Crystal Reports 10
Power User Workshop

Vision Harvest, Inc.

1-888-236-8087
sales@visionharvest.com

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This course covers Crystal Reports® 10

Vision Harvest

This courseware has been developed by the professional team at Vision Harvest, Inc., www.visionharvest.com. Questions, comments or concerns about courseware content should be sent to sales@visionharvest.com or 888.236.8087.

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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

Xtreme 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.

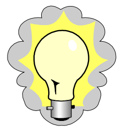
As you work in this Training Guide, certain conventions are used to identify specific procedures. Use the following table as a guide:

TRAINING GUIDE CONVENTIONS

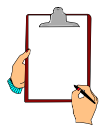
Item	**Illustrated As**
Menu Commands	Underlined letters for accessing menu commands are shown: Example: File/Open
Command Buttons	Commands in dialog boxes are shown as buttons: Example: ENTER
Categories, Radio Buttons, Text Boxes, Check Boxes	All options within dialog boxes are listed in italicized 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

Lesson 1: Refresher Exercise

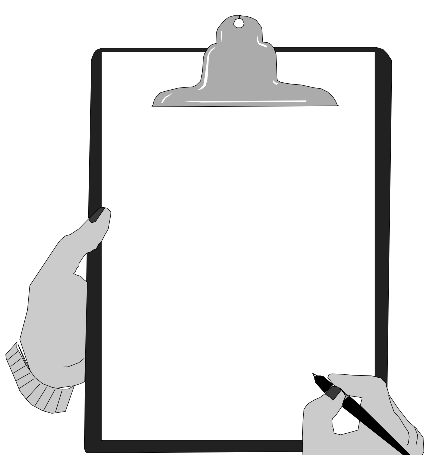
Lesson 2: Power Formatting with Multiple Sections

Lesson 3: Using the Running Totals Feature

Lesson 4: Prompting with Parameters

Lesson 5: Using Advanced Formula Features

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 10. 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.

Monthly Sales by Supplier and Product Type

Xtreme Mountain Bikes

Supplier Name: Active Outdoors
Product Type: Gloves

January 2002

Order ID	Product Name	Unit Price	Quantity	Line Total
2600	Active Outdoors Crochet Glove	$14.50	1	$14.50
2635	Active Outdoors Lycra Glove	$16.50	1	$16.50
2622	Active Outdoors Crochet Glove	$13.05	2	$26.10
2636	Active Outdoors Crochet Glove	$14.50	1	$14.50
2618	Active Outdoors Lycra Glove	$16.50	1	$16.50
2653	Active Outdoors Lycra Glove	$16.50	3	$49.50
2612	Active Outdoors Lycra Glove	$16.50	3	$49.50
2611	Active Outdoors Lycra Glove	$14.85	3	$44.55
2605	Active Outdoors Lycra Glove	$16.50	3	$49.50
2565	Active Outdoors Lycra Glove	$16.50	3	$49.50
2554	Active Outdoors Lycra Glove	$16.50	1	$16.50
				$347.15

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.

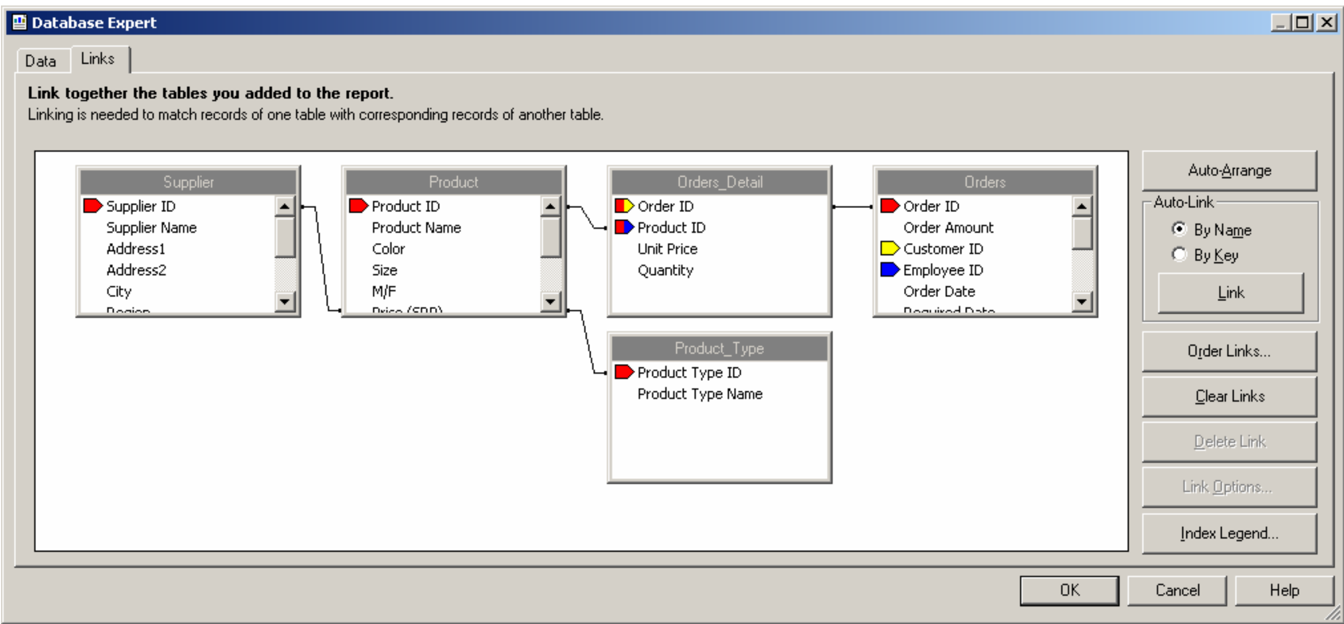
Next, decide which tables you need to add to get the required fields.

- 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 10** 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}

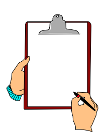
@Continued

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

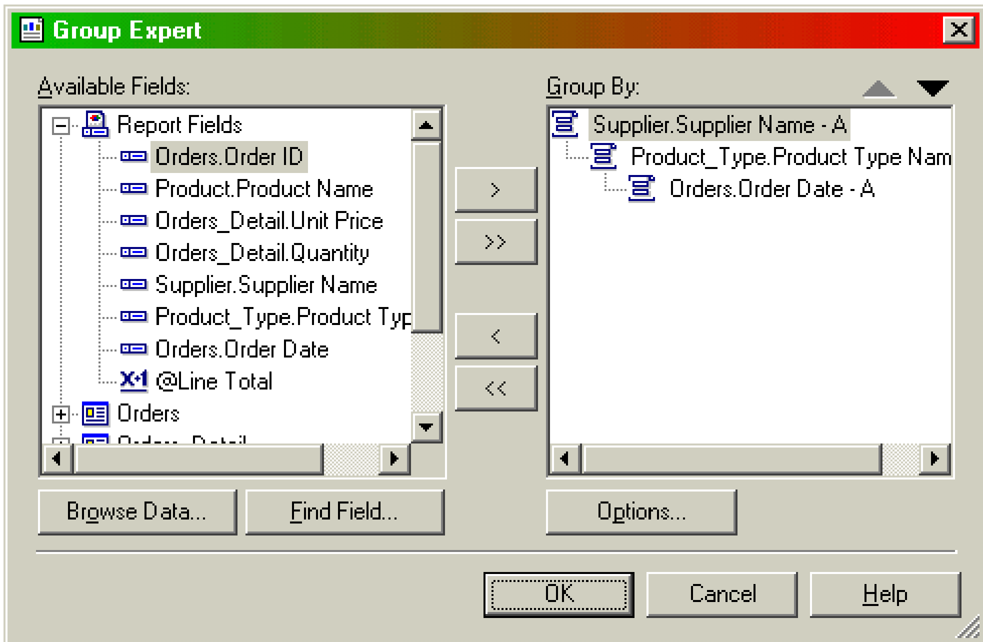
1. Select **Formula Fields:** in the **Field Explorer** dialog box, then click the button.
2. Name the formula **Line Total** and select the **Use Editor** button.
3. Create the formula shown above.
4. Add the formula to the report **Details** section after the **Quantity** field.
5. Create the **Continued** formula, but do not add it to the report yet.



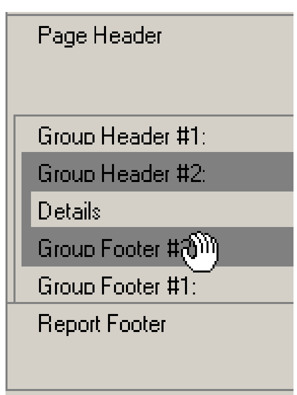
*You will add this formula later to display a "Continued" message in the group header. NOTE: The **InRepeatedGroupHeader** function is a function in the Print State category. Click the + sign to the left of Print State in the middle list in the Formula Editor, and then scroll to find the function. Double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

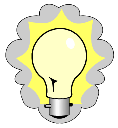
Advanced Grouping

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.

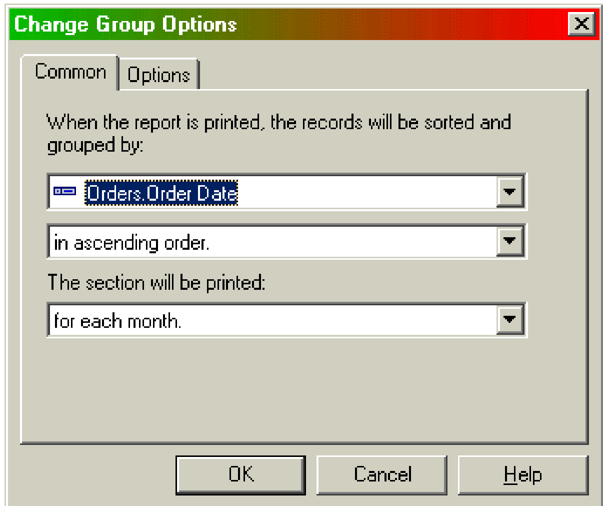


As you create groups, Crystal Reports nests each group inside the previous one you created. However, you can reorder groups in any order you want. To reorder groups, click the Group Header section name at the left of the Design screen, for the group you want to move. The group header and footer sections 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

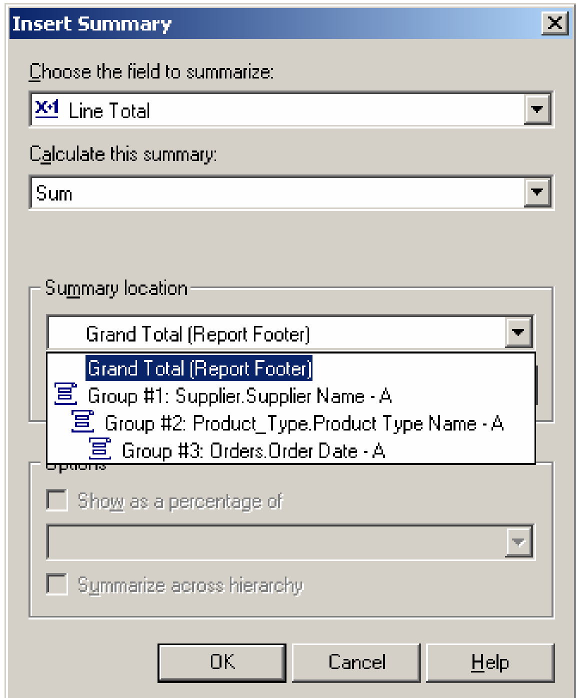
1. Open the **Group Expert** window using the **Group Expert** button. Create a group on the **Product Type Name** field. Turn on the *Repeat group header on each new page* feature by selecting the **Options** button

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**.

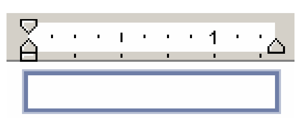
6. At this point save and preview the report. Name the report **Monthly Sales By Supplier & Product Type**.

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**.

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.

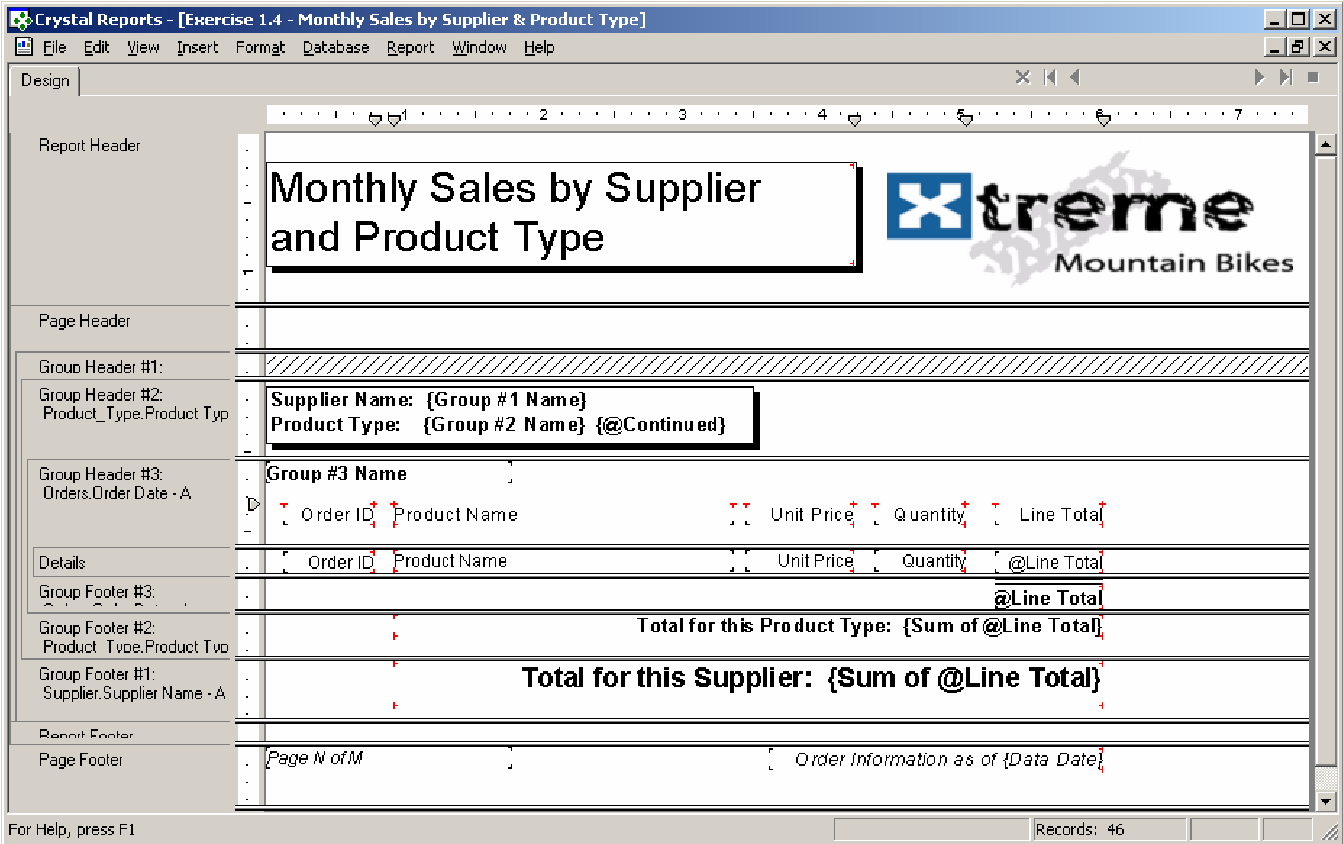
11. Depending on how you have the default formats set for **Date/Time** fields; you may need to reformat the **Group #3 Name** fields. The date should look like this: **January 2002**.

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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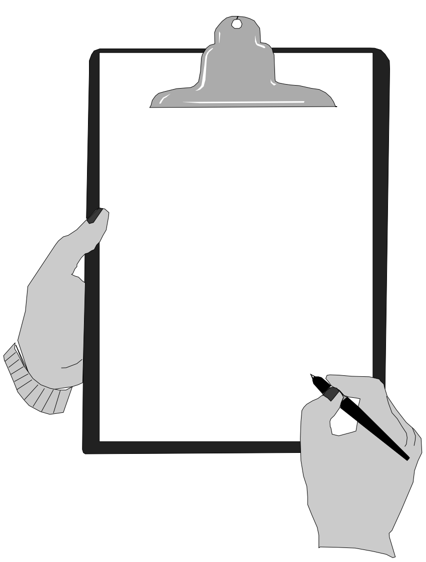

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