

Crystal Reports 10 Quick Start Workshop

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This course covers Crystal Reports® 10

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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
- 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!

Class Objectives

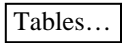

This class is a performance based instructional system. It is geared to provide you with the tools you need to build and distribute reports the quickest, most efficient way. After completing this course, you will be able to perform the following tasks:

- 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:

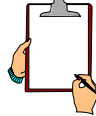
TRAINING GUIDE CONVENTIONS	
Item	Illustrated As
Menu Commands	Underlined letters for accessing menu commands are shown: Example: <u>F</u> ile/ <u>O</u> pen
Command Buttons	Command Buttons in dialog boxes are shown as buttons: Example: 
Categories, Radio Buttons, Text Boxes, Check Boxes	All options within dialog boxes are listed in italicized text: Example: the <i>Keep Group Together</i> check box the <i>Other</i> 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:

Basic Reporting

Lesson 1: Before You Begin

Lesson 2: Creating a Simple Report

Lesson 3: Formatting Features

Lesson 4: Selecting Specific Data from the Database

Lesson 5: Grouping and Sorting Data for Summary Purposes

Lesson 1

Before You Begin . . .

Lesson Objectives

After completing this lesson, you will be able to:

- **Understand and define the purpose of the report**
Decide the overall purpose of your report. Who will view it? What do they need to see? What decisions will be made from the data viewed?
- **Define the layout for the report**
What will the title be? Do you need information in the header and footer on each page? Do you need summaries or other totals?
- **Find the data**
Where is the data that you need to use in the report? Is it in a PC database file or on a client/server database? Does the data exist or does it need to be calculated?
- **Organize the data on the report**
Should you sort or group your data? Do you only want to see certain records from the database? If so, which ones? Do you want to call attention to certain information? If so, how will it be identified?
- **List the fields and tables needed for the report**
Create a list of the fields needed for the report and the tables in which those fields are located.

Defining the Purpose of the Report

Before you ever open the Crystal Reports application, you should do some planning on paper. A structured approach to planning a report will make the report creation process shorter and easier, with less rewriting and editing.

Essential to this process is clear and frequent communication with the user of the report, if that is someone other than you. Remember that a report is a management tool. It should help the reader quickly understand the relationships and/or essential elements contained in the raw data. Good reports present the correct data in a well-organized, easy-to-read manner. If the data is incorrect, or, if it is difficult to locate information, then the decision-making process can be slower or ineffective decisions may be made.

A good starting place is to write out, in one or two sentences, the purpose of the report. A purpose statement assists you in keeping your focus. It gives the report a goal. Think about or ask about what information the report is intended to convey and how it will be used. Ask the user what decisions will be made based on the information in the report. Often, users may not know exactly what they want. Nevertheless, with your expertise in Crystal Reports, you can help them get exactly what they need.

Here are some examples of report purpose statements:

- The purpose of this report is to show monthly sales of each product and the total dollar amount of each product sold.
- The purpose of this report is to keep track of inventory and quickly call attention to items that need to be reordered.
- The purpose of this report is to provide demographic information on our customers and suppliers in order to determine if we need to expand our supplier base.
- The purpose of this report is to compare year-to-date sales with last year's year-to-date sales to gauge how we are doing compared to last year. The information needs to be presented region by region.

You should also be aware of who is going to read the report. Often, different people at different levels of responsibility in the organization read the same report, but for different reasons. If this is the case, you need to organize the report so that each level of information is clear and easy to find. A common example would be a company sales report.

- The sales representatives might use the report to evaluate individual sales performance and do comparisons to other representatives.
- The regional sales manager might also use the report for comparisons of the sales reps in his/her region. But this person would also want to know how his/her region compares with other regions or what percentage of total company sales are represented by his/her region.

- The national sales director might use the report to evaluate regional manager's performance. It could also be used to compare sales to forecasts and determine if company-wide adjustments are needed.
- The Vice President of Sales might use this report to project manufacturing needs, warehouse locations, sales campaigns, etc.

Write out all these needs and formulate them into your purpose statement. If you can design the report to meet the needs of all these people, you will save yourself development time and serve your company as a whole.

Determining the Layout of the Report

The layout of the report is the plan for what information appears where.

What should the report title be? Plan a title that encompasses all uses of the information or the most detailed use of the information. Write out the title.

Is there information that should appear on each page of the report, such as the file name, author name, or page numbers? Will the users want to know how current the information is? Make a list of the items you need to include.

What pieces of information need to display at each level of the report? Do you need to summarize, total, calculate averages or percentages or perform any statistical analyses? If so, which information needs to be calculated and how do you want to divide the report for the calculations? For example, in the sales report mentioned above, you might need to calculate total sales by each sales representative, also by each region, also by country, and grand total for the entire company.

Write listings of what you need to see at each level of the report including totals and grand totals. Also, include the information by which you need to divide the report.

Finding the Data

It is critical to know, before you begin report development, where the data you need is located. You should know if the database you need to use is a PC data file or an SQL/ODBC data source or a Crystal Dictionary. Where is the database located and is there an ODBC connection already set up on your computer to access the database? If you do not know the answer, contact your MIS professional, database administrator or possibly even your co-workers to get this information.

Next, decide which pieces of information you need to see at the greatest level of detail in your report. Write down these pieces of information. Once you have determined the data you need for details, you can add this to all the other information you have listed for the report. You can then use this list to determine which fields you need to access for the report.

As you look through your list of pieces of information needed, you may see three types of information:

- Data that is taken directly from fields in the database
- Data that is calculated from fields in the database (such as summary totals)
- Information that is typed directly into text objects in the report (such as a title)
- Information that is generated automatically, but not from the database (such as page numbers)

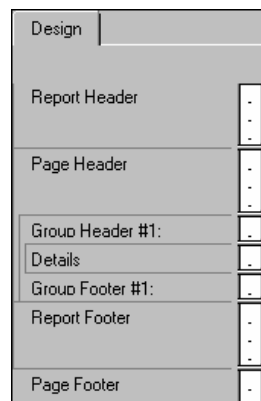
Go through this list and determine which pieces come directly from fields in the database, then make a list of the field names you are going to need. After you list the fields, make a list of the table or tables that contain these fields. Obviously, you are going to have to be somewhat familiar with the database to do this. If you do not know the database well, talk with your database administrator and see if you can obtain a data map or data dictionary that tells you where specific pieces of information are stored.

In addition to knowing field names, you should also become familiar with *field types* or *data types*. Many of the functions and commands used in Crystal Reports are designed to work with a specific type of data. You need to become comfortable with the types of data contained in your database. Most fields are one of the following data types: string, number, currency, date, time, date/time, Boolean, or memo.

Organizing the Data for the Report

Now that you know what data you need and where it is located, what you have to pull from the database, what you can type, and what you have to calculate, you need to put all this together. In other words, you need to organize it all, so you know what will print where on the report.

Each report that you create is divided into *sections* and the sections determine where things print on the report. The sections display in the Design view of Crystal Reports and print in the same order in which they display. Each section has its own characteristics that determine where objects print on the final report.



Report Header

Objects in this section print only one time at the beginning of the report. You might use this section for the report title (if you only wanted it to print on the first page) or for charts or maps that represent all the data in the report.

Page Header

This section prints the objects it contains at the top of each page of the report. This is a good location for print dates, page numbers, file name and author, or any other information that the user would want to see on each page.

Group Header

If you decide to divide the information in the report, you do it by creating *groups*. The items in this section appear at the beginning of each new group. Typically, this section contains the name of the group or other group identifying text and/or charts or cross-tabs that represent data group by group.

Details

This section contains the detail records for the report and gets repeated for each record pulled from the database. This is where you want to put the items that represent the details on the report.

Group Footer

This section prints at the end of each group in the report and only displays when the report has been divided into groups. Here is where the group subtotals and summaries appear and any other information you want included at the end of each group.

Report Footer

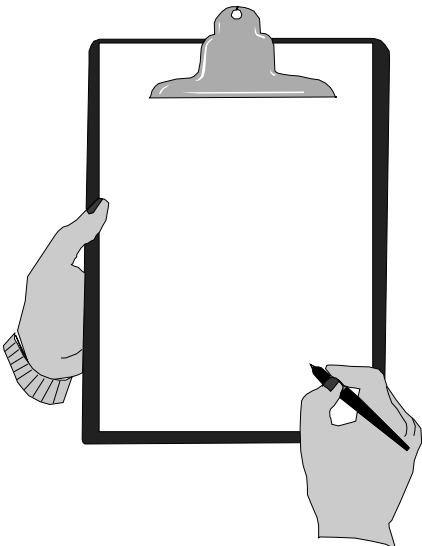
Objects placed in this section print only once at the end of the report. It is the perfect place for grand totals or other summaries for the entire report. Often it is used for charts, maps or cross-tabs that display information for the entire report.

Page Footer

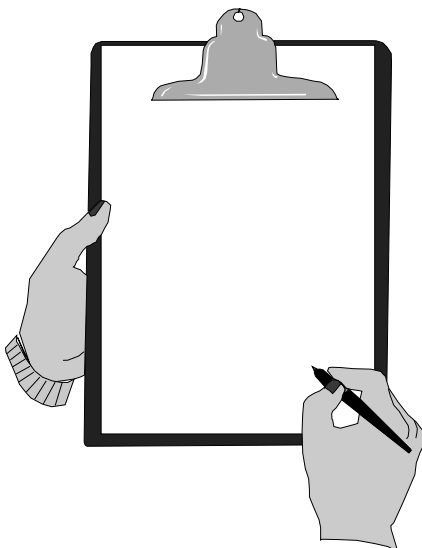
Like the Page Header, this section appears on each page of the report, only this one displays at the bottom of the page. Use it for page numbers, printed dates or other information that the user needs to see on every page of the report.

Now you can design your report on paper, placing each piece of data where it belongs. It can even be helpful to indicate the sections at the left of the paper to help you remember which objects to put into each section. Basically, draw a picture of what the report should look like. You are not going to do this planning in class because there is not time. Your class time is best spent learning the Crystal Reports program. However, this is a highly recommended process for you to follow when you begin to create your own reports. If you plan your reports on paper first, it will save you time, work and aggravation later.

NOTES



NOTES



Lesson 2

Creating a Simple Report

Lesson Objectives

After completing this lesson, you will be able to:

- **Use the Design and Preview windows to build reports**

The Design window is the main window for building a report. Become productive in putting together the basic items on the report, and then use the Preview window to see the results of your work.

- **Place data fields on your report**

Learn how to insert fields on the report.

- **Size and move objects**

Learning how to manipulate the objects on the report gives you control over the look and feel of the report.

- **Use guidelines to align objects**

Guidelines provide an easy method for moving and aligning objects. Become proficient at manipulating the guides and snapping objects to them.

- **Create text objects**

Add titles and other text to reports by creating a text object

- **Save and Preview the report**

Learn about the Preview view and how to navigate through the report. Set up the report to save automatically. Understand what happens when you refresh the data in the report.

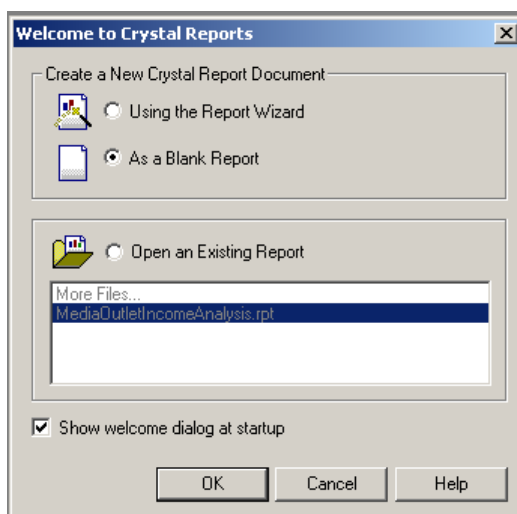
Starting the Crystal Reports Program

You can start Crystal Reports in one of three ways:

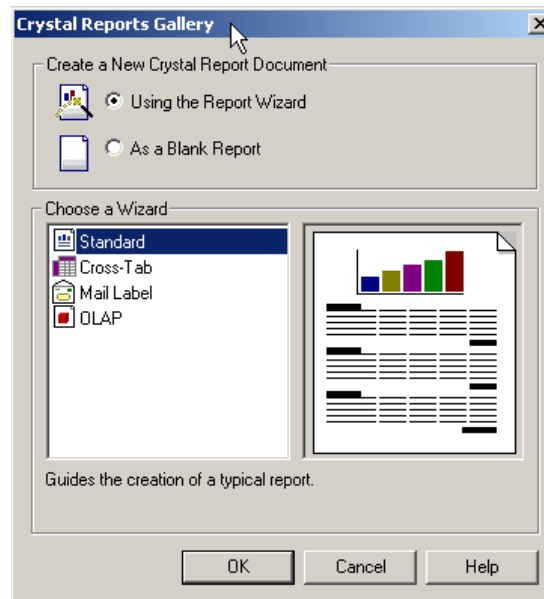
- Click the Start button then point to the Programs menu. Click on Crystal Reports 10.
- If you prefer to use the My Computer icon or Windows Explorer, open either one of these windows. Double click the Program Files folder, double click the Crystal Decisions folder, double click the Crystal Reports 10 folder, and then double click **crw32.exe**.
- If you have a desktop icon for 32-bit Crystal Reports, you can double click the desktop icon to open the Crystal Reports program.

Starting a New Report

When you first open Crystal Reports, the program helps you to begin creating a report by presenting the Welcome dialog box.



In this dialog box, you can begin a new report in one of two ways. You can create the report using a Report Expert or you can open a blank report. If you choose the *Using the Report Expert* button, Crystal displays the Crystal Report Gallery dialog box.

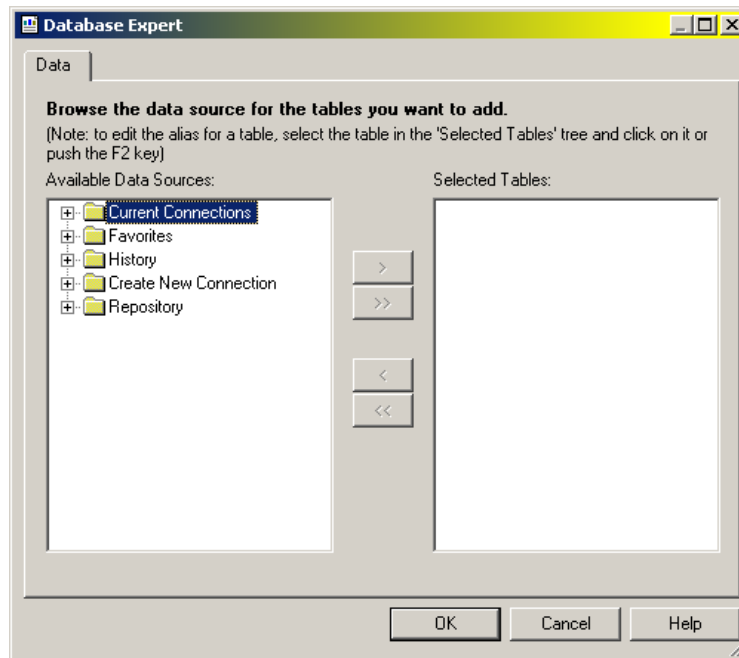


The Report Experts are tabbed dialog boxes that assist you in creating a specific type of report by doing some of the work for you. You will learn how to use a Report Expert later in this class.

If you click the *As a Blank Report* button, Crystal immediately takes you to the Database Expert screen in order to select the report's data source. You can also open an existing report. Crystal displays the last nine reports you have opened in the list. Alternatively, you can choose More Files to display an Open dialog box where you can go to any folder and choose the report yourself. Alternatively, you can simply close this dialog box by clicking the Cancel button.

Choosing a Data Source

Whenever you create a report, the first thing you have to do is select a data source. Crystal uses a dialog box called the Database Expert to present all possible data sources and allow you to choose one or more for a report.



- The **Current Connection** option displays the server or data file to which you are currently connected. If you just opened Crystal Reports, this option indicates **no items found**.
- **Favorites** works like Favorites or Bookmarks in a browser. You can add connections to the Favorites category so they are quick and easy to access.
- **History** shows a list of recently accessed connections, again for quick and easy viewing.
- **Create New Connection** is the folder that contains all possible data connections available for nearly any kind of database including Oracle, SQL Server and Access.

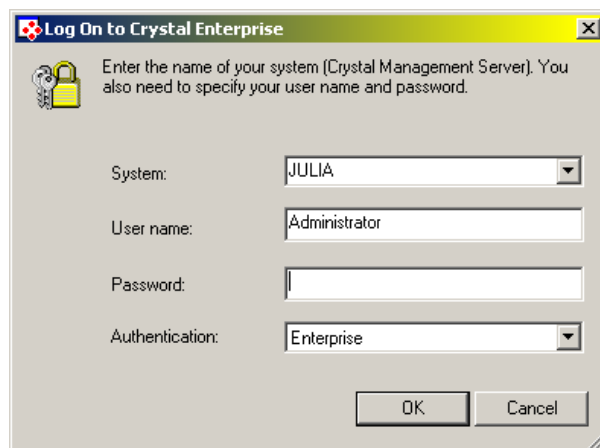
These are listed under **More Data Sources**

- **Access/Excel (DAO)** - Allows a direct connection to MS Access and other files using Microsoft's Data Access Objects and not ODBC.
- **Act! 3.0** - Enables Act! users to write reports using their Act! sales data.
- **Crystal Data Object** - Allows developers to write reports against data compiled using Visual Basic data arrays.

- **Crystal Queries** - This option allows reports to be created using Crystal Queries (.qry) files.
- **Database Files** - Use this option to connect directly to PC data files that can be accessed through a physical file location from the C: drive or other mapped network drive. This option connects to Access, Paradox, Btrieve, DBase and Foxpro.
- **Dictionary/Info View** - Use this option to connect to Crystal Dictionaries or Crystal Info Views. Both options are Metadata views of a relational database.
- **Exchange Folders/Address Book** - Reports can be written using data from Exchange folders or Exchange Address Books.
- **Field Definitions Only** - This option uses special drivers to create a report based only on a database schema without any actual data. Data must be returned at runtime for the report to work properly.
- **File System Data** - This option is useful for legacy databases that store data in “flat files and require a Data Definition File (DDF) to provide data structure.
- **Mailbox Admin** - Use this option to write reports using data from the Microsoft Exchange Server user profiles.
- **Message Tracking Log** - Use this option to write reports using data from the Microsoft Exchange Server Message Tracking Log
- **MS IIS/Proxy Log Files** - Use this option to write reports using data from the IIS/Proxy web log files.
- **NT Archived Event Log** - Use this option to write reports from archived Windows NT/2000 Event log files.
- **NT Current Event Log** - Use this option to write reports from the current Windows NT/2000 Event log files.
- **ODBC(RDO)** - The ODBC/RDO (Open Database Connectivity/Remote Data Objects) folder is typically used for server-based databases like Oracle, Sybase, Informix, and MS-SQL Server. The **Database Files** folder is used for PC data files run from the C: drive or from a network server, such as MS Access, Paradox, Btrieve, Dbase and FoxPro.
- **OLAP** - Use this option when creating reports using On-Line Analytical Processing data sources.
- **OLE DB(ADO)** - This is a Microsoft data connection similar to ODBC in its concept and requires the use of an OLE DB provider, which is similar to, and ODBC driver.

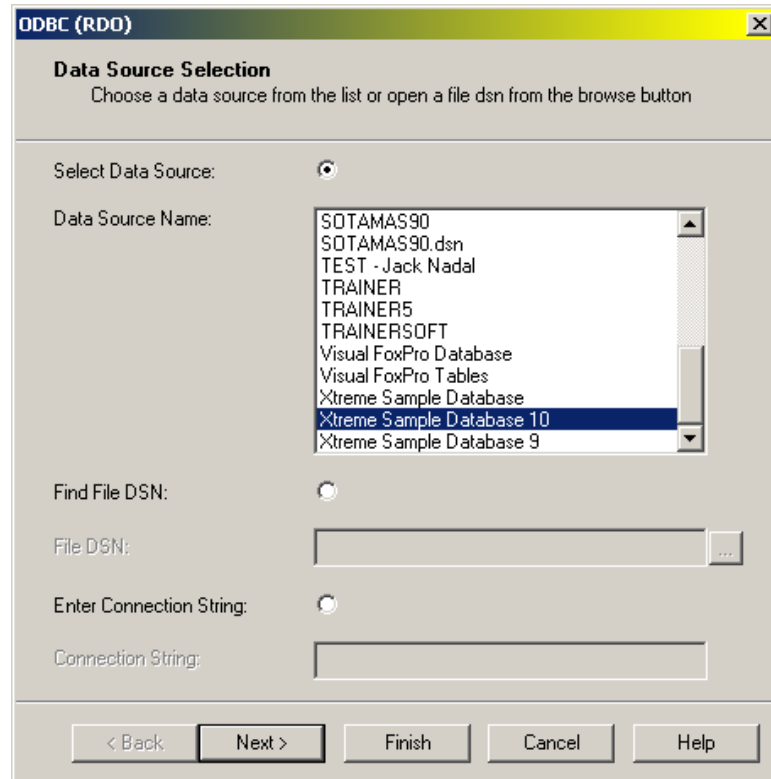
- **Outlook** - This is a connection driver that allows reports to utilize Outlook PST files.
 - **Public Folder ACL** - This option allows Microsoft Exchange Server administrators to write report using the Access Control List data contained in Exchange.
 - **Public Folder Admin** - Allows Microsoft Exchange Server administrators to access various public folder informational fields in Exchange.
 - **Public Folder Replica** - Allows reports to be created using data from Microsoft Exchange Server Replicated Public Folders.
 - **Web/IIS Log Files** - This option is similar to the MS IIS/Proxy Log Files data connection, but allows for reports to utilize data from non-Microsoft web servers such as Apache.
 - **xBase** - Use this connection when accessing multiple FoxPro or dBase files which contain filed relationships between the tables.

 - **More Data Sources** - This option allows access to other data sources using native drivers and is dependant on the options selected as part of the installation process.
 - **NOTE** – you may be asked for the Install CD if the driver was not installed for the database you have selected. In 10 not all drivers are installed by default. If you see this message and do not have the CD contact your system administrator.
- **Repository** shows a list of data source connections that have been stored in the repository, usually stored SQL queries. Opening the repository folder will first ask you to connect to Crystal Enterprise 10. If you have the rights to do this then you will see the repository. You can then select a SQL command or Business View if there are any in the repository.



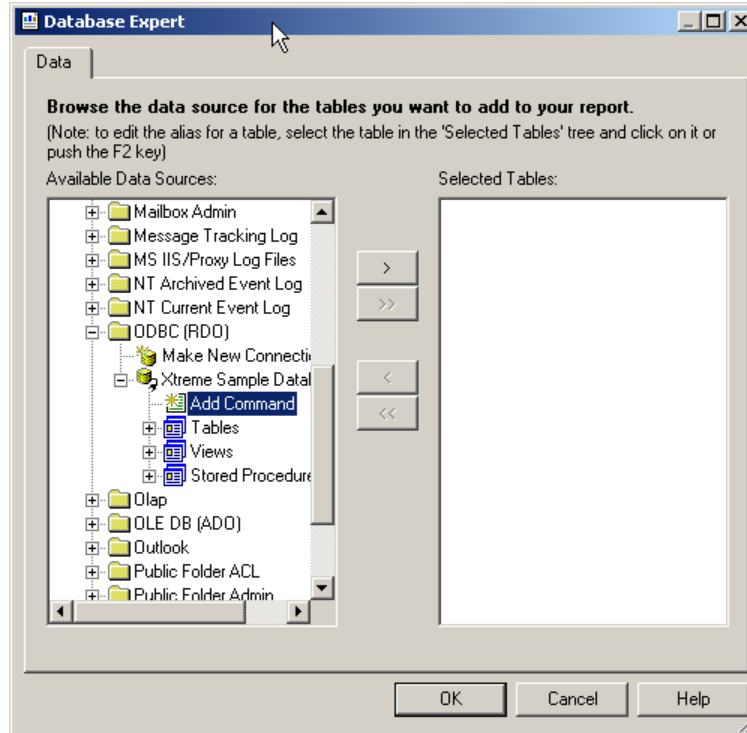
To choose a data source, click the Create a New Connection folder and select the data source you want, for this class select ODBC (RDO) and provide all required information the pop-up dialog windows requires.

Choosing the ODBC (RDO) data connection will activate ODBC (RDO) dialog window which display all ODBC connection currently available on your system:




Find the data source, select it and click the next button. The next screen will prompt for a Username/password if applicable. Respond to this screen and click Finish. Now the database connection is established and the Database Expert reappears.

The Database Expert now shows the new connection along with available items that can be selected for inclusion into the report. Some databases are able to determine which tables are available based on user login ID and therefore not all data tables may be shown.




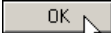




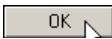
Depending on the database being accessed Commands, Tables, Views and Stored Procedures will be shown and available for use in the report. It is important to understand the differences between each these items.

- Commands allow for custom Structured Query Language (SQL) to be used as a data source. This means developers can now build complex queries using an advanced SQL building tool like Toad or SQL Navigator and port the completed code into Crystal Reports for use in the report.
- Tables are physical containers of data and are the only items that contain data and are sometimes referred to as “physical tables”.
- Views do not contain data and are sometimes referred to as “logical tables”. These tables are just queries which pull data from the physical tables. Views are usually created by the Database Administrator to make database reporting easier for the end-user to write reports.
- Stored Procedures are very similar to views in that they do not contain data. They are sometimes referred to as “procs”. The differences between Views and Procs are in the complexity of the query code used and the programming language used.

To add a table to the report, expand the Tables folder and then click the  to move it into the right column labeled Selected Tables. Once all the tables are selected click the OK button.

For this class, we are going to use an ODBC data source called Xtreme Sample Database 10. This sample database comes with Crystal Reports and installs automatically when you install the application.

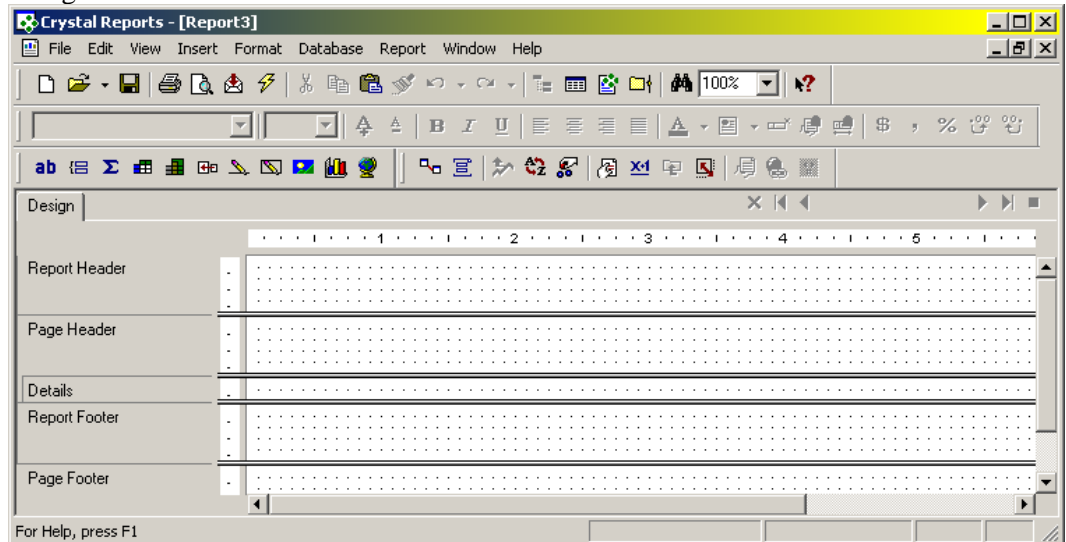
❖ Exercise 2.0 - Start a New Report

1. Click the  button, choose **Programs -> Crystal Reports 10**.
The application opens and displays the Welcome dialog box.
2. Click the *As a Blank Report* option button, and then click .
The Database Expert dialog box appears.
3. Click the  to the left of  **Create New Connection**.
The list of available data sources displays.
4. Find the **ODBC (RDO)** folder and double-click it.
This activates the ODBC (RDO) dialog window. Please note double-clicking only works on the first ODBC connection created. Afterwards you must double-click the Make New Connection item
5. With the **ODBC (RDO)** dialog window open, leave the *Select Data Source* radio button on and scroll to the bottom of the list until you find **Xtreme Sample Database 10**. Select it and then click .
6. At this point we want to add the **Xtreme Sample Database 10** connection to the **Favorites** folder for easier access during subsequent lessons. Select the **Xtreme Sample Database 10** connection, right-click it and then **Add to Favorites**.
7. Open the Favorites folder where you will now see the new connection you just created. Expand the Tables folder and select the Customer table. Click on .
8. The Customer table will now appear on the right list labeled *Selected Tables*:. Click .

The Crystal Reports Design window displays on the screen.

The Main Components of the Design Window

The Design view in Crystal Reports contains all the report creation features needed to build a report. Take a moment to look at the screen and identify the features of the Design window.



The window has the standard features of any Windows based program. These allow you to execute commands and perform tasks in Crystal Reports:

- The Menu Bar contains all the commands available in Crystal Reports. As with all Windows programs you can open the menus by clicking with the mouse or by pressing ALT + the underlined letter for the menu you want.
- The Toolbars contain buttons that are shortcuts to menu commands. You can view the function of a button by moving the mouse pointer over the button. When you do this, a Tool Tip displays the button name and the Status Bar at the bottom of the screen displays the function of the button.

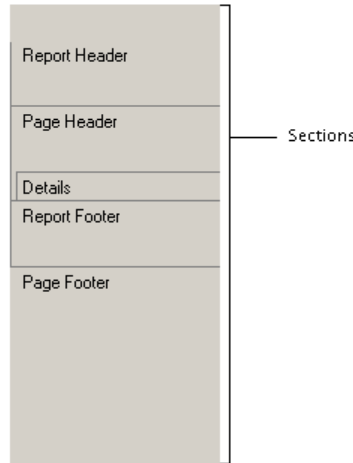



TIP: You can open and close the toolbars by **RIGHT** clicking on any toolbar. To hide a toolbar, click the checkmark to the left of the toolbar name. To show a toolbar, click the toolbar name.

- The Design tab indicates that you are in Design view. Once you have previewed the report, there is a Preview tab as well. You can easily switch between Design view and Preview view by clicking the appropriate tab.
- The Status Bar displays at the bottom of the Design and Preview screens and shows information about the object currently selected. If no object is selected

the Status Bar shows information about the toolbar button to which the mouse is pointing, information about the report itself, or help information.

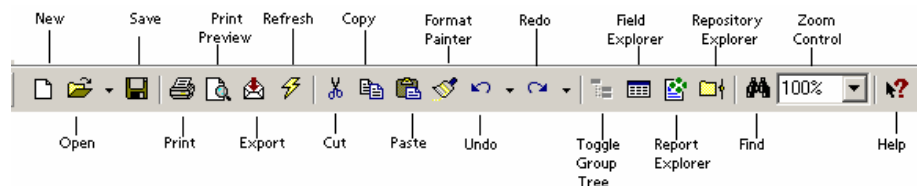
The default Design window is divided into five *sections*. Each section corresponds to a specific part of the final, printed report. Section names display at the left of the Design window. The behavior of the sections was discussed earlier in this manual. Refer to page 14 for descriptions of the sections.



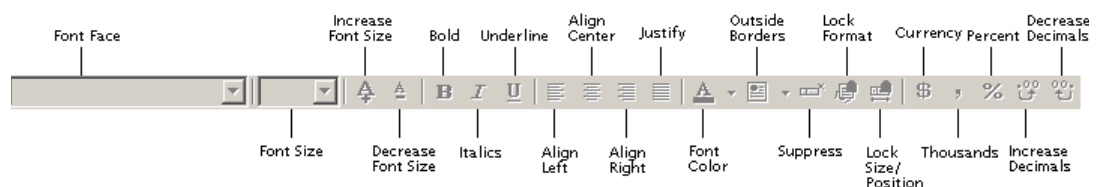
Each section has a bar at the bottom of the section that defines the height of the section. When you place the mouse pointer over a section bar, the pointer changes to this  image. Using this pointer, you can drag the bar to make the section taller or shorter.

Exploring the Toolbars

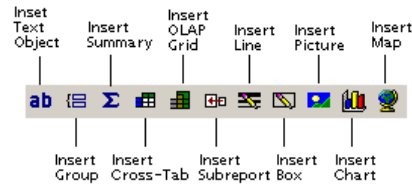
Crystal Reports has four toolbars. The Standard toolbar contains buttons for basic editing commands such as save, open, cut, copy and paste, undo, and help.



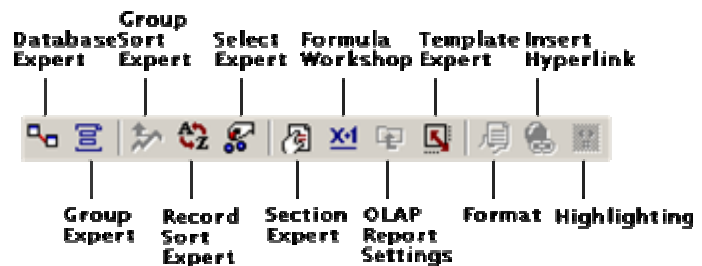
The Formatting toolbar has buttons for formatting commands such as bold, italic, underline, alignment, number formats, etc. Most of these buttons are not active unless you have an object selected.




The Insert toolbar shows buttons for adding various report objects into the report. These buttons are generally active and available for all reports.



The Expert toolbar shows buttons for modifying and formatting such items as charts and maps using an Expert wizard. These buttons may or may not be active depending on the button and the object it represents.



❖ Exercise 2.1 - Explore the Design Window

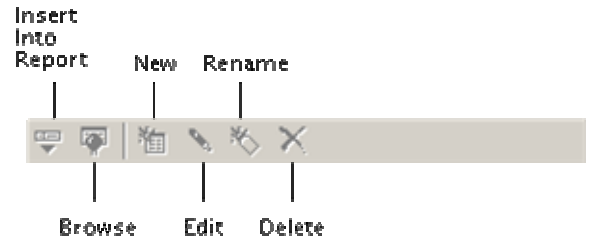
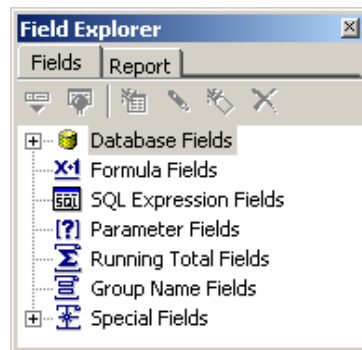
1. To begin, open to Field Explorer by clicking the  icon.
2. When you have the Design Window in front of you, take a few moments and practice these steps before adding data fields:
 - a. Move the mouse pointer across the Toolbar, reading the tool tips that appear when you touch the pointer on the buttons.
 - b. Run your mouse across the options on the Menu Bar, just above the Toolbar, click once to read the menu choices to familiarize yourself with the terms used by Crystal Reports.
 - c. Place the mouse pointer over the Section boundaries and stretch them up and down.

Managing Resources with Explorers

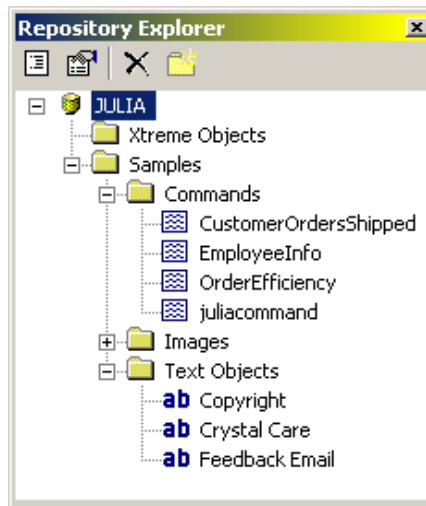
Managing resources are done through three Explorer components.

- **Field Explorer** -Use the Field Explorer to insert all types of fields into the report. The Field Explorer lists the seven types of fields you can insert into a report: Database, Formula, SQL Expression, Parameter, Running Total,

Group Name, and Special fields. With the icons at the top of the Field Explorer, you can manipulate the fields in the list.

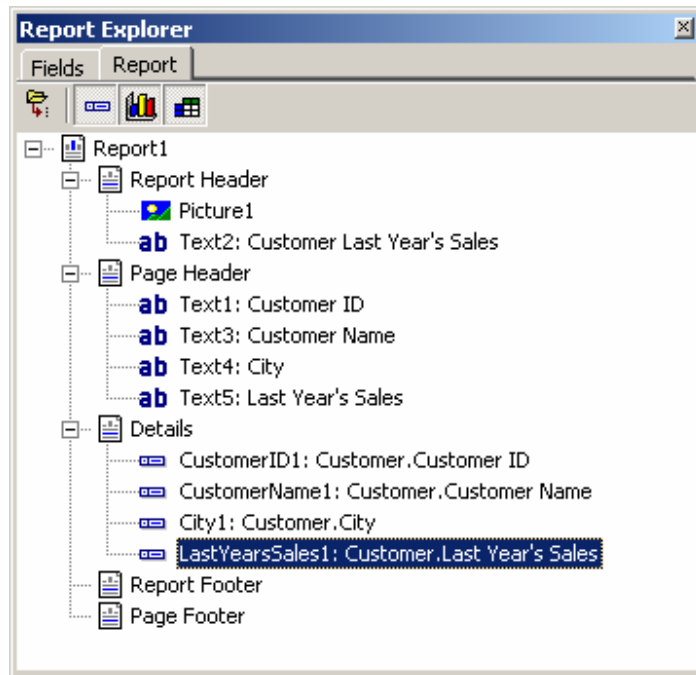


- **Repository Explorer** - This powerful new feature offers the report developer the chance to save several kinds of objects for re-use in subsequent reports. Although formulas may not be stored in the repository, many other useful items can be. Items which can be saved are:
 - Text Objects
 - Graphic Images
 - Custom Functions
 - Commands (Queries)



- **Report Explorer** - Another very useful new feature is the Report Explorer. This tool represents all the sections and objects in the report in a group-tree fashion. In addition to making it easier to find a particular object or section,


this explorer allows a user to select an item or items within the group tree for editing purposes. Simply right click on the item to view the editing options available.




The explorers can easily be turned on or off for viewing, but are normally docked to the left of the report design area. To “un-dock” an explorer, simply drag it by the title bar to the right of the report. To view an explorer, pull down the View menu to see a list of the three available explorers.

Placing Fields on the Report

As you look at the Field Explorer, you should notice that some of the field types have an icon to the left of the name. These indicate there are fields of that type available to the report. Expand the **Database Fields** folder to see available tables and fields. Expand a table to see available fields contained in that table.

The Field Explorer is automatically docked to the left of the design area. If you prefer to have it floating (undocked) in another location, just drag it to the right by its title bar. If you change your mind, just reposition it back to the docking area. The Field Explorer can also be docked to the right of the design area. And finally, the Field Explorer can also be closed any time and re-opened by clicking the  icon.

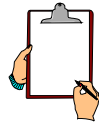
There are several ways to place fields onto the report. The Field Explorer dialog box provides access to all the fields in the table(s) you selected when beginning the report. Using the Field Explorer dialog box, you can place a field in the report in one of five ways:

- Select the field in the list, then click the Insert Fields  button, and then click in the report where you want the field to appear.
- Select the field in the list, then press ENTER, and then click in the report where you want the field to appear.
- Double click the field in the list, and then click in the report where you want the field to appear.
- Drag the field to the report. Release the mouse button when the pointer is pointing where you want the field to appear.
- Right Click on the field and chose Insert from the **Short Cut Menu**, then click in the report where you want the field to appear.

Typically, you would place fields in the Detail section of a report. When you place a field in the Detail section, Crystal Reports adds a Field Header directly above the data field in the Page Header section. The field defaults to the actual size of the field in the database or to the size of the field name, whichever is longer. This is very helpful for identifying the field at a glance.





WARNING: *If you place a field in any section other than the Detail section, Crystal Reports does NOT create a Field Header in the page header section of the report. Even if you later move the field to the Detail section, the Field Header is not created automatically.*



NOTE: *If you delete the field object from the report, Crystal Reports will automatically remove the Field Header from the report as well.*

❖ Exercise 2.2 - Place Fields in the Detail Section of the Report

1. Make sure the **Field Explorer** is open. If it is not click the  icon in the **Standard Toolbar**.
2. Expand the **Database Fields** node, find the Customer table and expand it to see a list of available fields.
3. Select the **Customer ID** field in the list of fields.
4. Click the  button.

The mouse pointer appears as a Ø symbol when it is pointing to a location where you cannot place a field.

5. Move your mouse into the **Details** section at the left side of the report and left-mouse click again.

Crystal Reports places the field in the details section and the field name in the Page Header section.

6. Select the **Customer Name** field, then press ENTER.

When you move the mouse, you again see a Ø symbol until you point into the report.

7. Again, move your mouse into the **Details** section after the **Customer ID** field to place the field.

Crystal Reports places the field in the report.

8. Double click the **City** field.

The mouse pointer changes to a Ø symbol until you point into the report.

9. Click in the **Details** section after the **Customer Name** field.

10. Left-mouse drag the **Region** field to the **Details** section after the **City** field.

NOTE: In the Field Explorer, you should see a green checkmark on the icon to the left of each field you add to the report.

Selecting and Sizing Objects

Once a field is placed on a report, it is good practice to resize it to a proper character length. When Crystal inserts the field it is the same size as the data field in the database, or the size of the field title, whichever is larger. To resize the field to a size you want, you must select it first. When a field is selected, a dot appears at the center of each of the four sides surrounding the object. These are called *sizing handles*. When you place the mouse pointer directly over a handle, the pointer changes to a two-headed arrow. Use this mouse pointer to drag the border of the object to change the size.



Since the data field and the field name appear in the report at the same size, you may often need to select *both* objects, so you can resize them at the same time. If you resize the field the heading will also resize whereas if you resize the heading the field will not resize. To select multiple objects, you can use one of two methods:

- Click the first object to select it. Then, while pressing the SHIFT key or the CTRL key, click other objects.
- Drag a marquee around the objects you want to select. Make sure the mouse pointer is NOT pointing to an object when you begin to drag. The marquee you drag selects any object touching the marquee or contained within the marquee. This process is sometimes referred to as “lassoing” objects.

❖ Exercise 2.3 - Size a Field Using the Resize Handles

1. Select the **Customer Name** field in the detail section.
2. Point to the sizing handle on the right side of the selected object.

The mouse pointer changes to a double-headed arrow when you are pointing to the correct location.

3. Drag to the left to make the field and fields name about 90% of their original size.

Notice that Crystal provides a line and shading on the ruler so you can easily see exactly how wide you are making the objects.

Also notice how the field header in the Page Header section resized itself to match the data field it is associated with. This last feature reduces time spent matching field headers to data fields in terms of size.

You can also resize fields to be the same size as another field using the Size command. To do this, simply multiple select the fields you want to size plus the field that is the size you want to match. RIGHT click the field that is the size you want, and then choose Size from the Shortcut menu. Crystal makes all selected fields the same width, height, or overall size as the field on which you RIGHT clicked.

❖ Exercise 2.4 – Resize a Field to Match Another Field

1. Select and resize the field header labeled “City” in the **Page Header** section. Resize the field header to be about 1.5” long, which should make it shorter.

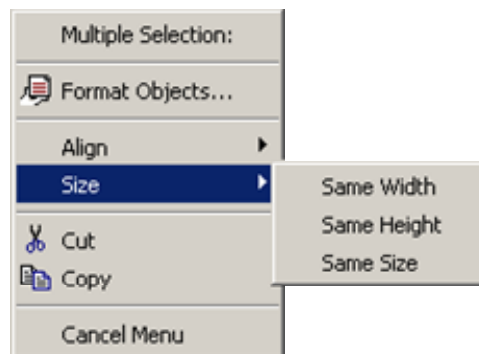
Notice how the data field “City” doesn’t resize to match its associated field header. This gives us added flexibility in sizing our field headers to be different sizes than their associated data fields.

2. Multiple select the **City** data field and its title, then RIGHT click the field.

Be sure you RIGHT click on the field, not the object you have already resized.

3. Point to Size in the shortcut menu, and then choose Same Width.



Crystal makes both the data field and the field header the width of the longer object.



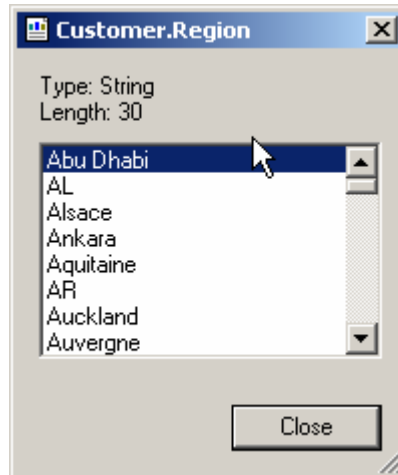
Browsing Field Data

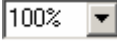
If you are not familiar with the data contained in a field, you might not know what size the field needs to be on the report. Crystal Reports lets you preview the data contained in a field to help you determine how big a field should be. To view the data in a field, select the field in the Field Explorer dialog box, and then click the Browse button in the Field Explorer toolbar. If the Field Explorer dialog box is not open, you can open it by clicking the Field Explorer button on the Toolbar. You may also right click on a field and select to Browse data

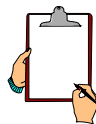
❖ Exercise 2.5 - Browse Field Data

1. Make sure the **Field Explorer** is still open; if it isn't click the **Insert Fields**  button in the toolbar to open the **Field Explorer**. Select the Region field in the **Data Fields** list.
2. Click the  button.

The Browse Field Data dialog box opens.



3. When you are finished viewing the field data, click **Close** to close the **Browse** dialog box.
4. Multiple select the **Region** field and its field title. Resize them to make them smaller. When you are finished, click away from the objects to deselect them.
However, what if you can't see the right edge of the fields to resize them?
5. Click the drop-down arrow after the **Zoom Control** box  on the Standard toolbar, and then choose **50%**.
6. Now, drag the resize handle to resize the **Region** field so it fits on the page.
7. Reset the **Zoom Control** box to **100%**.



NOTE: *The Browse dialog box, by default, displays the first 500 unique values in the database.*



TIP: *You can also open the Browse dialog box by **RIGHT** clicking the field in the report and choosing Browse Field Data... Be sure you **RIGHT** click the data field in the Details section, not the field name object.*

Moving and Aligning Objects

To move a field, you must first select it. Once selected, position the mouse directly over the object until you see a four-headed arrow. With this arrow, you can move the field by dragging it. To drag both a data field and its field name at the same time, just multiple select the fields, and then drag with the four-headed arrow. You can even drag fields from one section of the report to a different section. You can also move a data field and its field name by simply moving the data field.

The only problem with moving fields like this is that they get out of alignment with their titles. However, the shortcut menu has an Align command that works similarly to the Size command you have already used. Just multiple select the fields you want to align, then RIGHT click the field you want to align to. Choose Align from the shortcut menu, then choose to align on the left side, the right side, the center, or to the closest grid point.

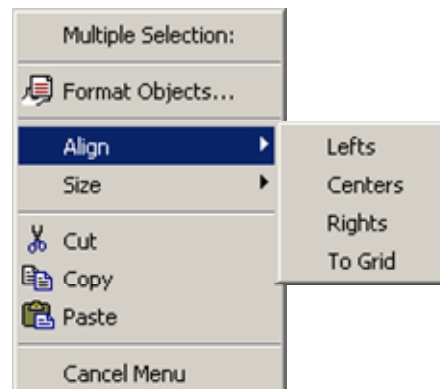
❖ Exercise 2.6 - Move an Object

1. Move the **Region** field header to the left, closer to the **City** field.

Notice that only the title moved. Now it is out of alignment with the field itself.

2. Multiple select the **Region** field and its field header. Then RIGHT click on the field header.
3. Choose **Align**, then **Lefts** from the shortcut menu.

Crystal aligns the field and its title on the left edge of the title.



TIP: You can also move or size an object with the keyboard. To move an item, select it, and then use the arrow keys on the keyboard to move it. If Snap to Grid is turned on, the arrows move the item one grid point. If it is turned off, the arrow keys move in very small increments. This is referred to as **NUDGING** an object. To resize using **NUDGE**, press and hold down the **SHIFT** key while pressing an arrow key.

Using Guides and Guidelines to Move and Align Objects

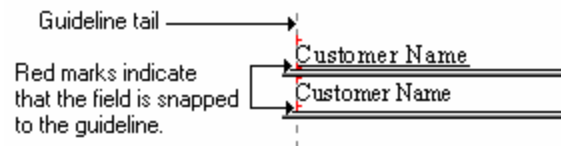
Although you can simply drag an object to move it, it is easier to move fields and their field names using the *guidelines*. Guidelines are triangular buttons with attached dashed lines that appear on the ruler bar at the top of the Design window. You can use these guidelines to easily move and align objects.

Crystal Reports inserts guidelines automatically in these situations:

- Whenever you insert a field in the Details section of a report, the program automatically creates a guideline at the left edge of the field frame and snaps the field and field title to it. You can move both the field and the field name, keeping them aligned, by dragging the guideline marker in the ruler.
- If you summarize a field, the program snaps the summary to the same guideline as the field you summarized to assure proper alignment.
- When you RIGHT click the shaded areas to the left of a section and choose the Arrange Lines command, the program automatically creates one or more horizontal guidelines in the section and snaps the fields to them.

When you move an object by dragging it with the four-headed arrow, you may move it off the guideline. If you do this, the object no longer snaps to the guide and does not move with the guide. You can re-snap the object, or snap any other object to any guide by moving the left edge of the object so it touches the guide.

When an object is snapped to a guideline, small red marks appear on the edge of the object where it touches the guideline.



You can also work with guidelines manually. Crystal Reports lets you add guidelines and delete them whenever you need to.

- To add a guideline to the horizontal ruler in any section, click in the ruler where you want the guideline to appear.
- To add a guideline to the vertical ruler, simply click in the ruler where you want the guideline to appear.
- To delete a guideline, drag its triangular button off the ruler.



WARNING: To snap a field to a guideline, you **MUST** move the field. You cannot snap a guideline to a field by moving the guideline.



TIP: Guidelines are much easier to work with if you can see the “tails”, that is the dashed lines that drop down from the guideline. To turn on the tails, choose File/Options... Click the **Show Guidelines in Design** command, and then click the **OK** button.

❖ Exercise 2.7 - Work with Guidelines

1. First, turn on the tails for the guidelines. Choose **F**ile/**O**ptions...
2. Click the *Guidelines* command, and then click **OK**.

Crystal displays the dashed lines extending down from the guideline markers in the ruler.

3. Point to the guideline marker for the **City** field and drag it to the left. Position it right after the **Customer Name** field.
4. Since you previously moved the **Region** field by dragging it with the four-headed arrow, you unsnapped it from its guideline. Using the four-headed arrow, move the field name for the **Region** field so its left edge touches its guideline. Now move the field title so its left edge touches the guideline.

Be sure to look for the red marks to see if the field is snapped to the guideline.

5. Move the guideline so the **Region** field and its field name are positioned just to the right of the **City** field.
6. Now you need to add another field. Make sure the **Field Explorer** is still open.
7. Insert the **Last Year's Sales** field to the right of the **Region** field.

Notice the guideline is automatically inserted on the right for numeric fields.

8. For purposes of this exercise, delete the guideline that was originally used to align the field by dragging its marker off the ruler.
9. The **Last Year's Sales** field is a number. Numbers usually look better if they line up on the right. Therefore, you need to create a new guideline for this field. Click on the horizontal ruler at the 7" mark.

Crystal creates a new guideline there.

10. Multiple select the **Last Year's Sales** field and its field name, and then drag the objects so their right edges touch the new guideline.

❖ Exercise 2.8 - Use the Arrange Lines Command to Align Field Titles Horizontally

1. Click in the gray **Page Header** section at the left of the screen with the **RIGHT** mouse button.

A shortcut menu opens.

2. Choose **Arrange Lines**.

Guidelines appear wherever a field is located in the section. Sometimes even where they don't appear.

3. Make sure all the field headers are lined up on a single guideline. Move any titles to the guideline if they are not.
4. If you see additional guidelines in the vertical ruler, delete them by dragging them off the ruler.
5. Move the vertical guideline to position the field titles where you want them.



WARNING: *Be careful when you are moving a guideline. If the mouse pointer is not positioned in the ruler when you release the mouse button, you will delete the guideline. If this happens, just create a new guideline by clicking in the ruler where you want it to appear or click the Undo button.*

Creating Text Objects

In addition to adding fields to a report, you can also add text objects. A *text object* is an object in which you can type any text you wish. It is not related to the underlying database in any way. Typically, you use text objects as titles or identifiers for summary information. To create a text object, choose **I**nsert/**T**ext Object from the menus or click the Insert Text Object button on the Toolbar. The mouse pointer becomes a Ø symbol until you point to a location on the report where you can insert objects. Just point to the location you want the object, then click to add it.

When you first insert a text object, it is in Edit mode. You see a flashing insertion bar inside the object. You can type text at this point. When you are finished adding text, click away from the object to finish editing. You cannot end the editing by pressing the ENTER key. This adds another line to the text in the object.



TIP: You can tell if you are in Edit mode by looking for the flashing insertion bar. Crystal Reports also displays a small ruler above the object when you are in Edit mode. If you need to make corrections to an object after you have exited Edit mode, double click the object to return to Edit mode.

❖ Exercise 2.9 - Insert a Text Object

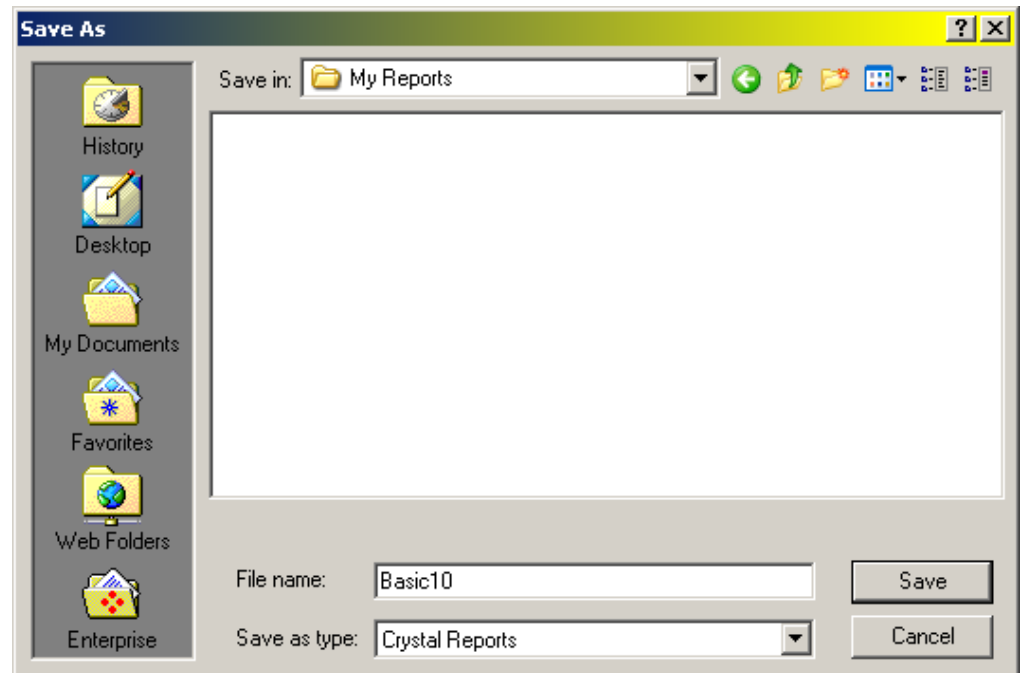
1. Click the **I**nsert **T**ext **O**bject button.
The mouse pointer displays as a Ø symbol until you point into the report.
2. Click in the **R**eport **H**eader section to add the object.
The text box appears with a flashing insertion bar.
3. Type **C**ustomer **S**ales.
4. Click away from the text object to finish editing.
5. Resize the object if necessary to view the entire text on one line.

Saving the Report

As with any software, it is a good idea to save your reports frequently in Crystal Reports so you do not lose work that you have done. To save a report, you can choose **F**ile/**S**ave from the menu or click the Save button on the Toolbar.

The first time you save a report, Crystal Reports opens the Save As dialog box.

In this box, you can specify a folder location for the report and give the report a filename. The five icons on the left give you one click access to common locations.

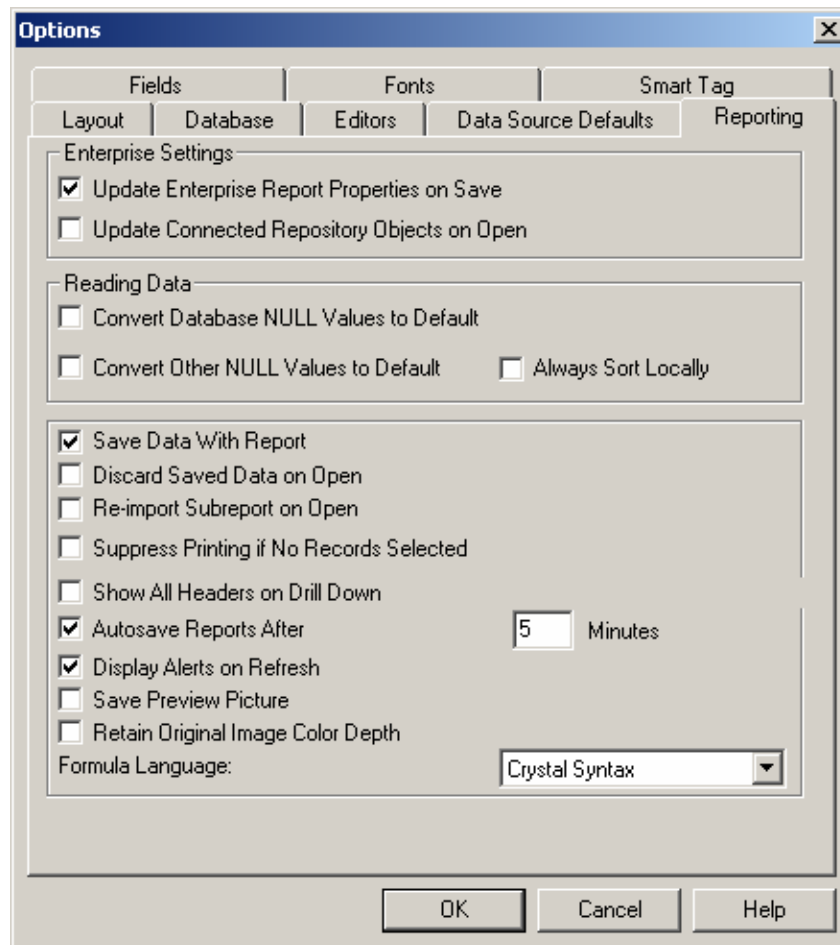


- The **History** folder opens the Windows Recent files folder.
- The **Desktop** icon lets you save this report as an icon on your Desktop.
- **My Documents** opens the Windows My Documents folder.
- The **Favorites** folder opens the list of favorite folders you have specified in Internet Explorer. If you have a folder where you want to keep all of your reports, add it to the Favorites folder, then it is easily accessible from here.
- **Web Folders** lets you save your report to a web folder on a web server. You no longer have to download reports, edit them locally, and then upload them to the web server.

Once you have saved and named a file, the Save command automatically overwrites the previous version of the file with the revised version. Crystal Reports does not prompt you to overwrite. If you want to preserve the previous version of the report, you must use the Save As command on the File menu to give the revised report a new name.


Autosaving the Report

Crystal Reports has an Autosave feature that automatically saves the report for you in a time frame you specify. To turn on the Autosave feature, choose File/Options from the menu and then select the Reporting tab.



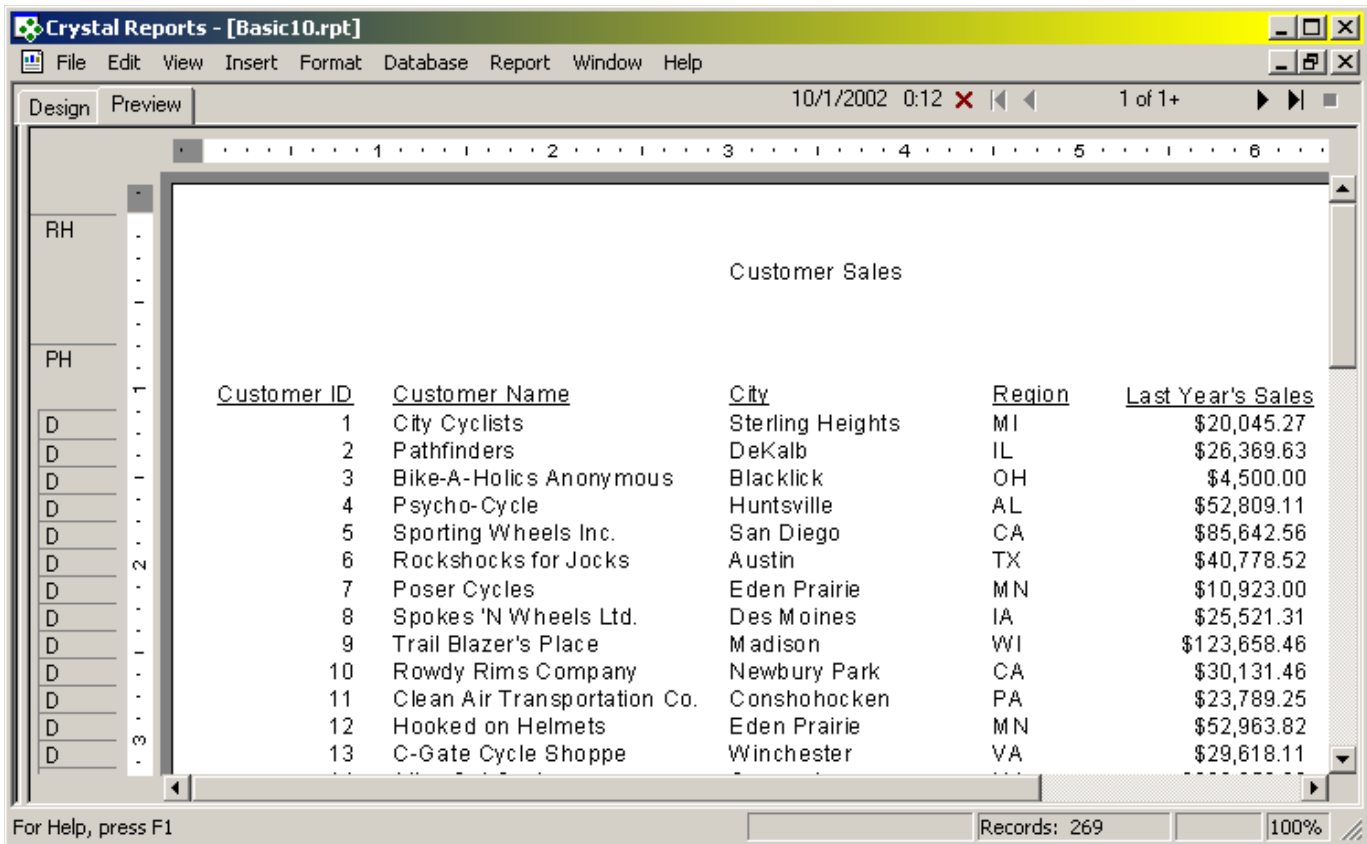
You can checkmark the Autosave Reports After command, then enter the number of minutes between saves.

❖ Exercise 2.10 - Save the Report

1. Click the Save  button on the Toolbar.
Crystal Reports opens the Save As dialog box.
2. Be sure you are in the Crystal Reports folder
C:\Program Files\Crystal Decisions\Crystal Reports 10
Type **Basic 10** in the *File name:* box.
3. Click the **Save** button.

Previewing the Report

When you have saved the report, you can see how it looks with data in it by using the Preview command. To preview the report for the first time, choose File/Print Preview or click the Print Preview button on the toolbar. Crystal Reports creates a Preview tab and displays the report similar to how it will look when printed. Once you have created the Preview tab, you can switch between Design and Preview views by clicking the appropriate tab.



At the upper right corner of the Preview view, you see navigation buttons.



- Use the ◀ and ▶ buttons to move through the report one page at a time.
- Use the |◀ or ▶| to display the first or last page of the report.
- The ✕ button deletes the Preview tab.
- The ■ button stops the processing of the report and displays the report with whatever data it has gathered up to the point you stopped the processing.
- The page indicator in the middle of the arrow buttons indicates the page you are viewing and the total number of pages in the report. Crystal formats the report only one page at the time to save time when you preview. If you see a + sign after the total page count, that means that Crystal has not formatted all the pages of the report, so the total count is not known. To get the actual total page count, go to the last page of the report.
- The date and time at the left of the buttons indicates the last date and time that the report was refreshed, or the last date and time that data was pulled from the database.

Refreshing the Data


When you preview a report, Crystal Reports queries the underlying database, pulls the records you requested, then saves them in memory and/or to a disk file. Thereafter, Crystal Reports works with the same record set on the local machine rather than re-querying the database. Once you have pulled the initial set of records, Crystal Reports can work very quickly because it does not have to re-query the database each time you want to preview the results of your work. If you want Crystal Reports to re-query the database, you can choose to *refresh* the data.

Crystal Reports automatically refreshes the data in certain circumstances:

- When you add additional fields to the report.
- When you add criteria that causes Crystal Reports to select additional records from the database.
- When you add a formula that uses a field that is not currently on the report.
- If you want Crystal Reports to automatically discard the saved data and pull new data from the database whenever you open the report, you can specify for Crystal to do this. Choose File/Options, select the Reporting tab, and then check the *Discard Saved Data When Loading Reports* command.

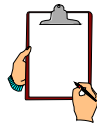
You can refresh the data manually whenever you want by choosing Report/ Refresh Report Data or by clicking the Refresh button on the Toolbar.

❖ Exercise 2.11 - Preview the Report

1. Click the **Print Preview**  button.
2. Click the navigation toggle buttons the report one page at a time.
3. Click the navigation buttons to view the first and last pages of the report.

Notice the change in the total page count after you have navigated to the last page of the report.

4. Click the Close **View** button to delete the **Preview** tab.
5. Click the **Print Preview** button to restore the tab.
6. Click the **Design** tab to return to **Design** view. Click the **Save** button again to save the report.



NOTE: When you preview the report, you may see a blank white area on the left of the screen. This is the Group Tree - Smart Navigation area. You will learn more about using this later. For now, you can turn this off by clicking the Toggle Group Tree button on the Formatting toolbar.

Getting Help

You can obtain help on Crystal Reports by choosing Help, Crystal Reports Help or by pressing the F1 key.



The left side of the screen provides help in locating the information you want.

- *Contents* show a table of expandable subjects through which you can look for the information. Think of this as a table of contents.
- *Index* provides a search method that looks through screen titles. Just type the keyword you want. Crystal interactively displays topics with that keyword in the title.
- *Search* is a word search option that searches help screen text. Again, type the keyword or words you want, and then click the List Topics button to see a listing of screens that contain your keyword.
- *Favorites* display a list of topics that you have added as favorites.



TIP: If you need help on functions in the Formula Editor, look them up by the function name or by the general category to which they belong. For example, search for the function name *ReplicateString*. If you cannot find the function by searching for the name, then look up the general category to which it belongs. You cannot locate *For Loop* by searching for the name, but you can find it by searching for its category, *Control Structures*.

Challenge Exercise – Creating a Basic Report

Create a report that lists orders, their important date and payment information.

1. Click the **New** button on the toolbar to begin the new report.
2. Create this report as a blank report.
3. In the **Database Expert** window, open the Favorites folder, the **Xtreme Sample Database 10, Tables** and then add the **Orders** table. Click **OK**.
4. Add the following fields to the Details section: **Order ID, Order Date, Required Date, Ship Date, Order Amount, and Payment Received**.

*The **Order ID** and **Order Amount** fields are number fields. Notice how Crystal Reports provides guidelines on the right edges of these fields. This is because number fields are right-aligned by default.*

5. Browse the **Order Date** field to see what the date looks like. When you are finished, close the **Browse** box.

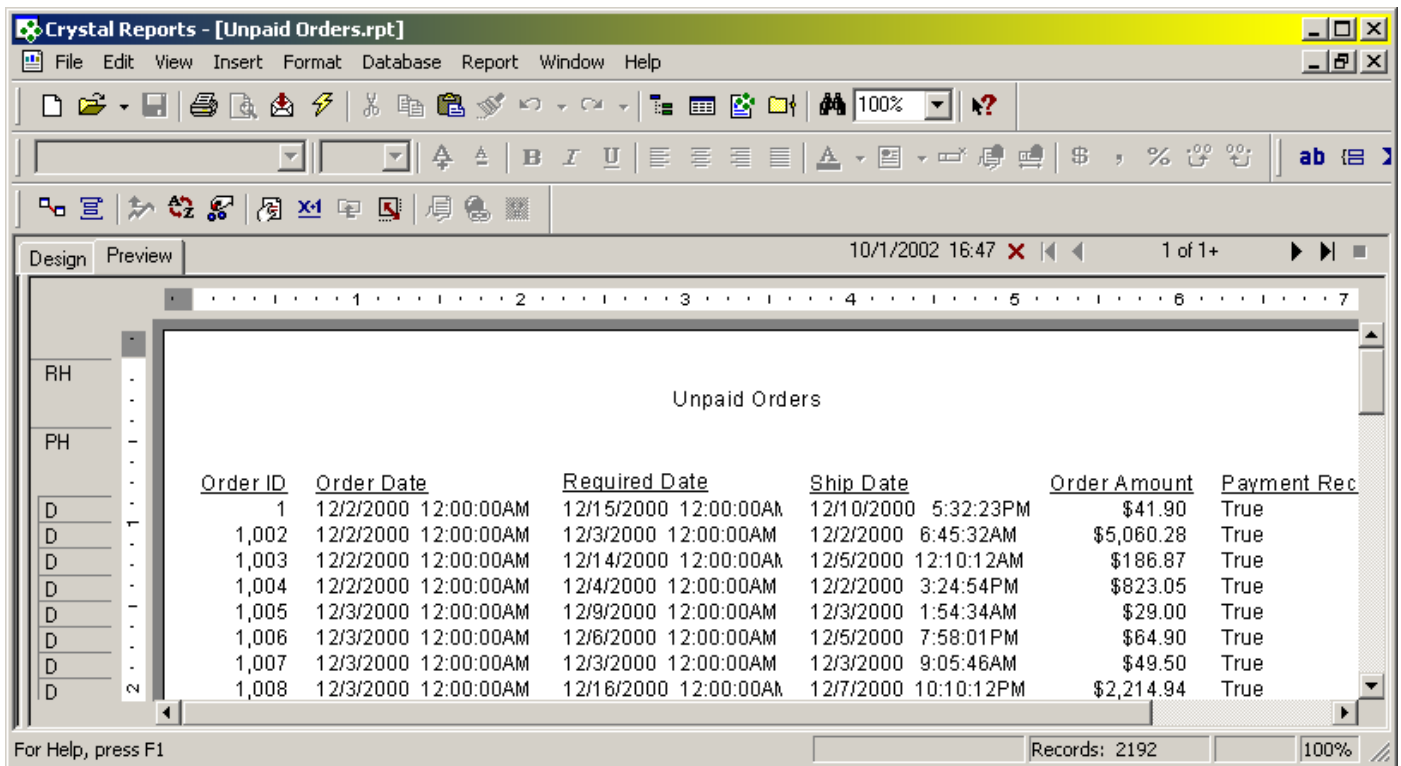
Notice the field shows both the date and the time. It needs to be about 1.5” long to display all the data.

6. Resize the Order Date field to be 1.5” long.
7. Using the **Size** command on the shortcut menu, resize the **Required Date** and the **Shipped Date** fields to be the same width as **Order Date**.

Notice how the field headers automatically resize the same as the data fields. Resize the field titles to be just a little larger than the actual text.

8. Use guidelines to position the fields so they look good to you.
9. Add a text box to the Report Header section. Type **Unpaid Orders**.
10. Save the report. Name it **Unpaid Orders**. Preview the report then resave it after you have previewed. When finished, close the report.

The Preview view of the report should look similar to the following illustration:



NOTES

