to create a report
- Set default options for the Crystal Reports program
- Create reports that pull data from multiple tables
- Use the Formula Editor to perform number calculations
- Create formulas that manipulate dates
- Modify string fields using powerful text functions.
- Conditionally format numbers with the Highlighting Expert
- Format sections on the report
- Use formulas to conditionally format any type of field
- Create summary reports for efficient analysis of data
- Add charts and customize how they look
- Distribute reports throughout your organization with Crystal's export feature
- Create geographical maps for charting
- Set up an ODBC connection to your database

About This Manual

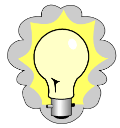
Each section of this manual contains objectives to provide you with the overall goals for the lesson. Lessons have descriptions of features and concepts followed by systematic directions for completing a specific task. Each section ends with a challenge exercise to help you practice the skills you learned in the lesson. Challenge exercises provide you with tasks to accomplish. Try to complete these exercises on your own.

As you work in this Training Guide, certain conventions are used to identify specific procedures. Use the following table as a guide:

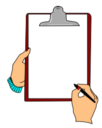
TRAINING GUIDE CONVENTIONS	
Item	**Illustrated As**
Menu Commands	Underlined letters for accessing menu commands are shown: Example: File/Open
Command Buttons	Commands in dialog boxes are shown as buttons: Example: ENTER
Categories, Radio Buttons, Text Boxes, Check Boxes	All options within dialog boxes are listed in italicized text: Example: the *Keep Group Together* check box the *Other* radio button
Keystrokes	Keyboard keys are indicated by uppercase text: Example: press ENTER Keyboard combinations are shown in uppercase text with a plus sign (+) between the keys that need to be pressed simultaneously. Example: press CTRL + S to save
Toolbar Buttons	Toolbar buttons are indicated by the button name and a graphic image of the button: Example: click the Print  button
Typing or File Selections	Text to be typed or file names to be selected are printed in bold letters: Example: type **Henry** select **grouping.rpt**
Exercises	Step-by-Step exercises in the text are indicated by bold text and the ❖ symbol. For example: ❖ **Exercise - Format Objects**

Tips, Notes, and Warnings

Tips, notes and warnings display with the following icons. Text for these additional comments display in bold and italics.



This icon indicates a TIP or shortcut.



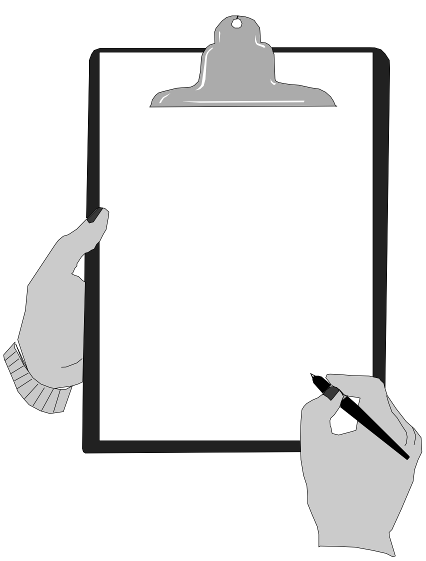
This icon points out a NOTE of additional information.

This icon calls attention to a WARNING or very important note.

Section 1:

Power Formatting and Formulas

NOTES



Lesson 1

Refresher Exercise

Lesson Objectives

After completing this lesson, you will be able to:

- **Plan and Create a report from a set of business requirements**
  Review the techniques needed to plan and create a report.

- **Add multiple groups to reports**
  Create groups within groups to subdivide your reports how you want.

- **Summarize different group levels**
  You can effectively summarize information at any group level or all group levels.

- **Insert simple lines and boxes for formatting**
  Make reports professional and attractive with graphical features.

- **Utilize the Repeated Group Header feature**
  Add a "Continued…" message when a group prints across pages

Review of Planning a Report

To make the report creation process efficient, you must plan the report. A little work up front before you ever open Crystal Reports can save you a lot of time putting the report together. It can also save problems caused by adding more tables to the report that can change the number of records displayed.

You must look at the business requirements for the report and decide what fields you need and the tables in which they are located. It is also helpful to look at things such as groupings, whether you need Cross-Tabs and what fields they contain, fields needed for formulas and selection criteria.

Suppose someone asks you to create a report based on the Xtreme Sample Database 9. Below are the business requirements for the report:

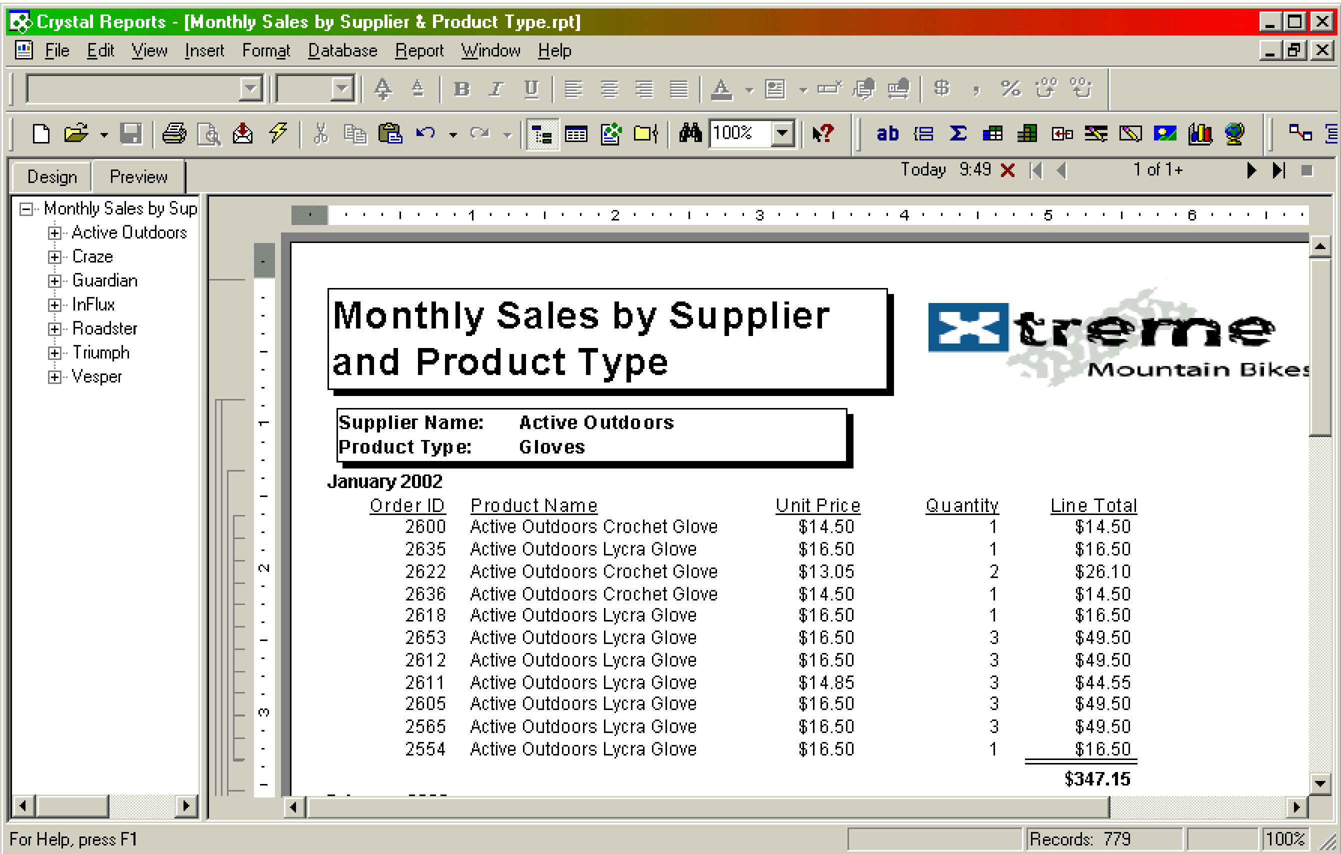
- The person requesting the report needs to see monthly customer sales by Supplier and Product Type. They want the Order ID, the Product Name, the line item Unit Price and Quantity and a total for the line items.

- They want the sales amounts summarized for each supplier, product type and month.

- They only need to see sales for 2002.

- Some of the groups are large enough to display on more than one page. They want the Supplier Name and Product Type repeated at the top of each page. If the group continues from the previous page, they want the word "Continued…" to print.

- The person requesting the report has supplied you with a printout of what the report should look like. See the sample on the next page.



To create this report, first determine which fields you need.

- For the Detail section, you need the Order ID field, Product Name field, the Unit Price field and the Quantity field.
- For the Line Total formula, you need to multiply the Unit Price field and the Quantity field.
- For grouping, you need the Supplier Name, the Product Type Name, and the Order Date.
- Finally, you need to select orders from 2002 based on the Order Date.

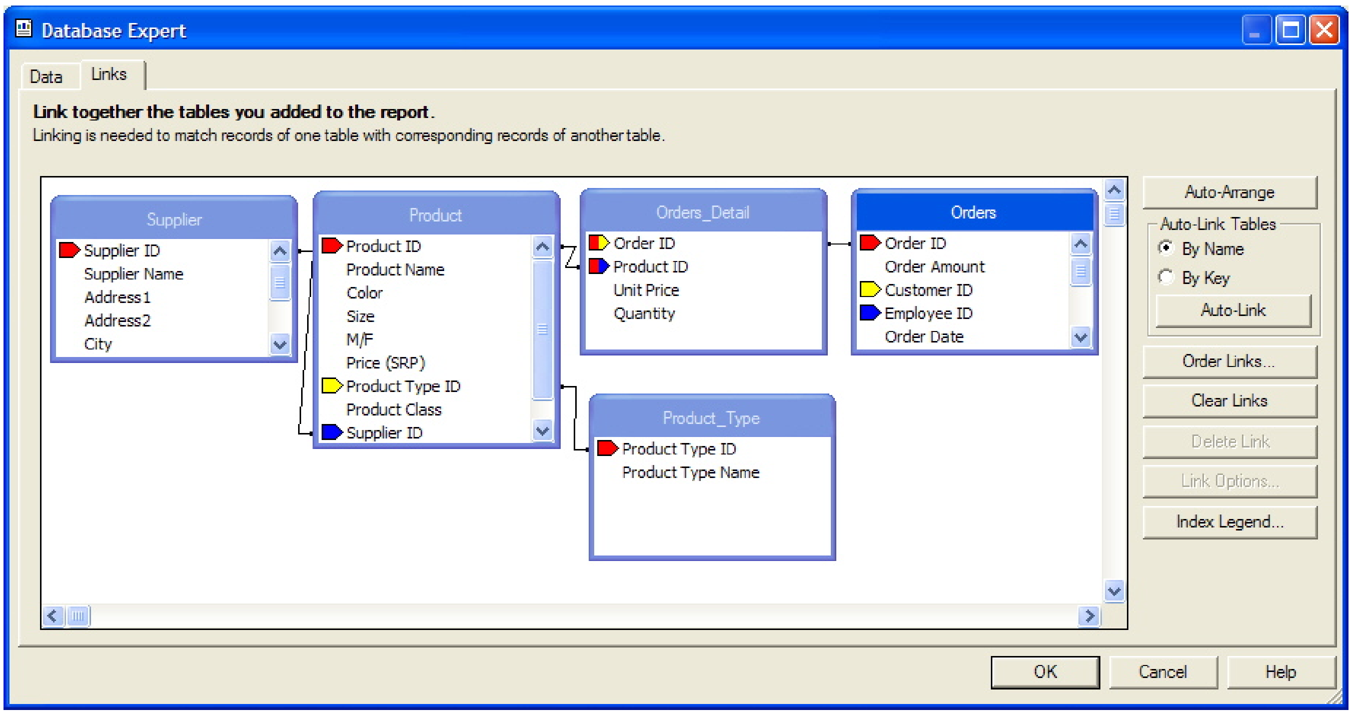
Next, decide which tables you need to add to get the required fields.

- The Supplier Name field is in the Suppliers table.
- The Product Name field is in the Products table.
- The Order ID and Order Date fields are in Orders.
- The Unit Price and Quantity fields are in Orders Detail.
- The Product Type Name field is in the Product Type table.

Since the Supplier Name is the main grouping, the Suppliers table should be the Primary table. From there you want to link Suppliers to Products with the Supplier ID field, link Products to Orders Detail with the Product ID field, link Orders Detail to Orders using the Order ID field, and, finally link Products to Product Type using the Product Type ID field.

Creating the Report

Since you have given this some thought and figured out the tables and the links, adding the tables in the correct order and creating the links is easy. The links should look like the following illustration:



Remember that you can add multiple tables to a report from the Database Expert. You work with links using the Links tab on the Database Expert. The Database Expert is accessed under the Database menu or by selecting the Database Expert button on the Expert Tools toolbar.

*The order in which the tables are displayed in the **Link tab** is partly determined by the order they are displayed in the **Selected Tables** section of the **Data tab** in the **Database Expert**. Order and links of the tables can be manually changed once they are displayed in the **Link tab**.*

Placing Fields on the Report

Remember that you have five ways of placing fields on a report. Select the field in the Field Explorer, then:

- Click the Insert button, then click in the report
- Double click the field, then click in the report
- Press ENTER, then click in the report
- Drag the field to the report
- Right mouse click, choose Insert to Report from the short cut menu, then click in the report

Remember, when you place a field in the Details section, Crystal Reports adds a detail field title in the Page Header section and aligns the field and field title with a guideline. You can drag the guideline marker in the ruler to move the field and its title together.

Now that you have planned the report, you are ready to use Crystal Reports to create the report.

❖ Exercise 1.0 - Begin the Monthly Sales by Supplier and Product Type Report and Link the Tables Needed

1. Start a new report *as a blank report*. Open the **Create a New Connection** folder then the **ODBC (RDO)** data sources and the **Xtreme Sample Database 9** data source. No password is needed to access this database. Add the tables indicated by the business requirements. Right click on the data source and select **Add to Favorites** as we shall be using this database throughout the class.

2. The **Auto-Link** feature should link the tables automatically. Clear the links and do them yourself.
   When you are finished the links should look like the illustration on the previous page.

3. Add the appropriate fields to the **Details** section.

4. Change the **Printer Setup** to a Portrait page layout, if necessary. Change the margins to be .5” on all four sides.

Creating the Formulas

You are also going to need two formulas for this report. It can be helpful to write out the formulas during the planning stage to be sure that you have accounted for all necessary fields. The formulas you need for this report are as follows:

@Line Total

{Orders_Detail.Unit Price} * {Orders_Detail.Quantity}

@Continued

If InRepeatedGroupHeader then " Continued...."

Remember that formulas are created from the Field Explorer dialog box. Select Formula Fields, and then click the New  button. After naming the formula, the Formula Editor dialog box opens providing you with three lists to select fields, functions and operators.

❖ Exercise 1.1 – Create the Formulas and Add to the Report

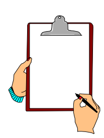
1. Select **Formula Fields:** in the **Field Explorer** dialog box, then click the  button.

2. Name the formula **Line Total** and select the **Use Editor** button.

3. Create the formula shown above.

4. Add the formula to the report **Details** section after the **Quantity** field.

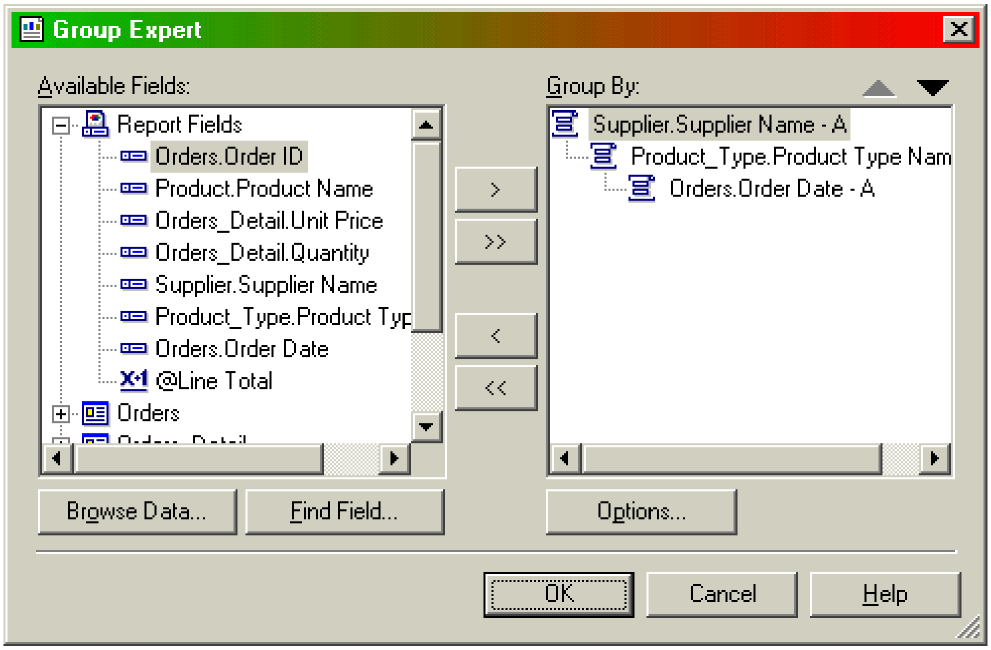
5. Create the **Continued** formula, but do not add it to the report yet.



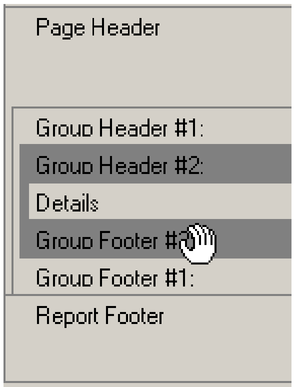
You will add this formula later to display a "Continued" message in the group header. NOTE: the InRepeatedGroupHeader function is a function in the Print State category. Click the + sign to the left of Print State in the middle list in the Formula Editor, and then scroll to find the function. Double click the function to add it to the formula.

Advanced Grouping

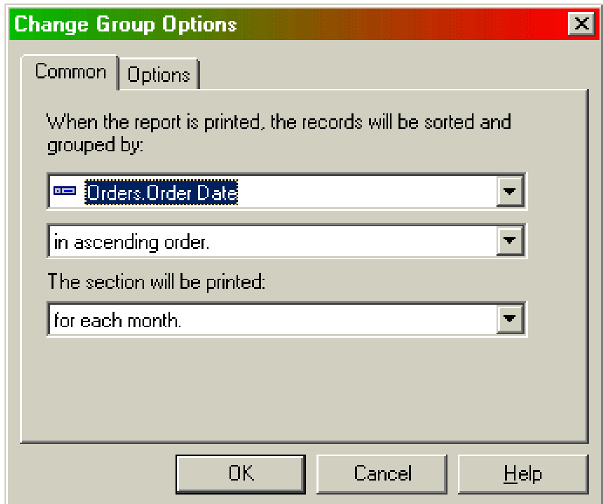
You can group data by using the Insert/Group… command or by clicking the Insert Group button on the Insert Tools toolbar or the Group Expert button on the Expert Tools toolbar. This report requires an Order Date group nested inside a Product Name group, nested inside a Supplier Name group as shown in the Group Expert illustration below.



As you create groups, Crystal Reports nests each group inside the previous one you created. However, you can reorder groups in any order you want. To reorder groups, click the Group Header section name at the left of the Design screen, for the group you want to move. The group header and footer sections are highlighted. Drag the group to the new location. The mouse pointer changes to a grabbing hand as you drag. In the Group Expert shown above you simply move the group headers using the arrows in the top right of the window



TIP: When you group on a date field, Crystal Reports allows you to define the period for which the date is broken down; i.e. monthly, yearly, quarterly, etc. A third drop-down list appears automatically in the Insert Group options dialog box allowing you to specify when the group is printed.



Remember that you can summarize any field by RIGHT clicking it, then choosing Insert Summary… You must specify the type of calculation you want Crystal Reports to perform and the group at which you want the summary to appear.

❖ Exercise 1.2 – Create groups and summarize the Line Total field

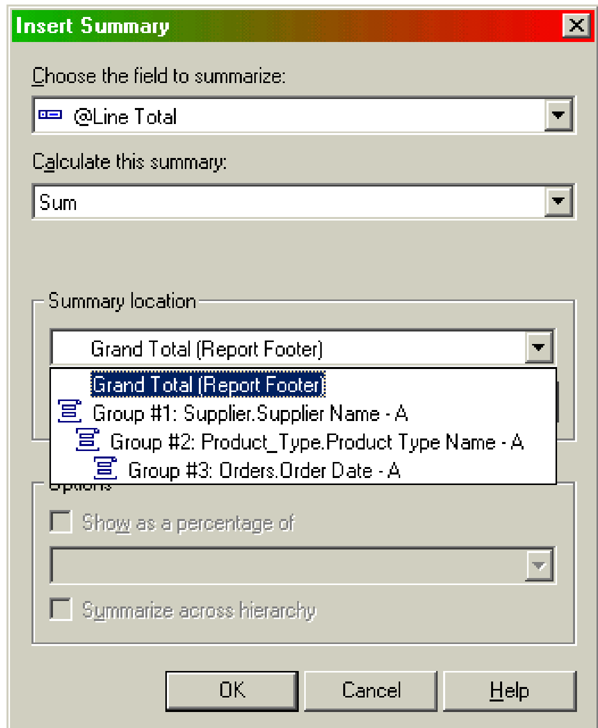
1. Open the **Group Expert** window using the **Group Expert** button. Create a group on the **Product Type Name** field. Turn on the *Repeat group header on each new page* feature by selecting the **Options** button

2. Create a second group on the **Supplier Name** field. Also, turn on the *Repeat group header on each new page* feature.

3. The report requirements call for the report to display information by Supplier Name and then Product Type. You need to change the order of the groups. Select the **Product Type Name** field in the **Group By** window of the **Group Expert**. Select the Down Arrow to reorder the groups.
   The Supplier Name should be the first group in the Group Expert with the Product Type name nested underneath.

4. Create a third group on the **Order Date.** Using the **Options** button and choose to print the section for each month.

5. Create a summary for the Line Total column. You will need to do this three times, once for each group.
   All the summary fields should automatically line up on the guideline to which the field is attached.



Selecting Certain Records

Remember that Crystal Reports pulls *all* records from the database unless you filter the records based on some criteria. The business requirements for this report requests only records from the year 2002. To specify this, use the *between* operator and specify all records with an order date range beginning 01/01/02 and ending 12/31/02.

❖ Exercise 1.3 – Select records with an Order Date in 2002

1. Make sure there are no fields selected on the report, and then click the **Select Expert** button on the Expert Tools toolbar.

2. Choose the **Order Date** field.

3. Choose the *is between* operator.

4. In the first drop-down list, select **1/1/2002 12:00:00AM**

5. In the second drop-down list notice that **12/31/2002** is not available for selection. Choose any date and change the entry to read **12/31/2002 12:00:00AM**.

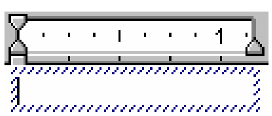
6. At this point save and preview the report. Name the report **Monthly Sales By Supplier & Product Type**.

Helpful Hints for Formatting the Report

Adding and Working with Text Objects

Once you have created a group, you can delete the group name field from the group header without affecting the grouping. You can delete the Supplier Name and Product Type Name fields from Group Headers #1 and #2, then create a text object in Group Header #2 that contains the Supplier Name and Product Type.

Remember that text objects can contain text you type and fields from the report. You can add a field to a text object by dragging the field from the Field Explorer dialog box into the text object. Once you have a field selected, the mouse pointer changes to an arrow with a + sign when you are pointing into a text object. You can also move a field from the report into a text object. The text object must be in Edit Mode (flashing insertion bar in the text box and a small ruler in the horizontal ruler at the top of the report).



Also remember that you can format all or part of a text object:

- To format the entire text object select the object (there are handles around the object) then apply the formatting.

- To format part of a text object, double click the object to enter Edit Mode, and then select the part you want to format. When the part is highlighted, apply the formatting.

- To format a field inside a text object, double click the object to enter Edit Mode, and then click on the field. Once the field is highlighted, apply the formatting.

Hiding and Suppressing Sections

Remember that you can hide or suppress sections in a report by RIGHT clicking on the section name in Design view and choosing the appropriate command. Hiding a section causes the section details to not display in the Preview tab. However, users can double click summaries to display hidden details. Suppressing a section causes the section to not display without any options for viewing it. A hidden or suppressed section will be grayed out in the Design tab.

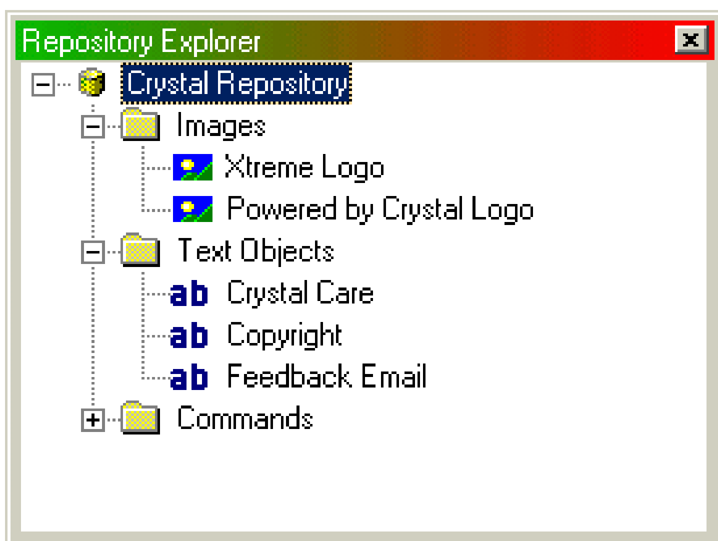
Guidelines

As a reminder, you can add horizontal guidelines to the rulers at the left of each section and snap the tops or bottoms of objects to the guidelines to horizontally align them.

❖ Exercise 1.4 - Format the Report

1. Return to the **Design** view. It is easier to add and format objects from **Design** view.

2. Add the title and format as you see it in the sample report on page on page 16. Add the **Xtreme** logo to the right side of the **Report Header**. You may add it from the **Repository**. If the **Repository Explorer** is not showing click on the explorer button and insert the image from the **Repository Explorer**.



3. Delete the **Group #1 Name** and **Group #2 Name** fields from **Group Headers #1 and #2**.

4. Using the sample report, create a text box in **Group Header #2**. Type the text **Supplier Name:** then add the **Group #1 Name: Supplier Name** field from the Group Name fields in the Field Explorer. On the second line of the text object type the text **Product Type:** then add the **Group #2 Name: Product Type Name** field. Format all objects in the text box to Bold. You may need to resize the text box. See the sample on the next page for final formatting.
   HINT: Format the text object border rather than drawing a box around the object. It is easier and you only have one object to deal with plus if you resize the text object the border will grow with it whereas a box will not.

5. Hide **Group Header #1**. It no longer contains anything you need to see in the report.

6. Add a text box to the **Group Footer #1** with the text **Total for this supplier:**. Move the summary field into the text object. Format the entire object to be Bold, 14 pt., and right aligned.

7. Add a text box to the **Group Footer #2** with the text **Total for this product type:**. Move the summary field into the text object. Format the entire object to be Bold and right aligned.

8. Format the summary field in the **Group Footer #3** section to have a top double line border. Make sure the summary field and text boxes are all snapped to the guideline on their right edges so they line up.

9. Snap the field titles to a horizontal guideline. Use the guideline to move the field names from the **Page Header** section to the **Group Header #3** section under the Group #3 Name field. Format the titles so they have no underline.
   By placing the titles in this section, the titles will reprint with each month's data.

10. Format the **Order ID** field to display without a comma. Format the **Unit Price** field, the **Line Total** formula, and all the summary fields to have a floating $.
    HINT: Refer to the bullets on page 19 for directions on how to format the summary fields inside the text boxes.

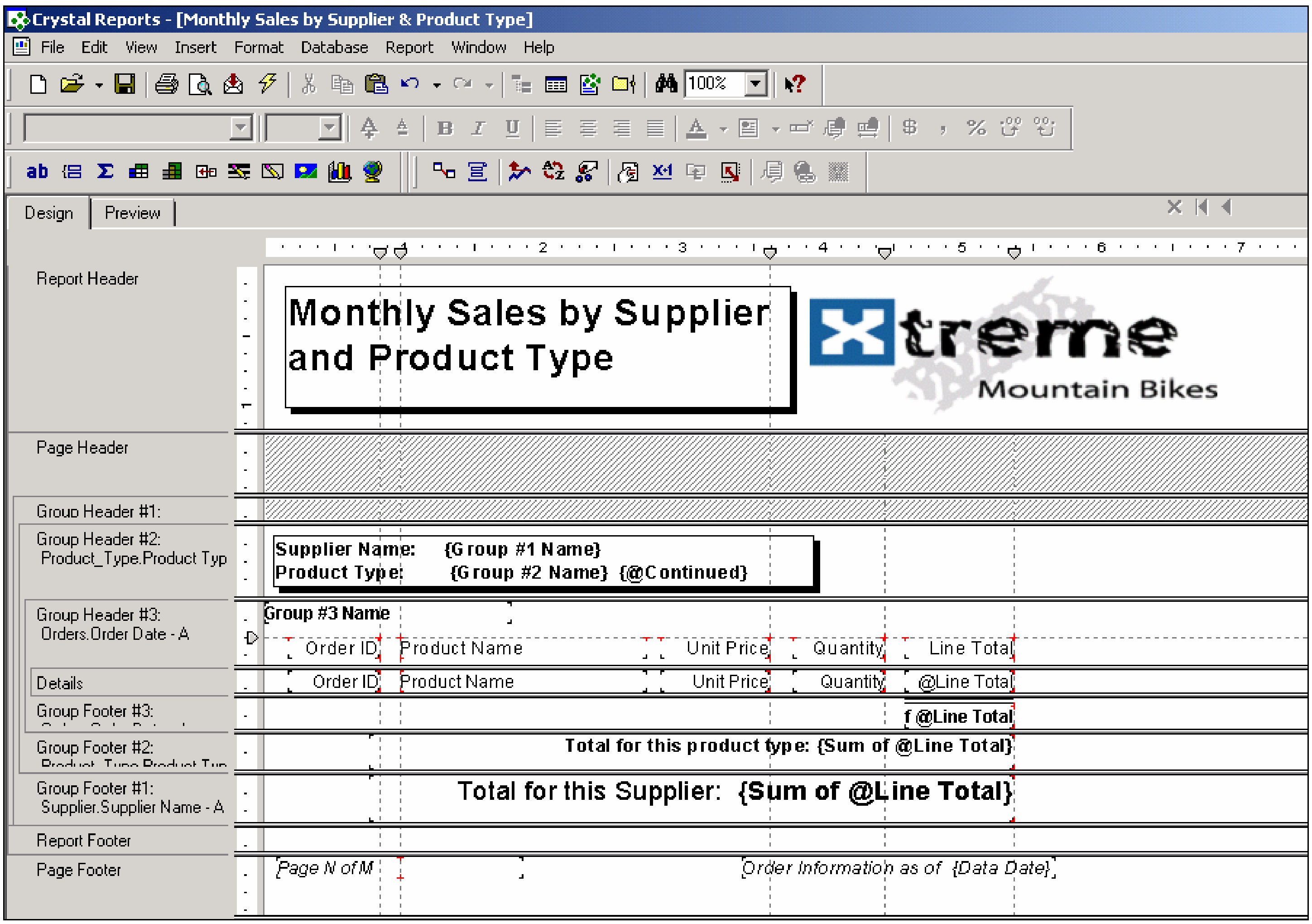
11. Depending on how you have the default formats set for **Date/Time** fields; you may need to reformat the **Group #3 Name** fields. The date should look like this: **January 2002**.

12. Add a text box to the left of the **Page Footer**. Use **Special Fields** to indicate **Page N of M**. Add another text box to the right of the page footer that reads **Order information as of.** Add the **Data Date** special field after the text. Format both boxes to be italics.

13. To add the word "**Continued…**" for a product or supplier group that is continued on an additional page, place the **@Continued** formula field in the text object that contains the Supplier and Product Names.

14. Save and preview the report. Do not forget that you can navigate easily through the report using the **Group Tree** section at the left of the screen. Just click the group you want to view. Close the report.

The Design view of the report should be similar to the following illustration:



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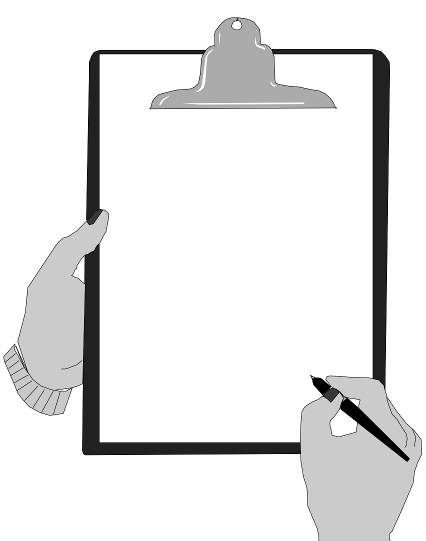

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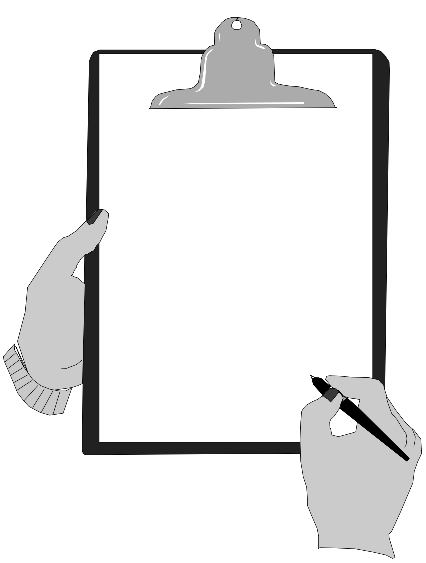


Lesson 2

Power Formatting with Multiple Sections

Lesson Objectives

After completing this lesson, you will be able to:

- **Create multiple sections**
  Expand your formatting power by learning how to add sections to the report.

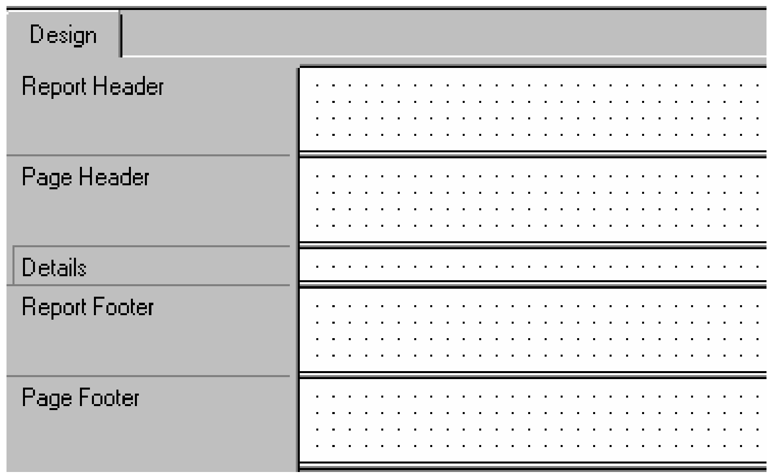
- **Underlay a section**
  Display a graphic or chart beside the data it represents by utilizing the underlay feature.

- **Use multiple sections for conditional formatting**
  Add additional sections that only display under certain conditions.

- **Use DrillDownGroupLevel in summary reports for formatting**
  Hide details and display column headings for some drill down levels and not others.

Using Multiple Sections in Reports

By default, Crystal Reports gives you five design areas to use when building your report: Report Header, Page Header, Details, Report Footer, and Page Footer.



Each area contains only a single section when you first begin your report. There are certain reporting tasks that you can perform most efficiently by creating multiple sections within an area, such as:

- Putting conditional messages in form letters
- Formatting objects/sections differently based on field values
- Alternating background colors on a row-by-row basis
- Eliminating blank lines when fields are empty
- Adding blank lines under specific conditions

When you understand the power of multiple sections, you discover many ways that you can use them to produce the report effects you want. The following are some ideas for using multiple sections:

Suppose you want to display current order amounts in the Details section. If the customer has outstanding amounts you want to display them as well. You add an additional Details section b, and conditionally format to display only if there are outstanding order amounts.

You are printing an employee listing grouped by Employee Name. You have information on each employee, including address, telephone, start date, and sales for the last month. You also have a field that displays the employee's picture that you want to display beside the printed data. You cannot put it in the Employee Name group header because it prints above the rest of the data and takes up too much space. So you create a second group header section, put the picture there, and then underlay the second section under the Details for each employee.

You need a single page summary report of the top twenty customers. Included in the report, you need a graph that shows each region's percent of total sales. There is not enough room to print the graph above or below the customer listing. You can put the graph in a Report Header b section and underlay it under the Details section to print the graph beside the data.

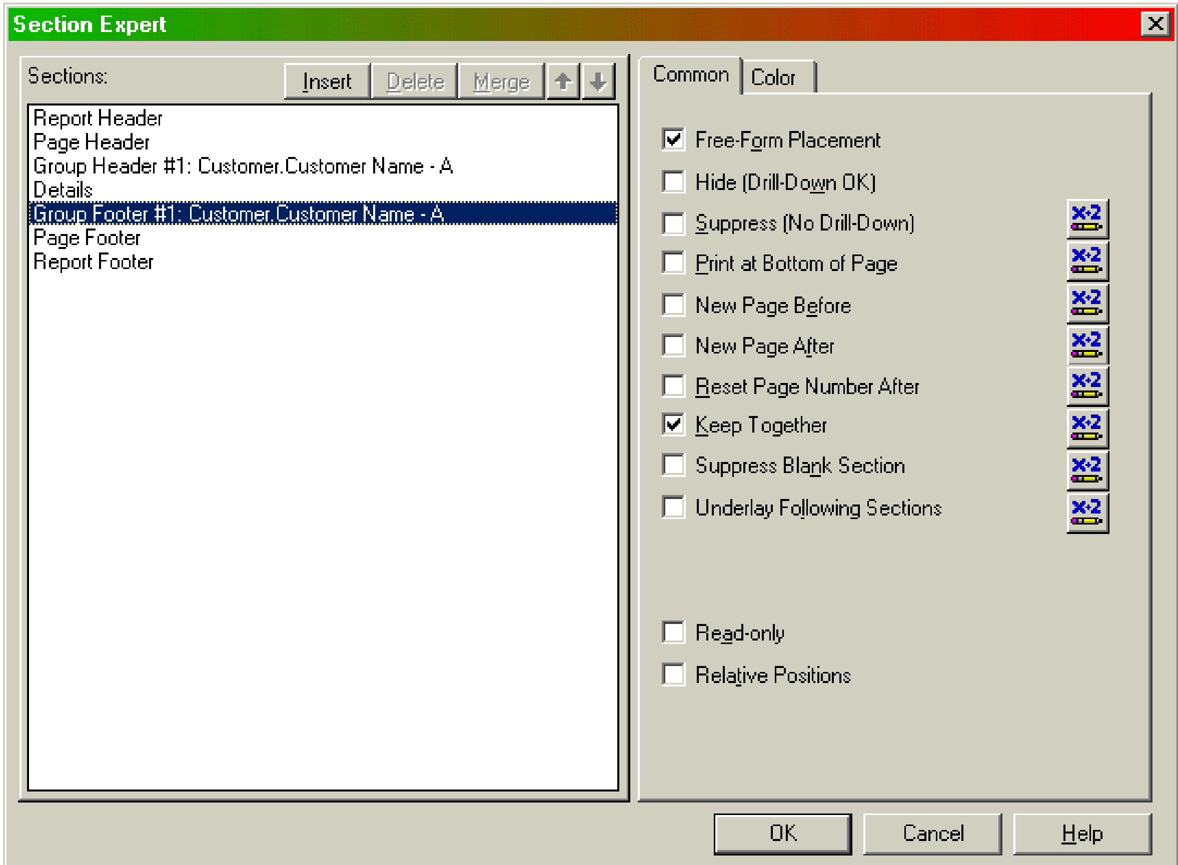
Your report prints customer invoices and a list of the orders in the last month. You want to include a nice letter to thank paid up customers for keeping their account current. For overdue customers, you want a more forceful letter asking them for payment. You can create two Group Header sections and conditionally suppress each one depending on the condition of the account. The Detail section would show all orders that have not been paid along with their due dates.

These are only some ideas for using multiple sections. You are going to try some of these ideas in following exercises.

Using the Section Expert to Work with Sections

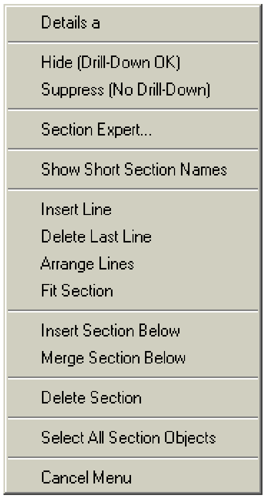
In the Section Expert, you can easily insert, merge and delete sections. You can also move sections within an area and conditionally format sections. Remember, you can open the Section Expert in three ways:

- Choose Report|Section Expert…
- Click the Section Expert button  on the Expert Tools toolbar
- RIGHT click the section name you want to format, then choose Section Expert from the shortcut menu



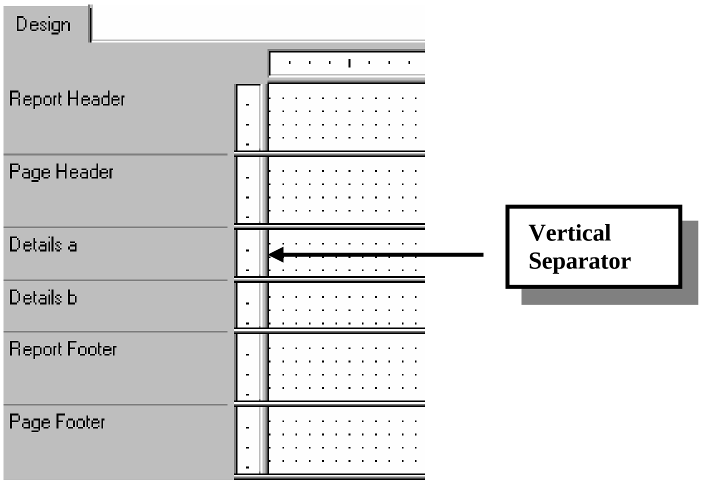
In the Section Expert, you can select the area with which you want to work in the *Sections:* list, and then click the Insert, Delete, or Merge buttons to manipulate additional sections in that area. The arrow buttons allow you to move sections within an area.

You can also perform all these section procedures from the Section shortcut menu. RIGHT click on the left side of the screen where you see the section name of the section you wish to change. The shortcut menu contains commands for inserting, merging, deleting and moving sections.



WARNING: If there is currently only one section in an area, the Merge, Move and Delete commands do not display. You only see the Merge command if you RIGHT click on a section that has another section of the same type below it.

Crystal Reports has a true shortcut for inserting a section below an existing section. Left click on the vertical separator bar in the section you wish to add. Hold down the mouse button until the mouse pointer changes to a double-headed arrow with a single line horizontally separating the arrows. Drag the line up or down and release. This method of inserting a new section keeps all the formatting from the section above.



❖ Exercise 2.0 – Insert an Additional Report Header Section

1. Create a report of Last Year's Sales by Country using the **Top Customer** view in the **Xtreme Sample Database 9** data source. Save and name the report **LYS by Country.**

2. Group by **Country**.

3. Insert the **Customer Name** and **Last Year's Sales** fields into the **Detail** section. Shorten the fields and move them to the left side of the report.

4. Summarize the **Last Year's Sales** field. Move the **Group #1 Name** field from the **Group Header** into the **Group Footer**.

5. Change the column title for the **Customer Name** to **Country**.

6. Hide the **Group Header #1** section and the **Details** section.

7. Place a text object into the **Report Header** section with the title **Last Year's Sales by Country**. Format the title like the illustration.

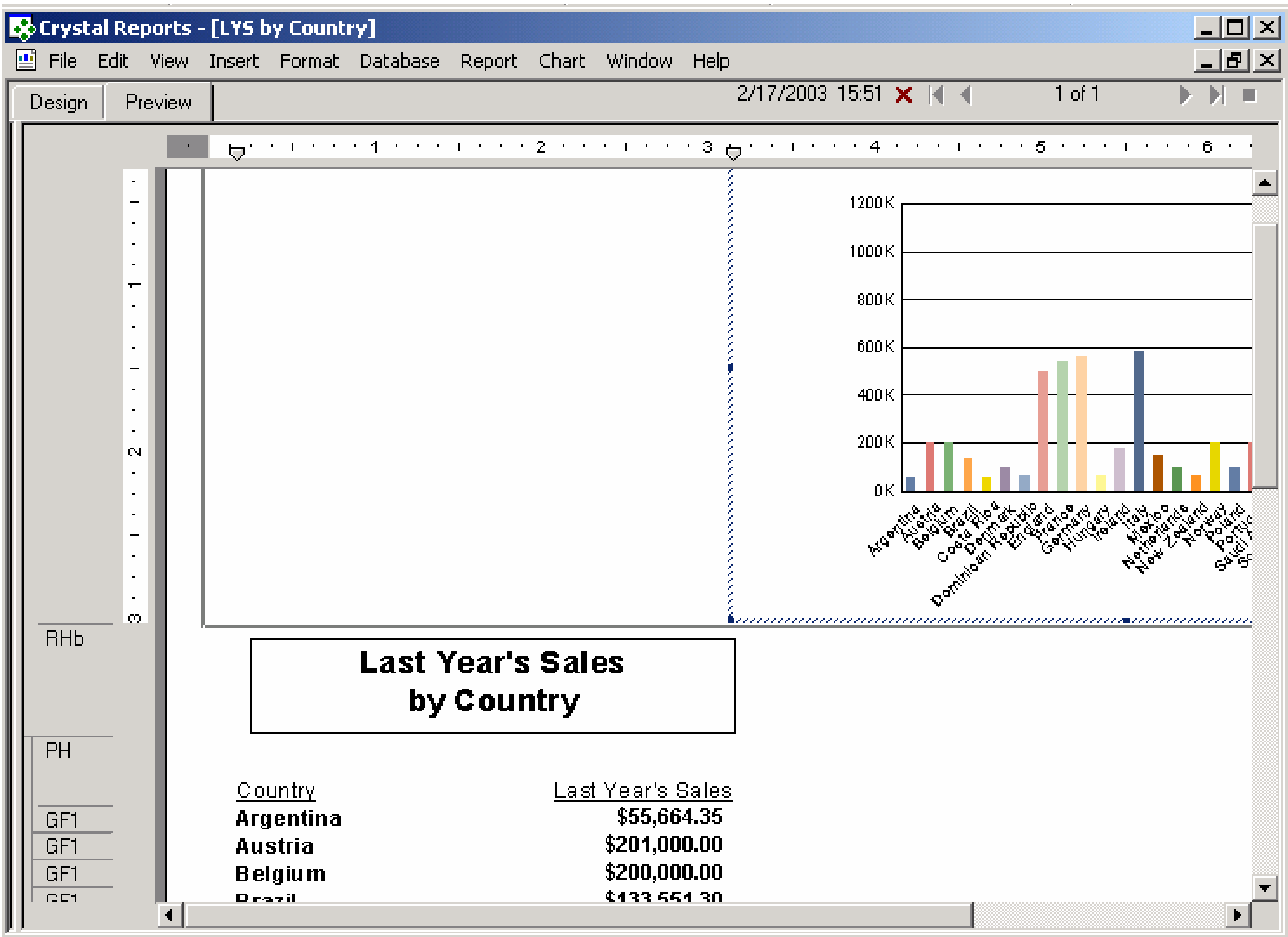
8. Create a bar chart to display in the **Report Header**. Open the **Chart Expert**. Turn off **Automatically set chart options** in the **Type** tab. On the **Data** tab, graph the groups on change of **Country**. Set the value to **Sum of Last Year's Sales**.

9. In the **Options** tab, set the *Bar Size* to average and turn off the Legend. In the **Text** tab, turn off the *Auto-Text* titles and delete all the text in the labels. When finished, click OK.
   Note: Notice the chart is placed in a Report Header section of its own.

10. After Crystal Reports places the graph in the report, move it to the right.

11. Save and preview the report.

The report should be similar to the following illustration:



The report would look better if the graph displayed beside the records. You can underlay the Report Header to accomplish this. However, if you underlay the entire Report Header, then the title also displays under the customer information. If you underlay the report section with the graph the title section will also underlay. We need to switch the title to Report Header a, the graph to Report Header b. We then underlay Report Header b.

12. Return to **Design** view.

13. Place the mouse pointer in the left area of the window and select **Report Header b**. Your mouse pointer should change to a hand and the section should be dark gray. While continuing to hold the left mouse button, move the hand up to **Report Header a.** Release the left mouse button. *This easily rearranges the section order. The title now displays in Report Header a and the graph displays in Report Header b.*

14. RIGHT click the section name for **Report Header b**, then choose **Section Expert**.
Notice the Section Expert now displays both Report Header sections.

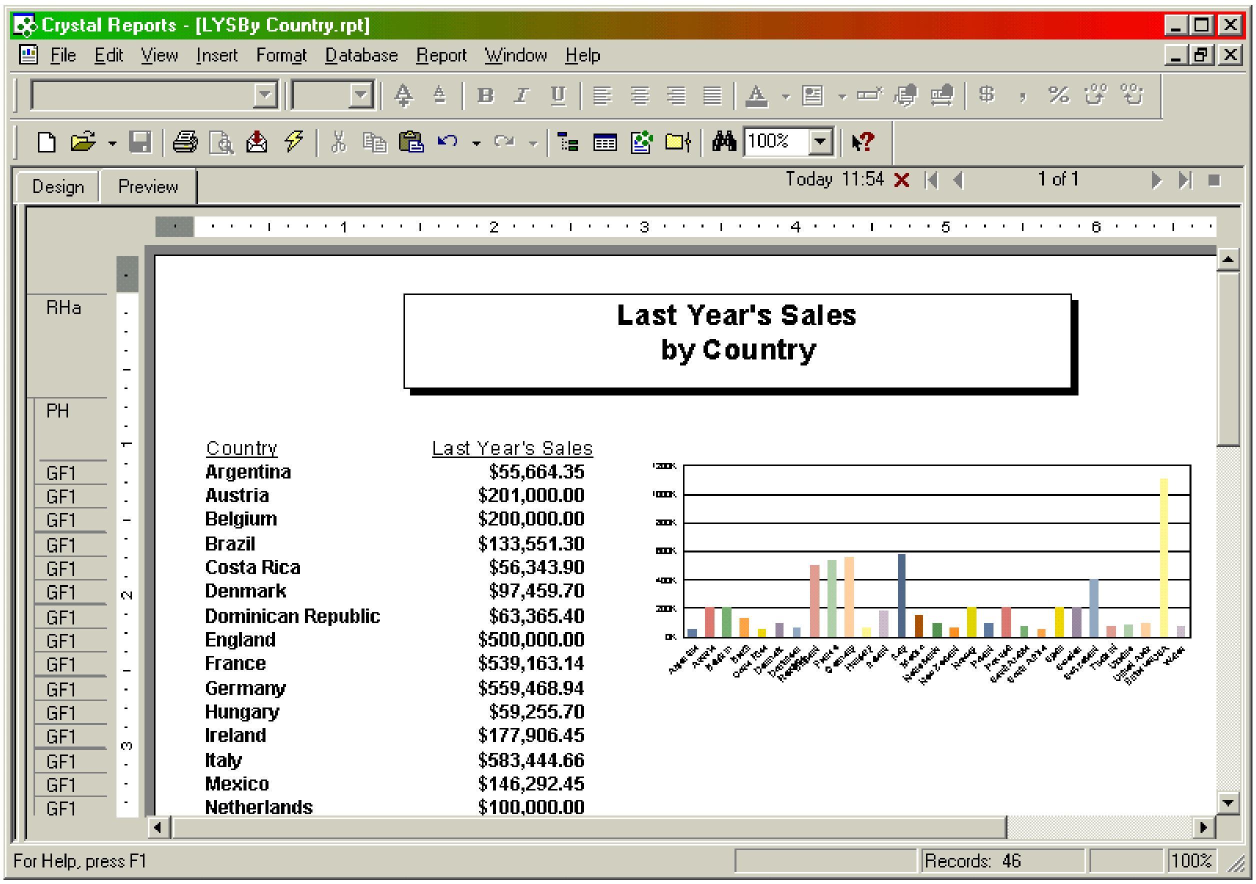
❖ Exercise 2.1 – Underlay a Section

1. Click the *Underlay Following Sections* check box, and then click **OK**.

2. The use of a second Report Header section also lets you center the report title without the under laid text printing on top of it. Move the title text object to the center of the Report Header a. Resize the title as shown in the sample.

3. Save and preview the report.

The report should look like the following illustration:



Conditionally Formatting Multiple Sections

Now that you have a nice looking sales summary report, suppose you want to include a congratulations message to those countries' sales reps that collectively sold more than $500,000. You want to display the message directly under the name and sales figure for the county.

The country name and sales figure are located in the **Group Footer** section. If you place the text message in the same **Group Footer** section underneath the field objects, it will create additional spacing for each group when the text message is suppressed.

To solve this problem, you can add another Group Footer section, add a text object with the message in **Group Footer #1b**, and then conditionally format to suppress this section if the **Sum of Last Year's Sales** field is less than 500000.

❖ Exercise 2.2 – Conditionally Format Multiple Sections

1. Return to **Design** view.

2. RIGHT click the **Group Footer #1** section name, then choose **Insert Section Below**.

3. Add a text object to the **Group Footer #1 b** section.

4. Type **Congratulations to the sales representatives for**. Select from the **Field Explorer**, the **Group #1 Name Country** field and place it into the text object. Continue to type **You have each won an all expense paid trip to St. Thomas!**
   Note we have inserted a group name field so that the text reads with the correct country inserted.

5. RIGHT click the **Group Footer #1 b** section name, then choose **Section Expert**.

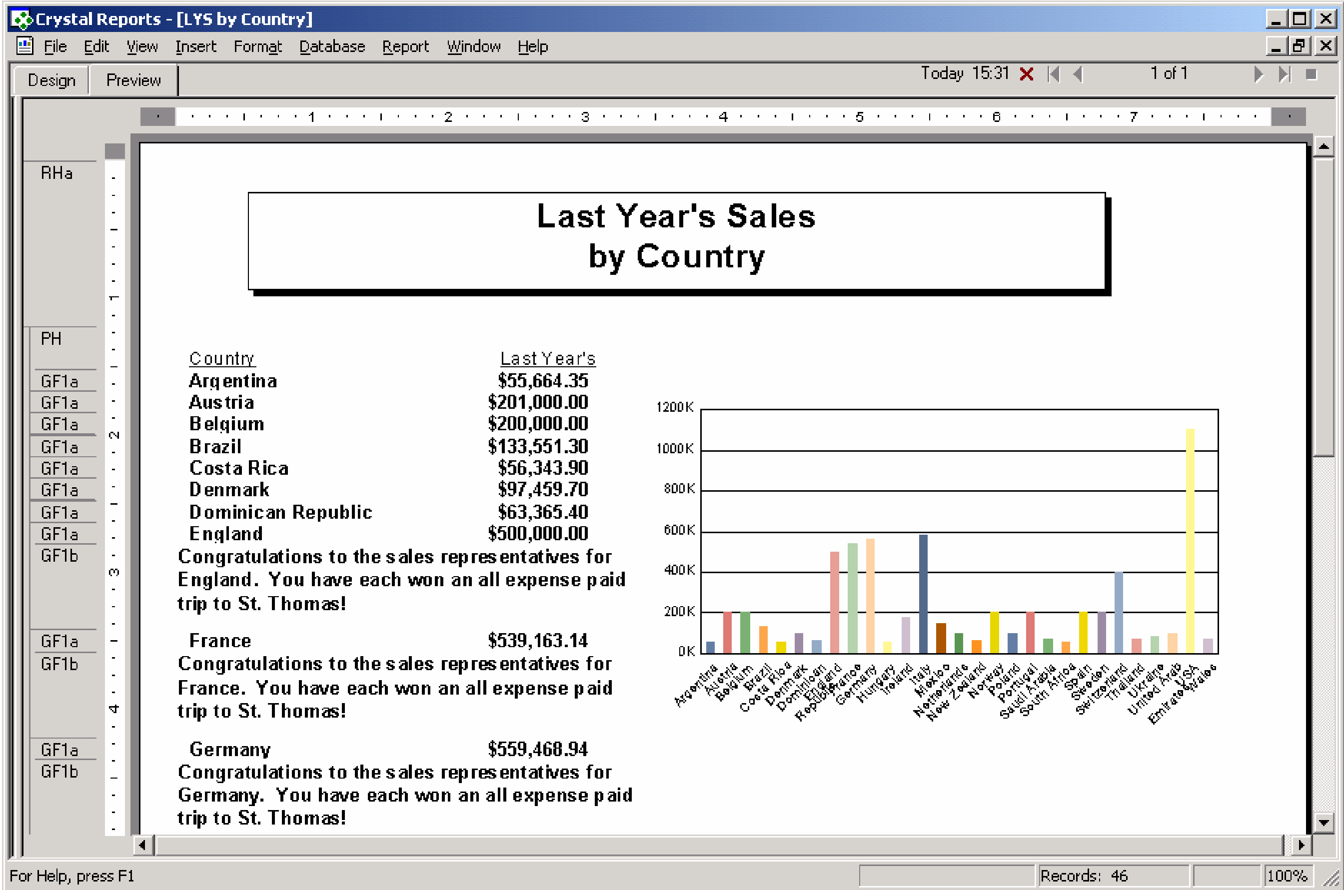
6. Click the  button after the *Suppress (No Drill Down)* check box.

7. Enter the following formula:

   **Sum({Top_Customers.Last Year's Sales},{Top_Customers.Country})
   < 500000**

8. Select the **Save and Close** button in the **Format Formula Editor**. Close the **Section Expert**. Save and preview the report.
   The message should only appear for those countries that have a Sum of Last Year's Sales equal to or over $500,000.

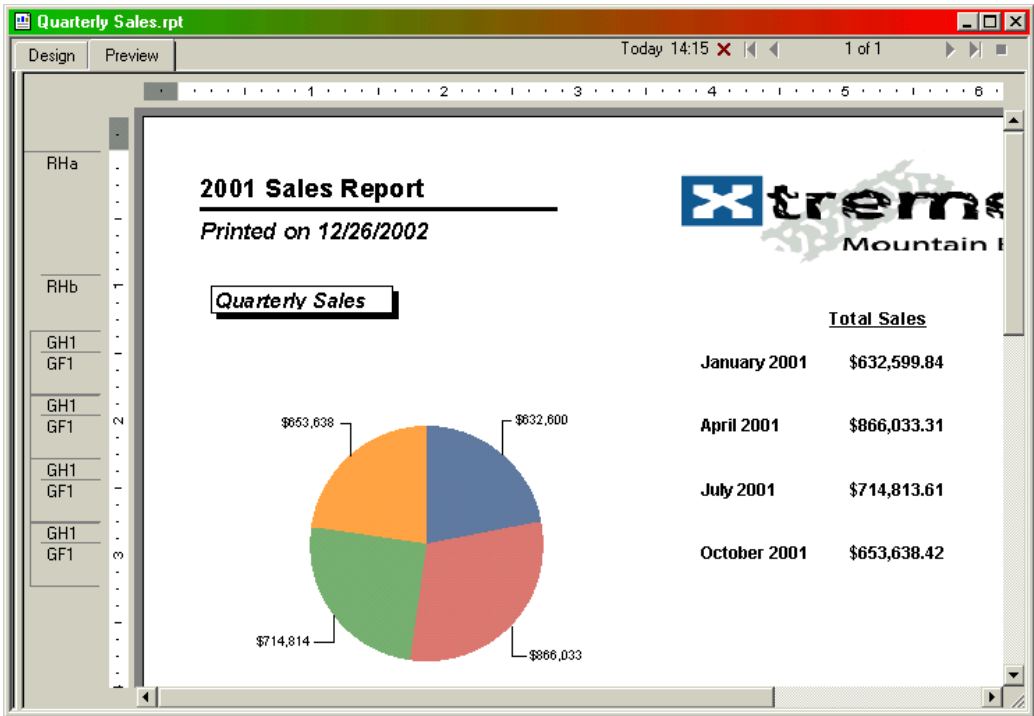
9. Close the report. Your report should look like the sample.



Crystal Reports - [LYS by Country]
File Edit View Insert Format Database Report Window Help
Design
Preview
Today 15:31
1 of 1
RHa
PH
GF1a
GF1b
Last Year's Sales
by Country
Country
Last Year's
Argentina $55,664.35
Austria $201,000.00
Belgium $200,000.00
Brazil $133,551.30
Costa Rica $56,343.90
Denmark $97,459.70
Dominican Republic $63,365.40
England $500,000.00
Congratulations to the sales representatives for England. You have each won an all expense paid trip to St. Thomas!
France $539,163.14
Congratulations to the sales representatives for France. You have each won an all expense paid trip to St. Thomas!
Germany $559,468.94
Congratulations to the sales representatives for Germany. You have each won an all expense paid trip to St. Thomas!
1200K
1000K
800K
600K
400K
200K
0K
For Help, press F1
Records: 46
100%

Challenge Exercise – Formatting with Multiple Sections

Suppose you need to create a Quarterly Sales report that shows the sales for last year (2001). This will be a summary report including a graph of the sales for each quarter and the sales totals for each employee. The finished report needs to look like the following illustration:



1. Start by creating a new report based on the **Xtreme Sample Database 9**. Add the **Employee** and **Orders** tables.

2. Use the **Group Expert** to insert a group on the **Order Date** field. Choose to print the group once for each quarter. Insert another group on the **Last Name** field.

3. Select only records in 2001 using the **between** operator.

4. Put the **Order Date** field and the **Order Amount** field into the **Details** section at the RIGHT side of the report. Put the field headings into **Group Header 2**.

5. Summarize the **Order Amount** field by **Order Date** (Group #1) and by **Employee Last Name** (Group #2). Format the summary fields to have currency symbols.

6. Move the **Group #1 Name** field into the **Group Footer #1** and position it close to the summary field. You may need to resize it. Do the same for the **Group #2 Name** field. Reformat the **Group #1 Name** field to look like the following: **January 2001**.

7. Add the title and the print date to the **Report Header** section. Format them like the example. Add the **Xtreme** logo from the **Crystal Repository** to the **Report Header**. To see the **Repository Explorer** click the repository explorer button
   HINT: Use two text boxes and draw a line between the two text boxes. If you want to resize the image you need to disconnect it from the repository before resizing.

8. Suppress the **Page Header** and hide the **Group Header #2** section, the **Group Footer #2** section and **Details** section.

9. Now you are ready for the extra sections. The report needs to have a subtitle and a graph of the sales by quarter. The subtitle needs to appear as a heading while the graph needs to display beside the summary values by using the underlay feature. Since both of these items must appear only once on the report, you need to put them in the **Report Header**. To accomplish both objectives, two additional **Report Header** sections are required.

10. Add a text object to **Report Header b** with the subtitle **Quarterly Sales.** Format the text to match the sample on the previous page.

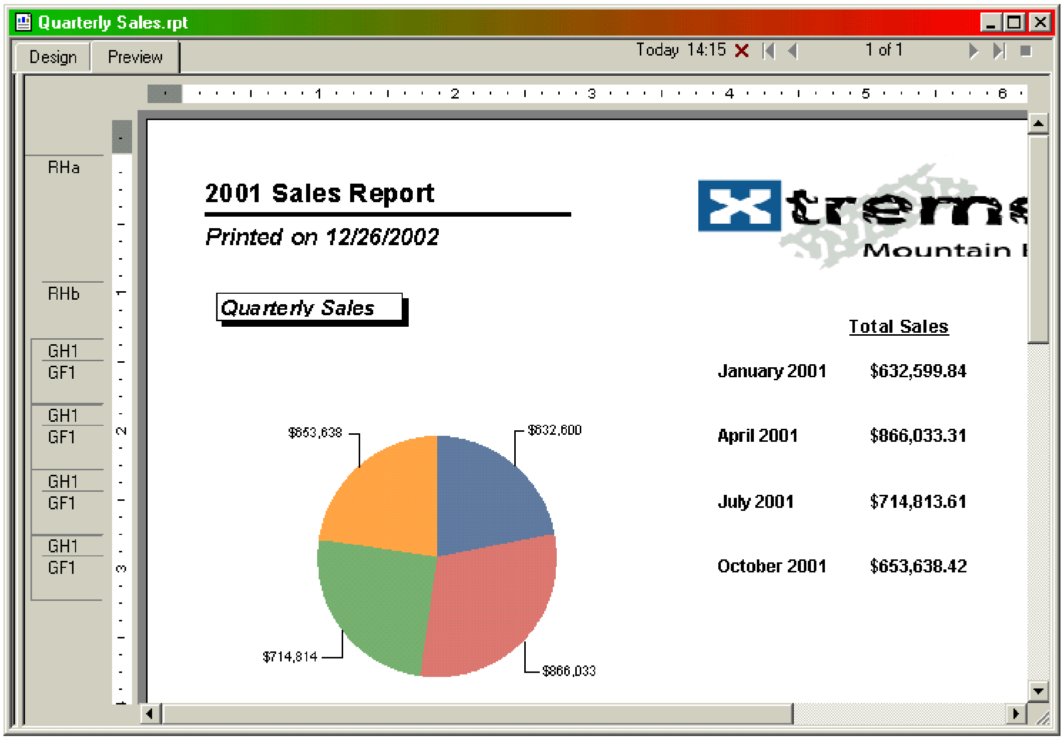
11. Add a pie chart that graphs the **Order Date** group on the **Sum of Order Amount**. Turn off *Automatically set chart options* on the **Type** tab. On the **Options** tab, display the values and format them to look like currency with no decimals ($1). Turn off the *Legend*. Turn off all the *Auto-Text* entries on the **Text** tab and delete any text.

12. Move the chart to the left of the **Report Header d** section and resize to be only 4” wide. Delete **Report Header a**.

13. Turn on the *Underlay following sections* command for **Report Header c** but not for **Report Header b**.

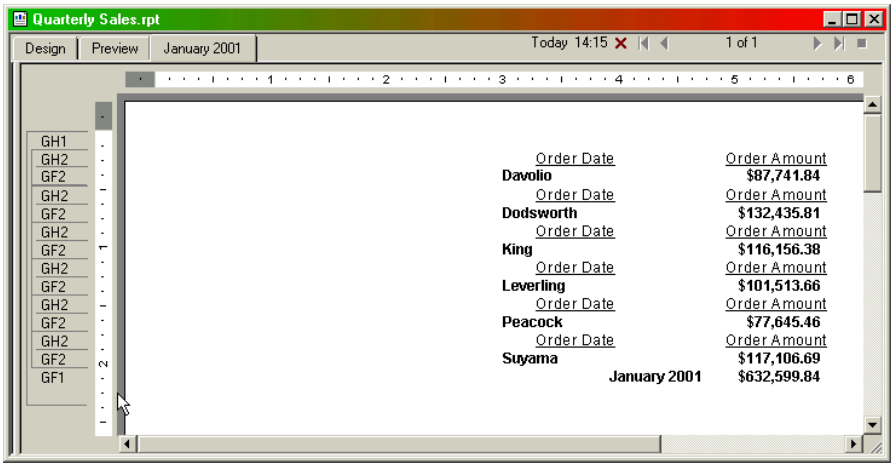
14. Finally you want to add a title for the quarterly sales figures. Add a text object to **Report Header b** that lines up with the **Order Amount** summary field. Type **Total Sales**. Format the box to be bold with a bottom single border.
HINT: Since the Order Amount summary field is a number and aligns on the right; use a guideline to align the text object and the summary field on their right edges. Right align the text in the text object.

15. Save this report and name it **Quarterly Sales**. Preview the report.

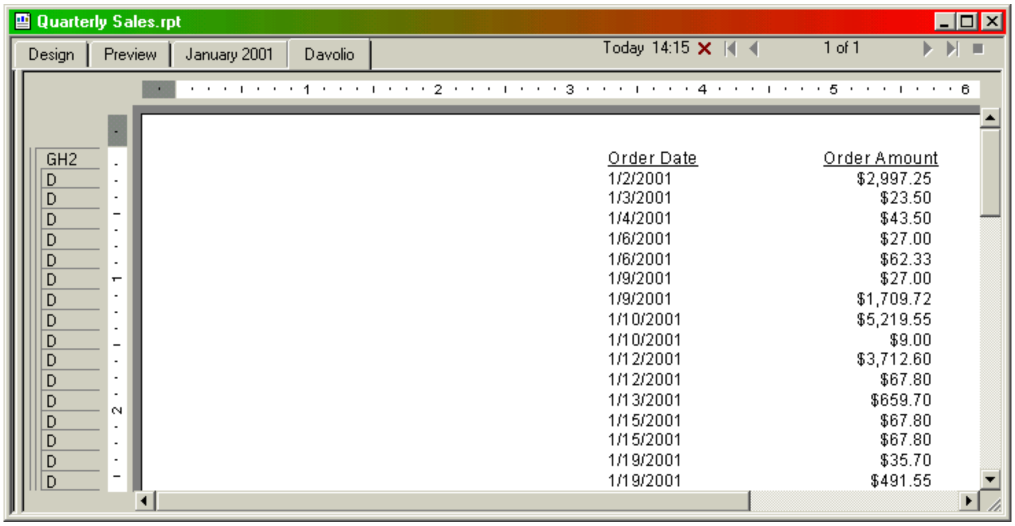


Challenge Exercise – Conditionally Formatting Using DrillDownGroupLevel

The Quarterly Sales report displays summary level information. However, when you created this report, you included the detailed information. The information in the Group #2 sections and the Details section was hidden in the previous exercise. If you drill down into the report by selecting the summary information for January 2001, you will notice that the report will display column headings for the first drill down. The drill down will look like the following example:

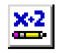


Obviously we do not want the column headings to appear at this level of detail. However, we do not want to delete them, because they will serve a useful purpose when you drill down to the order details for each employee. In order to prevent the column headings from appearing at the first drill down, Crystal Reports 9.0 provides a useful formatting option called DrillDownGroupLevel. By using this function in conjunction with conditional suppression of a section, the column headings will display at the order detail level, but not at the employee summary level.



In this exercise, you will format the report to only display the column headings at the order detail level.

1. Return to the **Design** view. Right click on the **Group Header #2** name and select the **Section Expert**.

2. Locate the  button beside the *Suppress* option.

3. The *DrillDownGroupLevel* function is found in the **Print State** functions list. The formula for preventing the group level drill down for **Group Header #2** is as follows:

   DrillDownGroupLevel = 1

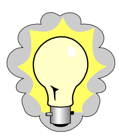
4. Save and close the **Format Formula Editor**.

5. Save and Preview the report.

6. On the **Preview** tab, double click the value for **January 2001**.
   Notice the information for January 2001 now displays the employees and their summary information. The column headings no longer appear at this level of detail.

7. Drill down to view the detail orders for Davolio. Notice the column headings appear above the order date and order amount columns.

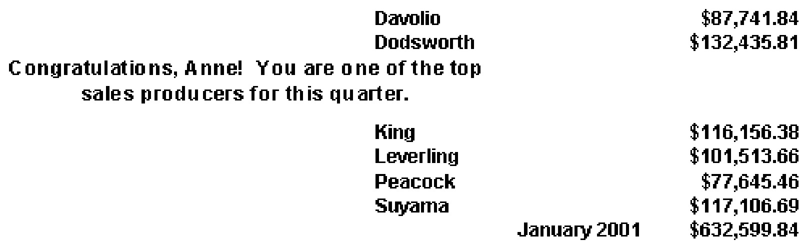
8. Save the report as **Quarter Sales with Drill Down** and close.



If you are unsure what the DrillDownGroupLevel value is for the group you are working with, create a formula with the DrillDownGroupLevel value in it and place it into the header. You will then see the value as you drill down. Once you know the value, simply place it into the Format Formula Editor as shown above to prevent the heading from displaying on drill down.

Challenge Exercise – Conditionally Formatting Multiple Sections

Suppose you also want to include a message in the report that congratulates all the sales reps with sales over $120,000 for each quarter. The message only displays when the sales person drills down on the quarter to see employee sales for that quarter. You only want the message to appear under the employee names meeting the top sales goals for that quarter. The results should look like this:



Since the sales per employee is a summary field, there is no way to compare it with summaries from other groups. So you need to add the message, then suppress it based on a combination of which quarter it is and the employee name.

1. Open the **Quarterly Sales** report and return to Design view.

2. RIGHT click the **Group Footer #2** section name at the left of the screen, then choose Insert Section Below.

3. Add a text box to the **Group Footer #2b** section. Type **Congratulations,** then insert the {Employee.First Name} field. Then type **! You are one of the top sales producers for this quarter.**

4. Resize the text object so it looks good to you.

5. Now you are ready to conditionally suppress the **Group Footer #2b** section. RIGHT click the **Group Footer #2b** section name, then choose **Section Expert**.

6. Click the  button after the *Suppress (No Drill Down)* check box.

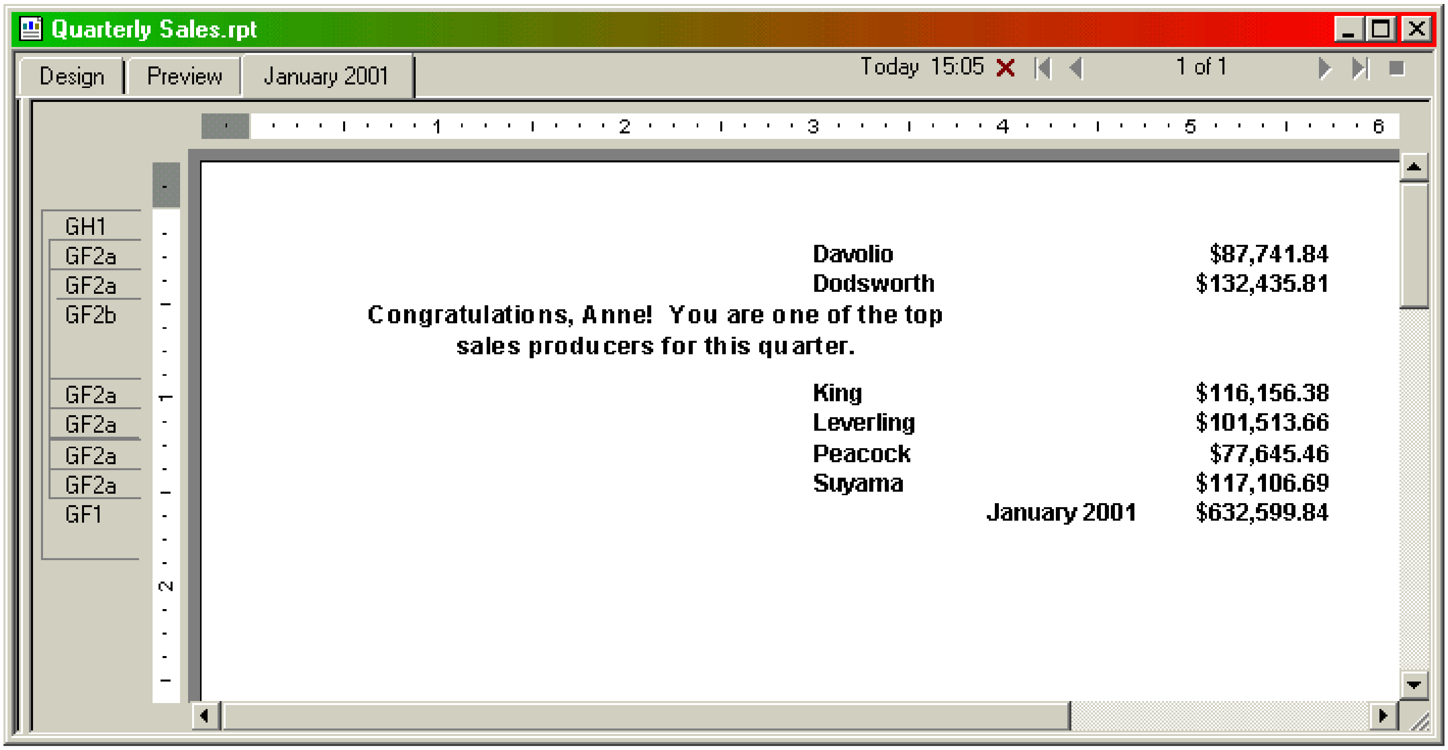
7. Enter the following formula:

   Sum ({Orders.Order Amount}, {Employee.Last Name}) < 120000

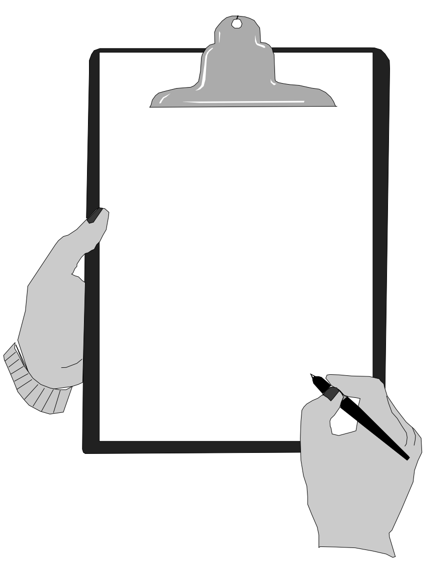
8. Save and close the formula. Close the **Section Expert**. Save and preview the report. *Double click on the January 2001 sales to see if the formula worked.*

9. Close the report.

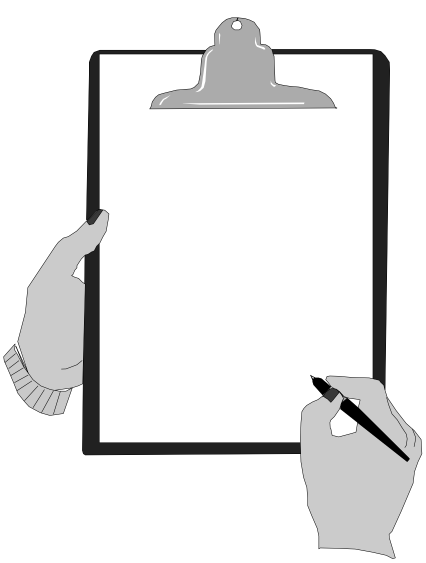
The drill-down pages of the report should look similar to the following illustration:



NOTES



NOTES



Lesson 3

Using the Running Totals Feature

Lesson Objectives

After completing this lesson, you will be able to:

- **Understand how to use Running Totals fields**
  Learn to create accumulated totals and to reset them automatically.

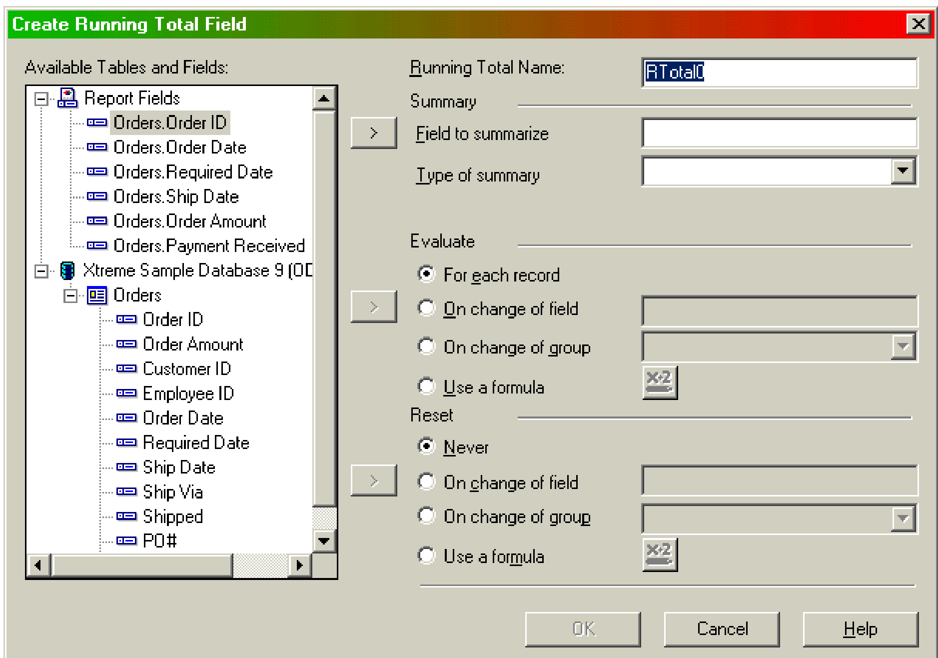
- **Create totals conditionally**
  Define a running total that only accumulates under certain conditions.

- **Create totals independent of groups in the report**
  Now, you have the control to make totals for any breaking point in the report or for all the records in the report.

Understanding Running Totals

To make working with totals easier, Crystal Reports has the Running Total field, an automatic field that calculates totals record by record, rather then just summarizing fields at the end of groups. Running total fields work similarly to formula fields. You create the running total from the Field Explorer dialog box, and then insert it into the report just like any other field. Running Total fields perform functions similar to summary fields, but provide more control over how the total is calculated and when the value is reset.

You create running total fields from the Field Explorer dialog box. With the Running Total Fields: highlighted, selecting the New button will open the Running Total Dialog box.



In this dialog box, you can name the Running Total field, pick a field to summarize and a type of calculation, determine when to evaluate the field, and define when to reset the field. You can even use the Formula Editor to specify conditions on which to evaluate or reset.

Once you have created a Running Total field you can use it in the report or reference it in formulas. The performance of the total is not dependent upon where you put the field in the report. It performs its calculations based upon the settings you define in the Create Running Total Field dialog box. However, proper placement of the running total within the report is suggested so the calculation makes sense when the report is reviewed.

Creating Running Totals for a List of Numbers

Running totals perform calculations on a record-by-record basis. That is, they evaluate for each record read in the report. For example, if you have a list of values and perform a running total that sums them, the running total adds each value to the sum of all the previous values.

Values	**Running Total**
2	0 + 2 = 2
4	2 + 4 = 6
10	6 + 10 = 16

The most basic type of running total is one that calculates a list of numbers. You tell Crystal Reports which field to calculate and what type of calculation to perform (count, standard deviation, sum, etc.). If the report is grouped, you can also instruct Crystal to restart the calculations at each new group.

In the next exercise, you are going to sum a list of Last Year's Sales amounts for customers. The report is grouped by Region. The report also shows the Top 3 regions. Remember the grand total shows the total for all selected records. We shall use the Running Total to show a grand total for the top 3 regions. In this case we do not need to reset the running total.

❖ Exercise 3.0 – Create a Running Total for a Top N or Bottom N report

1. Begin a new report, as a blank report, based on the **Xtreme Sample Database 9** and the **Customer** table.

2. Select only records with a country of **USA**. Group by the **Region** field.

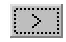
3. Summarize last year's sales by **Group #1** and also insert a grand total.

4. Sort the group using the **Group Sort Expert** to be a **Top 3** report exclude others from the report.

5. Add the **Customer Name**, the **City** and the **Last Year's Sales** fields to the **Details** section.

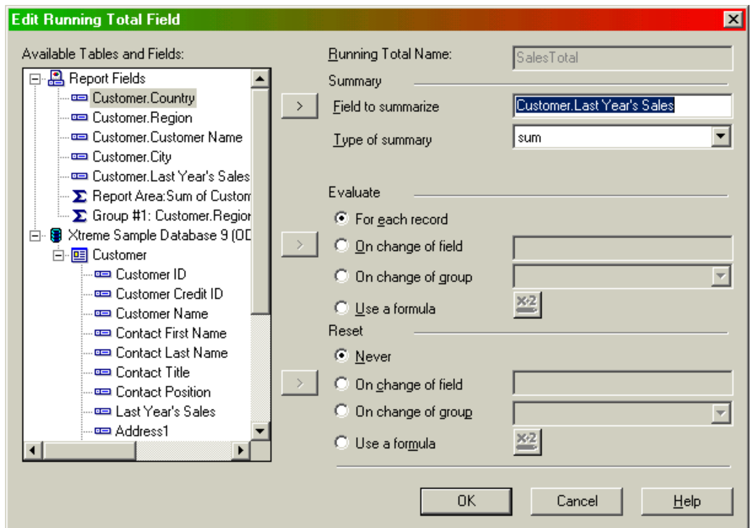
6. Now you are ready to create the running total. Select the **Running Total** field's item in the **Field Explorer**, and then click the **New** button.

7. Name the **Running Total** field **Sales Total**.

8. Select the **Last Year's Sales** field, and then click the  button in the *Summary* section.
   The field is added to the Summary section. The sum function is the default selected in the Type of summary list.

9. You want the field to be calculated for every record in the report, so make sure the *For each record* button is selected in the *Evaluate* section.

You do not want to reset the running total. Your running total dialog should look as follows:



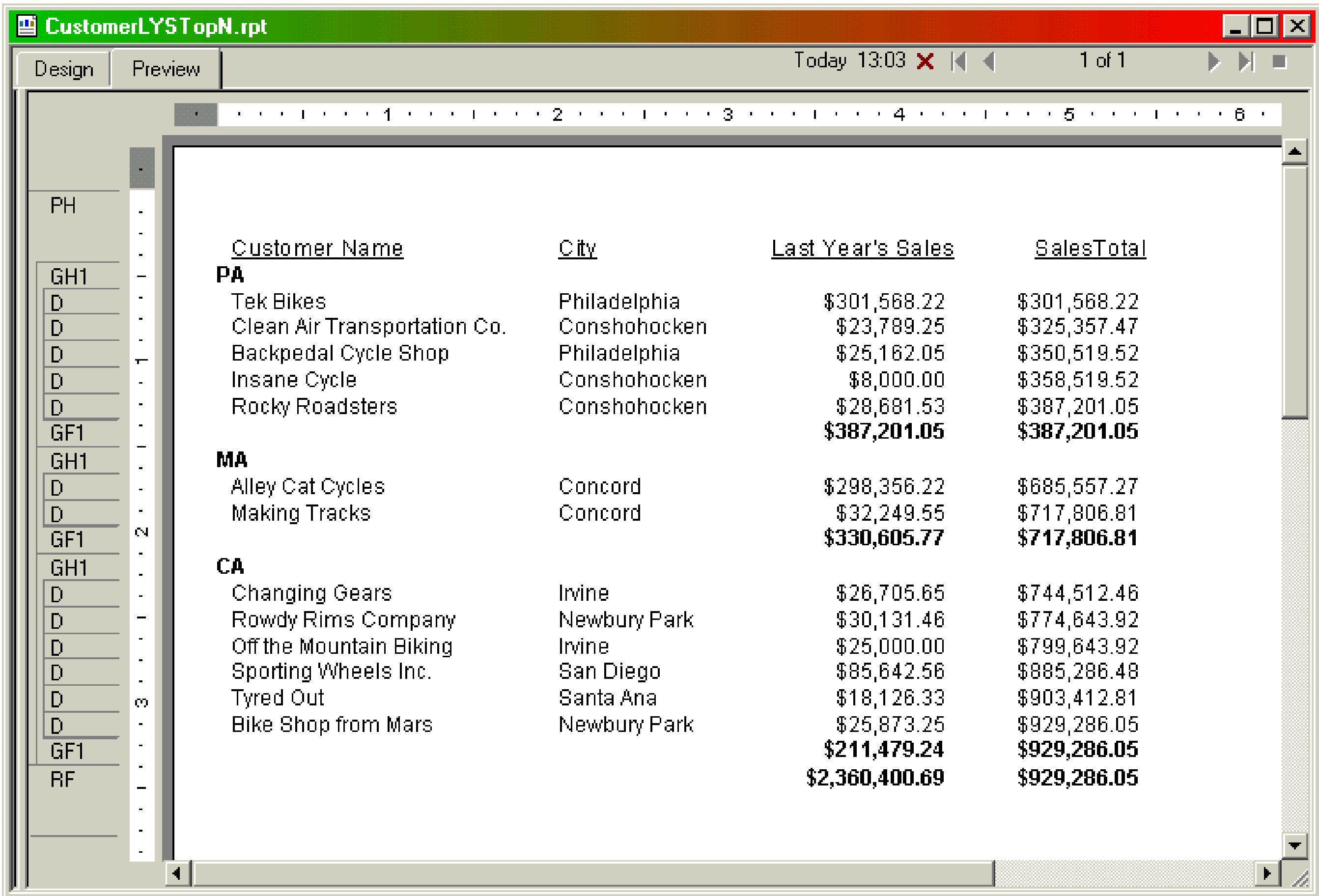
10. Click  to save the **Sales Total** field and return to the **Field Explorer**.

11. Insert the **Sales Total** field into the **Details** section of the report after the **Last Year's Sales** field.

12. Insert the running total into the **Group Footer #1** and the **Report Footer** as well.

13. Save the report as **Customer LYS TopN** and preview it.

The report should be similar to the following illustration:



Customer Name	City	Last Year's Sales	SalesTotal
PA			
Tek Bikes	Philadelphia	$301,568.22	$301,568.22
Clean Air Transportation Co.	Conshohocken	$23,789.25	$325,357.47
Backpedal Cycle Shop	Philadelphia	$25,162.05	$350,519.52
Insane Cycle	Conshohocken	$8,000.00	$358,519.52
Rocky Roadsters	Conshohocken	$28,681.53	$387,201.05
		$387,201.05	**$387,201.05**
MA			
Alley Cat Cycles	Concord	$298,356.22	$685,557.27
Making Tracks	Concord	$32,249.55	$717,806.81
		$330,605.77	**$717,806.81**
CA			
Changing Gears	Irvine	$26,705.65	$744,512.46
Rowdy Rims Company	Newbury Park	$30,131.46	$774,643.92
Off the Mountain Biking	Irvine	$25,000.00	$799,643.92
Sporting Wheels Inc.	San Diego	$85,642.56	$885,286.48
Tyred Out	Santa Ana	$18,126.33	$903,412.81
Bike Shop from Mars	Newbury Park	$25,873.25	$929,286.05
		$211,479.24	**$929,286.05**
		$2,360,400.69	**$929,286.05**

Note that the Grand Total for the report is $2,360,400.69. However, by using running totals we can get a grand total for the actual records displayed on the report, which in this case is $929,286.05.

Conditional Running Totals

There may be times when you want running total values to calculate only under certain conditions. For example, in the current report, you might want to have Crystal count the number of customers with sales higher than $30,000 for last year. You might also want Crystal to calculate the total sales for those customers only. In cases like these, you must enter a formula that specifies the conditions under which Crystal should do the running calculation.

Since there are only two situations involved, to perform the calculation or not, you do not have to type an if…then…else… statement in the Formula Editor. All you have to do is specify the test for the condition. If the test evaluates to true, Crystal calculates the running total. If not, it does not.

To create a conditional running total, just specify the *Use a formula* option in the *Evaluate* section, and then enter a test for the condition.

TIP: You can also use a condition to define when the running total is reset. Choose Use a formula in the Reset section.

❖ Exercise 3.1 – Create a Conditional Running Total

1. Return to **Design** view and make sure the **Field Explorer** box is open.

2. Remove the **Top N** sort using the **Group Sort Expert**.

3. Start a new running total and name it **Count 30K**.

4. Select **Customer Name** in the *Available Tables and Fields* list, and then click the button to add it to the *Fields to Summarize* box. Drop-down the *Type of Summary* list and choose **count**

5. In the *Evaluate* section, choose the *Use a Formula* radio button. Click the button.

6. Enter the following formula, then save and close the **Formula Workshop**.

   {Customer.Last Year's Sales} > 30000

7. Set the running total field to reset on the change of the **Region** group. Then click OK

8. Create another running total named **Sales 30K**. Select the **Customer.Last Year's Sales** field and set the summary type to **sum**. Use the same formula for the evaluation and reset on change of the **Region** group.

9. Expand the Group Footer #1 to 1". Delete the summary values in the footer. Add a text object to the **Group Footer #1**.

10. Type **The number of customers in**. Then select from the **Field Explorer** box the **Group # 1 Name** field. Place it into the text box and then continue to type **with sales over $30,000 is**.

11. Add the **#Count 30K** running total as a field to the text object.

12. Press the **SPACEBAR**, then type "**with total sales of**"

13. Add the **#Sales 30K** running total as a field to the text object.

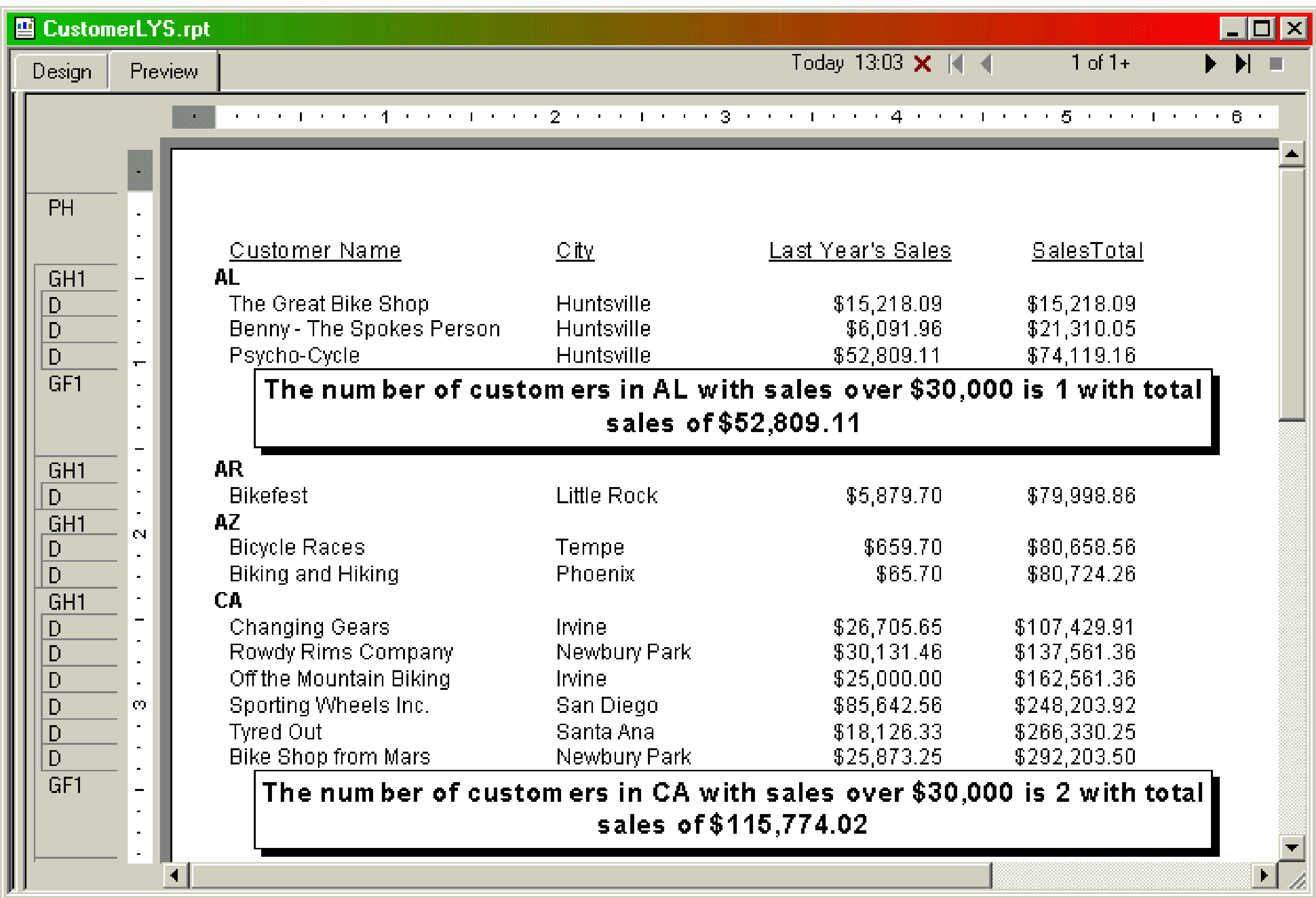
14. Format the text object to have a single line border with a drop shadow.

15. Finally, conditionally suppress the **Group Footer #1** section if the **#Count 30K** running total field equals zero.

    If there are no customers with sales over $30,000, you do not want to see the text box.

16. Save the report as **Customer LYS**. Close the report.

The report should look like the following illustration.



Challenge Exercise – Creating Running Totals

1. Create a new report that only shows the last ten order transactions for each employee. This report uses the **Employee** and **Orders** tables from the **Xtreme Sample Database 9** database.

2. Group on the **Employee Last Name**.

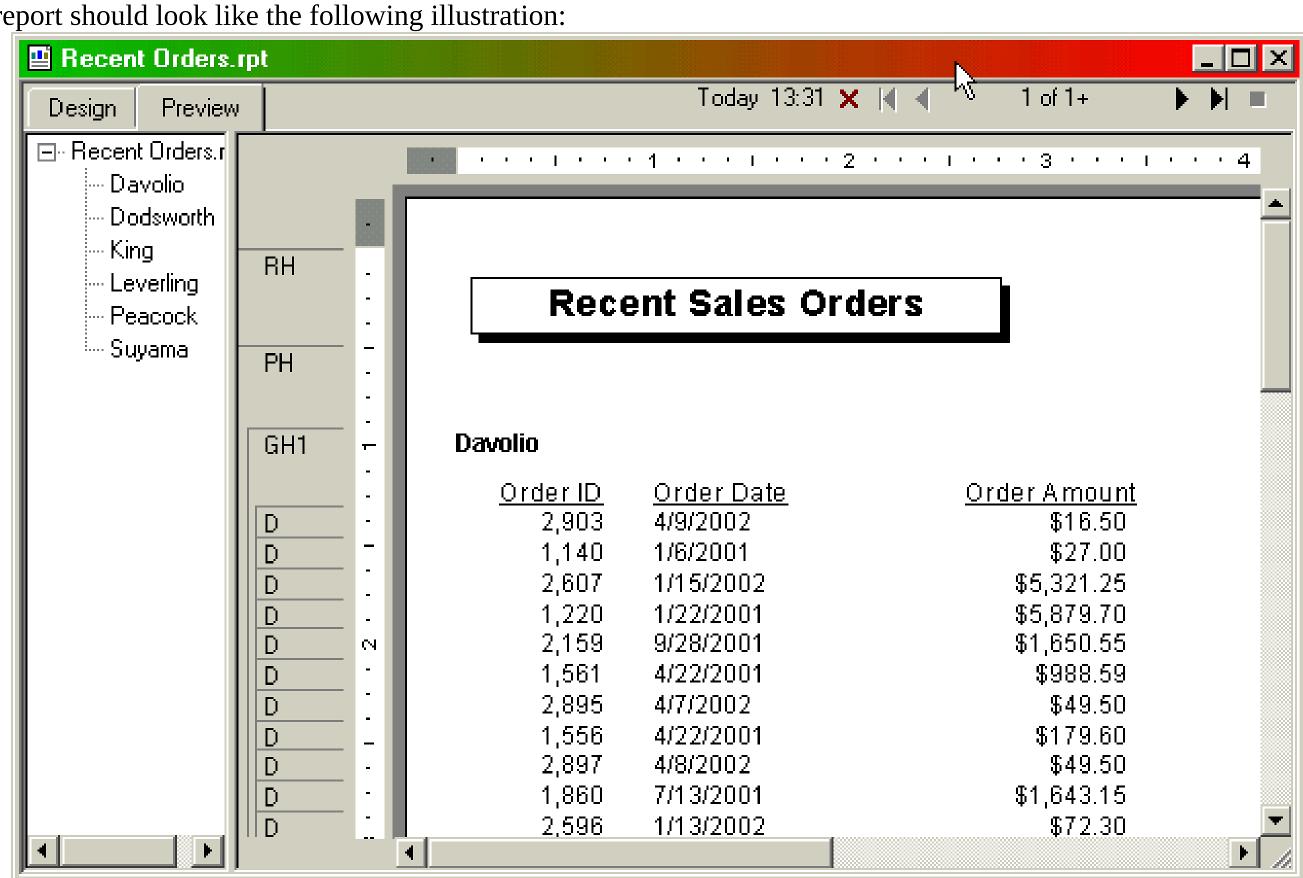
3. Insert the **Order ID**, **Order Date** and **Order Amount** fields in the **Details** section. Format **Order Date** to show as a date without time.

4. Place a text object in the **Report Header** section with the title **Recent Sales Orders**. Format the title as shown below.

5. Move the column titles from the **Page Header** section to the **Group Header** section under the **Group #1 Name** field.

6. Save the report and name it **Recent Orders**. Preview the report.

The report should look like the following illustration:



To view only the most recent ten transactions by date, you must sort the Order Date field in descending order. Then you need to create a running total that counts the orders and conditionally suppresses the Detail section if the order count is greater than ten.

7. Sort the **Order Date** field in descending order.

8. Create the running total and name it **Line Count**. Select the **Order ID** field. Set the summary to **count**, evaluate it for every record, and reset it at the change of the **Last Name** group.

9. Place the **Line Count** running total field in the **Details** section after the **Order Amount** field.

10. Preview the report and check to be sure that it restarts numbering at a new group. Save the report.

In order to show the last ten transactions per customer, you are going to conditionally suppress the Details section.

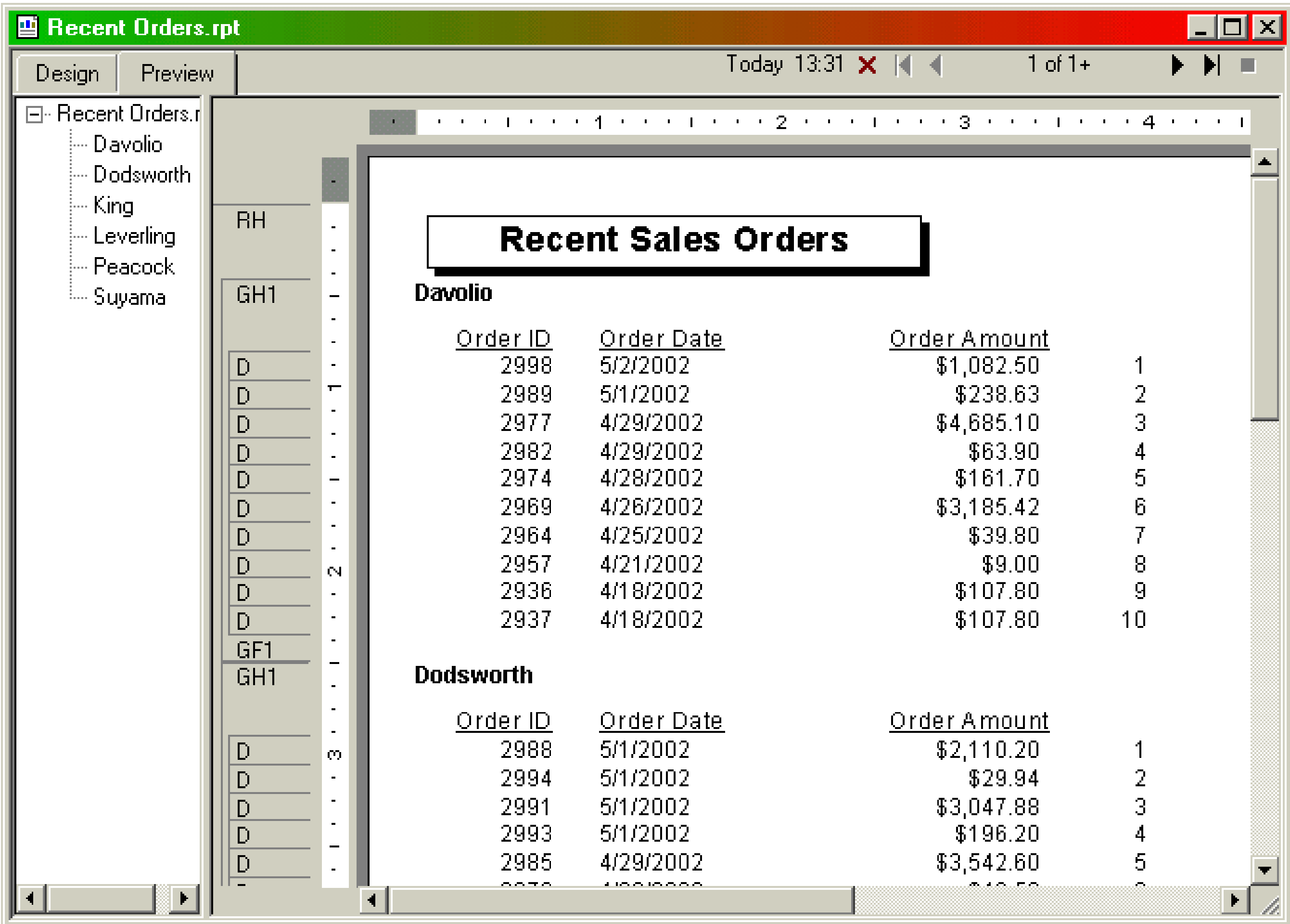
11. Open the **Section Expert** dialog box. Make sure the **Details** section is selected in the *Sections:* list.

12. Click the  button after the *Suppress (No Drill-Down)* check box.

13. Create the following formula: **{#Line Count} > 10**.

14. Save and preview the report. When finished, close the report.

The report should look like the following illustration:



Challenge Exercise – Creating a Conditional Running Total

Suppose you need to create a list of customers in Canada and the USA. You do not want to group the report, but you do need to see sales totals for each of the countries. You can use a conditional running total for the sales figures.

1. Start a new report based on the **Xtreme Sample Database 9** and the **Customer** table.

2. Add the **Customer Name** and **Last Year's Sales** fields to the **Details** section.

3. Select only those records with a country of **Canada** or **USA**. *HINT: Use the 'is one of' option.*

4. Sort the records alphabetically on **Customer Name**.

5. Create a running total field called **Canada Total**. Select the **Last Year's Sales** field and a sum operation. Select *Never* in the *Reset* section.

6. In the *Evaluate* section, choose *Use a formula*. Then create the following formula:

   {Customer.Country} = "Canada"

7. Create a running total field for the **USA** total. Use the same settings and a formula that sets the Country = "**USA**".

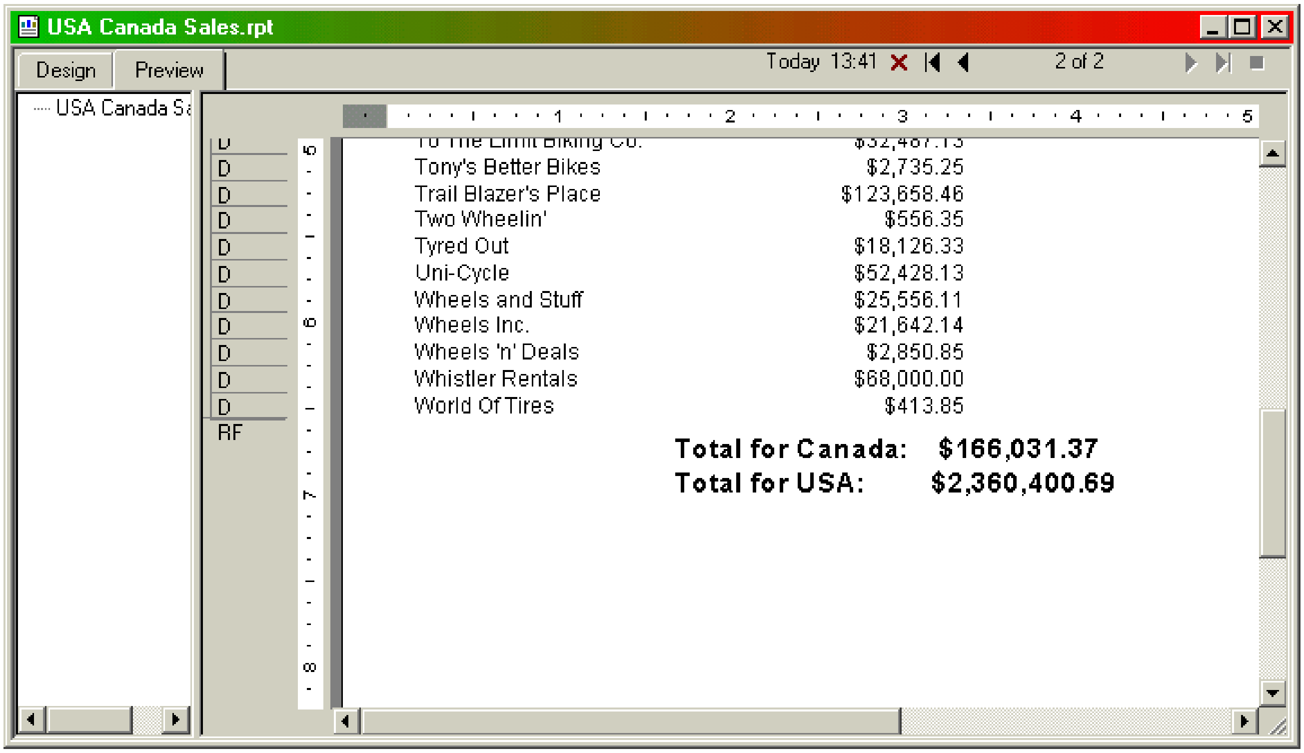
8. Create a text object in the **Report Footer**. Type **Total for Canada:** and insert the Canada running total from the **Field Explorer**. On the next line of the text Object, type Total for USA: and insert the USA running total. The text object should look like the following when you are done:

   Total for Canada: {#Canada Total}
   Total for USA: { #USA Total}

   NOTE: Running totals are indicated in Crystal Reports by the # sign.

9. Save the report and name it **USA Canada Sales**. Preview the report, and then close it.

The USA Canada sales report should look like the following illustration:



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