Introductory Crystal Reports

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...it's all about you

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Introduction and Overview

Welcome to TeachUcomp, Inc.'s Introductory Crystal Reports class. Crystal Reports is a database reporting application. It has powerful capabilities to access and analyze various sources of data for its reports.

As business evolves towards a more information-based workplace, the talent to access and create accurate and relevant reports from multiple data sources is quickly becoming a necessity for businesses of all sizes. However, as a business entity grows, it may often find that the data needed to make informed business decisions is contained within various database applications.

Crystal Reports provides a solution to this issue, due in large part to its flexibility in accessing various types of data. You can use Crystal Reports to access data from database files commonly used in many types of businesses and industries, from desktop database solutions like Microsoft Access to mainframe or server-based data files like Microsoft SQL Server or Oracle.

Crystal Reports can also be used by many different types of individuals within an organization. One does not have to be an IT guru to generate basic reports, as Crystal Reports provides many intuitive wizards to assist in report generation. It also has more advanced features for the IT professional's use, too. Whatever your data reporting needs, one will find that knowing Crystal Reports is a useful tool in making more informed business decisions.

Table of Contents

CHAPTER 1-
THE CRYSTAL REPORTS ENVIRONMENT

1.1- STARTING CRYSTAL REPORTS

1.2- THE MENU BAR

1.3- USING TOOLBARS

1.4- THE DESIGN VIEW

1.1- Starting Crystal Reports:

Crystal Reports is a database reporting application used by many different types of businesses and industries to generate accurate and powerful reports that assist in business decision-making. If you need the flexibility to generate reports from many different types of database files in your organization, then Crystal Reports is definitely for you! While there are many fine database report-writing software applications available, you will find that Crystal Reports is very useful in allowing you to use the same report-writing tool to access and analyze various types of data sources such as Microsoft Access, Oracle, and Microsoft SQL Server, among many others.

However, before you begin to examine the process of creating reports using the Crystal Reports application, you should familiarize yourself with its operating environment. Crystal Reports makes use of a standard operating environment that contains many familiar features, such as a Menu Bar and many types of toolbars. This first lesson will begin by examining the various objects you must use during the report creation process, what these objects are named, and where they are located within the application screen.

In Crystal Reports 2013, after opening the program you will see the "Start Page." At the top of the page, under the "Start a New Report" section, you will find hyperlinks that you can click to create either a new blank report or launch one of the report wizards to assist you in creating a specific type of report. In the "My Recent Reports" section you will see a hyperlinked listing of the most recently opened reports. You can click the name of a report in this list to quickly reopen it. You can also click the "Open File" hyperlink to launch the "Open" dialog box, which you can then use to find and open a previously created report.

If you wish to close the Start Page, you can click the small "X" on the "Start Page" tab at the very top of the page. To view it again after you have closed it, you can select "Help| Show Start Page" again from the Menu Bar.

The application window contains the Start Page as well as any other reports you may create. If you do not have a report open, then notice that most of the Menu Bar commands are not accessible and that the majority of the buttons displayed in the toolbars appear "grayed out" or unavailable for selection. To see how the environment changes when a report is opened, you need to create a report. Note that each report you create will be displayed in its own report window on a separate tab inside of the application window.

To create a new report in Crystal Reports 2013, you can either click the "New" button in the Standard toolbar, select "File| New| Blank Report…" from the Menu Bar, or just click the "Blank report" hyperlink in the Start Page.

At that point a new, blank report will appear in its own report window inside the application window. Also, the "Database Expert" dialog box will appear onscreen. This dialog box allows you to connect to the data source of the report, and you will discuss it in much detail later. For now, simply click the "Cancel" button in the "Database Expert" dialog box to close it and view the basic report window behind it.

Notice that you now have a full Menu Bar of choices at the top of the application window and that many of the buttons available in the toolbars are now displayed in color, indicating that they can be selected. In the main report window, you should see a tab at the left side of the screen that says "Design." This lets you know that what you are seeing onscreen is a report shown in the "Design" view. This is the view in which you will spend the majority of your time when creating reports. Next you will examine what tools are available to use within this view.

1.2- The Menu Bar:

You can access many commands in Crystal Reports by using the Menu Bar. The Menu Bar is the toolbar at the top of the Design View which displays the command categories of "File," "Edit," "View," "Insert," "Format," "Database," "Report," "Window," and "Help." Clicking a command category displays the names of functions which would logically belong to that category. For example, if you click the "File" command in the Menu Bar, you will see commands such as "New…," "Open…," "Save," and other file management commands. You may click any command displayed in black to perform that function. A command displayed in gray is unavailable at that time. Commands which are followed by the ellipsis mark, such as "Save As…" or "Open…" will display a dialog box into which you will need to enter additional information or make some additional choices before you can execute the command. This is in contrast to a command like "Exit" for example, which needs no additional information from you to be performed. You will also see some menu commands which are followed by a right-pointing arrow. When you roll your mouse pointer over one of these commands, like "Export," you will be presented with an additional side menu of commands from which you will need to select the command that you wish to execute.

You can also use the keyboard to execute Menu Bar commands. Many commonly used menu commands will display keyboard shortcuts to the right of their menu listing which you can press to quickly perform the commands. For example, if you click the "File" command in the Menu Bar you can see that the keyboard shortcut for the "Open…" command is "Ctrl + O" on your keyboard. To use the keyboard shortcut in the future, first ensure that you do not have any menu list displayed. You can retract a command list by clicking the name of the currently displayed command list again or by clicking into the empty space shown onscreen. Then simply press and hold down the "Ctrl" key on your keyboard while you then press and release the "O" key once on your keyboard. That should then invoke the "Open" dialog box, just as if you had selected "File| Open…" from the Menu Bar with your mouse. You can then close the displayed dialog box by using your mouse or by pressing the "Esc" key on your keyboard, which is the keyboard shortcut used to cancel a displayed dialog box.

You may also notice that not every single command shown in the Menu Bar necessarily has a keyboard shortcut displayed in the menu. However, you can still select any command in the Menu Bar using your keyboard, which can increase the speed with which you can select commonly used commands and functions. Once again, to use this technique, you must ensure that there are no menu command lists currently displayed onscreen. Then press and hold down the "Alt" key on your keyboard and examine the commands listed on the Menu Bar. You should see a small underline appear below one letter in each Menu Bar command, for example the "F" in "File." At this point, press the letter on your keyboard that corresponds to the underlined letter in the Menu Bar command that contains the command that you wish to execute. You will see the menu of commands appear, and also notice that each command listed also contains a single underlined letter. At this point, you may release the "Alt" key and then simply press the key on your keyboard which corresponds to the underlined letter in the command you wish to execute.

Also note that when a menu command is displaying its subcommands in the drop-down list, some of the commands display a picture to the left of the command. This lets you know that if you see the same picture in a toolbar, you can click it to execute the same function that the command performs. So using the Menu Bar is a great way to start to learn how to use the application.

1.3- Using Toolbars:

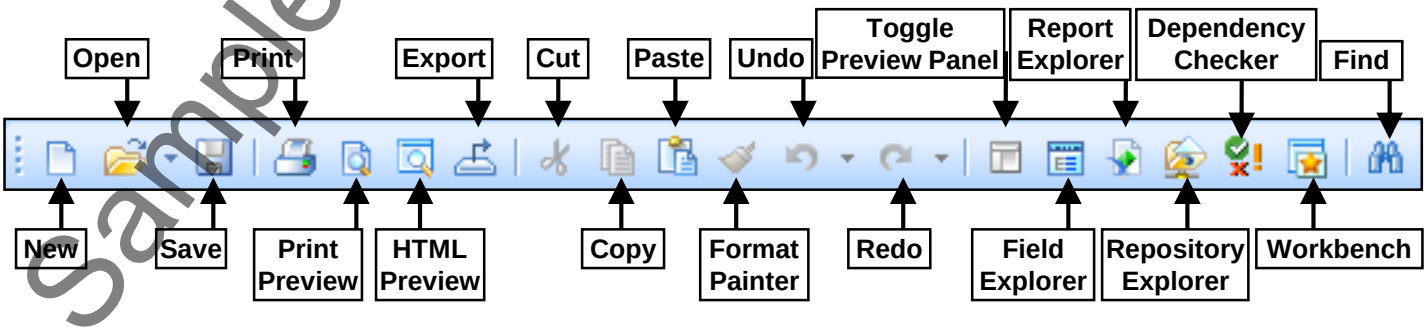
You can use the buttons on the toolbars in Crystal Reports to quickly and easily gain one-click access to some of the most commonly used commands and functions. Let's review the names of the various toolbars and what functions are available on these toolbars. While many of the functions listed many not seem familiar yet, you will see how to use each function later.

Many toolbars are displayed by default in Crystal Reports. You can control which toolbars appear and where they are located onscreen. In order to turn a toolbar's display on or off, you can select "View| Toolbars…" from the Menu Bar. This will cause the "Toolbars" dialog box to appear, listing the available toolbars in the list of checkboxes. To display a toolbar, make sure that there is a check in front of the toolbar's name in this list. To hide a toolbar, uncheck the checkbox next to the name of the toolbar that you wish to hide. When you are finished selecting which toolbars you wish to show or hide, click "OK" to set the new toolbar display. A faster way to accomplish this same task is to simply right-click any toolbar displayed onscreen. This will display a pop-up menu of the toolbars available. Toolbars that display a checkmark in front of their names are currently displayed onscreen. You can click the name of any toolbar displayed in the pop-up menu to toggle its display on or off.

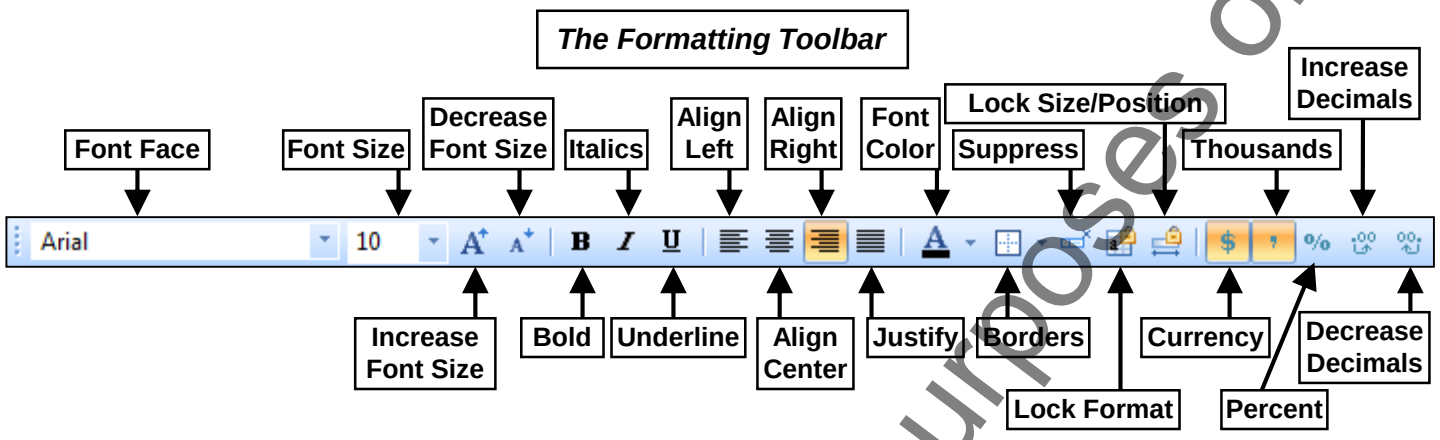
When a toolbar is displayed onscreen, you can find what the name of the button is by holding your mouse pointer over the button and resting it there until you see the name appear in a small text box called a "screen tip." This can be a useful way to familiarize yourself with the buttons available.

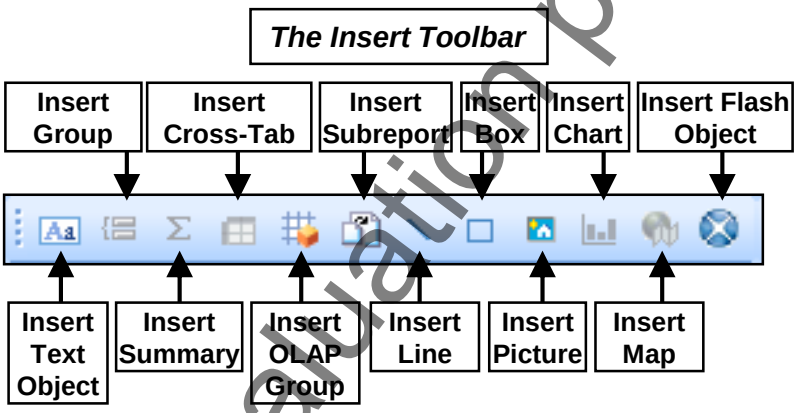
Toolbars can also be displayed onscreen in one of two modes: "embedded" or "floating." An embedded toolbar appears as if it were part of the application window and will typically appear embedded above the report design area. When your toolbar is embedded, you will see a thin handle appear at its left end. You can click and drag the toolbar by this handle to move it. You can drag it by this handle to embed it in any one of the four sides of the application window. Note that if you embed it at either the right or left sides of the application window, the handle by which you move the toolbar will instead appear at the top of the toolbar versus the left side of the toolbar. If you move an embedded toolbar from the sides of the application window and then release it over the design area, it will then appear as a "floating" toolbar, which hovers over the workspace area. When the toolbar appears as a "floating" toolbar, it will display its name in its own title bar at the top of the toolbar. You can click and drag the floating toolbars to move them around using the thin, blue title bars at the top of the toolbar when it is displayed as a floating toolbar. You can even click and drag them to the sides of the application screen and then release them there to make them appear as "embedded" toolbars again. If you accidentally drag an embedded toolbar from a side of the application window and make it a floating toolbar, you can easily return it to the location from which you moved it by simply double-clicking the thin, blue title bar of the toolbar when it appears as a floating toolbar to embed it back into the side of the application window from which you dragged it originally.

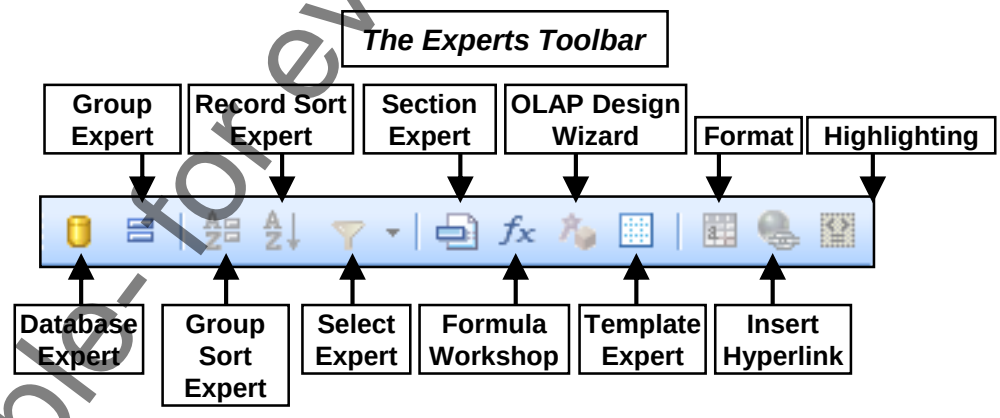
The Standard Toolbar (Crystal Reports 2013)



1.3- Using Toolbars- (cont'd.):







1.4- The Design View:

The Design view of a report is the view in which you will spend the majority of your time as you create your report. When you create a new report, it is displayed in Design view by default. You can see the "Design" tab in the upper left corner of the report design section. Once you have previewed a report using the "Print Preview" function, there will also be a "Preview" tab in that same area as well. You can then click the names of the two tabs to switch between the two views.

In Design view, you will not see the actual data as it will display in the report, but will instead see the fields and other data objects, and the various sections of the report into which you will place these objects. The default Design view is divided into five separate sections, which are labeled at the left side of the Design view. You will also see both a horizontal and vertical ruler surrounding the report Design view, as well. The various sections are where you place your report's data fields and other objects.

When you place a data field into a report section, its display is in some ways dictated by the section into which you placed the field. You will now examine the default sections of a report and how information placed into those sections will display when you preview the report.

Section Name:	***Data Display Properties:***
Report Header	Fields of information and other report objects that are placed into this section will display only once at the very beginning (top) of a report. Common location for report titles.
Page Header	Objects placed into this section will print at the top of each page of the report. This is a common location to place report dates, page numbering, and other common "header" information in a report.
Group Header	If you group information that is the same within a field (like all the same states listed in a "State" data field), you can enable a group header, where you could place information that would repeat once at the beginning of each set of unique values found within the grouped field.
Details	In this section, you place data fields and objects that you wish to have displayed once for each record (row) in the underlying table or query. This is often where the bulk of the data in a report appears.
Group Footer	If you group information that is the same within a field (like all the same states listed in a "State" data field), you can enable a group footer, where you could place information that would repeat once at the bottom of each set of unique values found within the grouped field. Common location of subtotals and summary functions that you wish to perform over each set of unique values found within the field by which you created the group.
Page Footer	Objects placed into this section will print at the bottom of each page of the report. This is a common location to place report dates, page numbering, and other common "footer" information in a report.
Report Footer	Data fields and objects placed into this section of the report will repeat once at the end of the entire report. Commonly used for grand totals and other summary functions that are performed over all of the values in the report.

1.4- The Design View- (cont'd.):

In Crystal Reports 2013, you can see a pane at the far right side of the application window called the "Field Explorer." In Crystal Reports you can view panes, called "explorers," onscreen as you create reports. These explorers allow you to view information in a collapsible and expandable outline format. You can click the small "+" and "-" symbol next to the various items listed to expand and collapse information. You can toggle the display of the explorers on and off by clicking the "View" command in the Menu Bar and then selecting the name of the explorer you wish to view from the drop-down menu that appears. The explorers are listed in the third section from the top within the drop-down menu.

It is worth noting that the explorers and be moved by simply clicking and dragging on the small title bars at the top of each explorer. They can be either "floating" over the design area, or "embedded" at the sides of the application window in the same way toolbars can. You can close an explorer window by clicking the "X" button at the right end of the small title bar above each explorer. You can then enable their display again by selecting "View" from the Menu Bar, and then clicking the name of the explorer that you wish to view.

The Field Explorer is a frequently used tool in Crystal Reports. It lists the various types of fields that you can insert into your report. The seven different types of fields are: "Database Fields," "Formula Fields," "Parameter Fields," "Running Total Fields," "Group Name Fields," and "Special Fields." You can use the buttons in the small toolbar at the top of the explorer to perform different actions on the selected fields.

The Report Explorer represents the various report sections in an outlined layout. You can click the name of an object listed in the sections to select it using this explorer. You can also perform additional actions on an object listed in this section by simply right-clicking the object you wish to manipulate and then clicking the desired command to perform in the pop-up menu of choices that appears. Like the Field Explorer, this explorer also has buttons available in the toolbar at the top of the explorer which you can click to perform various actions.

If you have a connection to a Crystal Enterprise server, you may make use of the Repository Explorer. This allows report designers to save various kinds of report objects to the repository so they may re-use them in future reports. You can save text and graphic objects, custom functions, and commands (queries) to the repository. You cannot store formulas into the repository, however. Also note that there is a toolbar at the top of this explorer that contains buttons that you can click to perform actions on the selected objects.

You will also have access to the "Workbench" pane. This pane allows you to create projects, which contain reports. This allows you to easily add, remove, sort and organize reports into manageable groupings of your own design. You can use the buttons in this pane to create new projects and add reports to the projects that you create.

ACTIONS-
The Crystal Reports Environment

USING THE MENU BAR:

1. Click the desired menu command to reveal a drop-down list of subcommands.
2. Click the desired subcommand to execute the selected function.

OR

1. Press and hold down the “Alt” key on your keyboard.
2. Press the key on your keyboard that corresponds to the underlined letter in the desired menu bar command.
3. Release the “Alt” key on your keyboard.
4. Press the key on your keyboard that corresponds to the underlined letter of the subcommand that you wish to execute.

TURNING TOOLBARS ON AND OFF:

1. Select “View| Toolbars…” from the Menu Bar.
2. In the “Toolbars” dialog box, click a checkbox next to the name of the toolbar that you wish to show or hide. Placing a check in the box will display the selected toolbar and clearing the check from the box will hide the selected toolbar.
3. Click “OK” when you are finished.

OR

1. Right-click any displayed toolbar.
2. Select the name of the toolbar to show or hide from the pop-up menu that appears.

USING TOOLBARS:

1. You can perform a function in a toolbar by simply clicking the desired button in the appropriate toolbar.
2. If a button has a small downward-pointing arrow to its right, you can click the arrow to reveal button settings from which you can select.
3. If you simply hold your mouse pointer over a button in a toolbar, its name will appear in a small, yellow box called a “screen tip.”

MOVING TOOLBARS:

1. When your toolbar is "embedded," you will see a thin handle appear at its left end. You can click and drag the toolbar by this handle to move it. You can drag it by this handle to embed it in any one of the four sides of the application window. Note that if you embed it at either the right or left sides of the application window, the handle by which you move the toolbar will instead appear at the top of the toolbar versus the left side of the toolbar.
2. If you move an embedded toolbar from the sides of the application window and then release it over the design area, it will then appear as a "floating" toolbar, which hovers over the workspace area. When the toolbar appears as a "floating" toolbar, it will display its name in its own title bar at the top of the toolbar. You can click and drag the floating toolbars to move them around using the thin, blue title bars at the top of the toolbar when it is displayed as a floating toolbar. You can even click and drag them to the sides of the application screen and then release them there to make them appear as "embedded" toolbars again.
3. If you accidentally drag an embedded toolbar from a side of the application window and make it a floating toolbar, you can easily return it to the location from which you moved it by simply double-clicking the thin, blue title bar of the toolbar when it appears as a floating toolbar to embed it back into the side of the application window from which you dragged it originally.

USING REPORT SECTIONS:

Report Header Fields of information and other report objects that are placed into this section will display only once at the very beginning (top) of a report. Common location for report titles.

Page Header Objects placed into this section will print at the top of each page of the report. This is a common location to place report dates, page numbering, and other common "header" information in a report.

Group Header If you group information that is the same within a field (like all the same states listed in a "State" data field), you can enable a group header, where you could place information that would repeat once at the beginning of each set of unique values found within the grouped field.

Details In this section, you place data fields and objects that you wish to have displayed once for each record (row) in the underlying table or query. This is often where the bulk of the data in a report appears.

Group Footer If you group information that is the same within a field (like all the same states listed in a "State" data field), you can enable a group footer, where you could place information that would repeat once at the bottom of each set of unique values found within the grouped field. Common location of subtotals and summary functions that you wish to perform over each set of unique values found within the field by which you created the group.

Page Footer Objects placed into this section will print at the bottom of each page of the report. This is a common location to place report dates, page numbering, and other common "footer" information in a report.

Report Footer Data fields and objects placed into this section of the report will repeat once at the end of the entire report. Commonly used for grand totals and other summary functions that are performed over all of the values in the report.

ACTIONS-
The Crystal Reports Environment

SHOWING AND HIDING THE EXPLORERS:

1. To turn on an explorer, select “View” from the Menu Bar.
2. Select the name of the explorer to view from the explorers listed in the “View” command list.
3. To close an explorer, click the small “X” button at the right end of the explorer’s title bar.

MOVING THE EXPLORERS:

1. You can click and drag the explorer panes by their title bars to move them to the desired side of the screen. You can also click and drag them over the design area to make them “floating” panes.
2. If you double-click into the middle of the title bar in a floating explorer pane, it will embed itself to the side of the application screen from which it was last moved.

USING THE EXPLORERS:

1. Click the small “+” sign next to an entry to expand that section of the outline shown in the explorer pane.
2. Click the small “-” sign next to an entry to collapse that section of the outline shown in the explorer pane.
3. You can select an item in the explorer pane and then click the desired button in the small toolbar at the top of the explorer pane to perform the selected button’s function on the object selected within the pane.
4. You can right-click an object selected within the explorer pane to view a pop-up menu of various command functions that you can click to perform on the selected object.

EXERCISES-
The Crystal Reports Environment

Purpose:

1. To become familiar with the basic objects in the Crystal Reports design environment.

Exercises:

1. Open Crystal Reports.
2. If using Crystal Reports 2013, click the “Blank report” hyperlink in the Start Page to create a new, blank report.
3. Click the “Cancel” button in the “Database Expert” dialog box that appears so you can see the report design view.
4. Locate the “Insert Toolbar.”
5. Locate the “Detail” section of the report design area.
6. Locate the “Formatting Toolbar.”
7. Locate the “Standard Toolbar.”
8. Select “File| Close” from the Menu Bar.
9. Click the “No” button to not save the changes that you have made.

CHAPTER 2-
Creating Data Connections

2.1- Creating a New Blank Report:

To create a new blank report in Crystal Reports 2013, you can click the "Blank report" hyperlink in the "Start Page" or select "File| New| Blank Report…" from the Menu Bar. This will create a new, blank report and launch the "Database Expert" dialog box where you can select a report data source.

You could also click one of the other report choices within the side menu that appears when you select "File| New" from the Menu Bar or click one of the other report hyperlinks in the "Start Page." In addition to a blank report, you can also select either "Standard Report…," "Cross-Tab Report…," "Mailing Label Report…," or "OLAP Cube Report…" from the Menu Bar to create a report of that type.

2.2- The Database Expert:

After you create a new report, you will see the "Database Expert" dialog box. This dialog box allows you to select the source of the data that will be used for the report. The pane at the left side of the dialog box lists the set of available types of data connections which you can use to connect to the desired data you wish to use for the report. Click the small plus signs (+) next to each folder to expand them and view existing connections or launch a dialog box that will allow you to connect to a data source of that type.

Name:	***Connection Type:***
My Connections	Clicking the small plus sign next to this folder displays a listing of the most recently accessed data sources on your machine for easy access to data sources which you have recently used.
Create New Connection	When you click the small plus sign next to this folder, you will then see another list of folders displaying the names of the various types of possible data connections that you can use for the report. Click the plus sign next to these folders to establish a new data connection to a data source of the selected type.

Next, you will need to input any additional information in any dialog boxes that appear to connect to your desired type of database file. Once you have made this connection, you will see any tables, views, stored procedures, or other data within the selected data connection shown within the left pane of the "Database Expert" dialog box. Once again, these are shown in a collapsible and expandable sections within your data connections. When expanded, you can click the icons of the tables or other data you wish to add to the report to select them and then click the ">" arrow to add the selected data to your report. The data will then appear within the "Selected Tables:" pane at the right side of the "Database Expert" dialog box.

Once you have added the necessary data into the right panel for use within your report, you can click the "OK" button within the "Database Expert" dialog box to set the report's data source. In the next few lessons within this chapter, you will review making connections to the most commonly used data sources.

2.3- Access/Excel (DAO):

If you click the small plus sign next to the "Access/Excel (DAO)" folder in the "Create New Connection" section of the "Database Expert," you will be presented with the "Access/Excel (DAO)" dialog box. You use this dialog box to create a data connection to a Microsoft Access file, a Microsoft Excel file, or one of many other file types using DAO (Data Access Objects) as the connection type versus an ODBC (Open Database Connectivity) connection. DAO is an object that works with Microsoft's Jet database engine used in Microsoft Office. ODBC is simply a standard that allows any application to communicate and manipulate a variety of different database applications by using a standardized set of SQL (Structured Query Language) statements. SQL is the language used by all relational database applications to extract information from database tables.

Because you can use DAO with many types of database/spreadsheet objects, you can also use this connection type to create a connection that use DAO for data access with Access, dBase III – dBase 5, Excel 3 – 8, an HTML import file, Lotus WK1, Lotus WK3 – 4, Paradox 3.x – 5.x, or a simple text database file.

To make a DAO connection, click the ellipsis mark button at the right end of the "Database Name:" text box to launch the "Open" dialog box. In the "Open" dialog box, use the "Look in:" drop-down at the top of the dialog box to navigate to the folder which contains the database file (or spreadsheet file) that you wish to use as the data source. Click the desired file in the list of available files, and then click "Open" to set the selected file as the data source for the report.

Next, use the "Database Type:" drop-down to choose the file type of the selected data object. If you need to create a secured connection to the data file, check the "Secure Logon:" checkbox, which then enables the next four fields that you can use to enter this information. Microsoft Access, in particular, supports both file-level and user-level security on its databases individually and in combination. If you are trying to access a Microsoft Access database that has both types of security applied, then use the DAO (or OLE DB) dialog box to set the data source. You cannot use the ODBC connection type as ODBC cannot support multiple passwords.

If there is a database password applied to the selected file, you can type the password into the "Database Password:" text box. This would be the file-level security password. In the "Session UserID:" text box, you can type the user name used for your user-level access to the database, if needed. In the "Session Password:" text box you can enter the password for your user-level "Session UserID:" security identification. Click the ellipsis mark button at the right end of the "System Database Path:" text box to launch the "Open" dialog box that allows you to select the Access security file (.mdw) associated with the current database, if applicable. Once you are done, click the "Finish" button to set the data source.

2.4- ADO.NET (XML):

If you click the small plus sign next to the "ADO.NET (XML)" folder in the "Create New Connection" section of the "Database Expert," you will be presented with the "ADO.NET (XML)" dialog box. This option is used when you wish to push data to your report from an ADO.NET data set. This option also supports pulling data from a custom-developed DLL that can return an ADO.NET dataset, as well.

You can enter the full path to either the XML file, XML Schema File, or .NET Dataset Provider into the "File Path:" field in this dialog box. Next, if you wish to use classes from an existing .NET project's data set, then check the "Use Data Set from Class" checkbox. That will then allow you to select the class whose data you wish to use from the "Class Name:" drop-down. Also, after checking the checkbox, you will see the "Data Set Names:" drop-down appear. You can use this drop-down to select the data set within the project file that contains the data that you wish to use as the basis for your report.

2.5- Database Files:

If you click the small plus sign next to the "Database Files" folder in the "Create New Connection" section of the "Database Expert," you will be presented with the "Open" dialog box. You use this dialog box to create a data connection to one of the many types of available databases in Crystal Reports. Once again, you can use the "Look in:" drop-down to select the folder within which you wish to look for the database or tables. You can also use the "Files of type:" drop-down to filter for a particular type of data file. Select the desired file from the list and then click "Open" to attempt to create a data source connection. If you cannot create a data connection using this "type," try using another (more specific) data connection type instead.

2.6- Java Beans Connectivity:

If you click the small plus sign next to the "Java Beans Connectivity" folder in the "Create New Connection" section of the "Database Expert," you will be presented with a dialog box that allows you to specify your desired Java data source.

You use this connection type to report off Java Beans that you or others in your organization have designed specifically for this purpose. You can report off of any complied Java class that returns a public method of "java.sql.ResultSet."

Note that for this feature to function, however, you will need to first install either the "Java Runtime Environment (JRE)" or the "Java Development Kit (JDK)" on your local machine. You must also create and configure specific registry entries so that Crystal Reports will know where to find your Java data sources.

For complete information on the software installation, development of Java Beans, and configuration of Java and Crystal Reports, read the "crxi_java_bean_connectivity.pdf" at the following hyperlink: http://resources.businessobjects.com/support/communitycs/TechnicalPapers/crxi_java_bean_connectivity.pdf

2.7- JDBC (JNDI):

You can click the small plus sign next to the "JDBC (JNDI)" folder to make a data connection to a Java Database Connectivity (JDBC) data source or to a data source that has already been identified using the Java Naming and Directory Interface (JNDI). To start, click the small plus sign next to the "JDBC (JNDI)" folder in the "Create New Connection" section of the "Database Expert" dialog box.

In the "JDBC (JNDI)" dialog box, select the type of connection to establish by selecting either the "JDBC Connection" or "JNDI Connection" option button. If you select "JDBC Connection," type the JDBC connection URL into the "Connection URL:" text box. Next, you must specify the name of the class that you want to use as the driver for this connection by typing it into the "Database Classname:" text box. You can also optionally specify a JNDI connection name for the connection by typing it into the "JNDI Connection Name (Optional):" text box. If you select the "JNDI Connection" option, enter the "JNDI connection URL" for the database driver specified by the driver's vendor into the field of the same name. Then type your JNDI username and password into the "JNDI Username:" and "JNDI Password:" text boxes. In the "Initial Context:" text box, enter the folder pathway where the JNDI service should look for data sources.

Once you specify the connection settings and click the "Next >" button, all available data sources in the specified location will be listed. Select the desired data source from the "Data Source Name" list and then click the "Next >" button again to move to the "Connection Information" screen. In the "Database Connection" screen, you can enter the database name and additional logon information required for your connection. When you are done, just click the "Finish" button to create the database connection.

2.8- ODBC (RDO):

When you click the small plus sign next to the "ODBC (RDO)" folder under the "Make New Connection" folder in the "Database Expert" dialog box, you will see the "ODBC (RDO)" dialog box appear. You use this dialog box to make an ODBC connection to a data source.

Open Database Connectivity (ODBC) is a standard used to connect to multiple types of data through a single application. When creating a direct connection to a specific type of data, you need a communication standard to access and use the data. Every type of data source has a different method of direct access used to view its data. However, if the data source can also use ODBC as another communication standard, then any program that uses ODBC can access its data, as well.

Many vendors who create database management systems and other types of data-driven applications, such as spreadsheets, will provide ODBC drivers that allow other applications that can communicate using ODBC to access their data. This allows Crystal Reports to access almost any type of data that provides ODBC connectivity. This allows you to make ODBC connections to Access, Excel, Informix, Visual FoxPro, Lotus Domino, Oracle, Sybase, SQL Server, and DB2 data sources.

To set an ODBC data source connection, use the "ODBC (RDO)" dialog box. If you select the default "Select Data Source:" option button, then you must select the desired types of data source to which you wish to make a connection from the list displayed below. You can also select the "Find File DSN:" option button, and then click the ellipsis mark button at the right end of the "File DSN:" text box to launch a dialog box that will allow you to select the correct file DSN which you wish to use for the data connection. You can also select the "Enter Connection String:" option button, and then type your own connection string to use for the ODBC connection into the "Connection String:" text box. Once you have selected the desired connection type, click the "Next >" button to continue.

In the next screen, you will see the selected data source displayed. Below that, enter both the "User ID:" and "Password:" needed to make a connection to the data source that you will select, if needed. This screen changes depending on the data source selected, so fill-in any additional information, as required.

2.8- ODBC (RDO)- (cont'd.):

Click "Finish" when you are done. Depending on the type of data source selected, you may have to then choose the file to use for the data source in another dialog box. If necessary, make your selection and then click "OK" to set the data connection.

2.9- OLAP:

When you click the small plus sign next to the "OLAP" folder under the "Make New Connection" folder in the "Database Expert" dialog box, you will see the "OLAP Connection Browser" dialog box appear. You can use this dialog box to select an OLAP data source for your report. Online Analytical Processing (OLAP) is a popular data storage format for multi-dimensional analysis of relational data.

In the "OLAP Connection Browser" dialog box you can browse for the desired OLAP data source that you want to use with Crystal Reports. If the OLAP server to which you wish to make the connection isn't displayed in this list, you can click the "Add…" button to establish a connection to the desired OLAP server. In the dialog box, you can specify the type of OLAP server and any additional log on information that would be needed to make a connection. You can create the connection and then return to the "OLAP Connection Browser" when finished. Here you can then select the OLAP Server connection that you have set in this dialog box, and click "Open" to open the selected OLAP Server, database, or cube.

2.10- OLE DB (ADO):

You can click the small plus sign next to the "OLE DB (ADO)" folder under the "Create New Connection" folder in the "Database Expert" dialog box to create a data connection to an OLE data source. OLE is a connectivity methodology created by Microsoft that allows the exchange of data and information between applications. In the "OLE DB (ADO)" dialog box you can select the "Provider:" from the list of OLE connection types listed, if desired. You can also check the "Use Data Link File:" and then click the ellipsis mark button at the right end of the "Microsoft Data Link File:" text box to browse for an unlisted data link file on your machine. When you have set the link file, click "Next >" to continue to the "Connection Information Screen." In this screen, which varies based on the data link file you selected in the previous screen, you will typically have to specify connection information. Then click "Next >" to continue to the "Advanced Information Screen." In this screen, you may edit the connection information provided by the provider that you selected in the initial screen of this dialog box. To do so, if needed, select the property that you wish to change in the list shown and then click the "Edit Value" button to set the new property value. When you are done in this screen, click "Finish" to set the OLE DB data connection. Note that this connection type is often used to access data from the newer Microsoft Office 2013-2007 data file formats.

2.11- Salesforce.com:

You can click the small plus sign next to the "Salesforce.com" folder under the "Create New Connection" folder in the "Database Expert" dialog box to create a data connection to Salesforce.com. You can then access information stored on that server. In the "Salesforce.com" dialog box, enter your user ID into the "SalesForce userID:" text box and enter your password into the "SalesForce password:" box. Then simply click the "Finish" button to create the data connection.

2.12- SAP BW MDX Query:

You can click the small plus sign next to the "SAP BW MDX Query" folder under the "Create New Connection" folder in the "Database Expert" dialog box to create a data connection to information that is stored in an SAP NetWeaver Business Warehouse (BW). You can connect to either queries that have been created with SAP Business Explorer (BEx) Query Designer, or you may connect directly to the data cubes in BW itself.

In the "SAP System Logon" dialog box, you simply select the desired SAP system to which you wish to connect and then click the "Next >" button to continue. You then enter the "Client," "Username," and "Password" values in to the fields provided, and then click "Next >" to continue. You can then select either or both of the two checkboxes shown: "Generate RFC trace files" and "Show empty data," if desired. When you generate RFC trace files, you can track which remote calls are made to the SAP system during the execution of a report. Displaying empty data simply shows blank rows within the report if they appear within the data. Then simply click the "Finish" button to complete the connection.

2.13- SAP Info Sets:

You can click the small plus sign next to the "SAP Info Sets" folder under the "Create New Connection" folder in the "Database Expert" dialog box to create a data connection to SAP R/3 InfoSets (previously known as "Functional Areas") and ABAP Queries.

In the "SAP System Logon" dialog box, you simply select the desired SAP system to which you wish to connect and then click the "Next >" button to continue. You then enter the "Client," "Username," and "Password" values in to the fields provided, and then click "Next >" to continue. You can then check the "Generate RFC trace files" checkbox, if desired. When you generate RFC trace files, you can track which remote calls are made to the SAP system during the execution of a report. Then simply click the "Finish" button to complete the connection.

2.14- SAP Operational Data Store:

You can click the small plus sign next to the "SAP Operational Data Store" folder under the "Create New Connection" folder in the "Database Expert" dialog box to create a data connection to existing ODS information that is stored in an SAP NetWeaver Business Warehouse (BW). You can connect to existing ODS objects using this data connection, and because this information is not multidimensional or parameterized, it can be reported on quickly. This connection type also pushes record selection to the server, often increasing report processing performance.

In the "SAP System Logon" dialog box, you simply select the desired SAP system to which you wish to connect and then click the "Next >" button to continue. You then enter the "Client," "Username," and "Password" values in to the fields provided, and then click "Next >" to continue. You can then check the "Generate RFC trace files" checkbox, if desired. When you generate RFC trace files, you can track which remote calls are made to the SAP system during the execution of a report. Then simply click the "Finish" button to complete the connection.

2.15- SAP Table, Cluster, or Function:

You can click the small plus sign next to the "SAP Table, Cluster, or Function" folder under the "Create New Connection" folder in the "Database Expert" dialog box to create a data connection that uses the Open SQL driver to access SAP's transparent tables, pool tables, cluster tables, views, and ABAP data clusters and functions.

In the "SAP System Logon" dialog box, you simply select the desired SAP system to which you wish to connect and then click the "Next >" button to continue. You then enter the "Client," "Username," and "Password" values in to the fields provided, and then click "Next >" to continue. You can then check the "Generate RFC trace files" checkbox, if desired. When you generate RFC trace files, you can track which remote calls are made to the SAP system during the execution of a report. Then simply click the "Finish" button to complete the connection.

Once the connection has been made, you can right-click the connection that you created and then select the "Options…" command from the pop-up menu that appears to open the "Options" dialog box and display the "Database" tab. In the "Data Explorer" section, you can then check the checkboxes to display only the types of data you want to use in the report.

You can also use the "Table name LIKE" field to filter for tables by name. Note that you can type partial table names and/or use wild card characters to filter table names. You can use the percent sign (%) to denote multiple, unknown characters and the underscore symbol (_) to denote a single unknown character.

In the "Tables and Fields" section, you can select the "Show description" option button to show the description of tables versus their actual, more technical, names.

When you have finished filtering your data connection, click the "OK" button to close the dialog box.

2.16- Universes:

You can click the small plus sign next to the "Universes" folder under the "Create New Connection" folder in the "Database Expert" dialog box to create a data connection to a selected universe on a BusinessObjects Enterprise server. First, you must select the name of your system from the "System:" drop-down and then enter your "User name:" and "Password:" into the text boxes that are available. You can then select the desired type of authentication from the "Authentication:" drop-down. When you are ready, click the "OK" button to continue. You will then see a listing of the available universes from which you can choose. You can then select a universe and click the "Open" button. You can then design a query on the data within the Business Objects Query Panel that appears.

2.17- XML and Web Services:

You can click the small plus sign next to the "XML and Web Services" folder under the "Create New Connection" folder in the "Database Expert" dialog box to create a connection to XML content.

In the "XML and Web Services" dialog box which appears, you can specify to either use a local data source, an HTTP(S) data source, or a Web Service Data Source by selecting the desired option and then entering the desired URL or browsing for the desired XML file. Depending on your selections made here, when you click the "Next >" button you can continue entering any additional authentication information needed, or specify an XML schema to use.

2.18- Repository:

You can click the small plus sign next to the "Repository" folder in the "Database Expert" dialog box to create a connection to the BusinessObjects Enterprise Repository for your report. In the "Log On to BusinessObjects Enterprise" dialog box you must select the name of your system from the "System:" drop-down and then enter your "User name:" and "Password:" into the text boxes that are available. You can then select the desired type of authentication from the "Authentication:" drop-down. When you are ready, click the "OK" button to continue. You can then use a stored business view or SQL command within the repository as a data source.

2.19- More Data Sources:

In addition to the primary data sources displayed within the "Database Expert" dialog box, you also have an array of secondary data sources that are available for use. Many, but not all, of these connection types are included for backwards-compatibility with older information systems or software. You can click the small plus sign next to the "More Data Sources" folder within the "Database Expert" to view the secondary data sources displayed in a list. As with your primary data sources, you simply click the small plus sign next to the name of the secondary data source that you wish to use to make a connection of that type as your report's data source.

If you click the small plus sign next to the "ACT!" folder you will be presented with the "Open" dialog box. You use this dialog box to create a data connection to an ACT! database file. If you are trying to connect to an ACT! database that is at version 2.x or lower, you must select an additional file named "Crw.act" during the connection process. This is not necessary for later versions of ACT!. So if accessing an ACT! database that is 2.x or lower use the "Open" dialog box to navigate to the folder that contains the "Crw.act" file (usually placed in the "Windows" or "Winnt System 32" folder), select it, and then click the "Open" button when finished. The "Choose file for ACT" dialog box will then appear. Use this dialog box to navigate to the folder that contains the ACT! database file you wish to access, select it, and then click "OK." Alternately, if you are trying to connect to an ACT! database that is at least version 3.x or higher, you simply skip the intermediate step of selecting the "Crw.act" file. Instead, use the "Open" dialog box to navigate to your ACT! database file, select it, and then click "Open" to set it as the data source.

If you click the small plus sign next to the "Btrieve" folder, you will be presented with the "Open" dialog box. You use this dialog box to create a data connection to a Btrieve (now called "Pervasive") database engine. The Pervasive engine is a complex system of DLL and EXE files that are also specific to the version of the Pervasive software you are using. It is important to note that the Pervasive database engine must be correctly configured. You will need to refer to your Btrieve/Pervasive database engine documentation to ensure that it has been correctly configured before attempting to access the data using Crystal Reports.

In the "Open" dialog box, you use the "Look in:" drop-down to navigate to the folder that contains the Pervasive DDF files. The Pervasive DDF files contain all of the necessary file, field and index information about the tables in the database. The following three DDF files are required and must all reside in the same directory (folder): "File.ddf," "Field.ddf," and "Index.ddf." One set of DDF files normally contains multiple Pervasive data file definitions. Once you select one of the DDF files, Crystal Reports will then add all of the data files defined in the selected DDF to the report. Crystal also takes the default location of the DDF files as the default path of the data files. The DDF files and the data files can reside in different folders, however. If you use Peachtree Complete Accounting, you'll find that this is the type of database connection to use for access to the tables in your Peachtree company file. You can navigate to the desired company folder and find the three DDF files needed to load your Peachtree company data tables.

2.19- More Data Sources- (cont'd.):

If you click the small plus sign next to the "COM Connectivity" folder, you will be presented with the "COM Connectivity" dialog box. You can use this dialog box to create a data connection to any COM (Component Object Model) object, registered on your local machine, that can return an ADO (ActiveX Data Objects) record set. To set the COM object as a data source, type the object's "ProgID" into the "Program ID:" field, and then click the "Finish" button.

You can use Crystal Reports to make a connection to message tracking logs in older versions of Microsoft Exchange Server. In Crystal Reports 2013, click the small plus sign next to either the "Exchange 5.5 Message Tracking Log" folder or the "Exchange Message Tracking Log" folder, depending on whether or not you are accessing the message log from an Exchange Server 5.5 or a more recent version.

Once you have made your selection, you will be presented with the "MS Exchange Message Tracking Log" dialog box. Click either the "Remote Browse…" button to launch the "Select a Network Drive" dialog box or "Local Browse…" to launch the "Choose Directory" dialog box. You use the dialog boxes to select the log file which you wish to use for the report. Once selected, click "OK." That will then return you to the "MS Exchange Message Tracking Log" dialog box, where you can click "OK" once again to launch the "Enter Message Tracking Log Dates" dialog box. Here you input the date range of tracking data to pull by entering in the date information into the "From" and "To" sections. When you are ready, click "OK" to finish.

If you click the small plus sign next to the "Field Definitions Only" folder, you will launch a dialog box that asks you to provide a data schema (layout) that is used to create the report. A data schema is simply a definition of what fields should appear within a table and what properties should be assigned to those fields. However, there is no actual data within the fields. If you use this option, you must select or create a data schema and place the fields from the schema into the report. Then you must pass the report a dataset (recordset) at the time when the report is actually viewed using a Crystal Data Object. This driver is mainly used for backward compatibility with older versions of Crystal Reports.

In the "Field Definitions Only" dialog box, click the ellipsis mark button at the right end of the "Field Definition File:" text box to launch the "Open" dialog box. Use the "Open" dialog box to navigate to the folder where you have saved your field definition file (.ttx). You can then select it and use the saved field definition for the current report.

If you don't have a saved field definition, you can click the "Create File…" button in the "Field Definitions Only" dialog box to open the "Database Definition Tool" dialog box where you can create and save a .ttx file to use. In this dialog box, you define the data fields that will be used by the report. Start by typing the name of the first field into the "Field Name:" text box. Then use the "Field Type:" drop-down to select the type of data that will be displayed in the field. If you select the "String" type (text), then input the length of the field (in characters) into the "Length:" text box that appears. When you are ready to add the field to the definition, click "Add" to add it to the list of fields below. You can also click any field listed at the bottom of this dialog box, and make editing changes to the information shown above. Click "Update" when you are finished making your changes to save them. You can also click "Delete" to delete a selected field in the "Database Definition Tool" dialog box.

When you have created the fields for the data schema, select "File| Save As" from the small Menu Bar in this dialog box. Then use the "Save File As :" dialog box to select the location to which you wish to save the .ttx file. Type the name for the file into the "File name:" text box, and click "Save" to save the data schema. You can then close the "Database Definition Tool" dialog box. In the "Field Definitions Only" dialog box, you should see the file you just created listed as the file reference in the "Field Definition File:" text box. Click "Finish" in this dialog box to finish setting the newly created schema as the data source.

When you click the small plus sign next to the "File System Data" folder, you will see the "File System Data" dialog box appear. You can use this dialog box to create a report on the attributes of the files

2.19- More Data Sources- (cont'd.):

and folders in your computer's filing (folder directory) system. You click the ellipsis mark button at the right end of the "Starting Directory:" text box to launch a "Browse For Folder" dialog box. Click the plus signs next to the drives and folders until you find the parent folder of the files and folders upon which you wish to base the report. Click the desired folder to select it, and then click "OK."

In the "File System Data" dialog box, you can check the "Include All Files:" checkbox to include every type of file within the selected directory. If you wish to filter the files included in the report in some way, uncheck this checkbox. You will then see the "File Mask:" text box appear, where you can type a mask by which to filter for the selected type of files. In the mask, an asterisk represents multiple unknown characters. You can check the "Include All Subdirectories:" checkbox to include all of the subfolders within the selected folder within which to search for files and attributes. If you uncheck this checkbox, you will see the "Max Number of Subdirectory Levels:" text box appear where you can type in the number of levels of subfolders within which to search for file data. You can also check the "Include Empty Directories" checkbox to include empty folders in the data, as well, if desired. When you are finished, click the "Finish" button.

When you click the small plus sign next to the "JD Edwards EnterpriseOne" folder, you will see the "JD Edwards EnterpriseOne" dialog box appear. You can use this dialog box to establish a data connection to a JD Edwards EnterpriseOne server. Here you enter the "Host," "Port," "Environment," "User," "Password," and "Role" information. When you are done, click the "Finish" button to set the connection.

If you want to make a connection to an older Microsoft Exchange Server, then use the "Legacy Exchange" connection type. If you click the plus sign next to the "Legacy Exchange" folder in Crystal Reports 2013, you will launch Microsoft Outlook. Once you have selected an Outlook profile to use, you will then see the "Select a folder/address book" dialog box. In this list you will see the various address books, archive folders, mailbox folders, and public folders that are accessible through the current profile. Click the small plus sign next to any folder to show its subfolders. You can then click the Outlook folder or address book you wish to use as the data source for the report.

When you click the plus sign next to the "Mailbox Admin" folder, you will see the "Logon to Exchange Servers" dialog box appear. Click the "Select Profiles…" button in the lower right corner of this dialog box to launch the "Select Profiles" dialog box. Here you can highlight the name of the profile to use, and click "OK." Then click "OK" in the "Logon to Exchange Servers" dialog box to finish. You use this data connection to display data about all of the mailboxes listed in an Exchange Server's Private Information Store.

When you click the small plus sign next to the "MS IIS/Proxy Log Files," you will see the "Select Log Files and Dates" dialog box appear. Here you can select the type of log files that you wish to access by making a selection from the option buttons provided. Then click the "Browse…" button to launch the "Choose MS IIS log File Directory" dialog box. Use this dialog box to select the folder where the directory logs are stored. Select the desired log file from the list at the right side of this dialog box, and then click "OK." In the "Choose Period Used When Logging" section of the dialog box, select the type of filter for the date range to use by selecting the desired option button and then fill-in the values to use in the text boxes below. Then click "OK" when you are finished to set the data source connection.

When you click the small plus sign next to the "NT Archived Event Log" folder, you will see the "Select an Archived Event Log File" dialog box appear. Use this dialog box to select an archived event log as the data source for your report. You must be using Windows NT 3.51 or later to access the data in the log files using this connection type. Use the "Look in:" drop-down to select the folder in which you have the archived event log, and then select the desired file from the list of files and folders shown. Click "Open" to finish creating the data connection.

If you click the small plus sign next to the "NT Current Event Log" folder, you will see the "Select Current Event Log File" dialog box appear. You use this dialog box to select an event log as the data source

2.19- More Data Sources- (cont'd.):

for your report. You must be using Windows NT 3.51 or later to access the data in the log files using this connection. Use the "Select one or more Computers:" box to select the computer that has the log files that you wish to access for this connection. Each computer that you select is then added to the "Computer(s):" list. You can click a selected computer in the list to also deselect it. When you have the desired computers selected, click "OK." The current log files will then be set as the data connection.

You can click the small plus sign next to the "Oracle EBS" folder to create a data connection to Oracle EBS data. In the "Oracle EBS" dialog box that opens, you will need to enter the "Service," "Database User," "Database Password," "Application Short Name," "Responsibility Key," and "Security Group Key." You can then click the "OK" button to create the data connection.

You can click the small plus sign next to the "Outlook" folder to create a data connection to Outlook. This will then launch Outlook and prompt you to select a profile, if necessary. Once launched, you will then be presented with the "Choose Folder" dialog box, which shows an expandable/collapsible navigation tree view of the folders within your selected Outlook profile. Choose the folder to which you wish to make the data connection from the list shown, and then click the "OK" button.

You can click the small plus sign next to the "Outlook/Exchange" folder to create a data connection to Outlook on an Exchange Server. This will then launch Outlook and prompt you to select a profile, if necessary. Once launched, you will then be presented with the "Choose Folder" dialog box, which shows an expandable/collapsible navigation tree view of the folders within your selected Outlook profile. Choose the folder to which you wish to make the data connection from the list shown, and then click the "OK" button.

You can click the small plus sign next to the "PeopleSoft Enterprise" folder to create a data connection to a PeopleSoft Enterprise server. In the "PeopleSoft Enterprise" dialog box, you will need to enter the "Server," "User" and "Password." Then click the "Finish" button to create the data connection.

You can click the small plus sign next to the "Public Folder ACL" folder to create a data connection to an Exchange Server that contains public folders whose **access and control list information** you wish to view. In the "Logon to Exchange Servers" dialog box, click the "Select Profiles…" button. In the "Select Profiles" dialog box, select the profile (server) to which you wish to make the connection. Click "OK" to return to the "Logon to Exchange Servers" dialog box. Click "OK" to create the data source connection.

You can click the small plus sign next to the "Public Folder Admin" folder to create a data connection to an Exchange Server that contains public folders whose **configuration and usage data** you wish to set as the report data. In the "Logon to Exchange Servers" dialog box, click the "Select Profiles…" button. In the "Select Profiles" dialog box, select the profile (server) to which you wish to make the connection. Click "OK" to return to the "Logon to Exchange Servers" dialog box. Click "OK" to create the data source connection.

You can click the small plus sign next to the "Public Folder Replica" folder to create a data connection to an Exchange Server that contains public folders which are replicated across other Exchange Servers. You can then access information about the folders and server on which the replicated public folders exist. In the "Logon to Exchange Servers" dialog box, click the "Select Profiles…" button. In the "Select Profiles" dialog box, select the profile (server) to which you wish to make the connection. Click "OK" to return to the "Logon to Exchange Servers" dialog box. Click "OK" to create the data source connection.

You can click the small plus sign next to the "Siebel eBusiness Applications" folder to create a data connection to Siebel. In the "Connection Information" dialog box that appears, select the connection type from the listing shown. You can then enter a unique name for this connection to ensure data integrity into the "Connection Name" field. Then click the "Next >" button to continue. You then enter the "User," "Password," Connection String," and "Repository" information. If needed, you can then check the "Apply Current Query" checkbox to display the "Restrict to Current Selection" option, which you can also check if needed. When you are done, click the "Finish" button to complete the connection.

2.19- More Data Sources- (cont'd.):

You can click the small plus sign next to the "Universal Web Service Connector (UWSC)" folder to create a data connection to a web server. In the dialog box that appears, enter the "Server," "Username," and "Password." Click "Finish" here to connect to the specified server for the new data source connection.

You can click the small plus sign next to the "Web/IIS Log Files" folder to create a data connection to a web log file. In the "Select Log File Location" dialog box, click the "Browse…" button to select the web log file which you wish to use as the basis of the data connection using the "Choose Directory" dialog box. Once you have selected the web log file that you wish to use, click "OK" in the "Choose Directory" dialog box to return to the "Select Log File Location" dialog box. Click "OK" here to set the selected log file as the new data source connection.

You can click the small plus sign next to the "xBase" folder to create a connection to an xBase database file. You can use this type of data connection to access data directly from dBase files, FoxPro tables, and Clipper data files. In the "Open" dialog box, use the "Look in:" drop-down to select the folder that contains the data files you wish to set as the data source. Select the desired xBase file and then click the "Open" button to set the selected data file as the connection's data source.

2.20- Selecting Report Data and Tables:

Once you have made a connection to a data source of a specific type within the "Database Expert" dialog box, you will see the new connection that you have made appear. You can click the small plus sign next to the listed data source connection to view the various types of objects within the connection. Note that with some types of connections some of the tables may not be accessible based on your User ID and data access privileges. Otherwise, you will see any tables, commands, views, and stored procedures that are available for the type of data source to which you have made a connection.

Note that if you wish to add another connection of the same type within the "Create New Connection" folder, you can double-click the "Make New Connection" command above the currently established data connections displayed in that folder. That will then launch another connection dialog box, where you can create another connection of the same type.

When you are viewing a data source connection, you may see "Commands," which allow you to create custom SQL (Structured Query Language) statements drawn from the data, which can then be used as the data source for a report. You should also see any available tables from the data source listed. These are the "base tables" in the data file which contain all of the database information in their rows and columns. These are often referred to as the "physical tables" in a relational database.

In addition to the base tables that you can access for your reports, you may also see "Views" that are available for use. Views are a construct of the relational model of data storage, and act in many ways like the base tables do. However, views do not actually store any data. These are simply preset queries which always pull the same data from the underlying base tables and display it in the same way. These are often referred to as "logical tables" in a relational database and are typically created by the database administrator to facilitate report generation. Views will typically show information from related base tables in a single location, making it easier to show data from multiple tables.

"Stored Procedures" are similar to views in that they display data, but do not contain data themselves. The main difference between views and stored procedures is in the complexity of the SQL code used to generate the displayed data. Also, you may have different programming languages other than SQL used in a stored procedure. However, they will always display some sort of result set (data) in the end, much like the base tables or views, and thus are also often used for reporting purposes.

2.20- Selecting Report Data and Tables- (cont'd.):

In order to add a table to a report, expand the tables in the data connection so that you can select the name of the table which you want to add to your report. Then click the single right-pointing arrow (>) in the middle of the "Database Expert" dialog box to move the table into the "Selected Tables:" list at the right side of the dialog box. You can add multiple tables, if necessary for the report. Note that if you add more than one table, the "Links" tab appears at the top of the "Database Expert" dialog box. You use this tab to set the connections and relationships between data in the selected tables. You will examine linking the tables in a report in a later section. For now, just note that once you have selected the necessary tables for the report, you can click "OK" to set the selected table or tables as the source of data for your report.

2.21- The Data Explorer:

After you have created a new data connection for a report, the connection will always be re-established when you open the report (after saving it) in the future. However, if you wish to delete a data connection that you no longer use, you will need to do that through the "Data Explorer" dialog box. You can also use this dialog box to log on and off of specified servers, and generally mange the data connection used by Crystal Reports on your computer.

If you have no report open, then you can access the "Data Explorer" by selecting "File| Log On or Off Server…" from the Menu Bar. If you have a report opened, then instead select "Database| Log On or Off Server…" from the Menu Bar.

In the "Data Explorer" dialog box, you can select a data connection listed and use the "Log On" and "Log Off" buttons to log on and off of the sever associated with that connection. You can also right-click any connection listed here and then select the "Delete Connection" command to permanently delete a data connection shown. When you are finished using this dialog box, click the "Close" button.

You can also use the Data Explorer if you need to connect to an SAP server to access your data. You use the folders within the "Data Explorer" just as you would within the "Database Expert" to select your SAP server. You can then click the "Log On" button and provide your user credentials to access the selected server.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING A NEW BLANK REPORT IN CRYSTAL REPORTS 2013:

1. Click the "Blank Report" hyperlink in the "Start Page," or select "File| New| Blank Report..." from the Menu Bar.
2. This will launch the "Database Expert" dialog box, which you use to select the data source for your report.
3. In the "Database Expert" dialog box which appears, expand the desired folder to view/create the necessary data connection to use for the report.
4. After creating the data connection, select the desired table(s) to add to the report from the connections shown in the "Available Data Sources:" list.
5. Click the right-pointing arrow in the middle of the dialog box to move the selected table(s) to the "Selected Tables:" list.
6. When you are finished adding the table or tables needed for the report, click "OK."

NAVIGATING THE DATABASE EXPERT:

1. If necessary, you can invoke the "Database Expert" by clicking the button of the same name in the Experts toolbar.
2. You can click the small plus sign (+) next to a folder to expand its contents. You can click the small minus sign (-) next to a folder to collapse and hide its contents.
3. The "My Connections" folder displays a listing of the most recently accessed data connections on your computer.
4. The "Create New Connection" folder displays a listing of the various types of data source connection types. You can click the folder of the type of connection that you want to create/use to make a connection or access a connection that you have created.
5. The "Repository" displays a listing of data source connections that have been stored to a Crystal Enterprise server, if you have one.

USING THE DATABASE EXPERT:

1. You can open the "Database Expert" by clicking the button of the same name in the Experts toolbar.
2. Select the data connection that will serve as the source of the current report from the "Available Data Sources:" list at the left side of this dialog box.
3. Highlight the first table to add to the report from the list, and click the ">" button to add it to the "Selected Tables:" list at the right. Repeat as needed until all of the tables needed for the report are added.
4. You can remove a table from the "Selected Tables:" list by highlighting it and then clicking the single left-pointing arrow button to return it to the list at the right side of the dialog box.
5. When you are ready adding tables to the report, click the "OK" button.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING AN ACCESS/EXCEL (DAO) CONNECTION:

1. Click the small plus sign next to the "Access/Excel (DAO)" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. Click the ellipsis (…) button at the right end of the "Database Name:" box to open the "Open" dialog box.
3. In the "Open" dialog box, use the "Look in:" drop-down at the top of the dialog box to navigate to the folder which contains the file you wish to use as the data source. Click the desired file name in the list of available files, and then click "Open" to set the selected file as the data source for the report.
4. Use the "Database Type:" drop-down to select what type of data object the file that you just selected is.
5. If you need to create a secured connection to the data file, then check the "Secure Logon:" checkbox, which then enables the next four fields, which you can use to set the secure access information.
6. If there is a database password applied, type the password into the "Database Password:" text box.
7. In the "Session UserID:" text box, type the user name for user-level access to the database, if needed.
8. In the "Session Password:" text box, enter the password for your user-level "Session UserID:" security identification.
9. Click the ellipsis mark button at the right end of the "System Database Path:" text box to launch the "Open" dialog box that allows you to select the Access security file (.mdw) associated with the current database, if applicable.
10. Once you have set any necessary options in this dialog box, click "Finish."

CREATING AN ADO.NET (XML) CONNECTION:

1. If you click the small plus sign next to the "ADO.NET (XML)" folder in the "Create New Connection" section of the "Database Expert," you will be presented with the "ADO.NET (XML)" dialog box.
2. You can enter the full path to either the XML file, XML Schema File, or .NET Dataset Provider into the "File Path:" field in this dialog box.
3. Next, if you wish to use classes from an existing .NET project's data set, then check the "Use Classes from Project" checkbox.
4. Checking that checkbox will then allow you to select the class whose data you wish to use from the "Classes:" drop-down.
5. Also, after checking the checkbox, you will see the "Data Set Names:" drop-down appear. You can use this drop-down to select the data set within the project file that contains the data that you wish to use as the basis for your report.

CREATING A DATABASE FILES CONNECTION:

1. Click the small plus sign next to the "Database Files" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "Open" dialog box, use the "Look in:" drop-down to select the folder within which you wish to look for the database or tables.
3. You can also use the "Files of type:" drop-down to filter for a particular type of data file.
4. Once again, select the desired file from the list and click "Open" to create a data source connection.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING A JAVA BEANS CONNECTION:

1. Click the small plus sign next to the “Java Beans Connectivity” folder in the “Create New Connection” section of the “Database Expert,” to be presented with a dialog box that allows you to specify your desired Java data source.
2. You use this connection type to report off Java Beans that you or others in your organization have designed specifically for this purpose. You can report off of any complied Java class that returns a public method of “java.sql.ResultSet.”
3. Note that for this feature to function, however, you will need to first install either the “Java Runtime Environment (JRE)” or the “Java Development Kit (JDK)” on your local machine. You must also create and configure specific registry entries so that Crystal Reports will know where to find your Java data sources.
4. For complete information on the software installation, development of Java Beans, and configuration of Java and Crystal Reports, read the “crxi_java_bean_connectivity.pdf” at the following hyperlink: http://resources.businessobjects.com/support/communitycs/TechnicalPapers/crxi_java_bean_connectivity.pdf

CREATING A JDBC (JNDI) CONNECTION:

1. Click the small plus sign next to the “JDBC (JNDI)” folder to create the initial connection, or double-click the “Make New Connection” icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. First you must select the type of connection that you wish to establish by selecting either the option button for either “JDBC Connection” or “JNDI Connection.”
3. If you select “JDBC Connection,” then you must type the JDBC connection URL into the “Connection URL:” text box. Then you must specify the name of the class that you want to use as the driver for this connection by typing it into the “Database Classname:” text box. You can also optionally specify a JNDI connection name for the connection by typing it into the “JNDI Connection Name (Optional):” text box.
4. If you select the “JNDI Connection” option, then you must first enter the JNDI connection URL for the database driver, specified by the driver’s vendor. Then type your JNDI username and password into the “JNDI Username:” and “JNDI Password:” text boxes. In the “Initial Context:” text box, you enter the folder pathway where the JNDI service should look for data sources.
5. Once you specify the connection settings and click the “Next >” button, all available data sources in the specified location will be listed. Select the desired data source from the “Data Source Name” list and then click the “Next >” button again to move to the “Connection Information” screen.
6. In the “Database Connection” screen, enter the database name and additional logon information required for your connection.
7. When you are done, click the “Finish” button to create the database connection.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING AN ODBC (RDO) CONNECTION:

1. Click the small plus sign next to the "ODBC (RDO)" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "ODBC (RDO)" dialog box, if you select the default "Select Data Source:" option button, then you must select the desired types of data source to which you wish to make a connection from the list displayed below.
3. You can also select the "Find File DSN:" option button, and then click the ellipsis mark button at the right end of the "File DSN:" text box to launch a dialog box that will allow you to select the correct file DSN which you wish to use for the data connection.
4. You can also select the "Enter Connection String:" option button, and then type your own connection string to use for the ODBC connection into the "Connection String:" text box.
5. Once you have selected the desired connection type, click the "Next >" button to continue.
6. In the next screen, you will see the selected data source displayed. Below that, enter both the "User ID:" and "Password:" needed to make a connection to the data source that you will select, if needed. This screen changes depending on the data source selected, so fill-in any additional information, as required.
7. Click "Finish" when you are done. Depending on the type of data source selected, you may have to then choose the file to use for the data source in another dialog box. If necessary, make your selection and then click "OK" to set the data connection.

CREATING AN OLAP CONNECTION:

1. Click the small plus sign next to the "OLAP" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "OLAP Connection Browser" dialog box, browse for the OLAP data source that you want to use. If the OLAP server to which you wish to make the connection isn't displayed in this list, you can click the "Add Server…" button to establish a connection to the desired OLAP server.
3. In the dialog box, you can specify the type of OLAP server and any additional log on information that would be needed to make a connection. You can create the connection and then return to the "OLAP Connection Browser" when finished.
4. You can then select the OLAP Server connection that you have set in this dialog box, and click "Open" to open the selected OLAP Server, database, or cube.

CREATING AN OLE DB (ADO) CONNECTION:

1. Click the small plus sign next to the "OLE DB (ADO)" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "OLE DB (ADO)" dialog box you can select the "Provider:" from the list of OLE connection types listed, if desired.
3. You can also check the "Use Data Link File:" and then click the ellipsis mark button at the right end of the "Microsoft Data Link File:" text box to browse for an unlisted data link file on your machine.
4. When you have set the link file, click "Next >" to continue to the "Connection Information Screen." **(cont'd.)**

CREATING AN OLE DB (ADO) CONNECTION- (CONT'D):

5. In this screen, which varies based on the data link file you selected in the previous screen, you will typically have to specify connection information.
6. Click "Next >" to continue to the "Advanced Information Screen."
7. In this screen, you may edit the connection information provided by the provider that you selected in the initial screen of this dialog box. To do so, if needed, select the property that you wish to change in the list shown and then click the "Edit Value" button to set the new property value.
8. When you are done in this screen, click "Finish" to set the OLE DB data connection.

CREATING A SALESFORCE.COM CONNECTION:

1. You can click the small plus sign next to the "Salesforce.com" folder under the "Create New Connection" folder in the "Database Expert" dialog box to create a data connection to Salesforce.com.
2. In the "Salesforce.com" dialog box, enter your user ID into the "SalesForce userID:" text box and enter your password into the "SalesForce password:" box.
3. Then simply click the "Finish" button to create the data connection.

CREATING AN SAP BW MDX QUERY CONNECTION:

1. You can click the small plus sign next to the "SAP BW MDX Query" folder under the "Create New Connection" folder in the "Database Expert" dialog box to create a data connection to information that is stored in an SAP NetWeaver Business Warehouse (BW). You can connect to either queries that have been created with SAP Business Explorer (BEx) Query Designer, or you may connect directly to the data cubes in BW itself.
2. In the "SAP System Logon" dialog box, you simply select the desired SAP system to which you wish to connect and then click the "Next >" button to continue.
3. You then enter the "Client," "Username," and "Password" values in to the fields provided, and then click "Next >" to continue.
4. You can then select either or both of the two checkboxes shown: "Generate RFC trace files" and "Show empty data," if desired. When you generate RFC trace files, you can track which remote calls are made to the SAP system during the execution of a report. Displaying empty data simply shows blank rows within the report if they appear within the data.
5. Then simply click the "Finish" button to complete the connection.

CREATING AN SAP INFO SETS CONNECTION:

1. You can click the small plus sign next to the "SAP Info Sets" folder under the "Create New Connection" folder in the "Database Expert" dialog box to create a data connection to SAP R/3 InfoSets (previously known as "Functional Areas") and ABAP Queries.
2. In the "SAP System Logon" dialog box, you simply select the desired SAP system to which you wish to connect and then click the "Next >" button to continue.
3. Enter the "Client," "Username," and "Password" values into the fields provided, and click "Next >."
4. You can then check the "Generate RFC trace files" checkbox, if desired.
5. Then simply click the "Finish" button to complete the connection.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING AN SAP OPERATIONAL DATA STORE CONNECTION:

1. You can click the small plus sign next to the “SAP Operational Data Store” folder under the “Create New Connection” folder in the “Database Expert” dialog box to create a data connection to existing ODS information that is stored in an SAP NetWeaver Business Warehouse (BW). You can connect to existing ODS objects using this data connection, and because this information is not multidimensional or parameterized, it can be reported on quickly. This connection type also pushes record selection to the server, often increasing report processing performance.
2. In the “SAP System Logon” dialog box, you simply select the desired SAP system to which you wish to connect and then click the “Next >” button to continue.
3. You then enter the “Client,” “Username,” and “Password” values in to the fields provided, and then click “Next >” to continue.
4. You can then check the “Generate RFC trace files” checkbox, if desired. When you generate RFC trace files, you can track which remote calls are made to the SAP system during the execution of a report.
5. Then simply click the “Finish” button to complete the connection.

CREATING AN SAP TABLE, CLUSTER, OR FUNCTION CONNECTION:

1. You can click the small plus sign next to the “SAP Table, Cluster, or Function” folder under the “Create New Connection” folder in the “Database Expert” dialog box to create a data connection that uses the Open SQL driver to access SAP’s transparent tables, pool tables, cluster tables, views, and ABAP data clusters and functions.
2. In the “SAP System Logon” dialog box, you simply select the desired SAP system to which you wish to connect and then click the “Next >” button to continue.
3. You then enter the “Client,” “Username,” and “Password” values in to the fields provided, and then click “Next >” to continue.
4. You can then check the “Generate RFC trace files” checkbox, if desired. When you generate RFC trace files, you can track which remote calls are made to the SAP system during the execution of a report.
5. Then simply click the “Finish” button to complete the connection.
6. Once the connection has been made, you can right-click the connection that you created and then select the “Options…” command from the pop-up menu that appears to open the “Options” dialog box and display the “Database” tab.
7. In the “Data Explorer” section, you can then check the checkboxes to display only the types of data you want to use in the report.
8. You can also use the “Table name LIKE” field to filter for tables by name. Note that you can type partial table names and/or use wild card characters to filter table names. You can use the percent sign (%) to denote multiple, unknown characters and the underscore symbol (_) to denote a single unknown character.
9. In the “Tables and Fields” section, you can select the “Show description” option button to show the description of tables versus their actual, more technical, names.
10. When you have finished filtering your data connection, click the “OK” button to close the dialog box.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING A UNIVERSES CONNECTION:

1. You can click the small plus sign next to the “Universes” folder under the “Create New Connection” folder in the “Database Expert” dialog box to create a data connection to a selected universe on a BusinessObjects Enterprise server.
2. Select the name of your system from the “System:” drop-down and then enter your “User name:” and “Password:” into the text boxes that are available.
3. You can then select the desired type of authentication from the “Authentication:” drop-down. When you are ready, click the “OK” button to continue.
4. You will then see a listing of the available universes from which you can choose. You can then select a universe and click the “Open” button.
5. You can then design a query on the data within the Business Objects Query Panel that appears.

CREATING AN XML AND WEB SERVICES CONNECTION:

1. Click the small plus sign next to the “XML and Web Services” folder under the “Create New Connection” folder in the “Database Expert” dialog box to create the initial connection, or double-click the “Make New Connection” icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the “XML and Web Services” dialog box which appears, you can specify to either use a local data source, an HTTP(S) data source, or a Web Service Data Source by selecting the desired option button and then entering the desired URL or browsing for the desired XML file.
3. Depending on your selection made, when you click the “Next >” button you can continue entering any additional authentication information needed, or specify an XML schema to use. When finished, click the “Finish” button to set the XML data source.

CREATING A REPOSITORY CONNECTION:

1. You can click the small plus sign next to the “Repository” folder in the “Database Expert” dialog box to create a connection to the BusinessObjects Enterprise Repository for your report.
2. In the “Log On to BusinessObjects Enterprise” dialog box you must select the name of your system from the “System:” drop-down and then enter your “User name:” and “Password:” into the text boxes that are available.
3. You can then select the desired type of authentication from the “Authentication:” drop-down.
4. When you are ready, click the “OK” button to continue.
5. You can then use a stored business view or SQL command within the repository as a data source.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING AN ACT! CONNECTION:

1. Click the small plus sign next to the "ACT!" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. If accessing an ACT! database that is 2.x or lower use the "Open" dialog box to navigate to the folder that contains the "Crw.act" file (usually placed in the "Windows" or "Winnt System 32" folder), select it, and then click "Open" when finished. The "Choose file for ACT" dialog box will then appear. Use this dialog box to navigate to the folder that contains the ACT! database file you wish to access, select it, and then click "OK."
3. If you are trying to connect to an ACT! database that is at least version 3.x or higher, you simply skip the intermediate step of selecting the "Crw.act" file. Instead, use the "Open" dialog box to navigate to your ACT! database file, select it, and then click "Open" to set it as the data source.

CREATING A BTRIEVE (PERVASIVE) CONNECTION:

1. Click the small plus sign next to the "Btrieve" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "Open" dialog box, you use the "Look in:" drop-down to navigate to the folder that contains the Btrieve (Pervasive) DDF files. The Pervasive DDF files contain all of the necessary file, field and index information about the tables in the database. The following three DDF files are required and must all reside in the same directory (folder): "File.ddf," "Field.ddf," and "Index.ddf."
3. Select one of the DDF files and click the "Open" button. Crystal Reports will then add all of the data files defined in the selected DDF files to the report.

CREATING A COM CONNECTIVITY CONNECTION:

1. If you click the small plus sign next to the "COM Connectivity" folder, you will be presented with the "COM Connectivity" dialog box.
2. To set a COM object as a datasource, type the object's "ProgID" into the "Program ID:" field, and then click the "Finish" button.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING AN EXCHANGE MESSAGE TRACKING LOG CONNECTION:

1. If using Exchange Server 5.5, click the small plus sign next to the "Exchange 5.5 Message Tracking Log" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established. If using Exchange Server 2000 or Exchange Server 2003, click the small plus sign next to the "Exchange Message Tracking Log" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "MS Exchange Message Tracking Log" dialog box, click either the "Remote Browse…" button to launch the "Select a Network Drive" dialog box or "Local Browse…" to launch the "Choose Directory" dialog box.
3. Use the dialog boxes to select the log file which you wish to use for the report and then click "OK."
4. That will then return you to the "MS Exchange Message Tracking Log" dialog box, where you can click "OK" once again to launch the "Enter Message Tracking Log Dates" dialog box.
5. Input the date range of tracking data to pull by entering in the date information in the "From (yyyymmdd)" and "To (yyyymmdd)" sections.
6. When you are ready, click "OK" to finish.

CREATING A FIELD DEFINITIONS ONLY CONNECTION:

1. Click the small plus sign next to the "Field Definitions Only" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "Field Definitions Only" dialog box, you can click the ellipsis mark button at the right end of the "Field Definition File:" text box to launch the "Open" dialog box which you can use to open your saved field definition file (.ttx). You can then select it and used the saved field definition for the current report.
3. If you do not have a saved field definition, click the "Create File…" button in the "Field Definitions Only" dialog box to view the "Database Definition Tool" dialog box, where you can create and save a .ttx file.
4. In this dialog box, you can define the fields of information that will be utilized by the report by typing the name of the first field into the "Field Name:" text box.
5. Then use the "Field Type:" drop-down to select the type of data that will be displayed in the field. If you select the "String" type (text), then you will have to input the length of the field (in characters) into the "Length:" text box that appears.
6. You can then type some sample data into the "Sample Data:" text box.
7. When you are ready to add the field to the definition, click "Add" to add it to the list of fields below.
8. You can then click any field listed at the bottom of this dialog box, and make editing changes to the information above. Click "Update" when you are finished making your changes to save them.
9. You can also click "Delete" to delete a selected field in the "Database Definition Tool" dialog box.
10. When you have created the necessary fields for the data schema, select "File| Save As" from the small Menu Bar in this dialog box.
11. Then use the "Save File As :" dialog box to select the location to which you wish to save the .ttx file.
12. Type the name for the file into the "File name:" text box, and click "Save" to save the data schema.
13. You can then close the "Database Definition Tool" dialog box.
14. In the "Field Definitions Only" dialog box, you should see the file you just created listed as the file reference in the "Field Definition File:" text box.
15. Click "Finish" in this dialog box to finish setting the newly created schema as the data source.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING A FILE SYSTEM DATA CONNECTION:

1. Click the small plus sign next to the "File System Data" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "File System Data" dialog box, click the ellipsis mark button at the right end of the "Starting Directory:" text box to launch a "Browse For Folder" dialog box. Click the plus signs next to the drives and folders until you find the parent folder of the files and folders upon which you wish to base the report. Click the desired folder to select it, and then click "OK."
3. You can check the "Include All Files:" checkbox to include every type of file within the selected directory. If you wish to filter the files included in the report in some way, uncheck this checkbox. You will then see the "File Mask:" text box appear, where you can type a mask by which to filter for the selected type of files.
4. You can check the "Include All Subdirectories:" checkbox to include all of the subfolders within the selected folder within which to search for files and attributes. If you uncheck this checkbox, you will see the "Max Number of Subdirectory Levels:" text box appear where you can type in the number of levels of subfolders within which to search for file data.
5. You can also check the "Include Empty Directories" checkbox to include empty folders in the data, as well, if desired.
6. When you are finished, click the "Finish" button.

CREATING A JD EDWARDS ENTERPRISEONE CONNECTION:

1. When you click the small plus sign next to the "JD Edwards EnterpriseOne" folder, you will see the "JD Edwards EnterpriseOne" dialog box appear. You can use this dialog box to establish a data connection to a JD Edwards EnterpriseOne server.
2. Here you enter the "Host," "Port," "Environment," "User," "Password," and "Role" information.
3. When you are done, click the "Finish" button to set the connection.

CREATING A LEGACY EXCHANGE CONNECTION:

1. Click the small plus sign next to the "Legacy Exchange" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. You will launch Microsoft Outlook where you can select an Outlook profile to use. If you are simply using the default profile, you will then be presented with the "Select a folder/address book" dialog box.
3. In this dialog box you will see the various Outlook objects that are accessible through the current profile.
4. Click the Outlook folder or address book that you wish to use as the data source for the report.
5. Click "OK."

CREATING A MAILBOX ADMIN CONNECTION:

1. Click the small plus sign next to the "Mailbox Admin" folder to create the initial connection.
2. In the "Logon to Exchange Servers" dialog box, click the "Select Profiles…" button in the lower right corner of this dialog box to launch the "Select Profiles" dialog box. Here you can highlight the name of the profile (server) to use, and click "OK." Then click "OK" in the "Logon to Exchange Servers" dialog box.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING AN MS IIS/PROXY LOG FILE CONNECTION:

1. Click the small plus sign next to the "MS IIS/Proxy Log Files" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "Select Log Files and Dates" dialog box, select the type of log files that you wish to access by making a selection from the option buttons provided.
3. Click the "Browse…" button to launch the "Choose MS IIS log File Directory" dialog box.
4. Use this dialog box to select the folder where the directory logs are stored. Select the desired log file from the list at the right side of this dialog box, and then click "OK."
5. In the "Choose Period Used When Logging" section of the dialog box, select the type of filter to use for the date range by selecting the desired option button. Then fill-in the values to use in the text boxes.
6. Click "OK" when you are finished to set the data source connection.

CREATING AN NT ARCHIVED EVENT LOG CONNECTION:

1. Click the small plus sign next to the "NT Archived Event Log" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "Select an Archived Event Log File" dialog box, select an archived event log as the data source for your report. You must be using Windows NT 3.51 or later to access the data in the log files using this connection type.
3. Use the "Look in:" drop-down to select the folder in which you have the archived event log, and then select the desired file from the list of files and folders shown.
4. Click "Open" to finish creating the data connection.

CREATING AN NT CURRENT EVENT LOG CONNECTION:

1. Click the small plus sign next to the "NT Current Event Log" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "Select Current Event Log File" dialog box, select an event log as the data source for your report. You must be using Windows NT 3.51 or later to access the data in the log files using this connection type.
3. Use the "Select one or more Computers:" box to select the computer that has the log files that you wish to access for this connection. Each computer that you click in this list is then selected and added to the "Computer(s):" list. You can click a selected computer in the list to also deselect it.
4. When you have the desired computers selected, click "OK."

CREATING AN ORACLE EBS CONNECTION:

1. You can click the small plus sign next to the "Oracle EBS" folder to create a data connection to Oracle EBS data.
2. In the "Oracle EBS" dialog box that opens, you will need to enter the "Service," "Database User," "Database Password," "Application Short Name," "Responsibility Key," and "Security Group Key."
3. You can then click the "OK" button to create the data connection.

ACTIONS-
Creating Data Connections

CREATING AN OUTLOOK CONNECTION:

1. Click the small plus sign next to the "Outlook" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. This will then launch Outlook and prompt you to select a profile, if necessary.
3. Once launched, you will then be presented with the "Choose Folder" dialog box, which shows an expandable/collapsible navigation tree view of the folders within your selected Outlook profile.
4. Choose the folder to which you wish to make the data connection from the list shown, and then click the "OK" button.

CREATING AN OUTLOOK/EXCHANGE CONNECTION:

1. If using Crystal Reports 2013, click the small plus sign next to the "Outlook/Exchange" folder, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. You will launch Microsoft Outlook where you can select an Outlook profile to use. If you are simply using the default profile, you will then be presented with the "Select a folder/address book" dialog box.
3. In this dialog box you will see the various address books, archive folders, mailbox folders, and public folders that are accessible through the current profile. Click the small plus sign next to any folder to show its subfolders.
4. Click the Outlook folder or address book that you wish to use as the data source for the report.
5. Click "OK."

CREATING A PEOPLESOFT ENTERPRISE CONNECTION:

1. You can click the small plus sign next to the "PeopleSoft Enterprise" folder to create a data connection to a PeopleSoft Enterprise server.
2. In the "PeopleSoft Enterprise" dialog box, you will need to enter the "Server," "User" and "Password."
3. Then click the "Finish" button to create the data connection.

CREATING A PUBLIC FOLDER ACL CONNECTION:

1. Click the small plus sign next to the "Public Folder ACL" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "Logon to Exchange Servers" dialog box, click the "Select Profiles…" button.
3. In the "Select Profiles" dialog box, select the profile (server) to which you wish to make the connection.
4. Click "OK" to return to the "Logon to Exchange Servers" dialog box.
5. Click "OK" to create the data source connection.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING A PUBLIC FOLDER ADMIN CONNECTION:

1. Click the small plus sign next to the “Public Folder Admin” folder to create the initial connection, or double-click the “Make New Connection” icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the “Logon to Exchange Servers” dialog box, click the “Select Profiles…” button.
3. In the “Select Profiles” dialog box, select the profile (server) to which you wish to make the connection.
4. Click “OK” to return to the “Logon to Exchange Servers” dialog box.
5. Click “OK” to create the data source connection.

CREATING A PUBLIC FOLDER REPLICA CONNECTION:

1. Click the small plus sign next to the “Public Folder Replica” folder to create the initial connection, or double-click the “Make New Connection” icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the “Logon to Exchange Servers” dialog box, click the “Select Profiles…” button.
3. In the “Select Profiles” dialog box, select the profile (server) to which you wish to make the connection.
4. Click “OK” to return to the “Logon to Exchange Servers” dialog box.
5. Click “OK” to create the data source connection.

CREATING A SIEBEL EBUSINESS APPLICATIONS CONNECTION:

1. You can click the small plus sign next to the “Siebel eBusiness Applications” folder to create a data connection to Siebel.
2. In the “Connection Information” dialog box that appears, select the connection type from the listing shown.
3. You can then enter a unique name for this connection to ensure data integrity into the “Connection Name” field.
4. Then click the “Next >” button to continue.
5. You then enter the “User,” “Password,” Connection String,” and “Repository” information.
6. If needed, you can then check the “Apply Current Query” checkbox to display the “Restrict to Current Selection” option, which you can also check if needed.
7. When you are done, click the “Finish” button to complete the connection.

ACTIONS-
CREATING DATA CONNECTIONS

CREATING A UNIVERSAL WEB SERVICES CONNECTOR (UWSC) CONNECTION:

1. You can click the small plus sign next to the "Universal Web Service Connector (UWSC)" folder to create a data connection to a web server.
2. In the dialog box that appears, enter the "Server," "Username," and "Password."
3. Click "Finish" here to connect to the specified server for the new data source connection.

CREATING A WEB/IIS LOG FILE CONNECTION:

1. Click the small plus sign next to the "Web/IIS Log Files" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "Select Log File Location" dialog box, click the "Browse…" button to select the web log file which you wish to use as the basis of the data connection using the "Choose Directory" dialog box.
3. Once you have selected the web log file that you wish to use, click "OK" in the "Choose Directory" dialog box to return to the "Select Log File Location" dialog box.
4. Click "OK" here to set the selected log file as the new data source connection.

CREATING AN XBASE CONNECTION:

1. Click the small plus sign next to the "xBase" folder to create the initial connection, or double-click the "Make New Connection" icon under that folder to create a new connection if there are already pre-existing connections of that type established.
2. In the "Open" dialog box, use the "Look in:" drop-down to select the folder that contains the data files you wish to set as the data source.
3. Select the desired xBase file and then click the "Open" button to set the selected data file as the connection's data source.

CREATING ADDITIONAL DATA CONNECTIONS AND SELECTING TABLES:

1. Once you have made a connection to a data source of a specific type under the "Create New Connection" folder, you will see the new connection that you have made to the data source.
2. You can click the small plus sign next to the listed data source connection to view the various types of objects within the database.
3. If you wish to add another connection of the same type, you can double-click the "Make New Connection" command above the currently established data connections displayed in that folder. That will launch another connection dialog box, where you can create another connection of the same type.
4. When you are viewing a data source connection, you may see "Commands," which allow you to create custom SQL (Structured Query Language) statements drawn from the data, which can then be used as the data source for a report.
5. You should also see any available tables from the data source listed. These are the "base tables" in the data file which contain all of the database information in their rows and columns. These are often referred to as the "physical tables" in a relational database.
6. Select the data connection that will serve as the source of the current report from the "Available Data Sources:" list at the left side of the "Database Expert" dialog box.

(cont'd.)

CREATING ADDITIONAL DATA CONNECTIONS AND SELECTING TABLES- (CONT'D.):

7. Highlight the first table to add to the report from the list, and click the ">" button to add it to the "Selected Tables:" list at the right. Repeat as needed until all of the tables needed for the report are added.
8. You can remove a table from the "Selected Tables:" list by highlighting it and then clicking the single left-pointing arrow button to return it to the list at the right side of the dialog box.
9. When you are ready adding tables to the report, click the "OK" button.

USING THE DATA EXPLORER:

1. If you have no report open, then you can access the "Data Explorer" by selecting "File| Log On or Off Server…" from the Menu Bar. If you have a report opened, then instead select "Database| Log On or Off Server…" from the Menu Bar.
2. In the "Data Explorer" dialog box, you can select a data connection listed and use the "Log On" and "Log Off" buttons to log on and off of the sever associated with that connection.
3. You can also right-click any connection listed here and then select the "Delete Connection" command to permanently delete a data connection shown.
4. When you are finished using this dialog box, click the "Close" button.
5. You can also use the Data Explorer if you need to connect to an SAP server to access your data. You use the folders within the "Data Explorer" just as you would within the "Database Expert" to select your SAP server. You can then click the "Log On" button and provide your user credentials to access the selected server.

EXERCISES-
CREATING DATA CONNECTIONS

Purpose:

1. There are no exercises for this section.

Exercises:

1. None.

CHAPTER 3-
Creating Basic Reports

3.1- Adding Data Fields to a Report

3.2- Browsing Field Data

3.3- Selecting, Moving, and Resizing Fields

3.4- Using the "Size" and "Align" Commands

3.5- Creating Text Objects

3.6- Saving a Report

3.7- Previewing a Report

3.8- Refreshing the Report Data

3.1- Adding Data Fields to a Report:

Once you have a new report with a data source displayed in the report design view, you will then need to place fields from the data source into the desired sections of the report to display the data. You use the "Field Explorer" to add data fields to the report from the connected data source.

In the "Field Explorer," you actually have a few different ways to add data fields to the report. First off, you need to display the data fields from the associated table or data source. Click the small plus sign next to the "Database Fields" icon to display the table or tables within the underlying data source that you added to the report through the "Database Expert." Click the small plus sign next to the name of the table whose data fields you wish to access. The fields of the table will then be displayed.

You can add one of the displayed fields to your report by selecting the name of the field that you wish to add to the report from the "Field Explorer" and then clicking the "Insert to Report" button in the toolbar at the top of the "Field Explorer" window. You can then click into the report section where you wish to place the field.

Another way to add fields is to click and drag the field that you wish to add to the report from the "Field Explorer" into the desired section of the report. You may also simply right-click the name of the field which you would like to add to the report, and then choose "Insert to Report" from the pop-up menu that appears. Then click into the report at the location where you wish to insert the selected field.

Most of the time, the data fields from the table will be placed into the "Details" section of the report. Note that as you place the fields into this section of the report, Crystal Reports will add a text "header" for each field into the "Page Header" section. That way, when the report is previewed, you will see the label for each column of data at the top of the page and the associated data will be displayed once per record in the data source down the page, under the label.

To remove a field that you have added to a report, click the actual field that you inserted to select it. Then you can simply press the "Delete" key on your keyboard to remove it from the report design view. Notice that deleting the field will also delete the field header that was also automatically added, as well.

3.2- Browsing Field Data:

Sometimes you would like to see the data contained within a field that you are going to place into the report design view. You can select the name of a field within the "Field Explorer" and then click the "Browse" button that appears in the toolbar at the top of the "Field Explorer" pane to display the data in a separate browsing widow. This window will then show the first few records of data contained within the selected field. You will also see the data type of the selected field displayed at the top of this small window. Viewing the data can give you a better idea of how wide to make the fields within the report design view. When you are finished previewing the data in the browsing window, you can simply close the window to return to report design view.

3.3- Selecting, Moving, and Resizing Fields:

Once you have fields placed into the report design view, you may need to change their position and size on the page. Before you can make any editing changes to a field, however, you need to select it first. You can click a field to select it. When a field is selected it will appear with a blue border around it in the report design view. You will also see four small squares around the perimeter of the object, one on each side of the field. These are called the "resizing handles." You use these to change the height and width of the data field.

If you need to deselect a field that you selected, you can click into the empty space within a report section to deselect the currently selected object or objects.

You can also select multiple objects simultaneously within a report. When you have multiple objects selected within a report, whatever action you then take is applied to all of the selected objects. This can be a useful way to delete several report data fields at once, versus deleting each one independently. You can also use it to apply a formatting style, like bolding, to several simultaneously selected fields.

To select multiple fields at the same time, click the first field which you would like to select. Then hold down either the "Shift" or "Ctrl" key on your keyboard while you continue to click the other fields that you would also like to simultaneously select. Then you can release the key that you were holding down when you have finished making your selections.

Another method of selecting multiple adjacent (next to each other) objects is to use a selection marquee. Hold your mouse pointer over the blank area in the section of the report where the fields that you wish to select are located. Then click and drag your mouse pointer, noticing the selection marquee that is being created as you continue to click and drag. Simply continue to click and drag the mouse through any fields that you wish to select. Any fields that are touched or enclosed by the selection marquee that you draw will become selected when you finally release your mouse pointer.

You may also easily move the selected fields that you have placed into your report. Simply place your mouse pointer over any selected field or fields in the report design view. When you see a four-pointed arrow appear as your mouse pointer, click and drag to move the selected fields and release them in another area of the report. You could also just select the fields and then use the arrow keys on your keyboard to move the fields up, down, left, or right.

You can also use the guidelines that appear in the ruler at the top of the report design view to move fields to the left and right. Using this method ensures that both the title and the data appear with the same alignment in the same column. Remember that when you insert a new field into the "Details" section of a report, Crystal will automatically create a label for the data which it places into the "Page Header" section. Notice when it does this, it will also place a small guideline marker into the ruler for the field. The marker looks like a small "home plate" from baseball. If you are familiar with Microsoft Word, you will think it looks like the "first line indent" character. You may click and drag this guideline left and right on the ruler to move both the data field and the label in tandem. However, it is important to note that when you manually click and drag on a field to move it, you then break it away from the aligning guideline. Therefore, using the guideline will not affect the field that you moved by hand after that. You will see a small red indicator at the left side of any field that is aligned to a guideline. You can re-associate a field with a guideline by manually moving the left edge of the field onto the guideline. When you place it into the correct position and then release it, you will see the red indicator appear at the left side of the object if you dropped it into the correct position. You can then use the guideline to move the field.

You may also add and remove the guidelines freely in the report design view. To add a guideline, simply click into the ruler at the position where you wish to place the guideline. To remove a guideline, click and drag the guideline from the ruler and release it into the report design section.

3.3- Selecting, Moving, and Resizing Fields (cont'd.):

To resize a data field, first select the field, or fields, to be resized. Then place your mouse pointer over the resizing handle that corresponds to the direction in which you wish to resize the selected field(s). When your mouse pointer is in the correct location it will appear as a double-pointed arrow. You may click and drag at that point to resize the selected field(s) in that direction: making them thinner, wider, shorter, or taller. You may also resize fields using your keyboard. To do this, select the field(s) to resize, hold down the "Shift" key on your keyboard, and then press the arrow keys on your keyboard to resize the selected field(s). It is also important to note that if you simply resize the data field, the field label will also be resized to the same dimensions. However, resizing the label will not reciprocally resize the data field.

3.4- Using the "Size" and "Align" Commands:

You can use the "Size" command to make multiple selected fields the same height, the same width, or the exact same size. To do this, first simultaneously select the desired fields that you wish to make the same width, height, or size. Then choose "Format| Make Same Size" from the Menu Bar. You could also simply right-click one of the selected fields and roll over the "Size" command from the pop-up menu that appears. Either way, a side menu of choices will appear from which you can select your desired option: "Same Width," "Same Height," or "Same Size." Note that if you right-click a selected field and then choose the "Size" command, the other selected fields will then share the same width, height, or size as the field upon which you right-clicked. If you use the Menu Bar method, then the selected fields will share the same width, height, or size of the last field selected.

You can also use the "Align" formatting command to align multiple selected objects with each other in the report design view. To do this, select the fields which you wish to align, first. Next, select "Format| Align" from the Menu Bar, or right-click one of the selected fields and choose "Align" from the pop-up menu that appears. Then choose the desired alignment from the side menu of choices that appears: "Tops," "Middles," "Bottoms," "Baseline," "Lefts," "Centers," "Rights," or "To Grid." Using the "To Grid" command will align them to the closest possible gridline point.

3.5- Creating Text Objects:

When you insert a text object into a report, you choose what text is displayed in the box provided and where to place the text object within the report. To insert a text object into a report, either click the "Insert Text Object" button at the left end of the Insert toolbar or select "Insert| Text Object…" from the Menu Bar. The mouse pointer will then appear as a crosshair over the report design area. You click and drag over the area of the report you wish the text object to cover. After placing the field, type the text that you want the text object to display into the box. When done, click outside of the text object into the report area to finishing editing the text. If you need to edit the displayed text within a text object after it has been inserted, double-click the text object to place the object back into text edit mode and make the necessary changes. Once again, click outside of the text object back into the report area when you are finished to leave text edit mode.

An interesting feature of text objects is that they can have data fields inserted into them while you are entering and editing the text. To do this, simply edit the text in the text object as normal. While in the text edit mode, select a database field to insert into the text object using the "Field Explorer" pane. Then click the "Insert to Report" button within the "Field Explorer" pane. Then click into the text object to insert the selected field at the location of the insertion point. When finished, click outside of the field set its content.

3.6- Saving a Report:

You should save your design work frequently so that you do not lose your progress when designing reports. When you save a report for the first time, you must use the "Save As" dialog box. You can invoke this dialog box by selecting "File| Save As…" from the Menu Bar. In the "Save As" dialog box, you use the "Save in:" drop-down to select the folder (directory) to which you wish to save the report. Then type the name for the report into the "File name:" text box. When you are finished, click the "Save" button to save the report into the folder you selected, giving it the name that you specified.

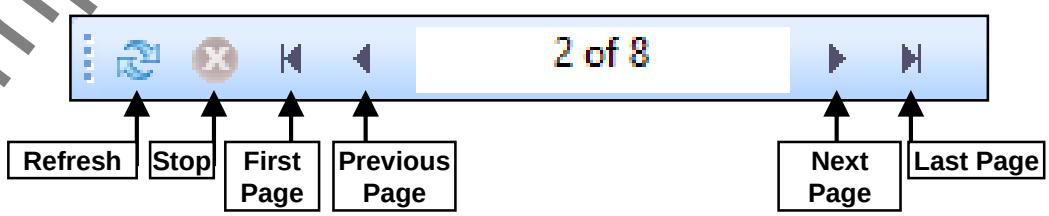
In the future, you can easily save the design changes that you make to the same report by simply clicking the "Save" button in the Standard toolbar, or by selecting "File| Save" from the Menu Bar. Crystal Reports will simply save your report changes to the same folder that you originally specified with the same name, overwriting the original. Therefore, there is no dialog box involved. However, if you ever wish to save a copy of the report that you are working on to another folder, or with a different name, you will need to use the "Save As" dialog box to do that. In that situation, simply choosing "File| Save As…" from the Menu Bar again will allow you to change either attribute using the "Save As" dialog box again.

3.7- Previewing a Report:

You should inspect how your report will appear with actual data displayed from the data source using the "Preview" function. To preview a report for the first time, select "View| Print Preview" from the Menu Bar. You can also just click the "Print Preview" button in the Standard toolbar. Crystal Reports will then create a new tab, named "Preview," where you can see the report with the associated data displayed. Once the "Preview" tab has been created, you can switch between the "Design" tab and the "Preview" tab in the future when you wish to view the data as it will display in the report when printed.

Note that when you are viewing the "Preview" tab, you will see the "Print Preview" toolbar appear. Clicking the "Refresh" button on this toolbar will refresh the report's data by drawing the most recent information from the underlying data source. You can click the "Stop" button to stop pulling the underlying data for the report. This stops the refreshing of the report data, should it take too long and you wish to simply preview the initial data. After those two buttons are a set of arrow buttons. You use these buttons to navigate through the preview of the data in the report. You can click the small left and right pointing arrows to navigate back and forth through the pages in the preview. You can click the buttons that look like small left and right pointing arrows with a line next to them to jump to the first or last page in a report preview. You will also see a page numbering indicator between the sets of arrows in this bar. Page numbering is displayed in a "X of Y" format, where "X" is the current page and "Y" is the total number of pages. Also note that Crystal Reports will only display a single formatted page at a time in the preview, so if you see a small plus sign next to the total page count, it means that there are additional pages to display, but that Crystal has not yet rendered these pages, so the total page count is still unknown. You can simply click the "last page" button in this bar to jump to the end page to get the accurate page count.

At the bottom of the report preview in the status bar is the time and/or date display of the most recent date and time that the report's data was refreshed from the underlying data source. If you want to delete the "Preview" tab entirely, you can click the small "X" button in the "Preview" tab to close the report preview.



3.8- Refreshing the Report Data:

When you initially preview a report, Crystal Reports selects the necessary records from the underlying data source. It then stores those data records to the disk or to memory for later use when previewing the data. This makes previewing the data in the report more time efficient because Crystal Reports doesn't need to then re-extract the records from the underlying data source each and every time you view the report. The date and time stamp displayed in the Status Bar below the report when it is previewed shows the last time that the data was actually extracted from the underlying data source. If necessary, you can refresh the data so that you are displaying a more current version of the underlying data in the preview. To refresh the data displayed in the report preview, you can either click the "Refresh" button in the Print Preview toolbar or select "Report| Refresh Report Data" from the Menu Bar. This will then cause Crystal Reports to refresh the preview display with the most current data available.

There are also times when Crystal Reports will automatically refresh the data in the preview. If you add more data fields to the report, it will automatically refresh the preview the next time that you view the report preview. If you add a formula to a report that references a field value not currently displayed in the report, it will also refresh the preview. Also, when you add criteria that causes Crystal Reports to change which records are being extracted from the underlying data source, it will then automatically refresh the preview.

ACTIONS-
CREATING BASIC REPORTS

ADDING DATA FIELDS TO A REPORT:

1. In the "Field Explorer," click the small plus sign next to the "Database Fields" icon to display the table, or tables, in the underlying data source. Click the small plus sign next to the name of the table whose data fields you wish to access. The fields of the table will then be displayed.
2. Select the name of the field that you wish to add to the report from the "Field Explorer" and then click the "Insert to Report" button in the toolbar at the top of the "Field Explorer" pane.
3. Click into the report section where you wish to place the field.

OR

2. Click and drag the field that you wish to add to the report from the "Field Explorer" into the desired section of the report.

OR

2. Right-click the name of the field which you would like to add to the report in the "Field Explorer" pane.
3. Choose "Insert to Report" from the pop-up menu that appears.
4. Click into the report at the location where you wish to insert the selected field.

REMOVING DATA FIELDS FROM A REPORT:

1. Click the actual field that you inserted into the report (not the associated label) to select it.
2. Press the "Delete" key on your keyboard to remove it from the report design view.

BROWSING FIELD DATA:

1. Select the name of a field to browse within the "Field Explorer" and then click the "Browse" button within the toolbar of the "Field Explorer" pane to display the data in a separate browsing widow.
2. This window will then show the first few records of data contained within the selected field. You will also see the data type of the selected field displayed at the top of this small window.
3. Close the window to return to report design view by clicking the "X" in the upper right corner of the window when you are finished.

ACTIONS-
Creating Basic Reports

SELECTING FIELDS IN A REPORT:

1. Click a field in the report design view to select it.
2. When a field is selected it will appear with a blue border around it. You will also see four small squares around the perimeter of the object, one on each side of the field.

DESELECTING FIELDS IN A REPORT:

1. Click into the empty space within a report section to deselect the currently selected object or objects.

SIMULTANEOUSLY SELECTING MULTIPLE FIELDS IN A REPORT:

1. Click the first field which you would like to select.
2. Hold down either the “Shift” or “Ctrl” key on your keyboard.
3. Click the other fields that you would also like to simultaneously select.
4. Release the key that you were holding down when you have finished making your selections.

OR

1. Place your mouse pointer over the blank area in the section of the report where the fields that you wish to select are located.
2. Click and drag your mouse pointer around the fields that you wish to simultaneously select to create a selection marquee as you continue to click and drag.
3. Continue to click and drag the mouse through any fields that you wish to select.
4. When you finally release your mouse pointer, any fields that are touched or enclosed by the selection marquee that you drew will become selected.

MOVING FIELDS:

1. Place your mouse pointer over any selected field or fields in the report design view.
2. When you see a four-pointed arrow appear, click and drag to move the selected fields and release them in another area of the report.

OR

1. Select the fields and then press the arrow keys on your keyboard to move the fields up, down, left, or right.

MOVING FIELDS USING RULER GUIDELINES:

1. Click and drag any field guideline left and right on the ruler to move both the data field and the associated label in tandem.

RE-ASSOCIATING FIELDS WITH THE RULER GUIDELINES:

1. Click and drag on the field that you wish to associate with a guideline, manually moving the left edge of the field onto the guideline.
2. When you place it into the correct position and then release it, you will see the red indicator appear at the left side of the object if you dropped it into the correct position.

MANUALLY ADDING RULER GUIDELINES:

1. To add a guideline, click into the ruler at the position where you wish to place the guideline.

MANUALLY REMOVING RULER GUIDELINES:

1. To remove a guideline, click and drag the guideline from the ruler and release it into the report design area.

RESIZING FIELDS:

1. Select the field (or fields) to be resized.
2. Place your mouse pointer over the resizing handle that corresponds to the direction in which you wish to resize the selected field(s).
3. When your mouse pointer is in the correct location it will appear as a double-pointed arrow. You may click and drag at that point to resize the selected field(s) in that direction: making them thinner, wider, shorter, or taller.

OR

1. Select the field(s) to resize.
2. Hold down the “Shift” key on your keyboard, and then press the arrow keys on your keyboard to resize the selected field(s).

Note: It is also important to note that if you simply resize the data field, the field label will also be resized to the same dimensions. However, resizing the label will not reciprocally resize the data field.

USING THE "SIZE" COMMAND TO SIZE FIELDS:

1. Simultaneously select the desired fields that you wish to make the same width, height, or size.
2. Choose "Format| Make Same Size" from the Menu Bar.

OR

2. Right-click one of the selected fields and roll over the "Size" command from the pop-up menu that appears.
3. A side menu of choices will then appear from which you can select your desired option: "Same Width," "Same Height," or "Same Size."

Note: If you right-click a selected field and then choose the "Size" command, the other selected fields will then share the same width, height, or size as the field upon which you right-clicked. If you use the Menu Bar, then the selected fields will share the same width, height, or size of the last field selected.

USING THE "ALIGN" COMMAND TO ALIGN FIELDS:

1. Select the fields which you wish to align.
2. Select "Format| Align" from the Menu Bar.

OR

2. Right-click one of the selected fields and choose "Align" from the pop-up menu that appears.
3. Choose the desired alignment from the side menu of choices that appears: "Tops," "Middles," "Bottoms," "Baseline," "Lefts," "Centers," "Rights," or "To Grid."

CREATING TEXT OBJECTS:

1. Click the "Insert Text Object" button at the left end of the Insert toolbar.

OR

1. Select "Insert| Text Object..." from the Menu Bar.
2. The mouse pointer will then be placed over the report design area and you simply click into the section where you wish to place the text object.
3. After placing the field, you will notice an insertion mark appear within the text object. Simply type the text that you want the text object to display into the box.
4. When you have finished, click outside of the text object into the report area to finishing editing the text.

ACTIONS-
CREATING BASIC REPORTS

EDITING TEXT OBJECTS:

1. Double-click the text object to place the object back into text edit mode.
2. Make the necessary changes and click outside of the text object back into the report area when you are finished to leave text edit mode.

INSERTING DATA FIELDS INTO TEXT OBJECTS:

1. Double-click the text object to place the object into text edit mode.
2. Click into the text field at the position at which you would like to insert the data field.
3. Select the data field to insert into the text object using whatever selection method that you prefer.
4. Click into the text object to insert a copy of the data field into the location at which you placed the insertion point.
5. Click outside of the text object when you are finished to stop editing the text.

SAVING A REPORT FOR THE FIRST TIME:

1. Select “File| Save As…” from the Menu Bar.
2. In the “Save As” dialog box, use the “Save in:” drop-down to select the folder (directory) to which you wish to save the report.
3. Type the name for the report into the “File name:” text box.
4. When you are finished, click the “Save” button to save the report into the folder you selected, giving it the name that you specified.

SAVING CHANGES TO A REPORT:

1. Click the “Save” button in the Standard toolbar.

OR

1. Select “File| Save” from the Menu Bar.

ACTIONS-
CREATING BASIC REPORTS

PREVIEWING A REPORT FOR THE FIRST TIME:

1. Select “View| Print Preview” from the Menu Bar.

OR

1. Click the “Print Preview” button in the Standard toolbar.
2. Crystal Reports will then create a new tab, named “Preview,” where you can see the report with the associated data displayed.
3. Once the “Preview” tab has been created, you can easily switch between the “Design” tab and the “Preview” tab in the future when you wish to view the data as it will display in the report.
4. To delete a preview tab, click the small “x” in the preview tab itself.

USING THE PREVIEW TOOLBAR:

1. Click the small “Refresh” button to refresh the underlying report data.
2. Click the small “Stop” button to stop pulling data from the underlying data source.
3. Click the button that looks like small left pointing arrow with a line next to it to preview the first page in the report.
4. Click the small left pointing arrow to preview the previous page in the report.
5. You will also see a page numbering indicator between the sets of arrows in this bar. Page numbering is displayed in a “X of Y” format, where “X” is the current page and “Y” is the total number of pages.
6. Also note that Crystal Reports will only display a single formatted page at a time in the preview, so if you see a small plus sign next to the total page count, it means that there are additional pages to display, but that Crystal has not yet rendered these pages, so the total page count is still unknown. You can simply click the “last page” button in this bar to jump to the end page to get the accurate page count.
7. Click the small right pointing arrow to preview the next page in the report.
8. Click the button that looks like small right pointing arrow with a line next to it to preview the last page in the report.
9. The time and/or date displayed in the status bar at the bottom of the report indicates the most recent date and time that the report’s data was refreshed from the underlying data source.

MANUALLY REFRESHING REPORT DATA:

1. Click the “Refresh” button in the Print Preview toolbar.

OR

1. Select “Report| Refresh Report Data” from the Menu Bar.

EXERCISES-
CREATING BASIC REPORTS

Purpose:

1. To be able to design a basic report layout in Crystal Reports 2013.

Exercises:

1. If using Crystal Reports 2013, first download and save the sample database file available from Business Objects at the following hyperlink (current as of December, 2013): https://smpdl.sap-ag.de/~sapidp/012002523100005852352008E/cr_xi_xtreme_rep_smpl_en.zip
   You will need to unzip the file before using it. Also be sure to note where you save the file on your computer, as you will need to use it in step 6.
2. Open Crystal Reports 2013.
3. Click the "Blank Report" hyperlink in the "Start Page."
4. In the "Database Expert" dialog box, click the small plus sign next to the "Create New Connection" folder.
5. Click the small plus sign next to the "Database Files" folder.
6. In the "Open" dialog box, use the "Look in:" drop-down to navigate to the "xtreme.mdb" file. It will be located in the folder you selected back in step #1 when you downloaded and unzipped it from the Internet.
7. Double-click the "xtreme.mdb" file to make the data connection.
8. Click the small plus sign next to the "Tables" under the new data connection.
9. Click the "Employee" table, and then click the right-pointing chevron to move it to the "Selected Tables:" pane at the right side of the dialog box.
10. Click "OK" in the "Database Expert" dialog box.
11. If needed, open the "Field Explorer by selecting "View| Field Explorer" from the Menu Bar. Then click the small plus sign next to the "Database Fields" in the "Field Explorer" pane.
12. Click the small plus sign next to the "Employee" table in the "Field Explorer" pane.
13. Click and drag the "First Name" field from the "Field Explorer" and drop it at the far left end of the "Details" section of the report design view.
14. Click and drag the "Last Name" field from the "Field Explorer" and drop it to the right of the "First Name" field that you placed into the "Details" section of the report design view.
15. Click and drag the "Position" field from the "Field Explorer" and drop it to the right of the "Last Name" field that you placed into the "Details" section of the report design view.
16. Click and drag the "Photo" field from the "Field Explorer" and drop it to the right of the "Position" field that you placed into the "Details" section of the report design view.
17. Click the "Insert Text Object" button in the Insert toolbar.
18. Click into the upper left corner of the "Report Header" section to place the text field.
19. Type "Employee Report" into the text box.
20. Click out into the blank area in the "Report Header" section to quit editing the text.
21. Select "File| Save As…" from the Menu Bar.
22. Click the "My Documents" folder at the left side of the "Save As" dialog box.
23. Type "Employee Report" into the "File name:" text box, and then click "Save."
24. Select "File| Close" from the Menu Bar to close the report.

CHAPTER 4-
Linking Tables in a Report

4.1- Basic Table Structures and Terms

4.2- Linking Multiple Tables

4.3- Table Joins

4.4- Enforcing Table Joins and Changing Link Types

4.1- Basic Table Structures and Terms:

It is important that you understand some basic terms and concepts involved in creating and using tables and databases if you wish to create more complex types of reports using Crystal Reports. Obviously, the deeper your knowledge of relational database design and structure is, the easier it will be to understand Crystal Reports and its place in the information storage and retrieval process. However, it is not required that you be a "whiz" with manipulating data tables to create basic reports.

The fundamental data storage object is the **table**. You store all of the data you wish to collect about a certain subject, like your employees, into your "base" tables in your **database**. A database is a storage container that typically contains multiple tables.

Tables have a structure in which they hold their data. Tables consist of columns and rows of information. The columns hold a certain type of data, like "Last Name," and are called **fields**. The fields in a table represent all of the different types of information that you wish to collect about the "subject" of the table. For example, if you had an "Employee" table, you would probably have fields for things like "First Name," "Last Name," "Position," "Hire Date," and other related types of data you wish to collect about the employees.

When you enter the field information for a single item into a table, you place all of the data for the item into a single row, which is called a **record**. For example, if you had an employee for whom you wish to make an entry into the "Employee" table, you would simply enter all of the data for each field into the next available row in the table to create the employee's record.

Many times the data that you wish to display within a single report is stored in many tables. In a **relational database**, you have many tables of information which are related to each other through information stored in common (or "shared") fields. In order to do that, each table must have a field that contains unique values for each record (like a "Social Security Number" field, or "Employee ID"). This field is called the **primary key** of the table.

Then, in the table to which you wish to relate the employees, you must have another field that contains the same information. However, in the related table the data stored in the column in not unique. This is often called the **foreign key** field. For example, if you had an "Orders" table, you would have fields for things like the "Order ID," (the primary key) "Order Date," and also "Employee ID" (the foreign key which would relate the employees to the orders). These fields are then linked when you create your reports in Crystal Reports, so that the records are related by the common field which they share (in this case, the same "Employee ID").

Employee : Table

Employee ID	Supervisor ID	Last Name	First Name	Position
1	5	Davolio	Nancy	Sales Representative
2		Fuller	Andrew	Vice President, Sales
3	5	Leverling	Janet	Sales Representative
4	5	Peacock	Margaret	Sales Representative
5	2	Buchanan	Steven	Sales Manager
6	5	Suyama	Michael	Sales Representative
7	5	King	Robert	Sales Representative
8	5	Callahan	Laura	Inside Sales Coordinator
9	5	Dodsworth	Anne	Sales Representative
10	2	Hellstern	Albert	Business Manager
11	10	Smith	Tim	Mail Clerk
12	10	Patterson	Caroline	Receptionist

Primary Key

Orders : Table

Order ID	Order Amount	Customer ID	Employee ID	Order Date
1	$41.90	1	1	12/2/2000
1002	$5,060.28	41	3	12/2/2000
1003	$186.87	77	4	12/2/2000
1004	$823.05	18	4	12/2/2000
1005	$29.00	64	3	12/3/2000
1006	$64.90	7	4	12/3/2000
1007	$49.50	32	9	12/3/2000
1008	$2,214.94	11	4	12/3/2000
1009	$29.00	25	4	12/3/2000
1010	$14,872.30	54	1	12/3/2000

Primary Key

Foreign Key

4.2- Linking Multiple Tables:

If you add multiple tables to the report using the "Database Expert," you will automatically see the "Links" tab appear next to the "Data" tab in this dialog box. Here is where you can view, edit, create and delete joins between tables in your report.

When you click the "Links" tab in the "Database Expert" dialog box, you will see the tables which you have added to the report and also the associated joins between the tables which you have added to the report. The joins are represented as the thin black lines between the table diagrams displayed in this tab.

Crystal Reports uses a feature called "Auto-Link" to automatically create the necessary links between the indexed fields in the tables that you added. Sometimes these may not be the joins that you would like to use in your report. You do have the flexibility to remove unnecessary joins and edit the joins that you wish to keep. You may even create your own joins, if necessary, and set the properties as desired.

If you wish to delete a join between table, you can click the link to select it. The link will turn blue when it has been selected. You can then click the desired button at the right side of the dialog box to make changes to the selected link. You can click the "Delete Link" button to delete the selected link. You can also click the "Link Options…" button to launch the "Link Options" dialog box. In the "Link Options" dialog box you can set the "Join Type," how to "Enforce Join," and the "Link Type," by selecting the desired option buttons. You will examine how the choices that you can set in this dialog box will impact the data used for your reports in the following sections. When you have made any changes to the link settings that you wish to apply using this dialog box, click "OK" to return to the "Links" tab of the "Database Expert" dialog box. Also note that you can right-click a link between tables and choose "Delete Link" to delete the link, or choose "Link Options…" to invoke the "Link Options" dialog box where you can edit the link settings.

If you want to delete all of the links that Crystal Reports generated for you automatically through the "Auto-Link" feature, you can simply click the "Clear Links" button. A dialog box will then appear, asking you if you are sure that you want to remove all the links. Click "Yes" to delete all of the links between all of the tables, or click "No" to retain the links that have been set.

When you are viewing the table diagrams in the "Links" tab, you will see the tables and fields. You can click and drag on the titles of the tables to rearrange their position onscreen. You can place your mouse pointer over the border of a table diagram until you see your mouse pointer appear as a double-pointed arrow. When it does this, you can then click and drag to change the size and shape of the table diagram. This can be helpful to display all of the fields that you need to see in the table sketch. You will often also see a small right-pointing arrow next to some field names in the table sketches. These indicate fields that have an index (sorting order) available to use. The "primary key" concept that was discussed earlier is actually a type of index. The color of the index shown indicates which "order" the index is. You can click the "Index Legend…" button in the "Links" tab of the "Database Expert" dialog box to launch the "Index Legend" dialog box. Here you can see the color coding used to signify the order of the indexes. The "Primary Key" index is the first index. You can actually have several indexes on tables, and you can see in the "Index Legend" that joins on indexed fields tend to produce report results more quickly. When you are finished looking at this dialog box, click "OK" to return to the "Links" tab in the "Database Expert" dialog box.

In the "Links" tab you can also click the "Auto Arrange" button to automatically arrange the table diagrams displayed in the "Links" tab in the most efficient manner for display within the "Links" tab. You can also have Crystal Reports re-link the tables that you have selected, if you have cleared the links. To do this, first select how to link the fields by choosing either the "By Name" option to link fields with the same name or the "By Key" option to link by foreign key assignment. When you have made your desired choice, simply click the "Link" button. If possible, Crystal Reports will then automatically create the links between the tables. Once again, you will need to double-check these links to ensure that they will function for the report.

4.2- Linking Multiple Tables- (cont'd.):

When you have more than two tables involved in the "Links" tab, the order in which the joins between the tables will be enforced will also be of great significance to how the set of records used by the report will appear. You can click the "Order Links" button in the "Links" tab of the "Database Expert" dialog box to launch the "Order Links" dialog box. In this dialog box you can set the order in which the links between tables will be enforced.

To change the order of the links used for the report in this dialog box, select the displayed link whose order you wish to change. The links will be executed from the top to the bottom in this list. Once you have the desired link selected, click the small, black "up" and "down" arrows in this dialog box to change the order of the displayed links. You can also check the "Link ordering is enforced," which will ensure that the joins between the tables will be enforced in the order shown. When you have the joins set in the order that you wish, click "OK" to set the join. In the "Database Expert," click the "OK" button when you are finished to set the links between the tables.

4.3- Table Joins:

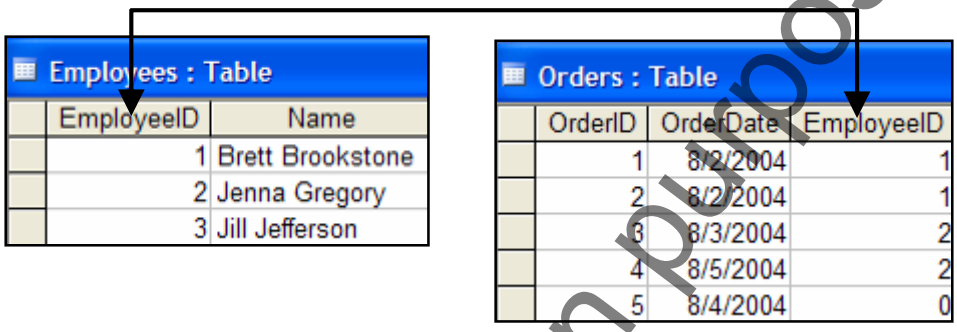
Using the Employees/Orders example, once you have the tables added to the report and they have an associated link between them on their "common field," you can then pull data from the tables and Crystal Reports will accurately display the requested data from the tables. Note that the information displayed in the "common fields" is of the same data type. This is a requirement of joining fields: both fields must share the same data type. For example, you cannot link a "text" field to a "number" field.

When you add multiple tables to the report using the "Database Expert" dialog box, Crystal will try to automatically create links between the tables. However, the way that Crystal Reports will choose to link the tables may not be correct. Crystal may create too many links, some of which will need to be deleted to pull the correct data. Crystal may also create the incorrect or undesired type of join between the fields and you may need to create or edit the join by hand in the "Links" tab of the "Database Expert" dialog box. There are several types of possible joins that you can create on the "Links" tab of the "Database Expert" dialog box. Below is a table listing the four basic types of joins and how they impact information extraction from the underlying tables.

Join Type:	***Join Effect:***
Inner	An "inner" join will display only records that have a matching value in the joined field in both tables.
Left-outer	A "left-outer" join will display all of the records from the left table and only matching records from the right table.
Right-outer	A "right-outer" join will display all of the records from the right table and only matching records from the left table.
Full-outer	A "full-outer" join displays all field values from both tables, regardless of whether or not there are matching values in the joined fields.

4.3- Table Joins- (cont'd.):

The type of join that exists between the tables for the report strongly determines what data will be used for the report and how that data will be displayed. Let's look at how the join that is set between two tables can impact the data that is selected and displayed in the report using the example of an "Employees" table and an "Orders" table. Pretend that you have two very small tables with the following fields and columns. In Crystal Reports, you can examine what data would be used for the report based on the type of join that you set up between them on their shared field (the "EmployeeID" field).



Employees : Table

EmployeeID	Name
1	Brett Brookstone
2	Jenna Gregory
3	Jill Jefferson

Orders : Table

OrderID	OrderDate	EmployeeID
1	8/2/2004	1
2	8/2/2004	1
3	8/3/2004	2
4	8/5/2004	2
5	8/4/2004	0

If you did not create a join between the two tables, but added them to the report, when you went to display the data from the two tables you would get inaccurate results. Specifically, this results in a Cartesian Product, where each and every entry in the first table is matched to each and every entry in the second table. You can see from the result set shown that this would be completely useless information.

EmployeeID	Name	OrderID	OrderDate
1	Brett Brookstone	1	8/2/2004 12:00:00AM
1	Brett Brookstone	2	8/2/2004 12:00:00AM
1	Brett Brookstone	3	8/3/2004 12:00:00AM
1	Brett Brookstone	4	8/5/2004 12:00:00AM
1	Brett Brookstone	5	8/4/2004 12:00:00AM
2	Jenna Gregory	1	8/2/2004 12:00:00AM
2	Jenna Gregory	2	8/2/2004 12:00:00AM
2	Jenna Gregory	3	8/3/2004 12:00:00AM
2	Jenna Gregory	4	8/5/2004 12:00:00AM
2	Jenna Gregory	5	8/4/2004 12:00:00AM
3	Jill Jefferson	1	8/2/2004 12:00:00AM
3	Jill Jefferson	2	8/2/2004 12:00:00AM
3	Jill Jefferson	3	8/3/2004 12:00:00AM
3	Jill Jefferson	4	8/5/2004 12:00:00AM
3	Jill Jefferson	5	8/4/2004 12:00:00AM

4.3- Table Joins- (cont'd.):

If you join the two tables through the “EmployeeID” field using the “inner join” type from Crystal Reports, you will only view data that have matches in both tables. Using an “inner join” produces the result set shown below, where any reference to the employee “Jill Jefferson” would be omitted, as she has made no orders. Since there is no reference to that employee in the “Orders” table, the record is omitted.

EmployeeID	Name	OrderID	OrderDate
1	Brett Brookstone	1	8/2/2004 12:00:00AM
1	Brett Brookstone	2	8/2/2004 12:00:00AM
2	Jenna Gregory	3	8/3/2004 12:00:00AM
2	Jenna Gregory	4	8/5/2004 12:00:00AM

If you use a “left-outer” join type, you will receive a slightly different set of results. Using this type of join, you will see every record in the left table and any data from the records that contain matching values from the right table. Looking at the result set that would be returned, which is shown below, you can see that now the reference to “Jill Jefferson” has been included this time, even though she has no matching orders.

EmployeeID	Name	OrderID	OrderDate
1	Brett Brookstone	1	8/2/2004 12:00:00AM
1	Brett Brookstone	2	8/2/2004 12:00:00AM
2	Jenna Gregory	3	8/3/2004 12:00:00AM
2	Jenna Gregory	4	8/5/2004 12:00:00AM
3	Jill Jefferson		

If you change the “join type” to become a “right-outer” join, you will see every order entered into the “Orders” table, regardless of whether or not there is an employee associated with the order entered. This would produce a result set in Crystal Reports like the one shown below.

EmployeeID	Name	OrderID	OrderDate
1	Brett Brookstone	1	8/2/2004 12:00:00AM
1	Brett Brookstone	2	8/2/2004 12:00:00AM
2	Jenna Gregory	3	8/3/2004 12:00:00AM
2	Jenna Gregory	4	8/5/2004 12:00:00AM
		5	8/4/2004 12:00:00AM

4.3- Table Joins- (cont'd.):

Using a “full-outer” join type, which is also often called a “union query,” will display each record from every table- including any records that do not have a match in the other associated table. This will produce a result set much like the one shown below.

EmployeeID	Name	OrderID	OrderDate
1	Brett Brookstone	1	8/2/2004 12:00:00AM
1	Brett Brookstone	2	8/2/2004 12:00:00AM
2	Jenna Gregory	3	8/3/2004 12:00:00AM
2	Jenna Gregory	4	8/5/2004 12:00:00AM
3	Jill Jefferson		
		5	8/4/2004 12:00:00AM

So you can see from these examples how important it is to select the desired tables that will display the data you would like to see in the report and also how important it is to ensure that the tables are correctly joined. You will perform all of the related linking of the tables in the “Links” tab of the “Database Expert” dialog box, which you will examine in a later lesson.

4.4- Enforcing Table Joins and Changing Link Types:

When you double-click a join that is displayed in the “Links” tab of the “Database Expert” dialog box, you can see that you can change the join type, the way the join is enforced, and the link type. In the “Link Options” dialog box you can select either “Not Enforced,” “Enforced From,” “Enforced To,” or “Enforced Both” in the “Enforce Join” section. Enforcing table joins ensures the desired use of the tables in the SQL statement (query) used to extract the records for your report, even if none of the fields are used in the report.

If you select the “Not Enforced” option, which is the default, the link you created will only be used to extract records from the tables if a field from the table is used in the report or if the table join is used to link to another table with fields used by the report.

Selecting the “Enforced From” option will only enforce the link if a fields from the table to which you are creating the link is used in the report. For example, if you create a link from table 1 to table 2, and only select a field from table 2, the join between the two tables will still be enforced when extracting records for the report. However, if you only selected fields from table 1 in the report, the join would not be enforced using this option.

If you select the “Enforced To” option, the join will only be enforced if a field from the table from which you are creating the link is used in the report. For example, if you create a link from table 1 to table 2, and only select a field from table 1, the join between the two tables will still be enforced when extracting records for the report. However, if you only selected fields from table 2 for the report, the join would not be enforced using this option.

Selecting the “Enforced Both” option, will ensure that if fields from either table involved in the link are used in the report the link between them will be enforced.

The other setting that you can change in the “Link Options” dialog box is the link type. The vast majority of the time, you use the “Equal [=] link” join type to pull records from a table that have an exact match to records from an associated table. This is the default setting for the joins that you create, but you can see that you also have the ability to change this, if needed.

4.4- Enforcing Table Joins and Changing Link Types- (cont'd.):

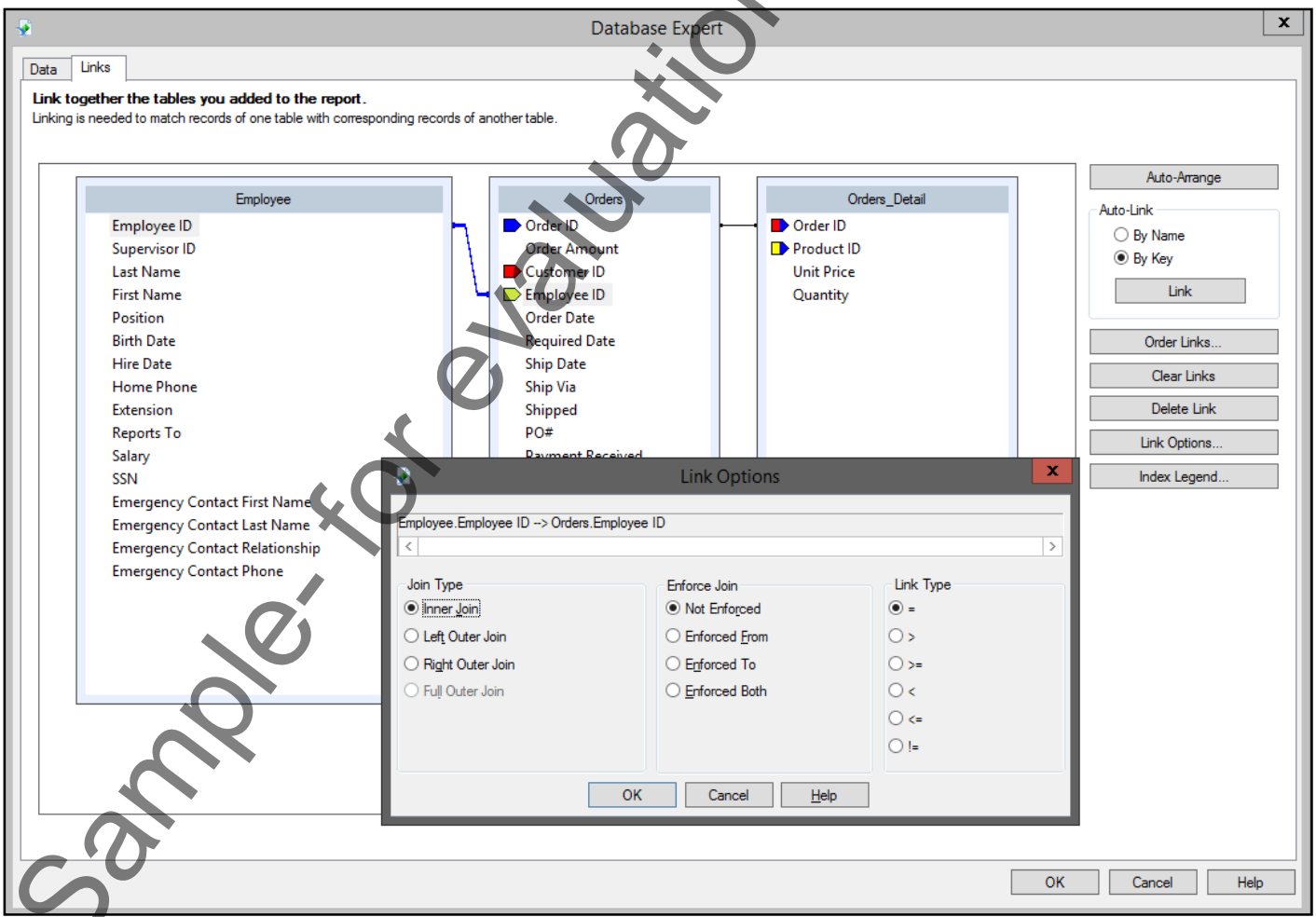
Selecting a link type other than the “Equal” link type will drastically alter the result set of records used for the report. If you select the “Greater Than [>] link” type, you will select records from the linked tables where the value from the field in the primary table from which you are linking is greater than the value in the field in the related table to which you are linking.

In much the same way, selecting the “Greater Than or Equal [>=] link” will select records from the linked tables where the value from the field in the primary table from which you are linking is greater than or exactly equal to the value in the field in the related table to which you are linking.

You can also set a table link type to the “Less Than [<] link” type. This type of link will select records from the linked tables where the value from the field in the primary table from which you are linking is less than the value in the field within the related table to which you are linking.

Setting the link type to the “Less Than or Equal [<=] link” type will select records from the linked tables where the value from the field in the primary table from which you are linking is less than or exactly equal to the value in the field in the related table to which you are linking.

Finally, you can also set the join to have the “Not Equal [!=] link” type. This will select records from the linked tables where the value from the field in the primary table from which you are linking is not equal to the value in the field in the related table to which you are linking.



ACTIONS-
Linking Tables in a Report

VIEWING MULTIPLE TABLE LINKS:

1. Click the “Database Expert” button in the Experts toolbar to display the “Database Expert” dialog box.
2. If you have added multiple tables to the report, click the “Links” tab which is next to the “Data” tab in this dialog box.

DELETING TABLE LINKS:

1. Click the “Links” tab in the “Database Expert” dialog box.
2. Click the link that you wish to delete to select it. The link will turn blue when it has been selected.
3. Click the “Delete Link” button to delete the selected link.

SETTING LINK OPTIONS:

1. Click the “Links” tab in the “Database Expert” dialog box.
2. Click the link for which you wish to set link options.
3. Click the “Link Options…” button to launch the “Link Options” dialog box.
4. In the “Link Options” dialog box, select the desired option button to set the “Join Type” option, the “Enforce Join” option, and the “Link Type” option.
5. Click “OK” to return to the “Links” tab of the “Database Expert” dialog box when you are finished.

DELETING ALL LINKS:

1. Click the “Links” tab in the “Database Expert” dialog box.
2. If you want to delete all of the links that Crystal Reports generated for you automatically through the “Auto-Link” feature, you can simply click the “Clear Links” button.
3. A dialog box will then appear, asking you if you are sure that you want to remove all the links. Click “Yes” to delete all of the links between all of the tables, or click “No” to retain the links that have been set.

CHANGING THE VIEW OF THE TABLE LINKS:

1. Click the “Links” tab in the “Database Expert” dialog box.
2. In the “Links” tab, you will see the tables and fields. You can click and drag on the titles of the tables to rearrange their position onscreen.
3. You can place your mouse pointer over the border of a table diagram until you see your mouse pointer appear as a double-pointed arrow. When it does this, you can then click and drag to change the size and shape of the table diagram.
4. You can also click the “Auto Arrange” button to automatically arrange the table diagrams displayed in the “Links” tab in the most efficient manner for display within the “Links” tab.

ACTIONS-
Linking Tables in a Report

VIEWING TABLE INDEXES:

1. Click the “Links” tab in the “Database Expert” dialog box.
2. In the “Links” tab, you will see a small right-pointing arrow next to some field names in the table sketches. These indicate fields that have an index (sorting order) available to use. The color of the index shown indicates which “order” the index is.
3. You can click the “Index Legend…” button in the “Links” tab of the “Database Expert” dialog box to launch the “Index Legend” dialog box. Here you can see the color coding used to signify the order of the indexes. The “Primary Key” index is the first index. You can actually have several indexes on tables, and you can see in the “Index Legend” that joins on indexed fields tend to produce report results more quickly.
4. When you are finished looking at this dialog box, click “OK” to return to the “Links” tab in the “Database Expert” dialog box.

RESETTING AUTOMATIC TABLE LINKING:

1. Click the “Links” tab in the “Database Expert” dialog box.
2. In the “Links” tab, first select how to link the fields by choosing either the “By Name” option to link fields with the same name or the “By Key” option to link by foreign key assignment.
3. When you have made your desired choice, simply click the “Link” button.
4. If possible, Crystal Reports will then automatically create the links between the tables. Once again, you will need to double-check these links to ensure that they will function for the report.

SETTING TABLE LINK ORDER:

1. Click the “Links” tab in the “Database Expert” dialog box.
2. Click the “Order Links” button in the “Links” tab of the “Database Expert” dialog box to launch the “Order Links” dialog box.
3. To change the order of the links used for the report in this dialog box, select the displayed link whose order you wish to change. The links will be executed from the top to the bottom in this list.
4. Once you have the desired link selected, click the small, black “up” and “down” arrows in this dialog box to change the order of the displayed links.
5. You can also check the “Link ordering is enforced,” which will ensure that the joins between the tables will be enforced in the order shown.
6. When you have the joins set in the order that you wish, click “OK” to set the jo.

EXERCISES-
Linking Tables in a Report

Purpose:

1. To be able to design a basic report layout using multiple tables in Crystal Reports 2013.

Exercises:

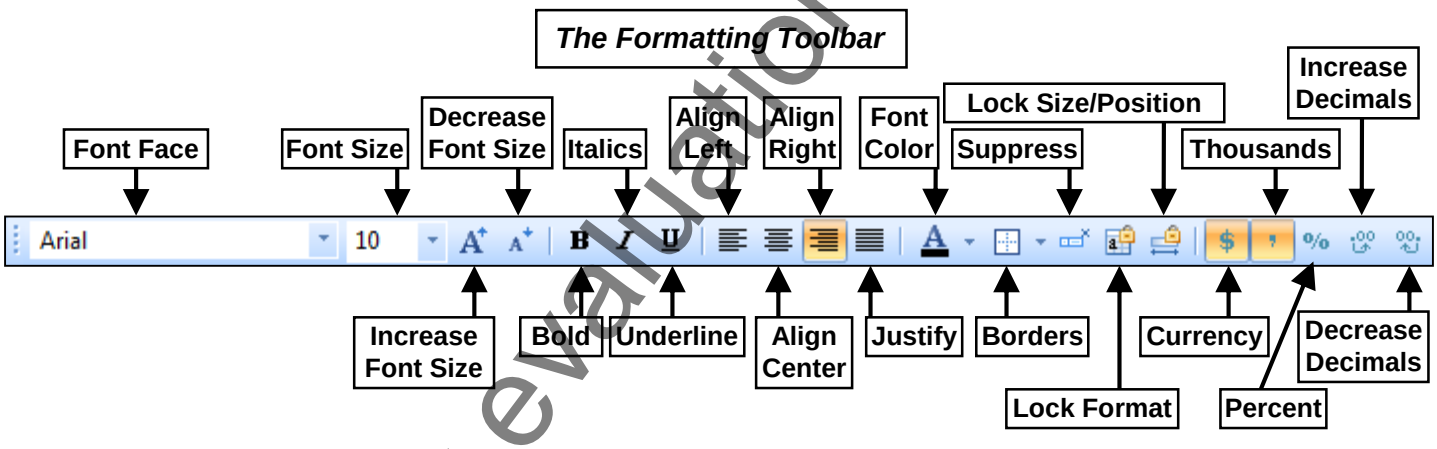
1. Open Crystal Reports 2013.
2. Click the "Blank Report" hyperlink in the "Start Page."
3. Click the small plus sign next to the "xtreme.mdb" database file connection which was created in the exercise at the end of the last chapter.
4. Click the small plus sign next to the "Tables" icon to display the tables of the database.
5. Click the "Employee" table, and then click the right-pointing chevron to move it to the "Selected Tables:" pane at the right side of the dialog box.
6. Click the "Orders" table, and then click the right-pointing chevron to move it to the "Selected Tables:" pane at the right side of the dialog box.
7. Click the "Links" tab which appears in the "Database Expert" dialog box.
8. Double-click the link between the two tables to view the "Link Options" dialog box.
9. View the link options, and then click "OK" when you are finished viewing the settings.
10. Click "OK" in the "Database Expert" dialog box.
11. Click the small plus sign next to the "Database Fields" in the "Field Explorer" pane.
12. Click the small plus sign next to the "Employee" table in the "Field Explorer" pane.
13. Click and drag the "First Name" field from the "Field Explorer" and drop it at the far left end of the "Details" section of the report design view.
14. Click and drag the "Last Name" field from the "Field Explorer" and drop it to the right of the "First Name" field that you placed into the "Details" section of the report design view.
15. Click the small plus sign next to the "Orders" table in the "Field Explorer" pane.
16. Click and drag the "Order ID" field from the "Field Explorer" and drop it to the right of the "Last Name" field that you placed into the "Details" section of the report design view.
17. Click and drag the "Order Date" field from the "Field Explorer" and drop it to the right of the "Order ID" field that you placed into the "Details" section of the report design view.
18. Click and drag the "Order Amount" field from the "Field Explorer" and drop it to the right of the "Order Date" field that you placed into the "Details" section of the report design view.
19. Click the "Insert Text Object" button in the Insert toolbar.
20. Click into the upper left corner of the "Report Header" section to place the text field.
21. Type "Employee Sales Report" into the text box.
22. Click out into the blank area in the "Report Header" section to quit editing the text.
23. If needed, resize the text object that you just created to fully display the text within it.
24. Select "File| Save As…" from the Menu Bar.
25. Click the "My Documents" folder at the left side of the "Save As" dialog box.
26. Type "Employee Sales Report" into the "File name:" text box.
27. Click "Save."
28. Select "File| Close" from the Menu Bar to close the report.

CHAPTER 5-
Basic Formatting Techniques

5.1- Formatting Report Objects:

In Crystal Reports, you can use the "Format Editor" dialog box or the Formatting toolbar to apply various aesthetic enhancements to the selected objects within your reports. The basic technique used to apply formatting is simple: select the report object or objects to which you wish to apply formatting, and then either use the buttons available in the Formatting toolbar or the choices available through the "Format Editor" dialog box to apply your desired choice of formatting options.

Shown below is the Formatting toolbar and the various buttons that you can click to apply the selected formats. Note that some of the buttons also have small drop-down arrows to the right of the button picture. These are buttons that have various options which you can set. For example, clicking the drop-down next to the "Font Color" button displays a small palette of color choices from which you can select. Choosing a color from the palette sets that as the color that you will then apply in the future when you next click the "Font Color" button directly. Also, some of the buttons may appear "grayed out" when you have certain types of report objects selected. That simply means that the associated formatting of the button cannot be applied to the type of report object that you selected. For example, if you select a text object in the report, the numeric formatting buttons will then appear "grayed out," as you cannot apply numeric formatting to text objects.



The Formatting toolbar is designed to allow quick access to some of the most commonly used formatting options available for selected report objects. However, some specific types of formatting that you may wish to apply can only be accessed through the "Format Editor" dialog box. Once again, you must first select the object or objects to which you wish to apply the formatting. Then either right-click the selected object or objects and choose the command that begins with the word "Format (object name)…" or simply click the "Format" command in the menu bar and select the topmost command in the drop-down list that appears, which will also appear as "Format (object name)…" in the listing. Either way, this will launch the "Format Editor" dialog box. In this dialog box, you can click through the tabs that are available at the top of the dialog box to view the formatting options which you can set on each tab. The tabs which appear will once again vary depending on the type of report object which you selected prior to invoking the "Format Editor" dialog box. In the next lessons, you will examine the various tabs that may appear within the "Format Editor" and what options you can specify on each.

5.2- The "Common" Tab of the Format Editor:

In the "Common" tab of the "Format Editor" dialog box, you can set many options that will always be available for selected fields. You can type a name for a single selected object into the "Object Name:" text box. This name, which can only consist of letters and numbers with no spaces or special characters allowed, is used for object referencing in various parts of Crystal Reports such as the Report Explorer and the Repository Explorer (if using Crystal Enterprise).

In the "Tool Tip Text:" text box you can specify the text that you would like displayed in the small text box that appears when a user hovers their mouse pointer over the report object.

Checking the "Read-only" check box will prevent additional formatting alterations from being applied to the selected object in the future. It does not, however, apply any type of report security.

Checking the "Lock Position and Size" checkbox will ensure that a user does not resize or move the selected report object in the future.

Checking the "Suppress" checkbox will suppress the selected object from appearing in both the "Preview" of the report and the printed output.

You can check the "Suppress if Duplicated" checkbox to suppress the display and printing of duplicate values in a field of data.

Checking the "Suppress Embedded Field Blank Lines" checkbox will suppress the display and printing of any blank values of a field embedded within the text field.

Checking the "Can Grow" checkbox will ensure that an object which may appear within the report with a variable length will be able to expand the field size vertically to accommodate all of the text. After checking this option, you can specify a limit (in lines) for the vertical growth in the "Maximum number of lines:" text box. If you leave it at zero, then the field can grow as large as necessary to display the data.

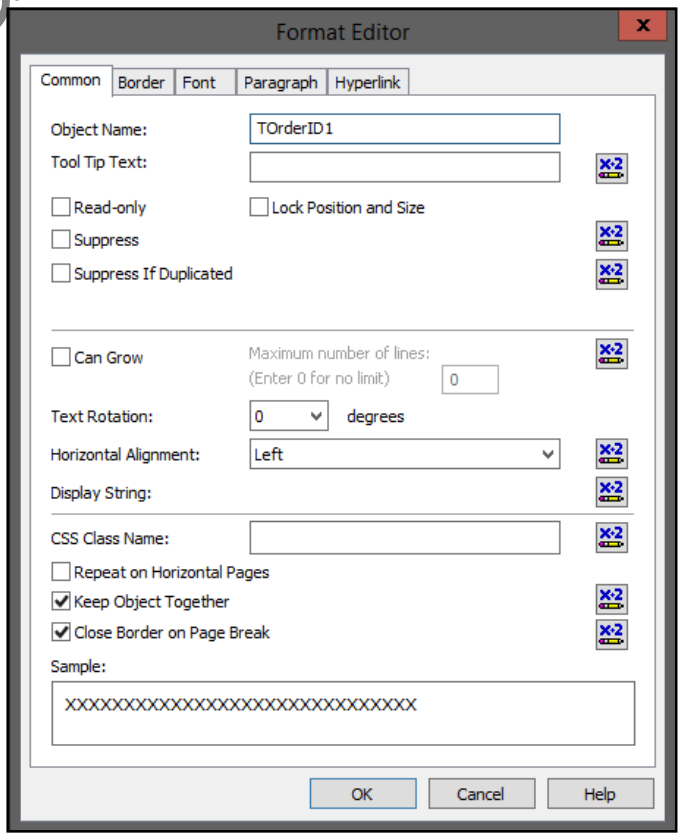
You can also use the "Text Rotation:" drop-down to specify either a rotation of 90 or 270 degrees for the text contained in the selected object.

If you use cascading style sheets to apply formatting to reports, you can type the class name for the selected object into the "CSS Class Name:" text box. Class names are used by cascading style sheets (CSS) to define and apply a pre-created format (style) to the selected report object.

Checking the "Repeat on Horizontal Pages" option allows you to repeat objects, like report titles for example, across horizontal pages in reports that contain horizontal page breaks (like ones created by some cross-tab and OLAP reports).

Checking the "Keep Object Together" checkbox will prevent breaking the content of the object with a page break when printed.

Checking the "Close Border on Page Break" checkbox will ensure that if an object with an applied border is split with a page break when printed, the border will appear closed at the end of the page.



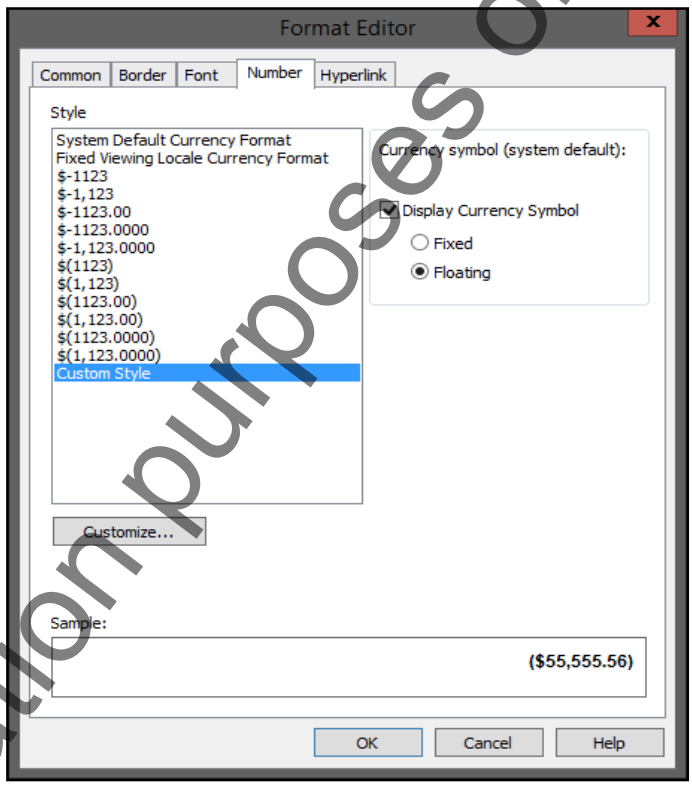
5.3- The "Number" Tab of the Format Editor:

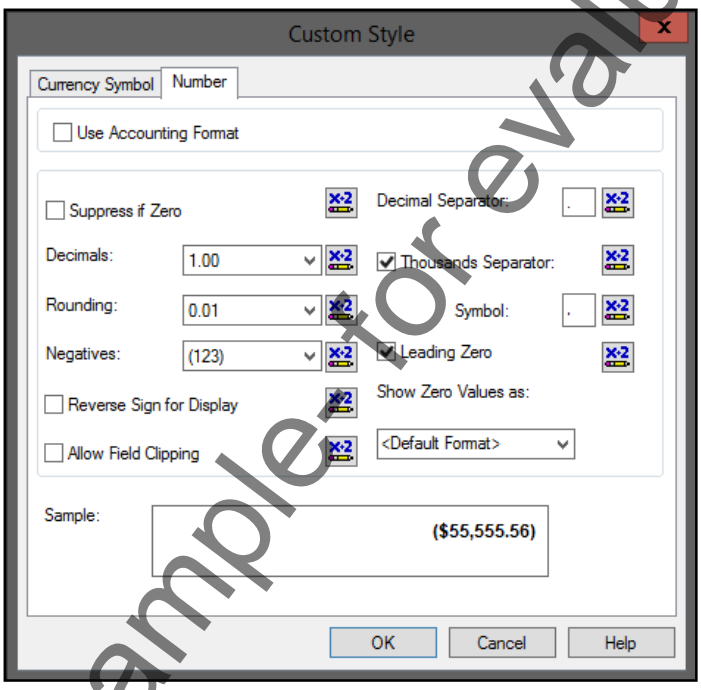
In the "Number" tab of the "Format Editor" dialog box, you can set options for the display of **numeric fields** in the report.

You can select one of the many preset numeric displays for numbers and currency fields from the "Style" list displayed at the left side of this tab.

If you have a **currency value field** selected, you can check the "Display Currency symbol (system default):" checkbox to apply a currency symbol to the field's display. If checked, then below that you can select either the "Fixed" or "Floating" option. If you select "Fixed," the currency symbol will always display at the left edge of the field. If you select "Floating," the currency symbol will appear directly to the left of the number itself.

Clicking the "Customize…" button launches another separate dialog box called the "Custom Style" dialog box. Here you can create your own custom displays for the number and currency symbol used for the field's display.





On the "Number" tab of the "Custom Style" dialog box, you can check the "Use Accounting Format" checkbox to set the appearance of the object to a traditional accounting display. Checking this option will display negative numbers in the report by referencing the Windows Regional Settings. They will then be displayed as either a minus sign or by brackets. This will also determine the position of the negative symbol. In addition, the dash symbol will be used to display zero (0) values in the report, and the currency symbol used will appear fixed at the left side of the field.

Checking the "Suppress if Zero" checkbox will hide the field's display in both the printout and the preview if it is zero.

You can use an alternate character for the decimal separator by typing one into the "Decimal Separator:" text box, if desired. Otherwise, the "period" character is used by default.

You can use the "Decimals:" drop-down to truncate the numeric display to the number of decimals specified by the drop-down.

5.3- The "Number" Tab of the Format Editor- (cont'd.):

If you check the "Thousands Separator:" checkbox, you will enable a separator for the thousands values in your numeric display. The character used is set to the "comma" character, by default, but you can specify another character to use, if desired, by typing it into the "Symbol:" text box.

You can use the "Rounding:" drop-down to select the number at which you would like the value displayed in the selected field to be rounded.

You use the "Negatives:" drop-down to select the desired appearance of negative numbers within the selected field.

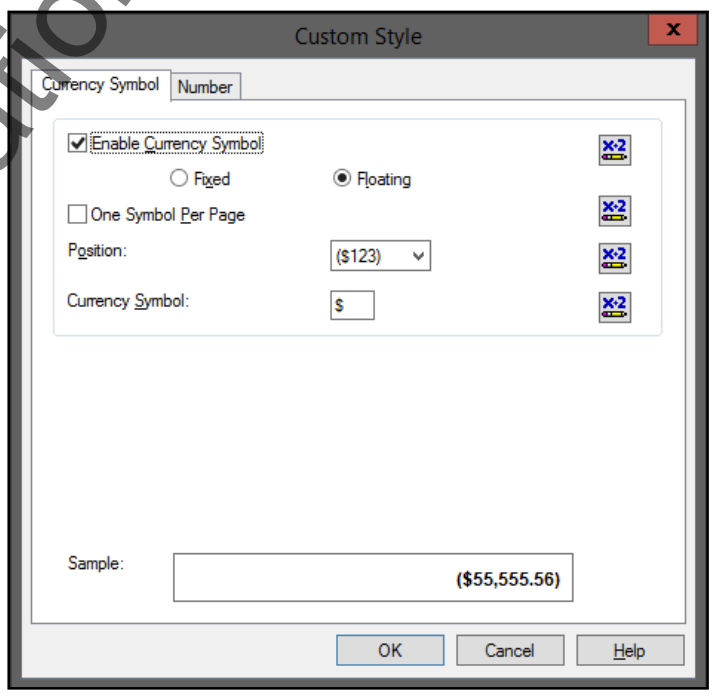
Checking the "Leading Zero" checkbox will add a leading zero to the display of decimal numbers between zero and one.

Checking the "Reverse Sign for Display" checkbox will reverse the traditional signs used to indicate debit and credit values in financial reports.

You can use the "Show Zero Values as:" drop-down to select the format used for the display of zero values in the selected report object.

If the "Allow Field Clipping" checkbox is checked, field values that are longer than the displayed length of the field in the report are truncated. If unchecked, the field's values will not be truncated, but will instead appear as pound signs (######), as they do in Excel for example. The pound signs indicate the field is simply too narrow to accurately display the field's value.

Once you have made the desired selections for your custom numeric style on the "Number" tab, you can then click the "Currency Symbol" tab to set your own custom display of the currency symbol, if desired.



You can check the "Enable Currency Symbol" checkbox to enable the display of a currency symbol in the selected report object. If checked, you can then select either a "Fixed" or "Floating" display.

If you check the "One Symbol Per Page" checkbox, the currency symbol will only appear next to the first value displayed on each page in the report for the selected number field.

Use the "Position:" drop-down to determine the position of the currency symbol displayed.

You can type a symbol to use as the currency symbol into the "Currency Symbol:" text box, if the default symbol of the dollar sign is not desired for the report.

Once you have made your custom number selections, click the "OK" button at the bottom of the "Custom Style" dialog box to return to the "Number" tab of the "Format Editor" dialog box.

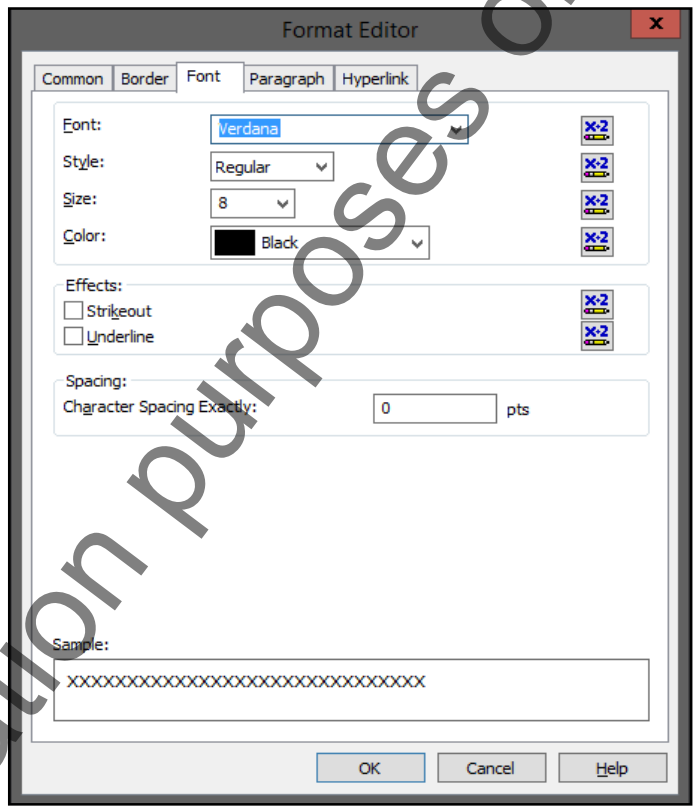
5.4- The "Font" Tab of the Format Editor:

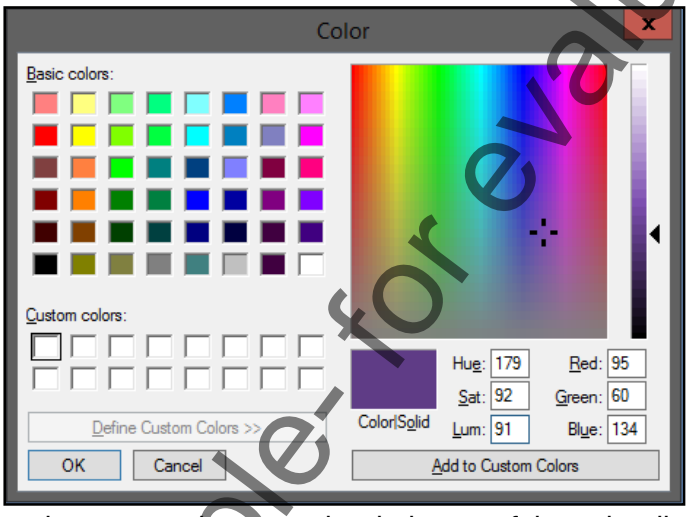
In the "Format Editor" dialog box you can click the "Font" tab to view the available choices that you can make to change the display of text in the selected report object or objects.

Clicking the "Font:" drop-down will display a listing of all of the available fonts on your machine. You can select the desired font face to use for the selected object by choosing it from the list.

The "Style:" drop-down allows you to apply a selected font style from the drop-down of choices available. Typical choices include "Bold," "Regular," "Italic" and others. However, note that the choices available in this drop-down depend directly upon which font is selected in the "Font:" drop-down. Some fonts have more style options than others do.

You can use the "Size:" drop-down to select a font size, measured in points, which you want to use for the values displayed in the selected report object. You can also simply type a desired font value directly into the associated text box to specify a font size that is not displayed in the drop-down menu. This field will also accept fractional font sizes, such as 10.5, if desired.





You can use the "Color:" drop-down to select the color to use for the text displayed in the selected report object. If the color you want to use is not shown in the small palette of colors displayed in the drop-down, you can click the "More…" command to invoke the "Color" dialog box. In the "Color" dialog box, you can select from the expanded palette of preset colors available for use in the "Basic colors:" section at the left side of the dialog box. You can also create your own custom colors, if desired. To do this, click one of the white color cubes under the "Custom colors:" section. Next, click and drag the small black left-pointing arrowhead in the color strip shown at the right side of the dialog box up or down to decrease or increase the darkness of the color displayed in the "Color|Solid" box. Next, click and drag the mouse pointer around in the rainbow gradient to change the color displayed in the box. You can also change the color by typing the desired numbers for the "Hue:," "Sat:" (saturation), and "Lum:" (luminosity) into the text boxes provided or by typing the desired values into the "Red:," "Green:" and "Blue:" text boxes provided. Once you have the desired font color displayed in the "Color|Solid" box, click the "Add to Custom Colors" button in the lower right corner of this dialog box to set the selected color as the color displayed in the selected cube of the "Custom colors:" section of the dialog box. In the future, when you invoke the "Color" dialog box, the selected color will be displayed here, so you will not need to re-create it in the future

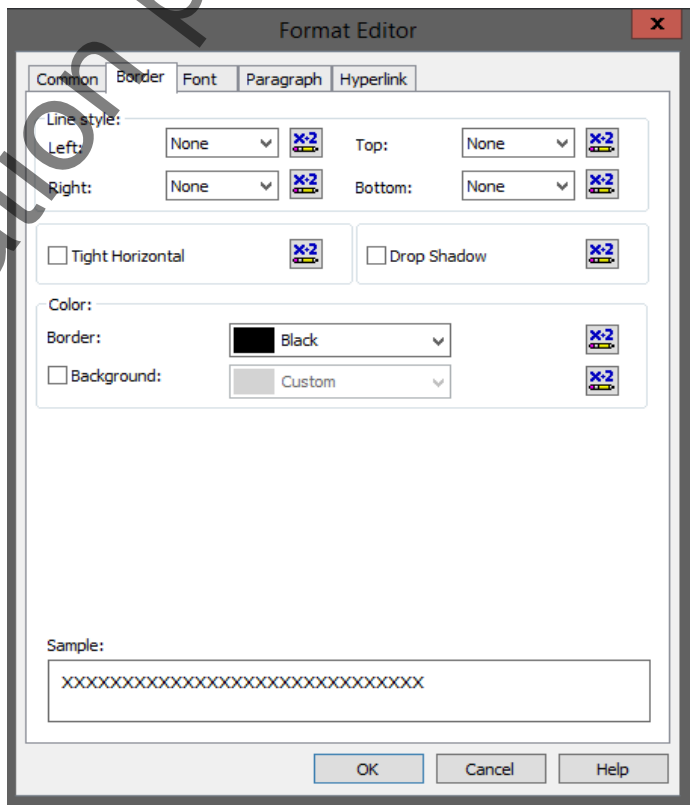
5.4- The "Font" Tab of the Format Editor - (cont'd.):

again. When you are finished in the "Color" dialog box, click "OK" to return to the "Format Editor" dialog box.

In the "Effects" section of the "Font" tab in the "Format Editor" dialog box, you can check the "Strikeout" checkbox to apply a strikethrough to the text displayed in the selected report object. Checking the "Underline" checkbox will apply an underline to the text displayed in the selected report object. Note that this underline will also appear under space values in the selected report object.

You can type a number value (in points) into the "Character Spacing Exactly:" text box to set the value specified as the value each character in your selected font should occupy, horizontally speaking. This value is measured from the start of one character to the start of the next character. This does not affect the size of the font used. As such, ensure that if you do use this feature that the font has enough space to display the characters in the field without having the letters in the text appear on top of one another.

5.5- The "Border" Tab of the Format Editor:



You can click the "Border" tab in the "Format Editor" dialog box to set the appearance of any border that you would like to appear around the selected report object or objects.

Use the drop-downs that appear next to the "Left:," "Top:," "Right:," and "Bottom:" labels to choose the line style that you would like to apply to the selected side of the report object. You can select either "None," "Single," "Double," "Dashed," or "Dotted."

You can check the "Tight Horizontal" checkbox to set the border to appear as tight as possible around the data displayed in the field.

Checking the "Drop Shadow" checkbox will simply apply a drop shadow (which appears under and to the right of the report object) to the selected report object.

Use the "Border" drop-down to select the desired color of the border applied from the drop-down list of choices. Note that you can also select the "More…" command here to invoke the "Color" dialog box, if the color you wish to apply isn't available in the list of colors displayed.

You can also apply a fill color to the selected report object by checking the "Background:" checkbox. If checked, this fills the selected report object with the color that you then specify using the drop-down that appears to the right. Once again, you can select a color displayed in the drop-down menu of choices, or you can select the "More…" command to invoke the "Color" dialog box, where you can select from a wider array of colors or create your own custom colors.

5.6- The "Date and Time" Tab of the Format Editor:

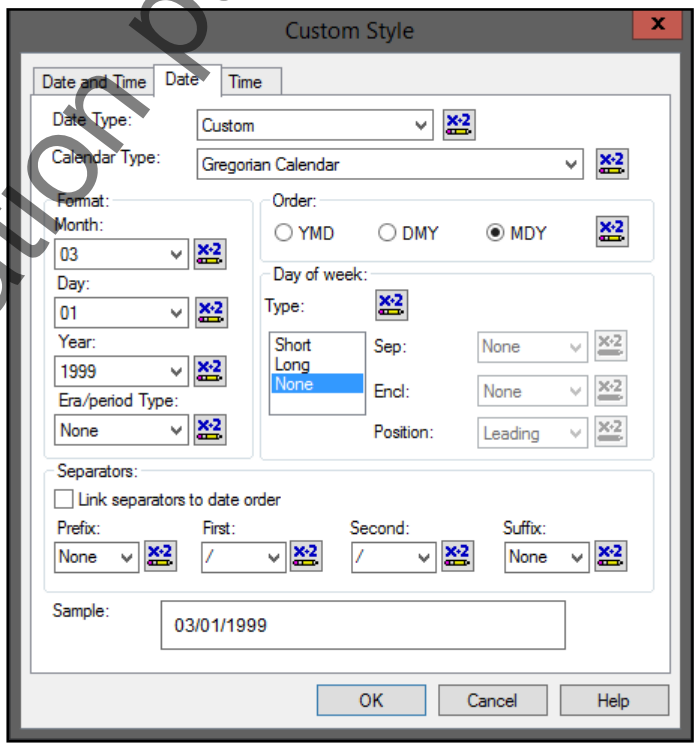
If you have selected a date/time field within the report to format, you will see the "Date and Time" tab appear within the tabs listed at the top of the "Format Editor" dialog box. You can click this tab to set the display options for the selected date/time fields.

On the "Date and Time" tab you can click any style listed in the "Style" list box to choose the selected style as the style used to display the date/time values in a selected **date/time field** in your report.

Clicking the "Customize" button will launch the "Custom Style" dialog box, where you can create and apply your own custom date and time styles to the selected report objects. In this dialog box there are three tabs you can use to specify the custom date/time format you desire: "Date and Time," "Date," and "Time." If you click the "Date and Time" tab within the "Custom Style" dialog box, you can specify the desired sort order for date/time values from the drop-down of choices available: "Date Time," "Date," and "Time."

You can also choose which separator you want to use between the date value and the time value from the "Separator:" drop-down on this tab. If you wish, you can also simply click into the text box shown and type the character that you want to use as the separator into the text box.

If you click the "Date" tab, you can set a custom display for the date value in the selected date/time field.



You can use the "Date Type:" drop-down at the top of this tab to choose to set the date display to the "Short Date" or "Long Date" based on the system settings of your computer. You can also specify a "Custom" display from the drop-down.

If your operating system supports multiple calendar types, you can select which calendar type to use for the date/time display from the "Calendar Type:" drop-down.

You can use the "Month:," "Day:," "Year:," and the "Era/period Type:" drop-downs to set the display for those specific types of elements in the date format.

In the "Order:" section, select the desired option button for the order of the month (M), day (D), and year (Y) elements.

In the "Day of week:" section, you can click the desired day "Type:" that you want to display. To the right of that, you can use the "Sep:," "Encl:," and "Position:" drop-downs to select a separator character to place between the day of the week and the actual date value, select a characters set within which you can enclose the displayed date, and choose whether the day is shown at the beginning or ending of the date/time value, respectively.

If you check the "Link separators to date order" checkbox, this will include the specified separators when sorting date fields. Below that you can use the "Prefix:" box to create a prefix for the date, such as the word "Date: ." You can also specify a "First:" and "Second:" separator character to be used between the three elements of the date display. You can then type any desired suffix value that you wish to display after the date values into the "Suffix:" text box drop-down.

If you would like to create a custom time value, click the "Time" tab in the "Custom Style" dialog box. You can set a custom display for the time values in a selected date/time field in a report.

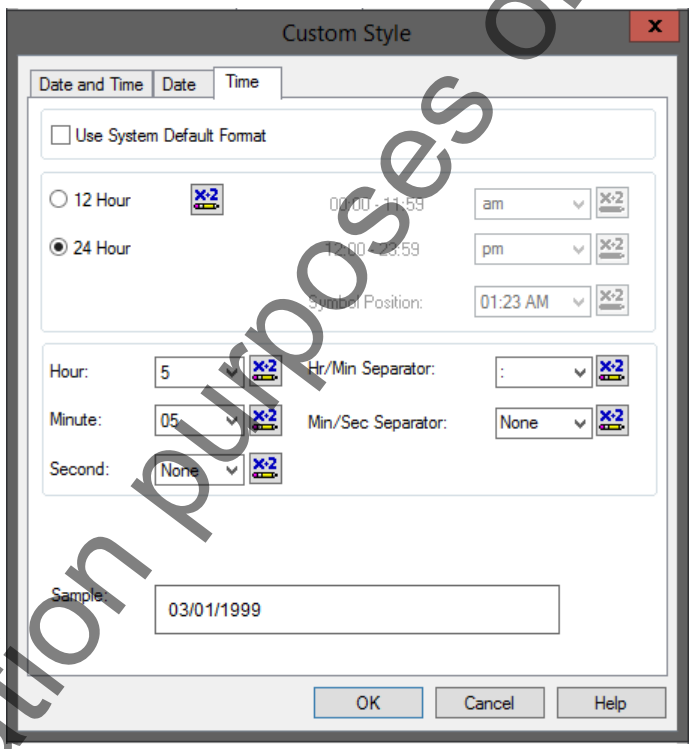
5.6- The "Date and Time" Tab of the Format Editor- (cont'd.):

If you check the "Use System Default Format" checkbox, the report will display the time values in the selected report field according to the current system settings in Windows.

Below that, you can either select to display the time as a "12 Hour" or "24 Hour" value by selecting the desired option button. If you select the "12 Hour" display, then you can choose what characters you want to represent the hours from midnight to noon by typing them into the "00:00 – 11:59" box, if you want something other than the default value of AM. You can do the same for the hours of "12:00 – 23:59," if you prefer a value other than the default of PM.

Use the "Hour:," "Minute:," and "Second:" drop-downs to choose the displayed format for those elements of the custom time value.

You can also choose or type in the character to use as the "Hr/Min Separator:" and the "Min/Sec Separator" into the boxes provided. When you have finished creating your custom value, click "OK" to return to the "Format Editor" dialog box.



5.7- The "Paragraph" Tab of the Format Editor:

In the "Format Editor" dialog box you may also have a "Paragraph" tab appear when you have a text-related report object selected. On the "Paragraph" tab, you can set the paragraph attributes for the selected text-containing report object.

You can use the "First Line:," "Left:," and "Right:" text boxes to specify a number (measured in inches) by which you would like to indent either the first line of each paragraph, the entire left side of the paragraph, or the entire right side of the paragraph. You can also use the "Line Spacing:" drop-down to select either "Multiple" or "Exact." Selecting "Multiple" will set the line spacing to be a multiple of the font size used and selecting "Exact" will set the line spacing to an exact number of points that you specify. In the "Of" text box, you can enter the multiple by which you want to set line spacing if you selected "Multiple" or enter the number of point to use between each line if you selected "Exact."

In the "Reading order:" section you can choose whether the text is to be read from "Left to Right" or "Right to Left."

If you have a text data field selected, you will be able to select either "none," "RTF text," or "HTML Text" from the "Text interpretation:" drop-down. This can assist you in correctly displaying RTF or HTML data in a text field with the correct formatting, if needed.

If you have a text object like a report label selected, you will be able to set the horizontal alignment for the selected object using the "Alignment:" drop-down.

5.8- The "Picture" Tab of the Format Editor:

If you selected a graphic to format in your report, then you can click the "Picture" tab in the "Format Editor" dialog box to set the formatting options for the graphic in your report.

On the "Picture" tab, you can input the number, measured in inches, that you want to cut away from the image by typing the measurement into the "Left:," "Right:," "Top:," or "Bottom:" text boxes in the "Crop From" section, as desired.

In the "Scaling" section, you can specify the "Width:" and "Height:" (as a percentage) to which you would like to scale the image.

In the "Size" section, you can enter a "Width:" and "Height:," measured in inches, to which you would like to resize the graphic.

If you make any changes to the size of the graphic and would like to reset the changes that you have made, you can click the "Reset" button in this tab to reset the alterations made to the image file for display within the report.

5.9- The "Boolean" Tab of the Format Editor:

If you select a field in a report that contains a logical (boolean) value, you can then select the "Boolean" tab in the "Format Editor" dialog box. Here you can use the "Boolean Text:" drop-down to set the display of the logical value that you would like to use in the report.

5.10- The "Hyperlink" Tab of the "Format Editor" Dialog Box:

If you have a selected report object to which you wish to set a hyperlink upon which the users could click when previewing the report, you can set these types of options on the "Hyperlink" tab in the "Format Editor" dialog box.

In the "Hyperlink type:" section, you can choose the option button that corresponds to the type of hyperlink that you wish to create. The options that are available depend upon which object in the report is selected. You can select the "No Hyperlink" option to remove a hyperlink from a field. This is also the default value displayed when creating a new hyperlink. You can select "An E-mail Address," and then type the email address to which you want the email sent into the "E-mail Address:" box below after the "mailto:" protocol shown. You could also select the "A Website on the Internet" option button, and then enter the website address into the "Website Address:" text box, after the "http://" information. You can also choose the "A File" option and then click the "Browse…" button to create a hyperlink to a file on your organization's network.

If you selected a report data field that contains website values displayed using the correct "http://www.someplace.com" syntax, you can select the "Current Website Field Value" option button. This will create a hyperlink from the data contained within the field that the users of the report can click upon to visit the website.

If you selected a report data field that contains email values displayed using the correct "someone@someplace.com" syntax, you can select the "Current E-mail Field Value" option button. This will create a hyperlink from the data contained within the field that the users of the report can click upon to send an email to the selected recipient.

5.11- The "Subreport" Tab of the Format Editor:

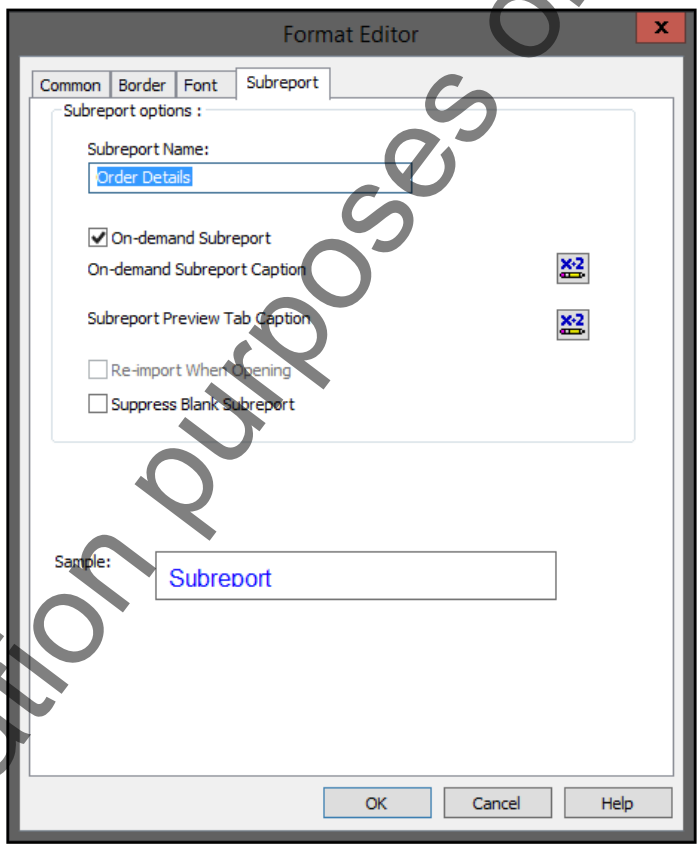
On the "Subreport" tab of the "Format Editor," you can specify the settings for any subreports that you have inserted into your main report. Subreports will be discussed in more detail in a later section. However, it is still useful to inspect what options you have for controlling the appearance and settings of subreport data.

In the "Subreport Name:" text box, you can type a name to quickly rename a subreport from within the main report in which you have it embedded.

If you check the "On-demand Subreport" checkbox, it will create a hyperlink to the subreport versus embedding the subreport into the main report.

Checking the "Re-import When Opening" checkbox will re-import the subreport each time that you open the subreport, displaying any changes that you have made.

If you check the "Suppress Blank Subreport" check box, you will hide blank subreports from displaying in the main report. When you have finished specifying your formatting options, just click "OK" to apply the formatting to the selected objects.



5.12- Drawing Lines:

Crystal Reports allows you to add some basic shapes, such as lines and rectangles to clarify information and enhance the report's presentation display. You can draw a line by either selecting "Insert| Line" from the Menu Bar or by clicking the "Insert Line" button in the Insert toolbar. When you do this, your mouse pointer will appear as a pencil icon when you hold it over the report area. You can then click and drag from one point to another to create a vertical or horizontal line in the report.

Notice that you can click the line to select it. You can also move and resize the object just as you can the report data fields and other report objects. Just click into the middle of the line and drag to move the line from one place to another in the report area. You can also click a line, place your mouse pointer over either end until you see the double-pointed arrow appear, and then click and drag to resize the line.

You can also change the formatting of the line that you have drawn by right-clicking the line and selecting "Format Line…" from the pop-up menu that appears or by clicking the line to select it and then choosing "Format| Format Line…" from the Menu Bar. This will then launch the "Format Editor" dialog box and display the "Line" tab. Here you can select a desired line style from the "Style:" drop-down. You can click one of the buttons displayed in the "Width:" section to set the desired width of the line. You can use the "Color:" drop-down to select the desired color for the line, as well. For vertical lines, you can check the "Extend to Bottom of Section when Printing" checkbox to always extend the selected line to the bottom of the report section.

5.12- Drawing Lines- (cont'd.):

If you check the "Suppress" checkbox, the line will not be printed. Checking the "Repeat on Horizontal Pages" checkbox will ensure that if there are horizontal page breaks in the report, the horizontal line you have selected will also print across the horizontal pages created.

Checking the "Read-only" option prevents additional formatting changes from being applied to the selected line. Checking the "Lock Position and Size" checkbox will prevent both moving and resizing of the line in the report. When you are done, click "OK" to apply the changes.

5.13- Drawing Boxes:

You can draw boxes (rectangles) around important data to "set it off" in a report, or you may simply use the boxes as an additional enhancement to the appearance of the report. Creating boxes in a report is very much like creating lines in a report. You can create boxes in a report by either clicking the "Insert Box" button in the Insert toolbar or by selecting "Insert| Box" from the Menu Bar. Once again, your mouse pointer will appear as a pencil when you hold it over the report. This time, you will click and drag from one corner of the area over which you want to place the box across to the opposite corner, releasing the mouse pointer when the box covers the desired report area.

When you click the border of the box it should appear selected with the resizing squares displayed around the perimeter of the box. You can place your mouse pointer over any one of these squares until your mouse pointer changes into a double-pointed arrow. Then click and drag to resize the square, if needed. You can place your mouse pointer over the border anywhere except where the resizing handles appear and click and drag to move the box around within the report sections.

To change the appearance of a box that you have drawn, you can either right-click the border of the object and select "Format Box…" from the pop-up menu that appears or you can click the box to select it and the choose "Format| Format Box…" from the Menu Bar. Either way, you will launch the "Format Editor" dialog box. There are two tabs in this dialog box which you use to change the appearance of your boxes: the "Box" tab and the "Rounding" tab.

You can click the "Box" tab to display general formatting options for the box. You can use the "Style:" drop-down to select the border style of the box: "None," "Single," "Dashed," "Dotted." Click the button in the "Width:" section that represents the desired thickness of the box's border. Use the "Color:" drop-down below that to choose the color of the box's border. If you wish to apply a "Drop Shadow" to the box, then check the checkbox next to that option.

If you would like to fill the box with a color, then you can check the "Color:" checkbox in the "Fill:" section. If you do check the checkbox, then use the drop-down that appears to the right of that to choose the desired fill color.

If you check the "Always Close Border" checkbox, Crystal Reports will end the box to enclose the data displayed on a page when a page break occurs within a box in the report. If you check the "Extend to Bottom of Section when Printing" checkbox, you allow the box to extend to the bottom of the section when printing. This is usually checked when placing a box around variable-length data. If you check the "Suppress" checkbox, you will not print the box when the report is printed. Checking the "Read-only" checkbox will prevent additional formatting changes to the selected box. Checking the "Repeat on Horizontal Pages" checkbox will let the box repeat across horizontal page breaks, if necessary. Checking the "Lock Position and Size" checkbox will set the position and size of the box, so that it cannot be moved in the report. Once you are finished, click "OK" to apply the formatting changes that you have selected.

5.14- Format Painter:

The "Format Painter" function allows you to copy the formatting settings from one object and then apply them to one or more other report objects, which saves you time in having to repeatedly re-apply the same formatting settings to multiple report objects. To use this feature, you need to select a report object that has the formatting attributes that you wish to copy to other objects. With this object selected, click the "Format Painter" button in the Standard toolbar, or select "Format| Format Painter" from the Menu Bar.

Next, place your mouse pointer over the report object to which you want to apply the formatting that you just copied. You will see the "paintbrush icon" appear when you place it over a report object to which you can apply the copied formatting. Click to apply the copied format to the selected object and turn off the format painter function.

Note that not all aspects of the formatting of the copied object are going to necessarily be pasted onto the destination object. The data types of the selected objects do play a role in deciding what can possibly be pasted onto a destination object after being copied from the source object. For example, if you selected a number field as the source object and then pasted the formatting onto a text field, only some of the formatting would be pasted. Formatting attributes, such as currency formatting and decimal position wouldn't be applied as they are not possible settings for a text object. In addition, formatting applied with the "X+2" buttons *will* be copied. However, conditional formatting applied using the "Highlighting Expert" will *not* be copied.

If you wish to apply formatting settings copied from one source object onto multiple other destination objects, start by selecting the source object from which you want to copy the formatting settings. Then click the "Format Painter" button in the Standard toolbar. Next, hold down the "Alt" key on your keyboard while you click all of the individual report objects to which you wish to apply the copied formatting. When you have finished, release the "Alt" key. Then click the "Format Painter" button again to turn it off when you are finished using the tool.

5.15- Formatting Part of a Text Object:

So far, you have discussed formatting entire selected report objects. Note that it is also possible to format only part of a text object within a report. For example, you could apply the bold format to a word within a report title even if the entire title is enclosed in a single text object. To select just part of the text within a text object, you must double-click the text object which contains the text which you wish to format. That will place the text object into "Edit Mode" where you can view the insertion point inside of the text object. At that point, click and drag over the text which you want to format independently of the other surrounding text to select it.

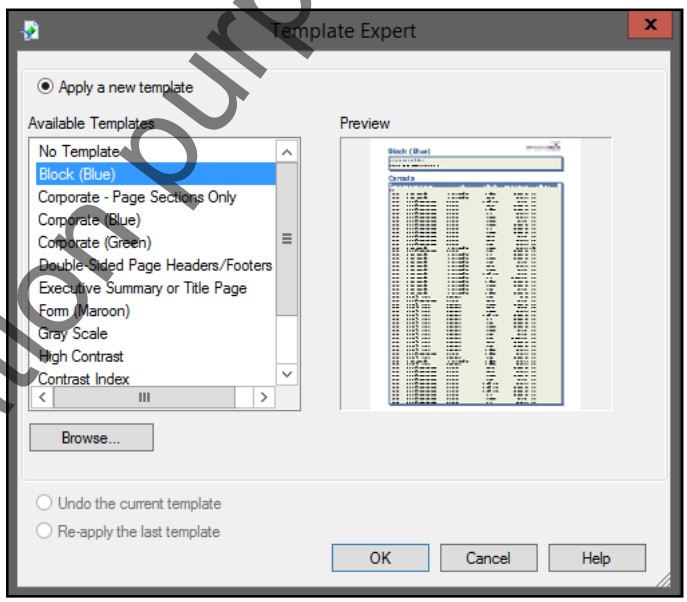
To then apply formatting to the selected text, you can click the buttons available in the Formatting toolbar or right-click the selection that you made and then select the "Text Formatting…" command from the pop-up menu which appears. You can then apply any changes that you would like using the "Text Format" dialog box and then click "OK" when you are finished to view the changes that you have applied. Once you are finished editing the text within the selected text object, click into the blank area of the report to de-select the object.

5.16- The Template Expert:

You can use the "Template Expert" to apply a pre-created format to your reports in Crystal Reports. This can be useful when you don't have the time to spend formatting a report, but would still appreciate it having a professional appearance. With just a few quick clicks of the mouse, you can apply a report style that includes borders, boxes, shading and other formatting features to your entire report.

Even if you don't particularly like any of the styles created for you, it is possible to use them as a basis for your own custom styles. You can edit the formatting applied by the Template Expert and also easily undo any style applied.

To apply a formatting template to your report, open the report and select "Report| Template Expert…" from the Menu Bar or just click the "Template Expert" button in the Experts toolbar. This will launch the "Template Expert" dialog box.



The first time that you select to apply a template, the "Apply a new template" option will appear selected and the list of "Available Templates" will be displayed at the left side of the dialog box.

Click a template name displayed in the list of available templates to see it appear in the "Preview" window at right. If you have a template or report which you would like to use, you can click the "Browse…" button to launch the "Open" dialog box. Here you can select the report or template to apply and then click the "Open" button to select. When you have the desired template selected, just click "OK" in the "Template Expert" dialog box to apply the selected template to the report that is currently displayed onscreen.

If you don't like the formatting applied, you can easily undo your change. Just click the "Template Expert" button in the Experts toolbar or choose "Report| Template Expert…" from the Menu Bar. In the "Template Expert" dialog box, you can then select the "Undo the current template" option, and click "OK" to reverse the template that you applied. If you undo the application of a formatting template and then wish that you hadn't removed it, you can invoke the "Template Expert" dialog box again, and this time choose the "Re-apply the last template" option. When you click "OK" you will re-apply the last formatting template that you removed.

5.17- Inserting Pictures:

If you have a picture, such as a corporate logo, that you wish to insert into a report, you can do this easily in Crystal Reports. You can either click the "Insert Picture" button on the Insert toolbar or choose "Insert| Picture…" from the Menu Bar. This will launch the "Open" dialog box. Use the "Look in:" drop-down to select the folder into which you have the graphic saved on your computer or network. Select the desired graphic from the list of files and folders displayed, and then click the "Open" button.

You can then click into the report section where you wish to insert the graphic. Pictures can be moved, resized and formatted using the same techniques you applied to other report objects.

ACTIONS-
Basic Formatting Techniques

APPLYING BASIC FORMATTING TO REPORT OBJECTS:

1. Select the report object or objects to which you wish to apply formatting.
2. Use the buttons available in the Formatting toolbar or the choices available through the "Format Editor" dialog box to apply your desired choice of formatting options.

USING THE "FORMAT EDITOR" DIALOG BOX:

1. Select the object or object to which you wish to apply the formatting.
2. Right-click the selected object or objects and choose the command that begins with the word "Format (object name)…" from the pop-up menu that appears.

OR

2. Click the "Format" command in the menu bar and select the topmost command in the drop-down list that appears, which will also appear as "Format (object name)…" in the listing.
3. In the "Format Editor" dialog box, you can click through the tabs that are available at the top of the dialog box to view the formatting options which you can set on each tab.
4. Set any desired formatting options on the appropriate tabs.
5. Click "OK" to apply the selected formatting.

SETTING "COMMON" TAB OPTIONS IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Common" tab.
3. You can type a name for a single selected object into the "Object Name:" text box.
4. In the "Tool Tip Text:" text box you can specify the text that you would like displayed in the small yellow text box that appears when a user hovers their mouse pointer over the report object.
5. Checking the "Read-only" check box will prevent additional formatting alterations from being applied to the selected object in the future.
6. Checking the "Lock Position and Size" checkbox will ensure that a user does not resize or move the selected report object in the future.
7. Checking the "Suppress" checkbox will suppress the selected object from appearing in both the "Preview" of the report and the printed output.
8. You can check the "Suppress if Duplicated" checkbox to suppress the display and printing of duplicate values in a field of data.
9. Checking the "Can Grow" checkbox will ensure that the object will be able to expand vertically to accommodate all of the text. After checking this option, you can specify a limit (in lines) for the vertical growth in the "Maximum number of lines:" text box. If you leave it at zero, then the field can grow as large as necessary to display the data.
10. You can also use the "Text Rotation:" drop-down to specify either a rotation of 90 or 270 degrees for the text contained in the selected object.
11. You can type the class name for the selected object into the "CSS Class Name:" text box.

(cont'd.)

SETTING "COMMON" TAB OPTIONS IN THE "FORMAT EDITOR"- (CONT'D.):

12. Checking the "Repeat on Horizontal Pages" option allows you to repeat the object across horizontal pages in reports that contain horizontal page breaks.
13. Checking the "Keep Object Together" checkbox will prevent breaking the content of the object with a page break when printed.
14. Checking the "Close Border on Page Break" checkbox will ensure that if an object with an applied border is split with a page break when printed, the border will appear closed at the end of the page.
15. Checking the "Suppress Embedded Field Blank Lines" checkbox will suppress the display and printing of any blank values of a field embedded within the text field.
16. Click "OK" to close the "Format Editor" dialog box when you are finished.

SETTING "NUMBER" TAB OPTIONS IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Number" tab.
3. In the "Number" tab of the "Format Editor" dialog box, you can set options for the display of numeric fields in the report.
4. You can select one of the many preset numeric displays for numbers and currency fields from the "Style" list displayed at the left side of this tab.
5. If you do have a currency value field selected, you can check the "Display Currency symbol (system default):" checkbox to apply a currency symbol to the field's display. If checked, then below that you can select either the "Fixed" or "Floating" option.
6. Click "OK" to apply the selected number formatting.

SETTING A CUSTOM NUMBER FORMAT IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Number" tab.
3. In the "Number" tab of the "Format Editor" dialog box, click the "Customize…" button to launch another separate dialog box called the "Custom Style" dialog box.
4. You can check the "Use Accounting Format" checkbox to set the appearance of the object to a traditional accounting display.
5. Checking the "Suppress if Zero" checkbox will hide the field's display in both the printout and the preview if it is zero.
6. You can use an alternate character for the decimal separator by typing one into the "Decimal Separator:" text box, if desired. Otherwise, the "period" character is used by default.
7. You can use the "Decimals:" drop-down to truncate the numeric display to the number of decimals specified by the drop-down.
8. If you check the "Thousands Separator:" checkbox, you will enable a separator for the thousands values in your numeric display. The character used is set to the "comma" character, by default, but you can specify another character to use, if desired, by typing it into the "Symbol:" text box.

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SETTING A CUSTOM NUMBER FORMAT IN THE "FORMAT EDITOR"- (CONT'D.):

9. You can use the "Rounding:" drop-down to select the number at which you would like the value displayed in the selected field to be rounded.
10. You use the "Negatives:" drop-down to select the desired appearance of negative numbers within the selected field.
11. Checking the "Leading Zero" checkbox will add a leading zero to the display of decimal numbers between zero and one.
12. Checking the "Reverse Sign for Display" checkbox will reverse the traditional signs used to indicate debit and credit values in financial reports.
13. You can use the "Show Zero Values as:" drop-down to select the format used for the display of zero values in the selected report object.
14. If the "Allow Field Clipping" checkbox is checked, field values that are longer than the displayed length of the field in the report are truncated. If unchecked, the field's values will not be truncated, but will instead appear as pound signs (######).
15. Click the "Currency Symbol" tab to set your own custom display of the currency symbol, if desired.
16. You can check the "Enable Currency Symbol" checkbox to enable the display of a currency symbol in the selected report object. If checked, you can then select either a "Fixed" or "Floating" display.
17. If you check the "One Symbol Per Page" checkbox, the currency symbol will only appear next to the first value displayed on each page in the report for the selected number field.
18. Use the "Position:" drop-down to determine the position of the currency symbol displayed.
19. You can type a symbol to use as the currency symbol into the "Currency Symbol:" text box, if the default symbol of the dollar sign is not desired.
20. Click "OK" to return to the "Number" tab of the "Format Editor" dialog box.
21. Click "OK" in the "Format Editor" dialog box to apply the number formatting.

SETTING "FONT" TAB OPTIONS IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Font" tab.
3. Click the "Font:" drop-down to select a font face from the list of available fonts on your machine.
4. Using the "Style:" drop-down allows you to apply a selected font style from the drop-down of choices available.
5. You can use the "Size:" drop-down to select a font size. You can also simply type a desired font value directly into the associated text box to specify a font size that is not displayed in the drop-down menu.
6. You can use the "Color:" drop-down to select which color you want to use for the text displayed in the selected report object. If the color you wish to use is not shown in the small palette of colors displayed in the drop-down, you can instead click the "More…" command to invoke the "Color" dialog box where you can select a custom color of your choosing.
7. You can check the "Strikeout" checkbox to apply a strikethrough to the text.
8. Checking the "Underline" checkbox will apply an underline to the text displayed.
9. You can type a number value (in points) into the "Character Spacing Exactly:" text box to set the value that you specify to be the value that each character in your selected font occupies, horizontally speaking.
10. Click "OK" to apply the selected font.

USING THE "COLOR" DIALOG BOX:

1. Display the "Color" dialog box.
2. In the "Color" dialog box, you can select from the expanded palette of preset colors available for use in the "Basic colors:" section at the left side of the dialog box.

OR

2. You can also create your own custom colors, if desired. Start by clicking one of the white color cubes under the "Custom colors:" section.
3. Click and drag the small black left-pointing arrowhead in the color strip at the right side of the dialog box down from the top of the strip towards the middle to increase the darkness of the color displayed in the "Color|Solid" box.
4. Click and drag the mouse pointer around in the rainbow gradient to change the color displayed in the "Color|Solid" box.
5. Note that you can also change the color by typing the desired numbers for the "Hue:," "Sat:" (saturation), and "Lum:" (luminosity) into the text boxes provided or by typing the desired values into the "Red:," "Green:" and "Blue:" text boxes provided.
6. Once you have the desired font color displayed in the "Color|Solid" box, click the "Add to Custom Colors" button in the lower right corner of this dialog box to set the selected color as the color displayed in the selected cube of the "Custom colors:" section of the dialog box.
7. In the future, when you invoke the "Color" dialog box, the selected color will be displayed here, so that you will not have to re-create again.
8. When you are finished in the "Color" dialog box, click "OK" to return to Crystal Reports.

SETTING "BORDER" TAB OPTIONS IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Border" tab.
3. Use the drop-downs that appear next to the "Left:," "Top:," "Right:," and "Bottom:" labels to choose the line style that you would like to apply to the selected side of the report object. You can select either "None," "Single," "Double," "Dashed," or "Dotted."
4. You can check the "Tight Horizontal" checkbox to set the border to appear as tight as possible around the data displayed in the field.
5. Checking the "Drop Shadow" checkbox will simply apply a drop shadow (which appears under and to the right of the report object) to the selected report object.
6. Use the "Border" drop-down to select the desired color of the border applied from the drop-down list of choices. Note that you can also select the "More…" command here to invoke the "Color" dialog box if the color you wish to apply isn't available in the list of colors displayed.
7. You can also apply a fill color to the selected report object by checking the "Background:" checkbox.
8. If you checked the "Background:" checkbox, select a fill color using the drop-down that appears to the right. Once again, you can select a color displayed in the drop-down menu of choices, or you can select the "More…" command to invoke the "Color" dialog box, where you can select from a wider array of colors or create your own custom colors.
9. Click "OK" in the "Format Editor" dialog box to apply the selected border.

ACTIONS-
Basic Formatting Techniques

SETTING "DATE AND TIME" TAB OPTIONS IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Date and Time" tab.
3. On the "Date and Time" tab you can click any style listed in the "Style" list box to choose the selected style as the style used to display the date/time values in the selected report object.
4. Click "OK" to apply the selected date/time formatting.

SETTING A CUSTOM DATE/TIME FORMAT IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Date and Time" tab.
3. In the "Date and Time" tab of the "Format Editor" dialog box, click the "Customize…" button to launch another separate dialog box called the "Custom Style" dialog box.
4. If you click the "Date and Time" tab within the "Custom Style" dialog box, you can specify the desired sort order for date/time values from the drop-down of choices available: "Date Time," "Time Date," "Date," and "Time."
5. You can also choose which separator you want to use between the date value and the time value from the "Separator:" drop-down on this tab. If you wish, you can also simply click into the text box shown and type the character that you want to use as the separator into the text box.
6. If you click the "Date" tab, you can set a custom display for the date value in the selected date/time field.
7. You can use the "Date Type:" drop-down at the top of this tab to choose to set the date display to the "Short Date" or "Long Date" based on the system settings of your computer. You can also specify a "Custom" display from the drop-down.
8. If your operating system supports multiple calendar types, you can select which calendar type to use for the date/time display from the "Calendar Type:" drop-down.
9. You can use the "Month:," "Day:," "Year:," and the "Era/period Type:" drop-downs to set the display for those specific types of elements in the date format.
10. In the "Order:" section, select the desired option button for the order of the month (M), day (D), and year (Y) elements.
11. In the "Day of week:" section, you can click the desired day "Type:" that you want to display.
12. To the right of that, you can use the "Sep:," "Encl:," and "Position:" drop-downs to select a separator character to place between the day of the week and the actual date value, select a characters set within which you can enclose the displayed date, and choose whether the day is shown at the beginning or ending of the date/time value, respectively.
13. If you check the "Link separators to date order" checkbox, this will include the specified separators when sorting date fields. Below that you can use the "Prefix:" box to create a prefix for the date, such as the word "Date: ." You can also specify a "First:" and "Second:" separator character to be used between the three elements of the date display. You can then type any desired suffix value that you wish to display after the date values into the "Suffix:" text box drop-down.
14. If you would like to create a custom time value, click the "Time" tab in the "Custom Style" dialog box.
15. If you check the "Use System Default Format" checkbox, the report will display the time values in the selected report field according to the current system settings in Windows.

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SETTING A CUSTOM DATE/TIME FORMAT IN THE "FORMAT EDITOR"- (CONT'D.):

16. You can either select to display the time as a "12 Hour" or "24 Hour" value by selecting the desired option button.
17. If you select the "12 Hour" display, then you can choose what characters you want to represent the hours from midnight to noon by typing them into the "00:00 – 11:59" box, if you want something other than the default value of AM. You can do the same for the hours of "12:00 – 23:59," if you prefer a value other than the default of PM.
18. Use the "Hour:," "Minute:," and "Second:" drop-downs to choose the displayed format for those elements of the custom time value.
19. You can also choose or type in the character to use as the "Hr/Min Separator:" and the "Min/Sec Separator" into the boxes provided.
20. When you have finished creating your custom value, click "OK" to apply your custom date/time formatting.

SETTING "PARAGRAPH" TAB OPTIONS IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Paragraph" tab.
3. You can use the "First Line:," "Left:," and "Right:" text boxes to specify a number (measured in inches) by which you would like to indent either the first line of each paragraph, the entire left side of the paragraph, or the entire right side of the paragraph.
4. Use the "Line Spacing:" drop-down to select either "Multiple" or "Exact." Selecting "Multiple" will set the line spacing to be a multiple of the font size used and selecting "Exact" will set the line spacing to an exact number of points that you specify.
5. In the "Of" text box, you can enter the multiple by which you want to set line spacing if you selected "Multiple," or enter the number of point to use between each line if you selected "Exact."
6. In the "Reading order:" section you can choose whether the text is to be read from "Left to Right" or "Right to Left."
7. If you have a text data field selected, you will be able to select either "none," "RTF text," or "HTML Text" from the "Text interpretation:" drop-down. This can assist you in correctly displaying RTF or HTML data in a text field with the correct formatting, if needed.
8. If you have a text object like a report label selected, you will be able to set the horizontal alignment for the selected object using the "Alignment:" drop-down.
9. Click "OK" to apply your paragraph formatting when you are finished.

SETTING "PICTURE" TAB OPTIONS IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Picture" tab.
3. You can input the number, measured in inches, that you want to cut away from the image by typing the measurement into the "Left:," "Right:," "Top:," or "Bottom:" text boxes in the "Crop From" section, as desired.

(cont'd.)

SETTING "PICTURE" TAB OPTIONS IN THE "FORMAT EDITOR"- (CONT'D.):

4. In the "Scaling" section, you can specify the "Width:" and "Height:" (as a percentage) to which you would like to scale the image.
5. In the "Size" section, you can enter a "Width:" and "Height:," measured in inches, to which you would like to resize the graphic.
6. If you make any changes to the size of the graphic and would like to reset the changes that you have made, you can click the "Reset" button in this tab to reset the alterations made to the image file for display within the report.
7. Click "OK" when you are finished applying your formatting changes to the selected picture.

SETTING "BOOLEAN" TAB OPTIONS IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Boolean" tab.
3. Use the "Boolean Text:" drop-down to set the display of the logical value that you would like to use in the report.
4. Click the "OK" button to apply the formatting changes.

SETTING "HYPERLINK" TAB OPTIONS IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Hyperlink" tab.
3. In the "Hyperlink type:" section, you can choose the option button that corresponds to the type of hyperlink that you wish to create. The options that are available depend upon which object in the report is selected.
4. You can select the "No Hyperlink" option to remove a hyperlink from a field. This is also the default value displayed when creating a new hyperlink.
5. You can select "An E-mail Address," and then type the email address to which you want the email sent into the "E-mail Address:" box below after the "mailto:" protocol shown.
6. You could also select the "A Website on the Internet" option button, and then enter the website address into the "Website Address:" text box, after the "http://" information.
7. You can also choose the "A File" option and then click the "Browse…" button to create a hyperlink to a file on your organization's network.
8. If you selected a report data field that contains website values displayed using the correct "http://www.someplace.com" syntax, you can select the "Current Website Field Value" option button. This will create a hyperlink from the data contained within the field that the users of the report can click upon to visit the website.
9. If you selected a report data field that contains email values displayed using the correct "someone@someplace.com" syntax, you can select the "Current E-mail Field Value" option button. This will create a hyperlink from the data contained within the field that the users of the report can click upon to send an email to the selected recipient.
10. You can click "OK" to apply the selected hyperlink properties to the selected report object when you are finished.

SETTING "SUBREPORT" TAB OPTIONS IN THE "FORMAT EDITOR":

1. Select the object or object to which you wish to apply the formatting.
2. Open the "Format Editor" dialog box and click the "Subreport" tab.
3. In the "Subreport Name:" text box, you can type in a name to quickly rename a subreport from within the main report in which you have it embedded.
4. If you check the "On-demand Subreport" checkbox, it will create a hyperlink to the subreport versus embedding the subreport into the main report.
5. Checking the "Re-import When Opening" checkbox will re-import the subreport each time that you open the subreport, displaying any changes that you have made.
6. If you check the "Suppress Blank Subreport" check box, you will hide blank subreports from displaying in the main report.
7. When you have finished, just click "OK" to apply the formatting to the selected subreport.

DRAWING LINES:

1. You can draw a line by either selecting "Insert| Line" from the Menu Bar or by clicking the "Insert Line" button in the Insert toolbar. When you do this, your mouse pointer will appear as a pencil icon when you hold it over the report area.
2. You can then click and drag from one point to another to create a vertical or horizontal line in the report.

MOVING AND RESIZING LINES:

1. Click the line to select it.
2. To move the line, click into the middle of the line and drag to move the line from one place to another in the report area.
3. To resize the line, you can also click a line, place your mouse pointer over either end until you see the double-pointed arrow appear, and then click and drag to resize the line.

FORMATTING LINES:

1. Click the line to select it.
2. Right-click the line and select "Format Line…" from the pop-up menu that appears.

OR

2. Choose "Format| Format Line…" from the Menu Bar.
3. In the "Format Editor" dialog box on the "Line" tab, select a desired line style from the "Style:" drop-down.
4. You can click one of the buttons displayed in the "Width:" section to set the desired width of the line.
5. You can use the "Color:" drop-down to select the desired color for the line, as well.
6. You can check the "Extend to Bottom of Section when Printing" checkbox to always extend the selected vertical line to the bottom of the report section.

(cont'd.)

FORMATTING LINES- (CONT'D.):

7. If you check the “Suppress” checkbox, the line will not be printed.
8. Checking the “Repeat on Horizontal Pages” checkbox will ensure that if there are horizontal page breaks in the report, the horizontal line selected will also print across the horizontal pages created.
9. Checking the “Read-only” option prevents additional formatting changes from being applied to the selected line.
10. Checking the “Lock Position and Size” checkbox will prevent both moving and resizing of the line in the report.
11. When you are done, click “OK” to apply the changes.

DRAWING BOXES:

1. You can create boxes in a report by either clicking the “Insert Box” button in the Insert toolbar or by selecting “Insert| Box” from the Menu Bar.
2. Your mouse pointer will appear as a pencil when you hold it over the report.
3. Click and drag from one corner of the area over which you want to place the box across to the opposite corner, releasing the mouse pointer when the box covers the desired report area.

MOVING AND RESIZING BOXES:

1. Click the border of the box to select it.
2. To resize the box, place your mouse pointer over any one of the resizing squares and then click and drag.
3. To move the box, place your mouse pointer over the border anywhere except where the resizing handles appear and click and drag to move the box around within the report sections.

FORMATTING BOXES:

1. Click the border of the box to select it.
2. Right-click the border of the object and select “Format Box…” from the pop-up menu that appears or you can click the box to select it and the choose “Format| Format Box…” from the Menu Bar.
3. In the “Format Editor” on the “Box” tab you can use the “Style:” drop-down to select the border style of the box: “None,” “Single,” “Dashed,” “Dotted.”
4. Click the button in the “Width:” section that represents the desired thickness of the box’s border.
5. Use the “Color:” drop-down below that to choose the color of the box’s border.
6. If you wish to apply a “Drop Shadow” to the box, then check the checkbox next to that option.
7. If you would like to fill the box with a color, then you can check the “Color:” checkbox in the “Fill:” section. If you do check the checkbox, then use the drop-down that appears to the right of that to choose the desired fill color.
8. If you check the “Always Close Border” checkbox, Crystal Reports will end the box to enclose the data displayed on a page when a page break occurs within a box.

(cont'd.)

FORMATTING BOXES- (CONT'D.):

9. If you check the “Extend to Bottom of Section when Printing” checkbox, you can allow the box to extend to the bottom of the section when printing.
10. If you check the “Suppress” checkbox you will not print the box when the report is printed.
11. Checking the “Read-only” checkbox will prevent additional formatting changes to the selected box.
12. You can check the “Repeat on Horizontal Pages” checkbox to have the box repeat across horizontal page breaks, if necessary.
13. Checking the “Lock Position and Size” checkbox will set the position and size of the box, so that it cannot be moved in the report.
14. Once you have made any formatting changes that you would like, click “OK” to apply the changes.

USING FORMAT PAINTER:

1. To copy the formatting from one object to another, select a report object that has the formatting attributes that you wish to copy.
2. Click the “Format Painter” button in the Standard toolbar, or select “Format| Format Painter” from the Menu Bar.
3. Place your mouse pointer over the report object to which you want to paste the formatting that you just selected and click to apply the copied format to the selected object and simultaneously turn off the format painter function.

OR

1. To copy the formatting from one object to multiple other report objects, start by selecting the report object which has the formatting you want to copy.
2. Click the “Format Painter” button in the Standard toolbar.
3. Hold down the “Alt” key on your keyboard while you click the individual report objects to which you want to paste the copied formatting. Then release the “Alt” key.
4. If needed, click the “Format Painter” button in the Standard toolbar again to turn this feature off.

FORMATTING PART OF A TEXT OBJECT:

1. Double-click the text object which contains the text which you wish to format. That will place the text object into “Edit Mode” where you can view the insertion point inside of the text object.
2. Click and drag over the text which you want to format independently of the surrounding text to select it.
3. To apply formatting to the selected text, click the buttons available in the Formatting toolbar.

OR

3. Right-click the selection that you made and then select “Text Formatting…” from the Menu Bar.
4. Then apply any formatting you would like using the “Text Format” dialog box and click the “OK” button when finished.
5. Click back into the blank area of any report section to de-select the selected object.

ACTIONS-
Basic Formatting Techniques

APPLYING A FORMATTING TEMPLATE:

1. Open the report to which you want to apply the formatting template and display it onscreen.
2. Select "Report| Template Expert…" from the Menu Bar or just click the "Template Expert" button in the Experts toolbar to launch the "Template Expert" dialog box.
3. The first time that you select to apply a template, the "Apply a new template" option will appear selected and the list of "Available Templates" will be displayed at the left side of the dialog box.
4. Click a template name displayed in the list of available templates to see it appear in the "Preview" window at right.
5. If you have a template available which you would like to apply, but does not appear in this list, you can click the "Browse…" button to launch the "Open" dialog box. Here you can select the template to apply and then click the "Open" button to select.
6. When you have the desired template selected, just click "OK" in the "Template Expert" dialog box to apply the selected template to the report that is currently displayed onscreen.

REMOVING A FORMATTING TEMPLATE:

1. Open the report to which you applied a formatting template which you now wish to remove and display it onscreen.
2. Select "Report| Template Expert…" from the Menu Bar or just click the "Template Expert" button in the Experts toolbar to launch the "Template Expert" dialog box.
3. Select the "Undo the current template" option.
4. Click "OK" to reverse the application of the template that you applied.

RE-APPLYING A FORMATTING TEMPLATE AFTER REMOVING IT FROM THE REPORT:

1. Open the report to which you wish to re-apply the formatting template after removing it and display it onscreen.
2. Select "Report| Template Expert…" from the Menu Bar or just click the "Template Expert" button in the Experts toolbar to launch the "Template Expert" dialog box.
3. Choose the "Re-apply the last template" option.
4. When you click "OK" you will re-apply the last formatting template that you removed.

INSERTING PICTURES:

1. Either click the "Insert Picture" button on the Insert toolbar or choose "Insert| Picture…" from the Menu Bar to launch the "Open" dialog box.
2. Use the "Look in:" drop-down to select the folder into which you have the graphic saved on your computer or network.
3. Select the desired graphic from the list of files and folders displayed, and then click the "Open" button.
4. You can then click into the report section where you wish to insert the graphic.

EXERCISES-
Basic Formatting Techniques

Purpose:

1. To be able to apply basic formatting techniques to report objects in all versions of Crystal Reports.

Exercises:

1. Open Crystal Reports.
2. Select "File| Open…" from the Menu Bar to launch the "Open" dialog box.
3. Click the "My Documents" folder at the left side of the dialog box, or use the "Look in:" drop-down at the top of the dialog box to navigate to the "My Documents" folder.
4. Select the "Employee Report," which you created in the "Chapter 1- Exercise."
5. Click the "Open" button.
6. Select "Report| Template Expert…" from the Menu Bar to launch the "Template Expert" dialog box.
7. In the "Available Templates" list, click the "Block (Blue)" template to see it previewed at the right side of the dialog box.
8. Click "OK" to apply the selected template.
9. Click and drag the "BLOB field" (the picture) and place its left edge onto the guideline that is located roughly at 5" on the horizontal ruler.
10. Click and drag the "Position" field and place its left edge onto the guideline that is located roughly at 3" on the horizontal ruler.
11. Click and drag the "Last Name" field and place its left edge onto the guideline that is located at roughly 1" on the horizontal ruler.
12. Click and drag the "First Name" field and place its left edge onto the guideline that is located at the far left side of the horizontal ruler.
13. Click the "BLOB Field" (the picture) in the "Details" section to select it.
14. Choose "Format| Format Graphic…" from the Menu Bar to launch the "Format Editor" dialog box.
15. Click the "Picture" tab.
16. In the "Scaling" section, change the "Width:" and "Height:" to "50."
17. Click the "Border" tab.
18. In the "Line style:" section, set the drop-downs for "Left:," "Top:," "Right:," "Bottom:" to the value of "Single."
19. On the same tab, check the "Drop Shadow" checkbox.
20. Click "OK" at the bottom of the "Format Editor" dialog box to apply the changes.
21. In the report design view, place your mouse pointer over the bottom gray line of the "Details" section until you see the mouse pointer turn into a double horizontal line with a single black double-pointed vertical arrow intersecting it.
22. When you see that icon click and drag the section slightly downward to increase the amount of space between each detail record. You should be able to fully view the drop shadow on the image and a thin amount of white space below the drop shadow.
23. Click the "Position" field in the "Details" section to select it.
24. Click the "Italics" button in the Formatting toolbar.
25. Resize the width of the selected field so that it's right end extends to almost 5" in the horizontal ruler.
26. Click the "Print Preview" button in the Standard toolbar to preview the data in the report as it will be displayed when printed on the "Preview" tab.
27. Select "File| Save" from the Menu Bar to save the changes to the report.
28. Select "File| Close" from the Menu Bar to close the report.

CHAPTER 6-
RECORD SELECTION

6.1- THE SELECT EXPERT

6.2- SETTING MULTIPLE FILTERS

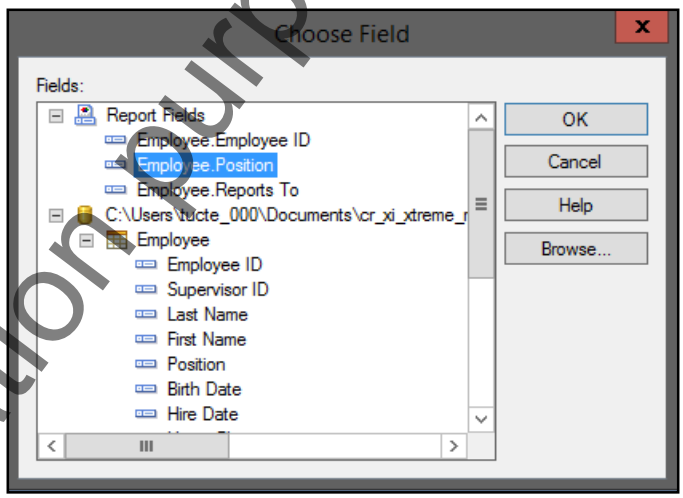
6.3- EDITING THE SELECTION FORMULA

6.1- The Select Expert:

You can use the "Select Expert" to create and apply filters to the report data. When you create and apply report filters, you in some way specify which records to include and exclude for the report. Unless you wish to display every single record from the underlying table or tables that you selected when you created the report, you must apply filters to restrict the data displayed in some manner.

Crystal Reports uses the "Select Expert" dialog box to specify the filtering criteria applied to a report. One way to use this tool is to first ensure that you do not have any data fields selected in your report, then click the "Select Expert" button that appears in the Experts toolbar. Beginning the process this way will display the "Choose Field" dialog box, first. You can select either a field from the report or a field from the underlying tables, even if not displayed in the report, from the list.

In the "Choose Field" dialog box, you can click the name of the field by which you want to apply a criteria restriction from the list of fields displayed in the dialog box. Once you have clicked on the name of the field by which you want to apply the filter in the "Choose Field" dialog box, you can then click "OK" to finally display the "Select Expert" dialog box.



The other way to launch the "Select Expert" dialog box is to simply click the name of the field in the "Details" section of the report in "Design" view to which you want to apply a filter, first. Then click the "Select Expert" button in the Experts toolbar to launch the "Select Expert" dialog box.

The "Select Expert" dialog box allows you to apply filtering conditions to the field that you initially selected. You will see the name of the field you selected displayed as a tab at the top of the "Select Expert" dialog box. You use the drop-down that appears on this tab to select the comparison operator by which you want to compare the value of this field to a criteria value which you will then specify. The text box where you can specify or select from a value contained within the field will only appear after a comparison operator has been selected. Note that the number of criteria text boxes that appear will also depend of the specific comparison operator selected. In these text boxes, you may have drop-down arrows appear upon which you can click to choose from a value in the selected field. The drop-down will only display the first 500 values in a field, so you can also directly type the data into the fields displayed, if needed.

6.1- The Select Expert- (cont'd.):

Following is a listing of the various types of comparison operations which are available for selection within the drop-down that appears on the selected field tab in the "Select Expert" dialog box.

Operator:	Filters:
is any value	This condition specifies that there is no filter being applied. All records are displayed. This is the default comparison operator.
is equal to	This operator will only display records that exactly match the value you specify.
is not equal to	This operator displays all records which are not an exact match to the specified value.
is one of	This operator displays all records which exactly match a list of values specified.
is not one of	This operator display all records which are not an exact match of any values specified.
is less than	This operator displays all records with a value less than the value specified.
is less than or equal to	This operator displays all records with a value less than or equal to the value specified.
is greater than	This operator displays all records with a value greater than the value specified.
is greater than or equal to	This operator displays all records with a value greater than or equal to the value specified.
is between	This operator displays all records with a value between the two values specified.
is not between	This operator displays all records with a value that is not between the two values specified.
starts with	This operator displays all records that have the same initial characters specified.
does not start with	This operator displays all records that do not have the same initial characters specified.
is like	This operator displays all records that match the character pattern specified. You establish the pattern using the wildcard characters of the question mark and/or the asterisk.
is not like	This operator displays all records that do not match the character pattern specified. You establish the pattern using the wildcard characters available.
is in the period	This operator displays all records that have a date/time value that falls within the date/time period specified.
is not in the period	This operator displays all records that have a date/time value that does not fall within the date/time period specified.
is True	This operator displays all records where the logical (boolean) value is true.
is False	This operator displays all records where the logical (boolean) value is false.
formula:	Displays all records that match the result of a formula that you specify.

6.1- The Select Expert- (cont'd.):

Once you have chosen the desired comparison operator by which you want to filter the selected field, you can then enter or type the desired value against which to compare the field into the boxes which appear to the right of the selected comparison operator. For logical (boolean) values, simply selecting the comparison operator is enough.

For the comparison operators "is like" and "is not like," you must create the pattern against which to match the selected field's values. You use the traditional DOS wildcard characters to establish this pattern. Wildcard characters are symbol characters that represent "unknown" values within a field. The question mark symbol (**?**) represents one unknown character in a field. The asterisk symbol (*****) represents multiple unknown characters in a field.

For example, entering the "like" operator followed by a criteria of "T??" would return records with a field value of three characters that begin with the letter "t," like "Tim," "Tom," "the" and others. As another example, entering the "like" condition followed by the criteria of "T*" would return records with a field value that simply begins with a "t," like "Thomas," "T-bird," "Thunder" and any other words that begin with the letter "t," regardless of their character length.

After you have set the desired criteria, you may click the "OK" button to apply the filter. Then when you click the "Preview" tab, you may be prompted to refresh the data to apply the new filter. Click the "Refresh Data" button to refresh the report data displayed in the "Preview" tab. If you have not yet previewed the report data, then the filter will be used to create the new "Preview" tab which appears.

6.2- Setting Multiple Filters:

Oftentimes, you may need to create and apply multiple filters to display the data that you want. You can apply multiple filters while using the "Select Expert" dialog box. After creating the first filtering criteria that you wish to apply, simply click the "<New>" tab at the top of the "Select Expert" dialog box or click the "New…" button at the right side of the dialog box. This will launch the "Choose Field" dialog box where you can select the field by which you want to filter the report from the list displayed and then click "OK." This will then create a new tab in the "Select Expert" dialog box with the name of the new field that you selected. On this tab, simply select the desired comparison operator and enter the necessary criteria in the drop-down text boxes to the right.

You can continue this process, adding all of the various filters needed to display the correct records in the report. Also notice that you can click back onto the various tabs displayed to edit the comparison operators used and the values entered, if needed.

When you enter multiple filters, the records that will be used in the report are the records that match ***all*** of the filtering criteria specified. For example, if you created a filter on a "State" field for any record that was exactly equal to "MI" and then created a second filter on an "Amount Sold" field for any record that was greater than $100, the records returned for the report would be any record where the "State" was equal to "MI" ***AND*** the amount sold was greater than $100. It wouldn't be enough to simply match only one of the two criteria specified. In the next section, you will look at how you can also set up an "OR" condition between multiple criteria specified in the "Select Expert."

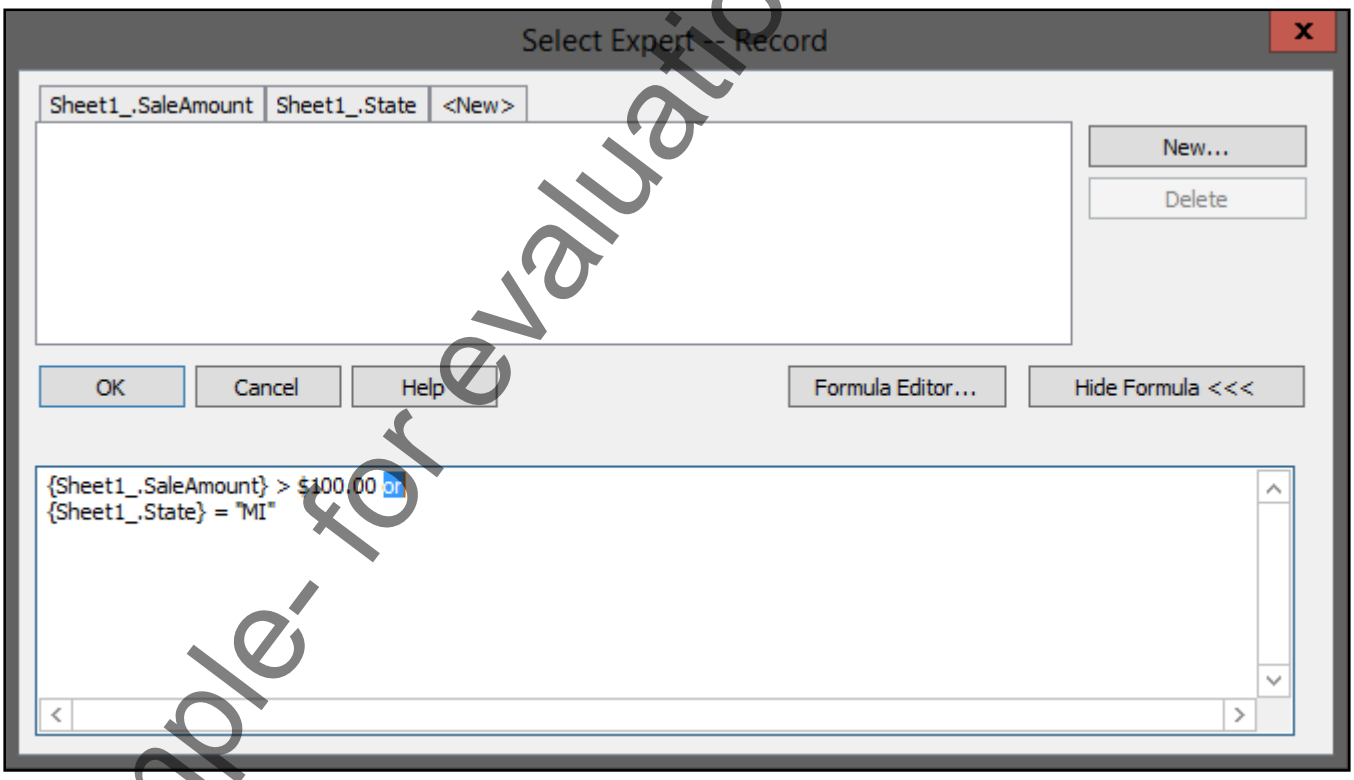
Note that if you create a filter on a field and then wish to remove the entire field filter, you can click the tab of the field that has the filter that you wish to remove to select it. Then click the "Delete" button at the right side of the "Select Expert" dialog box. Then click the "OK" button to apply the change.

6.3- Editing the Selection Formula:

At times, you may find it necessary to edit the actual formula that is created by the “Select Expert” for record selection. This is especially useful for creating multiple criteria that you will join with the “Or” statement instead of the “And” statement, which is the default. To do this, create the needed filters and criteria in the “Select Expert” dialog box, first.

To then view the formula that is created by the filter selections that you made, click the “Show Formula >>>” button in the lower right corner of the “Select Expert” dialog box. This will toggle the name of the button and also extend the “Select Expert” dialog box by displaying an additional section at the bottom of the dialog box. The selection formula will then be displayed in the large white text box in the newly displayed section. Notice that each filter displays as a separate line in the text box joined by the word “and.” You can choose to join two filters with the “or” condition by simply clicking into the text box and replacing the word “and” with the word “or” between the two conditions where you wish to display records that match either one filter or the other.

Note that if you display the formula, and then add more filtering criteria, the display of the formula will not always refresh. You can click the “Hide Formula >>>” button to hide the displayed section and then show it again by clicking the “Show Formula >>>” button. This will then refresh the display of the formula, which you may then edit as needed. Once you have edited the formula, click the “OK” button to apply the filters that you have set.



ACTIONS-
RECORD SELECTION

USING THE SELECT EXPERT TO SET REPORT FILTERING:

1. Ensure that you do not have any data fields selected in your report and then click the "Select Expert" button that appears within the Experts toolbar.
2. In the "Choose Field" dialog box, click the name of the field by which you want to apply a criteria restriction from the list of fields displayed in the dialog box and click "OK" to finally display the "Select Expert" dialog box.

OR

1. Click the name of the field in the "Details" section of the report in "Design" view by which you want to apply a filter.
2. Click the "Select Expert" button in the Experts toolbar to launch the "Select Expert" dialog box.
3. The "Select Expert" dialog box allows you to apply filtering conditions to the field that you initially selected.
4. You will see the name of the field you selected displayed as a tab at the top of the "Select Expert" dialog box.
5. You use the drop-down that appears on this tab to select the comparison operator by which you want to compare the value of this field to a criteria value which you will then specify.
6. In the drop-down text box or text boxes which then appear, you can choose from a value in the selected field. The drop-down will only display the first 500 values in a field, so therefore you can also directly type the data into the fields displayed if needed.
7. If you wish to apply another filter, click the "New…" button at the right side of this dialog box, or click the "<New>" tab at the top of this dialog box.
8. The "Choose Field" dialog box will then appear, and you need to click the name of the field by which you want to apply a report filter and then click "OK."
9. Then repeat steps 3 through 6.
10. If you need to edit the formula, click the "Show Formula >>>" button and edit the formula as needed.
11. Click "OK" when you are finished specifying your filtering criteria.

DELETING A FILTER IN THE SELECT EXPERT:

1. Either click the "Select Expert" button or choose "Report| Select Expert…" from the Menu Bar.
2. Click the tab that contains the name of the field to which you applied a filter that you now wish to remove.
3. Click the "Delete" button at the right of this dialog box.

EXERCISES-
RECORD SELECTION

Purpose:

1. To be able to filter the records selected from the tables for reports in all versions of Crystal Reports.

Exercises:

1. Open Crystal Reports.
2. Select "File| Open…" from the Menu Bar to launch the "Open" dialog box.
3. Click the "My Documents" folder at the left side of the dialog box, or use the "Look in:" drop-down at the top of the dialog box to navigate to the "My Documents" folder.
4. Select the "Employee Report," which you created in the "Chapter 1- Exercise."
5. Click the "Open" button.
6. Click the "Design" tab.
7. Ensure that there aren't any fields selected onscreen and then click the "Select Expert" button within the Experts toolbar.
8. Click the "Employee.Position" field.
9. Click "OK."
10. In the "Select Expert" dialog box on the "Employee.Position" tab, use the drop-down to select "is equal to."
11. Use the drop-down to the right of that to select the "Sales Representative" choice.
12. Click "OK" in the "Select Expert" dialog box.
13. Click the "Print Preview" button in the Standard toolbar to preview the data in the report as it will be displayed when printed on the "Preview" tab.
14. If needed, click the "Refresh Data" button in the "Change in Record Selection Formula" dialog box.
15. Select "File| Save" from the Menu Bar to save the changes to the report.
16. Select "File| Close" from the Menu Bar to close the report.

CHAPTER 7-
SORTING AND GROUPING RECORDS

7.1- THE RECORD SORT EXPERT

7.2- THE GROUP EXPERT

7.3- MANAGING GROUPS

7.4- SUMMARIZING GROUPS

7.5- HIERARCHICAL GROUPINGS

7.6- THE GROUP SORT EXPERT

7.1- The Record Sort Expert:

You can use the "Record Sort Expert" to sort the report data. When you sort a report, you can choose by which fields the data is sorted and in what order. To sort the displayed data, you can either click the "Record Sort Expert" button in the Experts toolbar, or you can choose "Report| Record Sort Expert…" from the Menu Bar.

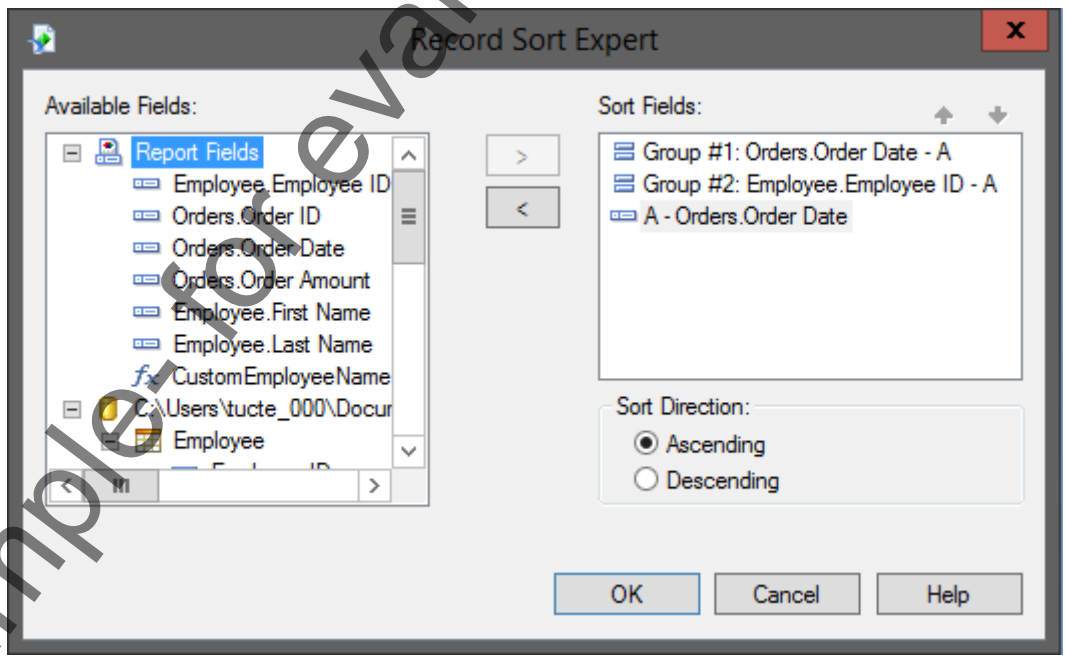
This will then launch the "Record Sort Expert" dialog box. At the left side of this dialog box you will see the listing of "Available Fields:." You can expand and collapse the listing of fields displayed in the report and fields that only exist in the underlying data tables. You can sort by either set of fields. Fields do not necessarily need to be displayed in a report to sort by their values.

Click the first field by which you want to sort the data in the list of "Available Fields:" and then click the right-pointing arrow button to move a copy of the field over to the "Sort Fields:" list. You can then click the field displayed in the "Sort Fields:" list and choose to apply either an "Ascending" or "Descending" sort order by clicking the desired option button in the "Sort Direction:" section.

If you need to sort the data by more than one field, you can then repeat the process for the next field by which you want to sort the data in the "Available Fields:" list. Note that if you have multiple fields by which you are sorting the data, then the small "up" and "down" pointing arrows appear in the upper right corner of the "Record Sort Expert" dialog box. You can click a field listed in the "Sort Fields:" field list and then click the "up" and "down" arrows to move the selected field up and down to reorganize the order in which the fields are sorted.

If you wish to remove a field from the sort list, click it to select it from the "Sort Fields:" list at the right side of the "Record Sort Expert" dialog box and then click the left-pointing arrow button to remove the selected field from the "Sort Fields:" list.

When you are ready to apply the sorting displayed in the "Record Sort Expert" dialog box, click the "OK" button to apply the selected sorting.



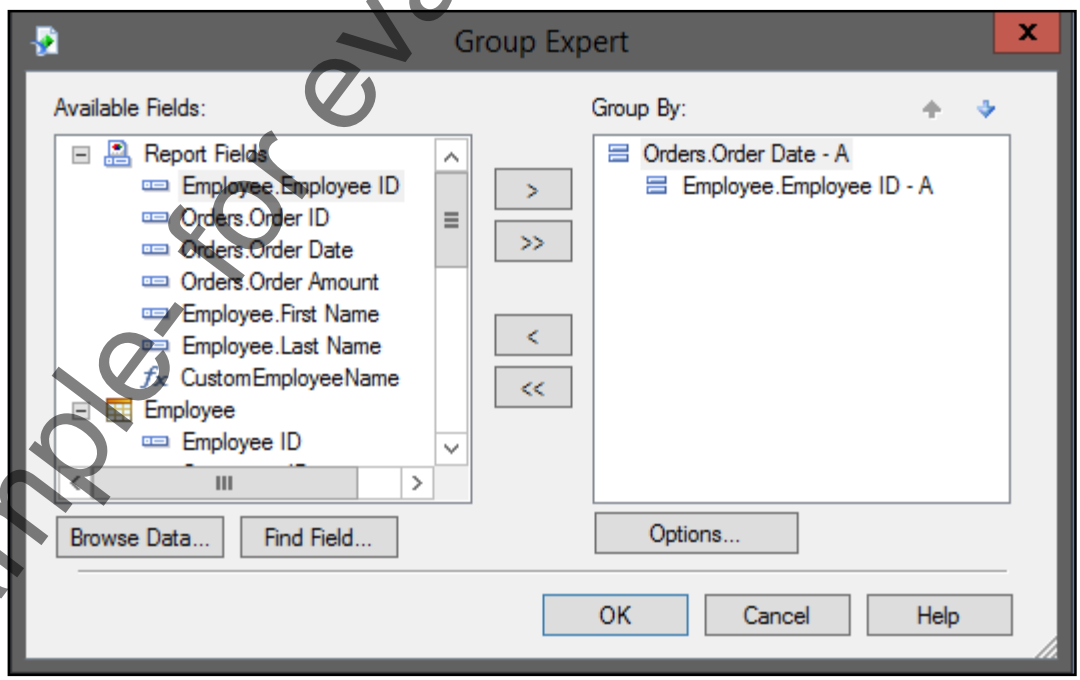
7.2- The Group Expert:

You can use the “Group Expert” to create groupings within your report by which you can view subtotals and sort the report data. For example, let’s assume that you were requested to create a report that shows employees sales with totals by employee. Oftentimes, when you state the purpose of the report you will notice that you wish to see the data “by” some field. The word “by” is often an indication of by which field you will want to create the groups in your report. When you create groups based on the value of a field, Crystal Reports will group together all of the exact same values found within the selected field. You can then perform additional calculations over the groups established, like sum the value of an “Amount Sold” field for each unique grouping of values in an “Employee ID” field. Grouping by data fields makes these types of summary calculations possible.

In Crystal Reports, you can use the “Group Expert” dialog box to create the groupings necessary for your report and set any additional options you may wish. You can launch the “Group Expert” dialog box by either clicking the “Group Expert” button in the Experts toolbar or by selecting “Report| Group Expert…” from the Menu Bar.

In the “Group Expert” dialog box, you can click the name of the field by which you want to create the first group in the “Available Fields:” list. Then click the single right-pointing arrow to move the selected field over into the “Group By:” list. You can then click another field in the “Available Fields:” list and click the same arrow again to move it to the “Group By:” list at the right side of the dialog box, if you need to create another grouping within the first grouping. Note that the sub-groupings appear indented below the previous grouping above them. If you wish to remove a field by which you are grouping within the “Group By:” list, click its name to select it and then click the single left-pointing arrow to send the field back to the list of “Available Fields:” at the left side of the dialog box.

If you added the fields by which you want to create the groupings to the “Group By:” list at the right side of the dialog box in the incorrect order, you can easily rearrange the order of the fields listed by clicking the name of the field in the “Group By:” list and then clicking the small “up” and “down” arrows in the upper right corner of the dialog box to change the order of the grouped fields



7.2- The Group Expert- (cont'd.):

You also can set the properties of the data fields in the "Group Expert" dialog box. Just click the field for which you want to set grouping options in the "Group By:" list, and then click the "Options…" button at the bottom of the list. That will launch the "Change Group Options" dialog box. There are two tabs here which you can use to set the group properties: the "Common" tab, and the "Options" tab.

If you click the "Common" tab, you will be presented with the name of the field by which the groupings will be created displayed in a drop-down box. Below that you have another drop-down that displays the four different options that you have for sorting data. You can select to sort the groups in either "Ascending" (A-Z, 1-10) order or "Descending" order (Z-A, 10-1). You can also select to leave the records sorted "in original order," which will exempt the groups from any artificial sorting. If you select the "in specified order" option, you will add and display the "Specified Order" tab. Here you can create a specified order by which to sort the groups that is neither ascending nor descending.

On the "Specified Order" tab, you can create the custom sort order to be used for the group. You can use the "Named Group:" drop-down to choose a value from the field by which you wish to sort, if the field contains a value by which you wish to create the groupings. You can select multiple fields from this drop-down, if needed. Each field that you select is added to the list of values displayed below. You can change the sort order of the values in this list by first clicking the value whose position in the list you wish to change. Then click the small black "up" and "down" arrows to the right of the list to change their position within the list values.

You can remove a field value that you have added by to the listing of values by selecting the value to remove and then clicking the "Delete" button below the list. You can add a new value by which to sort the displayed results by clicking the "New" button below the list of values. This will then launch the "Define Named Group" dialog box. Here you can type a name for one of the values in your group into the "Group Name:" text box at the top. You can then specify a filtering criteria by which items will be placed into the named group that you created. When you are finished creating the group, click "OK" to add the group to the list in the "Specified Order" tab.

If you select a range of records which you will then reference as a single named group in the "Specified Order" tab, then you should indicate what you will do with the rest of the non-selected records on the "Others" tab. When you click the "Others" tab, you can set your desired option: "Discard all others," "Put all others together, with the name:," which you can then type into the box provided, or "Leave in their own groups."

Back on the "Common" tab it is worth noting that if you have a date field selected for the grouping, then you will also see another drop-down appear under the listing of "The section will be printed:." Here you can choose the date grouping that you wish to use for your selected field. If you have a logical (boolean) value selected for the grouping, then you will see a drop-down that gives you options for creating groups based on the logical values.

Finally, you can click the "Options" tab to set other available options for the grouped field. Normally when you create field groupings in reports, you will see a new "group tree" pane at the left of the report that you can use to jump to the various sections of the report. You will also typically have a group header and group footer where you can see the names of the groups in your report. By default, the group name fields have the same values as the group field. You can check the "Customize Group Name Field" checkbox to specify the group name field as either a database field or a group name formula that returns a string (text) value that can be used for the group name field. For example, you could group by the "Employee ID" field, but display the "Employee Name" for the group field name, if desired. To select a database field, use the drop-down to choose which fields values to display for the group name field from the drop-down available.

7.2- The Group Expert- (cont'd.):

If you wanted to, you can also choose the "Use a Formula as Group Name" option and then click the "X+2" button to create a text formula that you can use for the values. Creating formulas will be discussed later in the course. Note that you cannot choose to customize the group name at all for fields that are sorted in "specified order."

You can also check the "Keep Group Together" checkbox to try to keep the groups that are created from breaking across multiple pages, if possible. You can check the "New Page After" checkbox to create a new page after a specified number of visible groups have appeared. You can also check the "Repeat Group Header On Each Page" checkbox to allow groups that do break across multiple pages to repeat the group header information for each page.

Once you have set any options for the selected field by which you are grouping, click "OK" in the "Change Group Options" dialog box to return to the "Group Expert" dialog box. Then click the "OK" button in the "Group Expert" dialog box to apply the selected groupings to the report.

Notice that when you create groupings within a report, Crystal Reports will then create a "Group Header" and a "Group Footer" for each grouped field both above and below the "Details" section in the "Design View" of the report. If you have added multiple fields by which you are grouping, then you will see multiple group headers and footers, labeled "Group Header #1:," "Group Header #2:," and so on and so forth. Also, Crystal Reports will add the group name (as you specified it when setting the options) to the "Group Header" sections. Remember that data placed into the "Group Header" will repeat at the top of each unique value within the group that was created, and data placed into the "Group Footer" will repeat at the end of each unique value in each group.

7.3- Managing Groups:

The "Group Expert" is useful for creating multiple groupings on the fields within a report and setting all of the necessary properties while you are performing that task. It is also useful to note that you can create a single data grouping within a report by simply clicking the "Insert Group" button in the Insert toolbar or by choosing "Insert| Group…" from the Menu Bar.

This will launch the "Insert Group" dialog box, which presents us with the same grouping options that you saw in the "Change Group Options" dialog box. You can use the tabs available here to set the grouping options that you wish to apply, and then click "OK" to set the new grouping in the report

You can also edit and delete groupings that you have created in the "Design" view, if you prefer to not use the "Group Expert" for some reason. You can edit a grouping that has been created by simply right-clicking the name of the group header or footer that you wish to edit or delete. From the pop-up menu that appears, you can choose the "Change Group…" command to re-launch the "Change Group Options" dialog box where you can make any editing changes as needed and then click "OK" to apply them. If you select the "Delete Group" command from the pop-up menu that appears, the grouping will be removed from the report.

If you have multiple groupings applied, you can also easily reorder the groups by simply clicking and dragging the group header and/or group footer of the group which you wish to move and releasing it in the desired position within the group headers and footers listed at the left side of the "Design" view in the report.

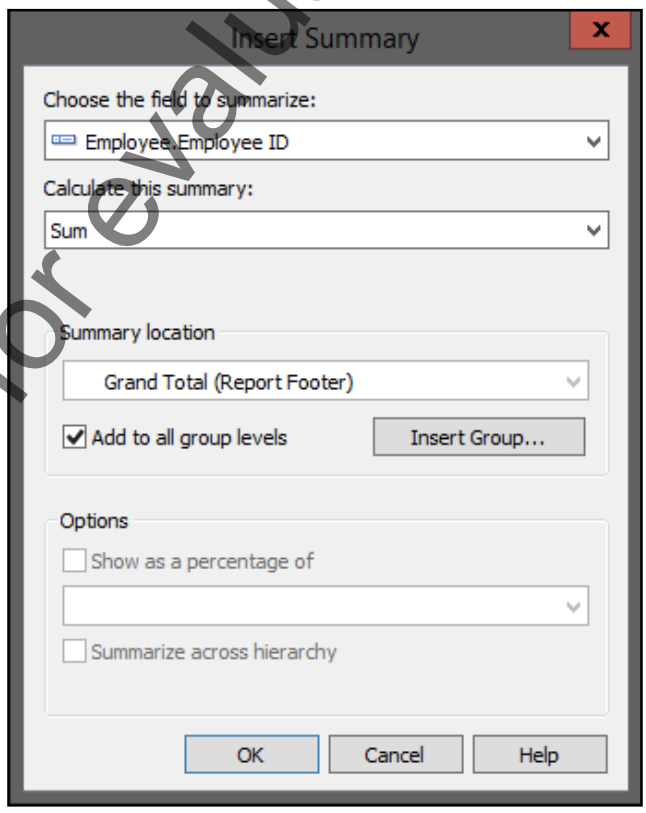
7.4- Summarizing Groups:

One of the main reasons to creating groupings on the data values within fields is so that you can perform summary calculations upon some field for each unique value created by the groupings. Since summary calculations are performed over each grouping, they appear in the "Group Footer" sections. Note that you do not need to have the report data grouped before you can apply summary fields to the report. If you simply apply a summary field to a report that contains no data groupings, you will receive a "grand total" field at the very end of the report.

To insert a summary field into your report, you can either click the "Insert Summary" button on the Insert toolbar or you can choose "Insert| Summary…" from the Menu Bar. This will then launch the "Insert Summary" dialog box. Use the drop-down at the top of the dialog box to choose which field's values you would like to calculate over the group. Then use the "Calculate this summary:" drop-down to choose which calculation to perform over the group. In the "Summary location" section, use the drop-down to choose the grouping over which you want the summary calculation performed. Note that if you needed to create a grouping that you had forgotten, you can click the "Insert Group…" button to launch the "Insert Group" dialog box where you can create the groups, if needed.

Under the "Options" section you can check the "Show as a percentage of" checkbox to calculate the percentage total of one group within a larger grouping, such as the grand total, for example. You can then use the drop-down below that checkbox to decide by which of the other available groupings you wish to see the percentage. If you have created a hierarchical grouping, you can view an identical summary across the hierarchy's sub-groupings by checking the "Summarize across hierarchy" checkbox.

When you are ready, click "OK" to insert the summary field into the selected group footer or at the end of the report as a grand total. Note that you can reposition, resize, and format the field as you would like as long as it remains within the set section.



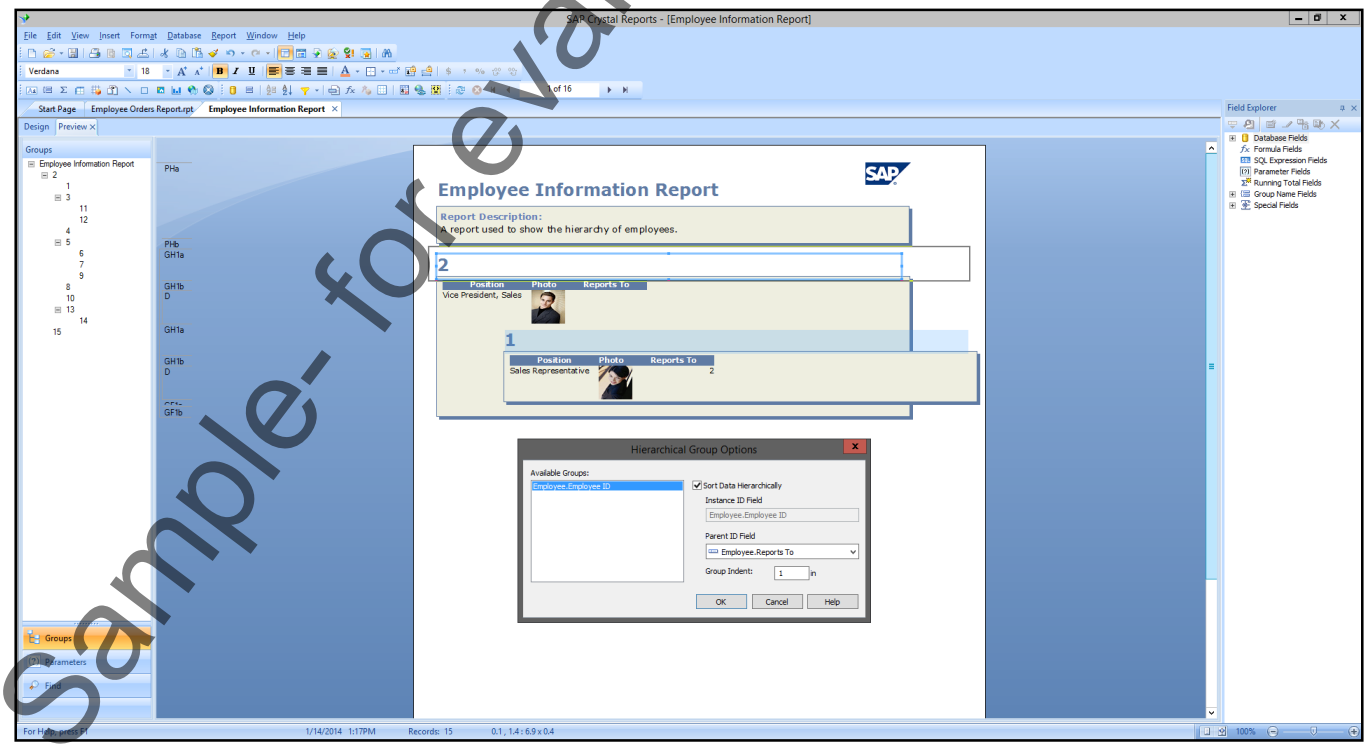
7.5- Hierarchical Groupings:

You can apply a grouping to a report that will illustrate hierarchical relationships in the underlying data source. Many times this type of relationship is created by what is referred to as a "self-join" within a table, where one field's values (such as an "Employee ID") appear as two different field's values (such as an "Employee ID" field and a "Supervisor ID" field). Creating a hierarchical grouping allows you to view and sort the data based on the relationship between the two fields.

If you have a relationship like the one mentioned within the table or tables in your report you can create a hierarchical grouping on the data. To create a hierarchical grouping, first create a data grouping on the field which is the basis for your hierarchy (like the "Employee ID" field). Set any display options for the group and sort it in ascending order.

Once you have the group created, select "Report| Hierarchical Grouping Options…" from the Menu Bar. This will open the "Hierarchical Group Options" dialog box. You will see the listing of the groups that you have created in your report in the "Available Groups:" list at the left side of this dialog box. Click the name of the group that you want to sort hierarchically in this list. Then check the "Sort Data Hierarchically" checkbox. This makes the "Parent ID Field" drop-down become active. Use this drop-down to select the name of the field by which you want the group that you selected in the "Available Groups:" list organized. Using the previous example, if you had selected the "Employee ID" as the field by which you are grouping the data then you could select the "Supervisor ID" field from the "Parent ID Field" drop-down to display the employees hierarchically sorted by whom they report to (as displayed in the "Supervisor ID"). Note that to create a hierarchical organization, you must have two fields that share the same data type.

Once you have the fields selected, you can then type a number into the "Group Indent" box. The number which you type into this box is the number (in inches) by which you wish to indent the records underneath each grouping. When you have finished, click "OK" to apply the hierarchical grouping. Notice that when you are inserting summary fields, you will now have the ability to calculate the fields values across the hierarchical grouping that you created by checking the "Summarize across hierarchy" option.



7.6- The Group Sort Expert:

If you have summary fields inserted into your report that perform calculations over a group, then you can use the "Group Sort" expert to place the groups into an order that is based on the calculated values of their subtotals.

To sort the groups in your report by the subtotal values, select "Report| Group Sort Expert…" from the Menu Bar or click the "Group Sort Expert" button in the Experts toolbar. This will launch the "Group Sort Expert" dialog box. At the top of this dialog box are the various groupings for which you have created summary field totals. You can click the name of the grouping by which you want to sort the report data to view the settings on the selected tab.

You can use the "For this group sort" drop-down to choose either "No Sort," "All," "Top N," "Bottom N," "Top Percentage," or "Bottom Percentage." The way that you can then filter or sort the groups by their calculated summary fields will vary depending upon which option you select using this drop-down. Let's look at what you can set for each option.

Selection:	**Sorting/Filtering Applied:**
No Sort	The default setting. Applies sorting based on the group name, not the summary values.
All	Choosing this option allows you to sort based on values from one of the summary fields calculated for the selected grouping. You can select by which summary field's values you wish to sort (if there are more than one) from the list which appears at the right. You can also select whether to sort the values in "Ascending" or "Descending" order.
Top N	Choosing this option allows you to sort and filter for only a selected number of the topmost values in the summary fields for each grouping.
Bottom N	Choosing this option allows you to sort and filter for only a selected number of the bottommost values in the summary fields for each grouping.
Top Percentage	Choosing this option allows you to sort and filter for only a selected percentage of the topmost values in the summary fields for each grouping.
Bottom Percentage	Choosing this option allows you to sort and filter for only a selected percentage of the bottommost values in the summary fields for each grouping.

If you choose either the "Top N," "Bottom N," "Top Percentage," or "Bottom Percentage" options, then you must select the summary field that contains the values by which you want to filter and sort the groups from the drop-down to the right.

Then type either the number of groups to display into the "Where N is:" text box or type the number for the percentage of values to display into the "Where Percentage is:" text box.

If you wish to include the "Others" as a group, then check the "Include Others, with the name:" checkbox. Below that, type the name which you wish to give to the "others" group into the text box shown. If you wish to include groups where the summarized value is tied (equal to) another group's summarized value, then check the "Include ties" checkbox.

Once you have set the desired options for the groups in your report by which you want to filter and/or sort, click the "OK" button to apply the changes that you have made in the "Group Sort Expert" dialog box.

ACTIONS-
Sorting and Grouping Records

USING THE RECORD SORT EXPERT:

1. Either click the "Record Sort Expert" button in the Experts toolbar or choose "Report| Record Sort Expert…" from the Menu Bar.
2. In the "Record Sort Expert" dialog box you will see the listing of "Available Fields:." Click the first field by which you want to sort the data in the list of "Available Fields:" and then click the right-pointing arrow button to move a copy of the field over to the "Sort Fields:" list.
3. You can then click the field displayed in the "Sort Fields:" list and choose to apply either an "Ascending" or "Descending" sort order by clicking the desired option button in the "Sort Direction:" section.
4. If you need to sort the data by more than one field, you can then repeat the process for the next field by which you want to sort the data in the "Available Fields:" list.
5. Note that if you have multiple fields by which you are sorting the data, then the small "up" and "down" pointing arrows appear in the upper right corner of the "Record Sort Expert" dialog box. You can click a field listed in the "Sort Fields:" field list and then click the "up" and "down" arrows to move the selected field up and down to reorganize the order in which the fields are sorted.
6. If you wish to remove a field from the sort list, click it to select it from the "Sort Fields:" list at the right side of the "Record Sort Expert" dialog box and then click the left-pointing arrow button to remove the selected field from the "Sort Fields:" list.
7. When you are ready to apply the sorting displayed in the "Record Sort Expert" dialog box, click the "OK" button to apply the selected sorting.

USING THE GROUP EXPERT:

1. Click the "Group Expert" button in the Experts toolbar or select "Report| Group Expert…" from the Menu Bar.
2. In the "Group Expert" dialog box, click the name of the field by which you want to create the first group in the "Available Fields:" list and then click the single right-pointing arrow button to move the selected field into the "Group By:" list.
3. To create another grouping within the first grouping, repeat step #2 for the other field by which you want to group. Note that the sub-groupings appear indented below the previous grouping above them.
4. To remove a field from the "Group By:" list, click its name to select it and then click the single left-pointing arrow to send the field back to the list of "Available Fields:" at the left side of the dialog box.
5. If you added the fields to the "Group By:" list in the incorrect order, you can rearrange the order of the fields by clicking the name of the field in the "Group By:" list and then clicking the small "up" and "down" arrows in the upper right corner of the dialog box to change the order of the grouped fields.
6. To set the properties of the data fields in the "Group Expert" dialog box, click the field for which you want to set grouping options in the "Group By:" list and then click the "Options…" button at the bottom of the list to launch the "Change Group Options" dialog box.
7. There are two tabs in the "Change Group Options" dialog box which you can use to set the group properties: the "Common" tab, and the "Options" tab.
8. If you click the "Common" tab, you will see the name of the field by which the groupings will be created displayed in a drop-down box.
9. Below that is another drop-down that displays the four sorting options. You can select to sort the groups in either "Ascending" (A-Z, 0-9) order, "Descending" order (Z-A, 9-0), leave the records sorted "in original order," or choose to sort them "in a specified order."

(cont'd.)

USING THE GROUP EXPERT- (CONT'D.):

10. If you select the “in specified order” option, you will add and display the “Specified Order” tab. You can click this tab to create the custom sort order to be used for the group.
11. You can use the “Named Group:” drop-down to choose a value from the field by which you wish to sort, if the field contains a value by which you wish to create the groupings. You can select multiple fields from this drop-down, if needed. Each field that you select is added to the list of values displayed below.
12. You can change the sort order of the values in this list by first clicking the value whose position in the list you wish to change. Then click the small black “up” and “down” arrows to the right of the list to change their position within the list values.
13. You can remove a field value that you have added by to the listing of values by selecting the value to remove and then clicking the “Delete” button below the list.
14. You can add a new value by which to sort the displayed results by clicking the “New” button below the list of values to launch the “Define Named Group” dialog box.
15. Here you can type a name for one of the values in your group into the “Group Name:” text box at the top.
16. You can then specify a filtering criteria by which items will be placed into the named group that you created.
17. When you are finished creating the group, click “OK” to add the group to the list in the “Specified Order” tab.
18. If you select a range of records which you will then reference as a single named group in the “Specified Order” tab, then you should indicate what you will do with the rest of the non-selected records on the “Others” tab.
19. When you click the “Others” tab, you can set your desired option: “Discard all others,” “Put all others together, with the name:,” which you can then type into the box provided, or “Leave in their own groups.”
20. On the “Common” tab it is worth noting that if you have a date field selected for the grouping, you will see another drop-down appear under the listing of “The section will be printed:.” Here you can choose the date grouping that you wish to use for your selected field.
21. If you have a logical (boolean) value selected for the grouping, then you will see a drop-down that gives you options for creating groups based on the logical values.
22. You can click the “Options” tab to set other available options for the grouped field.
23. You can check the “Customize Group Name Field” checkbox to specify the group name field as either a database field or a group name formula that returns a string (text) value that can be used for the group name field.
24. To select a database field, use the drop-down to choose which fields values to display for the group name field from the drop-down available.
25. You can also choose the “Use a Formula as Group Name” option and then click the “X+2” button to create a text formula that you can use for the values. Note that you cannot choose to customize the group name at all for fields that are sorted in “specified order.”
26. You can also check the “Keep Group Together” checkbox to try to keep the groups that are created from breaking across multiple pages, if possible.
27. You can also check the “Repeat Group Header On Each Page” checkbox to allow groups that do break across multiple pages to repeat the group header information for each page.
28. Once you have set any options for the selected field by which you are grouping, click “OK” in the “Change Group Options” dialog box to return to the “Group Expert” dialog box.
29. Click the “OK” button in the “Group Expert” dialog box to apply the selected groupings to the report.

ACTIONS-
Sorting and Grouping Records

INSERTING A GROUP:

1. It is also useful to note that you can create a single data grouping within a report by simply clicking the "Insert Group" button in the Insert toolbar or by choosing "Insert| Group…" from the Menu Bar.
2. In the "Insert Group" dialog box, which presents us with the same grouping options that you saw in the "Change Group Options" dialog box, you can use the tabs available to set the grouping options that you wish to apply.
3. Click "OK" to set the new grouping in the report.

EDITING OR DELETING A GROUP:

1. In the "Design" view of the report, you can edit a grouping that has been created by simply right-clicking the name of the group header or footer that you wish to edit or delete.
2. From the pop-up menu that appears, you can choose the "Change Group…" command to re-launch the "Change Group Options" dialog box where you can make any editing changes as needed and then click "OK" to apply them.

OR

2. If you select the "Delete Group" command from the pop-up menu that appears, the grouping will be removed from the report.

REARRANGING THE GROUP ORDER:

1. If you have multiple groupings in the "Design" view, you can reorder the groups by clicking and dragging the group header and/or group footer of the group to move and releasing it in the desired position within the group headers and footers listed at the left side of the "Design" view in the report.

ACTIONS-
Sorting and Grouping Records

INSERTING A SUMMARY GROUP:

1. Either click the “Insert Summary” button on the Insert toolbar or you can choose “Insert| Summary…” from the Menu Bar.
2. Use the drop-down at the top of the “Insert Summary” dialog box to choose which field’s values you would like to calculate over the group.
3. Then use the “Calculate this summary:” drop-down to choose which calculation to perform over the group.
4. In the “Summary location” section, use the drop-down to choose the grouping over which you want the summary calculation performed.
5. Note that if you needed to create a grouping that you had forgotten, you can click the “Insert Group…” button to launch the “Insert Group” dialog box where you can create the groups, if needed.
6. Under the “Options” section you can check the “Show as a percentage of” checkbox to calculate the percentage total of one group within a larger grouping, such as the grand total, for example.
7. You can then use the drop-down below that checkbox to decide by which of the other available groupings you wish to see the percentage.
8. If you have created a hierarchical grouping, you can view an identical summary across the hierarchy’s sub-groupings by checking the “Summarize across hierarchy” checkbox.
9. When you are ready, click “OK” to insert the summary field into the selected group footer or at the end of the report as a grand total.

CREATING A HIERARCHICAL GROUPING:

1. Create a data grouping on the field which is the basis for your hierarchy and set any display options for the group that you would prefer.
2. Once you have the group created, select “Report| Hierarchical Grouping Options…” from the Menu Bar.
3. You will see the listing of the groups that you have created in your report shown in the “Available Groups:” list at the left side of this dialog box.
4. Click the name of the group that you want to sort hierarchically in this list.
5. Then check the “Sort Data Hierarchically” checkbox.
6. This makes the “Parent ID Field” drop-down become active. Use this drop-down to select the name of the field by which you want the group that you selected in the “Available Groups:” list organized.
7. Once you have the fields selected, you can then type a number into the “Group Indent” box. The number which you type into this box is the number (in inches) by which you wish to indent the records underneath each grouping.
8. When you have finished, click “OK” to apply the hierarchical grouping.

USING THE GROUP SORT EXPERT:

1. Select “Report| Group Sort Expert…” from the Menu Bar or click the “Group Sort Expert” button in the Experts toolbar.
2. In the “Group Sort Expert” dialog box click the tab that displays the name of the grouping by which you want to sort the report data to view the settings on the selected tab.
3. You can use the “For this group sort” drop-down to choose either “No Sort,” “All,” “Top N,” “Bottom N,” “Top Percentage,” or “Bottom Percentage.”
4. If you select “All,” then select by which summary field’s values you wish to sort (if there are more than one) from the list which appears at the right.
5. If you select “All,” then also select whether to sort the values in “Ascending” or “Descending” order.
6. If you choose either the “Top N,” “Bottom N,” “Top Percentage,” or “Bottom Percentage” options, then you must select the summary field that contains the values by which you want to filter and sort the groups from the drop-down to the right.
7. If you choose either the “Top N,” “Bottom N,” “Top Percentage,” or “Bottom Percentage” options, then type either the number of groups to display into the “Where N is:” text box or type the number for the percentage of values to display into the “Where Percentage is:” text box.
8. If you choose either the “Top N,” “Bottom N,” “Top Percentage,” or “Bottom Percentage” options, and also wish to include the “Others” as a group, then check the “Include Others, with the name:” checkbox. Below that, type the name which you wish to give to the “others” group into the text box shown.
9. If you choose either the “Top N,” “Bottom N,” “Top Percentage,” or “Bottom Percentage” options, and wish to include groups where the summarized value is tied (equal to) another group’s summarized value, then check the “Include ties” checkbox.
10. Once you have set the desired options for the groups in your report by which you want to filter and/or sort, click the “OK” button.

EXERCISES-
SORTING AND GROUPING RECORDS

Purpose:

1. To be able to group, sort, and summarize the data in reports within all versions of Crystal Reports.

Exercises:

1. Open Crystal Reports.
2. Select "File| Open…" from the Menu Bar to launch the "Open" dialog box.
3. Click the "My Documents" folder at the left side of the dialog box, or use the "Look in:" drop-down at the top of the dialog box to navigate to the "My Documents" folder.
4. Select the "Employee Sales Report," which you created in the "Chapter 4- Exercise."
5. Click the "Open" button.
6. Click the "Design" tab.
7. Select "Report| Group Expert…" from the Menu Bar.
8. In the "Group Expert" dialog box, select the "Orders.Order Date" field from the "Available Fields:" list.
9. Click the right-pointing arrow button ">" to move the field into the "Group By:" list at the right.
10. Select the "Employee ID" field from the "Available Fields:" list.
11. Click the right-pointing arrow button ">" to move the field into the "Group By:" list at the right, under the "Orders.Order Date" field.
12. In the "Group By:" list, select the "Orders.Order Date – A" field.
13. Click the "Options…" button at the bottom of the "Group By:" list to launch the "Change Group Options" dialog box.
14. On the "Common" tab, use the drop-down under the "The section will be printed:" text line to choose "for each year." from the menu of date grouping options.
15. Click "OK" in the "Change Group Options" dialog box.
16. In the "Group By:" list, select the "Employee.Employee ID – A" field.
17. On the "Options" tab, check the "Customize Group Name Field" checkbox.
18. Click the "Use a Formula as Group Name" option button.
19. Click the "X+2" button to the right of the option button that you just selected in the previous step.
20. Click into the large text box in the lower right corner and type the following expression *exactly* as shown: **"Employee Number "+ CStr ({Employee.Employee ID})**
21. Click the "Save and Close" button in the upper left corner of the "Formula Workshop" window to return to the report.
22. Click "OK" in the "Change Group Options" dialog box.
23. Click "OK" in the "Group Expert" dialog box.
24. Click and drag the "Group #1 Name" field and drop the left side of the field at 1.5" in the horizontal ruler.
25. Select "Insert| Text Object…" from the Menu Bar.
26. Click at the left edge of the report in the "Group Header #1:" section to place the text object, and then type "For the Fiscal Year: " into the text box.
27. Click into the blank area of the report to stop editing the text.
28. Click the text object to ensure that it is selected, and then click the "Bold" button in the Formatting toolbar.
29. Select "Insert| Summary…" from the Menu Bar.

(cont'd.)

Exercises- (cont'd.):

30. Select “Orders.Order Amount” from the “Choose the field to summarize:” drop-down.
31. Choose “Sum” from the “Calculate this summary:” drop-down.
32. Choose “Group #2: Employee.Employee ID – A” from the “Summary location” drop-down.
33. Click “OK.”
34. Select “Report| Group Sort Expert…” from the Menu Bar.
35. Use the drop-down to select “All.”
36. Select the “Descending” option button.
37. Click “OK.”
38. Click the “Print Preview” button in the Standard toolbar and review the appearance of the report.
39. Select “File| Save” from the Menu Bar.
40. Select “File| Close” from the Menu Bar to close the report.

CHAPTER 8- PRINTING REPORTS

8.1- INSERTING SPECIAL FIELDS

8.2- PAGE SETUP

8.3- PRINTING REPORTS

8.1- Inserting Special Fields:

Special fields are data fields that you can insert into your reports which display information that is unrelated to the information stored in the tables of the report. Special fields retrieve general report and system information that you may find useful in reports, such as page numbering, the date the report was printed, the filename of the report, and other types of general report data. Inserting special fields uses the same technique for field insertion used for inserting "Database Fields." You insert both types of fields in the same manner within the "Field Explorer" pane at the right side of the window.

To view the various special fields which you can insert, click the small plus sign next to the "Special Fields" entry within the "Field Explorer" pane. Then you can click the name of the special field which you want to insert into the report and click the "Insert to Report" button in the toolbar of the "Field Explorer" pane. Then click into the place in the report where you want the value of the special field to be displayed.

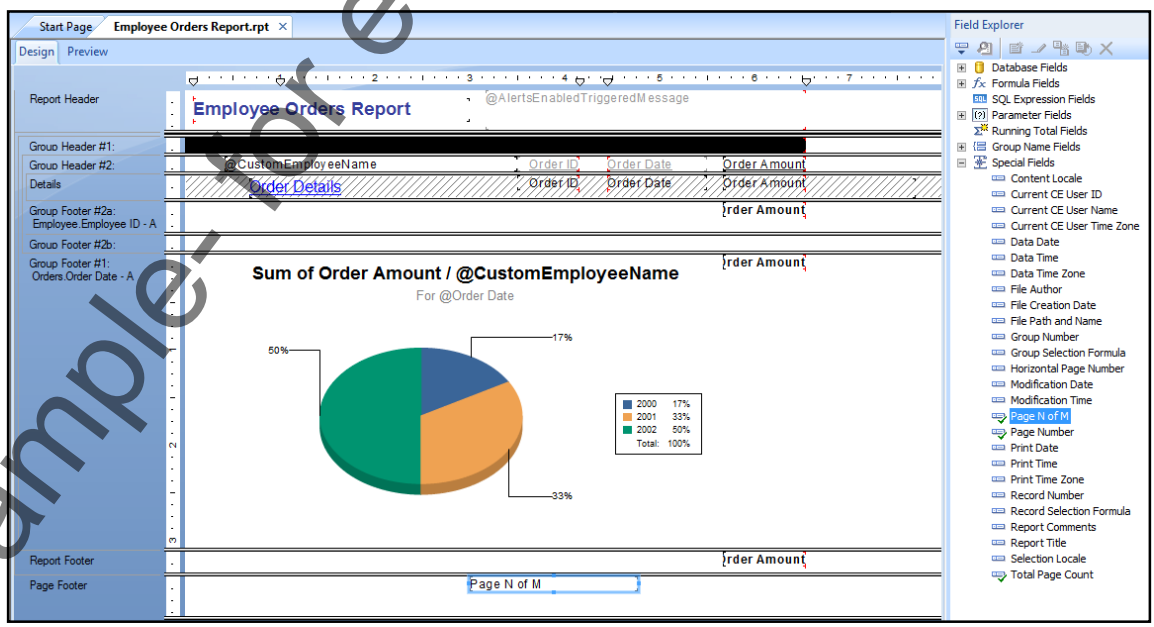
While you may place special fields into almost any section you would like, sometimes the type of field indicates where it would most likely be placed. For example, inserting the "Page N of M" field into the "Page Footer" section of the report would display the page numbering at the bottom of each page of the report, which makes more sense than placing that type of information into the "Details" section, for example. Many times the type of data represented by the special fields is best placed into the various header and footer sections of the report. Let's examine what types of special fields you can insert and what data they display in your reports.

Field Name:	**Description:**
Content Locale	Displays the locale setting of the computer on which the report is running.
Current CE User Id	Shows the user id of the current Crystal Enterprise user, if available.
Current CE User Name	Shows the name of the current Crystal Enterprise user, if available.
Current CE User Time Zone	Shows the time zone of the user (if one exists).
Data Date	Shows the date that the report data was last refreshed.
Data Time	Shows the time that the report data was last refreshed.
Data Time Zone	Shows the time zone in which the data was last refreshed.
File Author	Shows the "Author" listed in the "Summary Info" window.
File Creation Date	Shows the date that the report was created.
File Path and Name	Inserts the file path and name of the current report.
Group Number	Numbers each group and displays it in the group header or group footer.
Group Selection Formula	Shows the group selection formula used to filter the groups displayed in the report.

(cont'd.)

8.1- Inserting Special Fields- (cont'd.):

Field Name:	Description:
Horizontal Page Number	Numbers the horizontal pages created by report objects, such as OLAP grids and cross-tabs, which may extend over several horizontal pages.
Modification Date	Shows the last date that the report was saved.
Modification Time	Shows the last time that the report was saved.
Page N of M	Inserts the page number with a total page count into the report.
Page Number	Inserts the page number on each page in the report.
Print Date	Shows the date that the report was printed.
Print Time	Shows the time that the report was printed.
Print Time Zone	Shows the time zone in which the report was printed.
Record Number	Assigns and displays a number for each record in the report.
Record Selection Formula	Shows the Record Selection Formula used to select the records in the report.
Report Comments	Shows the comments that you have entered into the "Summary Info" window.
Report Title	Shows the report title that you have entered into the "Summary Info" window.
Selection Locale	Shows the locale setting of the machine the report is running on.
Total Page Count	Shows the total count of the pages in the report.



8.2- Page Setup:

You can change the report's page setup options using the "Page Setup" dialog box. To access this dialog box, select "File| Page Setup…" from the Menu Bar to invoke the "Page Setup" dialog box. Then select the name of the printer to use from the drop-down in the "Printer Options" section. Then use the drop-down in the "Page Options" section to choose the size of the paper to which you will be printing. In the "Orientation" section, choose either "Portrait" or "Landscape" to set the longer edge of the paper to be printed at the side or at the top. To set the margins by hand, type the desired number (typically measured in inches) into the "Top:," "Left:," "Bottom:," and "Right:" text boxes in the "Margins" section. If you check the "Adjust Automatically" checkbox, it will ensure that if the report is printed onto paper that isn't the same size as the paper that you designed it to be printed upon, the margins will automatically be adjusted so that the display is not warped. Instead, the excess space will be evenly distributed between the top, bottom, left and right margins. If you do not want the report to be printed, select the "No Printer (optimize for screen display)" checkbox at the top of the dialog box. Once you have the settings you wish, click "OK" to set them and close the "Page Setup" dialog box.

8.3- Printing Reports:

When you wish to print your report, just click the "Print" button in the Standard toolbar or choose "File| Print…" from the Menu Bar. This launches the "Print Setup" dialog box. In the "Printer" section, you can select the printer to use to print the report. In the "Page Range" section, choose "All" to print all the pages. You can also select "Current Page" or type a page range into the "Pages:" text box. Enter the number of copies to print into the "Number of copies:" text box and check the "Collate" checkbox to print multiple, collated copies. When you are ready to print, click the "Print" button to print your report.

ACTIONS-
PRINTING REPORTS

ADDING SPECIAL FIELDS INTO A REPORT:

1. In the "Field Explorer," click the small plus sign next to the "Special Fields" icon to display the special fields in the report.
2. Select the name of the field that you wish to add to the report from the "Field Explorer" and then click the "Insert to Report" button in the toolbar at the top of the "Field Explorer" pane.
3. Click into the report section where you wish to place the field.

OR

2. Click and drag the field that you wish to add to the report from the "Field Explorer" into the desired section of the report.

OR

2. Right-click the name of the field which you would like to add to the report in the "Field Explorer" pane.
3. Choose "Insert to Report" from the pop-up menu that appears.
4. Click into the report at the location where you wish to insert the selected field.

SETTING PAGE SETUP OPTIONS:

1. Open the report and then select "File| Page Setup…" from the Menu Bar.
2. Select the name of the printer to use from the drop-down in the "Printer Options" section.
3. Use the drop-down in the "Page Options" section to choose the size of the paper to which you will be printing.
4. In the "Orientation" section, choose either "Portrait" or "Landscape" to set the longer edge of the paper to be printed at the side or at the top.
5. To set the margins by hand, type the desired number (typically measured in inches) into the "Top:," "Left:," "Bottom:," and "Right:" text boxes in the "Margins" section.
6. If you check the "Adjust Automatically" checkbox, it will ensure that if the report is printed onto paper that isn't the same size as the paper that you designed it to be printed upon, the margins will automatically be adjusted so that the display is not warped. Instead, the excess space will be evenly distributed between the top, bottom, left and right margins.
7. If you do not want the report to be printed, select the "No Printer (optimize for screen display)" checkbox at the top of the dialog box.
8. Once you have the settings you wish, click "OK" to set them and close the "Page Setup" dialog box.

PRINTING REPORTS:

1. Click the "Print" button in the Standard toolbar or choose "File| Print…" from the Menu Bar.
2. In the "Printer" section of the "Print Setup" dialog box, select the printer to use to print the report.
3. In the "Page Range" section, choose "All" to print all the pages, "Current Page" to print the current page, or type a page range into the "Pages:" text box.
4. Enter the number of copies to print into the "Number of copies:" text box and check the "Collate" checkbox to print multiple, collated copies.
5. When you are ready to print, click the "Print" button to print your report.

EXERCISES-
PRINTING REPORTS

Purpose:

1. There are no exercises for this chapter.

Exercises:

1. None.

Crystal Reports Keyboard Shortcuts

Menu Bar Shortcut Keys	Key
New Report	Ctrl + N
Open Report	Ctrl + O
Save Report	Ctrl + S
Print Report	Ctrl + P
Cut	Ctrl + X
Copy	Ctrl + C
Paste	Ctrl + V
Delete	Del
Select All	Ctrl + A
Find	Ctrl + F
Go To Page	Ctrl + G
Design View	Ctrl + D
Refresh Report Data	F5
Formula Editor Shortcut Keys	**Key**
Browse selected field	Alt + B
Check for Errors	Alt + C
Toggle the “Shows Field” tree	Alt + F
Comments the current line	Alt + M
Sort tree content	Alt + O
Toggles the “Shows Operator” tree	Alt + P
Save formula	Alt + S
Toggles the “Shows Function” tree	Alt + U
Select all	Ctrl + A
Copy	Ctrl + C
Move to end of last formula line	Ctrl + End
Find	Ctrl + F
Set a bookmark	Ctrl + F2
Clear all bookmarks	Ctrl + Shift + F2
Move to beginning of file	Ctrl + Home
Move to start of word at left	Ctrl + ←
Select through start of word at left	Ctrl + Shift + ←

Formula Editor Shortcut Keys (cont'd.)	Key
Opens a dialog to create a new formula	Ctrl + N
Save and close Formula Editor	Ctrl + S
Focus to the syntax name list box	Ctrl + T
Switch to previous control box	Ctrl + Shift + Tab
Switch to next control box	Ctrl + Tab
Paste	Ctrl + V
Cuts	Ctrl + X
Undo	Ctrl + Z
Repeat	Ctrl + Shift + Z
Keyword Auto Complete	Ctrl + Space
Move to end of line	End
Copies object from list to formula box	Enter
Go to next bookmark	F2
Find next item	F3
Go to previous bookmark	Shift + F2