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**ADVANCED  
CRYSTAL  
REPORTS**

**TEACHUCOMP, INC.**

*...it's all about you*

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# ADVANCED CRYSTAL REPORTS

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# INTRODUCTION AND OVERVIEW

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Welcome to Teachucomp, Inc.'s Advanced 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 in order 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 or Microsoft Visual FoxPro 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 in order 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.

# **CHAPTER 13-**

## **ADVANCED REPORTING TOOLS**

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**13.1- USING RUNNING TOTALS**

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Sample- for evaluation purposes only.

# ADVANCED REPORTING TOOLS

## 13.1- Using Running Totals:

You can make formula fields which display the results of a running total, versus simply showing the results tabulated at the end of a record grouping. You create these fields in the “Field Explorer” pane, just as you would any other type of formula field. These fields function in much the same way as a summary field functions, however, you have a greater amount of control over how the calculation is performed and when the calculated value is reset.

To create a running total field, click on the “Running Total Fields” entry in the “Field Explorer” pane. Then click the “New” button in the toolbar at the top of the “Field Explorer” pane to launch the “Create Running Total Field” dialog box. You use this dialog box to name the field and set its calculation properties.

In the “Running Total Name:” text box you can type a name for the running total field. In the “Summary” section, you select which field’s values to calculate. Click on the field to summarize within the “Available Tables and Fields:” list at the left side of the dialog box, and then click the “>” arrow button to move the selected field into the “Field to summarize” text box at the right. Then use the “Type of summary” drop-down to select what type of summary calculation to perform over the chosen field.

In the “Evaluate” section you can set the parameters under which the calculation will be performed for the selected field’s values. You can select the “For each record” option to calculate the chosen function for every record in the report. You can also choose the “On change of field” option to calculate a value based on the change to the value shown in another field. If you do choose that option, then click on the field to use for the changing values in the “Available Tables and Fields” list at the left of the dialog box and click the “>” arrow button to move it into the “On change of field” text box at the right side.

You could also choose the “On change of group” option button in the “Evaluate” section to evaluate the selected field on the change of a grouped value. If you choose this option, then select which group’s values you want to use from the drop-down to the right of the “On change of group” label.

You can also select the “Use a formula” option button and then click the “X+2” button to invoke the “Formula Editor.” In the Formula Editor, you can create a formula that, when evaluated and found to be true, will then perform the selected calculation of the chosen field. This is very handy for creating conditional running sum fields. For example, if you want to sum the “Amount Sold” field where the “Order Country” field was “USA,” you could set that up as the condition under which the field would be added. The result would be the sum of all sales from the USA.

In the “Reset” section, you can choose under which conditions the running total will be reset back to zero. If you select “Never,” the field’s values will never be set back to zero in the report. You can also select the “On change of field” option button in the “Reset” section to have the running total field get reset back to zero on the change of value to a specified field. If you select this option, then select by which field you want to reset the value from the list displayed in the “Available Tables and Fields:” list at the left side of the dialog box, and click the “>” arrow button to move the selected field into the text box displayed. You can also select the “On change of group” option, and then select by which group’s changing values you wish to reset the running total back to zero from the drop-down which appears. You can also click the “Use a formula” option button, and then click the “X+2” button to invoke the “Formula Editor.” In the “Formula Editor,” you can create a condition that, when met, will reset the value of the running total field back to zero.

Once you have set the desired attributes of the running total field, just click “OK” in the “Create Running Total Field” dialog box. The field that you created will then be displayed in the “Field Explorer” pane. You can then insert it into your report just as you would any other type of field.

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## 13.2- Creating Parameter Fields- (2011, 2008 & 11):

A parameter field allows you to specify a value that will be used by the report when the report data is refreshed. Parameters can serve multiple purposes in reports and are one of the most powerful tools that you have. You can use parameters to filter report data at run-time, selecting which records to display and calculate “on-the-fly.” You could also have a parameter prompt you to enter a value which can then be used by a formula in the report, for example.

You create the parameter fields in the “Field Explorer” pane, just as you create many other types of fields. You do have a few considerations to bear in mind as you create the parameter fields for use in your reports. First off, parameter fields that will be used by report group or record selection formulas do not need to have the parameter field placed into the actual report. Simply create the parameter field and then reference it as needed within the selection formula. Also, you can create parameters that will accept “string,” “number,” “currency,” “boolean,” “date,” “time,” or “date/time” values for use in the report.

To create a parameter field, select the “Parameter Fields” option in the “Field Explorer” pane and then click the “New” button in the toolbar at the top of the pane. This will launch the “Create New Parameter” dialog box where you can specify the settings for the parameter field. The “Name:” and “Type:” are the only two required arguments in this dialog box. You can specify the other values, as needed.

In the “Create New Parameter” dialog box, enter the name of the parameter field that you want to create into the “Name:” text box. It can be up to 255 characters in length, but should be short, descriptive, and easy to reference. You can then use the “Type:” drop-down to select the data type of the parameter.

In the “List of Values:” area, you can create a list of preset values from which the user can select the desired value to use for the parameter when refreshing the report data. You can either select the “Static” option or the “Dynamic” option. Note that your choice changes what fields are available in the dialog box.

If you select “Static,” then you are presenting the user with choices that always contain the same values. This is used for possible parameter choices that do not change very frequently. If you choose “Dynamic,” then you create a list of possible parameter choices that can be updated, as needed. In addition, you can create cascading choices in the dynamic parameter prompts. This allows you to make the user select from multiple fields to specify an exact value. For example, you could use both the “City” and “State” fields in a dynamic prompt to prevent confusion about which city is being referred to when one is selected. For example, using a cascading prompt you could make the user choose “Grand Rapids, MI” versus “Grand Rapids, MN.” In a static prompt you would simply see the city of “Grand Rapids” shown twice in the list, without any idea which value was associated with which state.

If you select the “Static” option, then you can provide a list of values from a database field from which the user can choose by selecting the name of the desired database field from the “Value Field” drop-down. You can use the “Description Field:” drop-down to choose a database field which describes the contents of the “Value Field” choice, if needed. For example, if you selected the “Employee ID” field as the “Value Field,” then you could select the “Employee Name” field as the “Description Field” so the user could see a name versus a number when selecting a parameter value.

If you wish to manually type a list of values and, optionally, descriptions; then you can either click into the first row of the “Value” column to begin entering the parameter values, or you can click the “Insert” button to append a new entry to the list of values. In the value list, you can click into any entry made, and then click the “Delete” button, which looks like a black ‘x,’ to delete the selected entry.

You may also click the “Move Up” and “Move Down” arrow button to move the selected choice up or down through the list of values.

You can use the “Actions” drop-down button to perform various commands on the value list shown. If you selected to use a database field value, then you must select the “Append all database values” command to load the values from the selected field(s) into the value list. You can select the “Clear”

# ADVANCED REPORTING TOOLS

## 13.2- Creating Parameter Fields- (2011, 2008 & 11- cont.):

command to remove all list values shown. You can import a delimited list of values from a text file by clicking the “Import...” command choice. This launches a separate dialog box, which you can use to browse for and open the desired delimited text file. Also, you can select the “Export...” command to export a manual list to a delimited text file using the “Save As” dialog box.

If you choose “Dynamic” in the “List of Values:” section, then you have different choices to make in this section. If you have a cascading parameter choice, meaning it uses multiple fields, then type whatever you would like to have displayed as the prompting text for the cascading parameter into the “Prompt Group Text:” text box. You can use this with single-field prompts, as well, but the title shows up at the top of the parameter dialog box prompt and not over the individual fields.

To create a new list of field values from which the user can select, ensure that the “New” choice is selected in the “Choose a Data Source:” section. You can then select from the list of fields in the current data source by using the “Insert” button or by clicking into the first empty row of the “Value” column. You can select any field entered into the list and click the “Delete” button to delete the field. You can also reorganize a selected value by clicking the “Move Up” and “Move Down” arrow buttons. If you would like to use a secondary field for the description of the field selected in the “Value” column, then you can choose a field for that purpose to the right in the “Description” column. In the “Parameter” column, you can click on a value to unbind it from the parameter. You can also click it to bind an unbound parameter value.

Once you have set your value list, then you can set the desired options for each value in the “Options” area. The choices from which you can select change depending on whether or not you selected “Static” or “Dynamic” value fields. For all “Static” values that are not “Boolean” (logical) values, you can set the following parameter options by clicking into the “Setting” column and entering or changing the value. In the “Prompt Text:” option, you can enter the text that you want to appear as the parameter prompt. You can choose “True” or “False” for the “Prompt With Description Only” to only allow the description field choices to be viewed in the parameter prompt (True), or to show both the value and description fields (False). You can enter a default parameter value to use in the “Default Value” option. If you select “True” in the “Allow custom values” option, then the users can type in their own values in addition to selecting from the value list. If set to “False,” then they must only choose from the values shown in the list. If the “Allow multiple values” option is set to “True,” then the parameter prompt will allow multiple values to be selected. This also enables you to set both the “Allow discrete values” and “Allow range values” options to “True,” as well. Normally, you can only select one of the two options.

You can set the “Allow discrete values” option to “True” to allow for only singular parameter values to be selected. Although there can be multiple, singular values- this means that there are no ranged parameter values, such as all values from \$100 to \$1,000.

You can set the “Allow range values” option to “True” to allow ranged parameter value choices. You can use the “Min length” option to enter the minimum number of characters that can appear as a value entry. You can also use the “Max length” to enter the maximum number of characters that could appear as a value entry. You can use the “Edit Mask” option to enter a field mask that restricts the possible range of characters that your users could input, if desired.

When setting static, boolean parameter options, you can set the “Prompt Text,” “Prompt With Description Only,” and “Default Value” options, as normal. You can also enter the “Boolean group #” option to set the number of the group to which you wish to add the selected boolean value. Boolean groups are created when Crystal Reports requires users to enter a prompt value. Boolean groups can contain many Boolean parameter fields. When a user select a group of boolean values, they can set the same values or different values to each parameter in the group. You use the “Exclusive Group” option to set this behavior. If this option is set to “True,” users can only select a single “True” boolean value from the boolean options

# ADVANCED REPORTING TOOLS

## **13.2- Creating Parameter Fields- (2011, 2008 & 11- cont.):**

presented in the group. If set to “False,” then the users can set multiple options in the group to “True.”

If you selected a “Dynamic” set of values, then you can set the “Prompt Text,” “Prompt With Description Only,” “Allow multiple values,” “Allow discrete values,” and “Allow range values” options, as normal. In addition, you can use the “Sort Order” option to select how to sort the field’s data values in the parameter prompt. The values can be sorted in either ascending (A-Z, 1-9) order or descending (Z-A, 9-1) order by either the value field or the description field.

Once you have set the desired parameter options, click “OK” in the “Create New Parameter” dialog box to create the new parameter field.

## **13.3- Creating Parameter Fields- (10):**

Parameters add a level of flexibility to your reports. Many times, you have values that you would like to specify at run-time in a report. A parameter field allows you to specify a value that will be used by the report when the report data is refreshed.

Parameters can serve multiple purposes in reports and are one of the most powerful tools that you have to allow for additional flexibility within a report. You can use parameters to filter report data at run-time, selecting which records to display and calculate “on-the-fly.” You could also have a parameter prompt you to enter a value which can then be used by a formula in the report, for example.

You create the parameter fields in the “Field Explorer” pane, just as you create many other types of fields. You do have a few considerations to bear in mind as you create the parameter fields for use in your reports. First off, parameter fields that will be used by report group or record selection formulas do not need to have the parameter field placed into the actual report. Simply create the parameter field and then reference it as needed within the selection formula. Also, you can create parameters that will accept “string,” “number,” “currency,” “boolean,” “date,” “time,” or “date/time” values for use in the report.

To create a parameter field, select the “Parameter Fields” option in the “Field Explorer” pane and then click the “New” button in the toolbar at the top of the pane. This will launch the “Create Parameter Field” dialog box where you can specify the settings for the parameter field. The “Name” and “Value Type” are the only two required arguments in this dialog box. You can optionally specify the other values, as needed.

In the “Create Parameter Field” dialog box, you can type the name of the parameter field that you want to create into the “Name:” text box. It can be up to 255 characters in length, but should be short, descriptive, and easy to reference. In the “Prompting text:” text box, you can type the text that you want to have appear when the report prompts you to enter the parameter value. This can be up to 255 characters in length. You can then use the “Value type:” drop-down to select the data type of the parameter.

If you click the “Default Values...” button in this dialog box, you will open the “Set Default Values” dialog box. You can use this dialog box to set a default value to be used in case the user doesn’t specify a value. You can also use this dialog box to create a list of preset values from which the user can select the value to use for the parameter when refreshing the report data.

If you want the possible values from which the user could select to be drawn from a database table, you can specify the name of the table from the “Browse table:” drop-down. From there, you can select which field in the table to use from the choices in the “Browse field:” drop-down. The values will then appear in the “Select or enter value:” list at the left side of the dialog box. If you had the values listed in a text file which you wanted to import, you could click the “Import...” button to launch the “Open” dialog box where you could select the text file with the values which you wanted to use, and then click “Open” to list the values in the “Select or enter value:” list. You can then use the arrow buttons to move the selected list items to and from



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## 13.3- Creating Parameter Fields- (10- cont.):

the “Default Values” list at the right side of the dialog box. You can even click into the text box that is immediately below the “Select or enter value:” label and type in the value which you wish to add to the default values list. Then click the “>” arrow button to move it to the default values list.

In the “Default Values” list you can click on a listed element to select it. You can then click the “Set Description...” button to change the description used for the selected value, if desired. Also notice that if the elements added to the “Default Values” list aren’t in the desired order, you can select an entry and then click the “Up” and “Down” arrows in the upper right corner of the list to reorganize the entries, if desired.

In the “Options” section, you can check the “Length limit” checkbox to restrict the data entry of the parameter to a specified size range. You can then type a “Min Length” and a “Max Length” into the text boxes provided. If you instead prefer to specify an input mask to use for the parameter, you can type an input mask using accepted masking characters into the “Edit mask:” text box.

You can also set the “Display:” drop-down to either “Value and Description” or “Description” to choose what will be shown in the pick list used by the report user. If you want to sort the entries shown in the default values list, you can choose a sorting method from the “Order:” drop-down. You can then use the “Order based on:” drop-down to choose to sort either by the “Values” or “Descriptions” used.

When you have made any changes to the settings of the default values used by the parameter field that you want to apply, click “OK” to return to the “Create Parameter Field” dialog box.

In this dialog box, if you want the user to be able to choose more than one value from your list of default values, check the “Allow multiple values” checkbox. Otherwise, the user will only be allowed to specify a single value from the list of defaults specified. If you select the “Discrete value(s)” option, you can choose multiple, individual values to use for the parameter. If you select “Range value(s)” instead, you can select a range of values between which all of the other values would also be selected. You could also choose “Discrete and Range Values” option. You can also check the “Allow editing of default values when there is more than one value” checkbox if you wish to enable that feature. Whenever you have the desired settings for the type of parameter field you want to create set in the “Create Parameter Field” dialog box, click “OK” to create the parameter field.

## 13.4- Parameterized Record Selection:

One of the primary reasons to create and use parameters within Crystal Reports is for record selection. Imagine if you had a report which showed sales by region of your company. If you had a parameter which you could use for the “region” variable, you could use the same report and change the parameter (in this example, the region) each time to show different regional sales.

To use a parameter for record selection after creating the necessary parameter field, click the “Select Expert” button in the Experts toolbar. In the “Select Expert” dialog box you select the field against which to compare the parameter value and the desired comparison operation as normal. This time, notice that when you choose the value against which to compare the field from the drop-down available, that there is a parameter prompt at the top of the drop-down of choices in the following format: **{?ParameterName}**. If you have multiple parameters from which you could choose, then select the name of the parameter whose value you want to use for the record selection. After you have made the selection criteria, click “OK.”

It is important to note that the parameter value and the field against which you are comparing the parameter value must share that same data type. For example, if you had a “Number” parameter field, you could not compare it to a “String” field’s value.

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## **13.5- Entering Parameter Values- (2011, 2008 & 11):**

After you have entered a parameter field into your report, you can preview the report to force the report to refresh its data and enter a parameter value for use. Once you have created the preview and set the value, simply switching between the “Design” and “Preview” tabs will not necessarily prompt you to re-enter a new parameter value. You can always force a “refresh” of the data by selecting “Report| Refresh Report Data” from the Menu Bar.

When you do this in a report that already contains parameterized values used for the “Preview,” Crystal Reports invokes a dialog box asking if you wish to “Use current parameter values” or “Prompt for new parameter values.” Select the desired option and then click “OK” to continue.

When you are initially entering a parameter value, or if you select to re-enter a parameter value when refreshing report data, you will do so through the “Enter Values” dialog box. In this dialog box, you will see the names of the report parameters, and you can select or enter the desired values to use for the report for each one shown. After initially selecting parameter values, all parameters will retain their last setting, and you only need to select and change the value of the parameters that you need to, in order to display the data you want to see in the “Preview.”

The value or values which you then specify are used to by the parameter to select records, display the chosen value, format fields, or whatever else you may use parameter values for in a report. Once you have entered the values for use, click “OK” to apply the new parameters.

## **13.6- Entering Parameter Values- (10):**

After you have entered a parameter field into your report, you can preview the report to force the report to refresh its data and enter a parameter value for use. Once you have created the preview and set the value, simply switching between the “Design” and “Preview” tabs will not necessarily prompt you to re-enter a new parameter value. You can always force a “refresh” of the data by selecting “Report| Refresh Report Data” from the Menu Bar.

When you do this in a report that contains parameterized values used for the “Preview,” Crystal Reports invokes a dialog box asking if you wish to “Use current parameter values” or “Prompt for new parameter values.” Select the desired option and then click “OK” to continue.

When you are initially entering a parameter value, or if you select to re-enter a parameter value when refreshing report data, you will do so through the “Enter Parameter Values” dialog box. In this dialog box, you will see the names of the report parameters listed in the “Parameter Fields:” list. You can click on a parameter listed to display its settings and the parameter’s prompt below the list. The last selected value for the parameter is displayed at the bottom of the dialog box. You can click the “Reset” button to reset **all** the parameter values back to their default values, if needed. Otherwise, all parameters will retain their last setting, and you only need to select and change the value of the parameters that you need to in order to display the data you want to see in the “Preview.”

Depending on the type of parameter that you created, you enter the value or range of values to use for each parameter into the text box(es) or drop-down(s) at the bottom of this dialog box. The value or values which you then specify are used to by the parameter to select records, display the chosen value, format fields, or whatever else you may use parameter values for in a report. Once you have entered the values for use, click “OK” to apply the new parameters.

## 13.7- Creating Subreports:

Another sophisticated report tool which you can use is the subreport. A subreport is created in the same manner as a normal report, but it is then embedded within a main report as a report object and it cannot contain another subreport within it. This allows you to access and display information from two unrelated reports in a single report, or to display multiple views of report data in a single report.

You can create either linked or unlinked subreports. Unlinked subreports simply have no relationship between the records displayed in the subreport and the records displayed in the main report. The data is unrelated to each other in much the same way “unlinked” data in tables is unrelated. In linked subreports the data in the subreport is matched up to data in the primary report. For example, If you create an “Orders” report, you can create a linked subreport that displays the “Order Details” for each record in the “Orders” table. This could be used as another way of displaying the “one-to-many” type join between data in related tables.

To create a subreport, you can select “Insert| Subreport...” from the Menu Bar or click the “Insert Subreport” button in the Insert toolbar. This will invoke the “Insert Subreport” dialog box. In this dialog box you can select how you want to create the subreport using the two options displayed: “Choose an existing report” or “Create a subreport with the Report Wizard.” If you select the first option, then click the “Browse...” button to invoke the “Open” dialog box where you can choose which report you want to embed as a subreport within the main report. If you wanted to create the subreport “on-the-fly” within the primary report, you can instead choose the latter option button and then click the “Report Wizard...” button to launch the Report Wizard dialog box which steps you through the creation of a standard report.

You can also check the “On-demand subreport (similar to a hyperlink)” checkbox to create a subreport which doesn’t display its data until the user double-clicks on the subreport link to drill-down and display the subreport data on another “Preview” tab. They are displayed within their own object frame in the main report, which reduces the amount of display space required within the main report. In addition, data from an “On-demand subreport” isn’t accessed from the database until the user double-clicks on the subreport to display the detail data. You can later access the subreport object and change its caption using the “Format Editor.”

Assuming you wanted to create an unlinked subreport, you could just click the “OK” button at this point and then click into the report at the place where you wanted to display the subreport data. However, if you wanted to create a linked subreport, you must then click the “Link” tab in the “Insert Subreport” dialog box. When you create a link between the primary report and the subreport, they are linked by a parameter field created by the linking process. The parameter field is then used as a reference for the subreport’s record selection formula, which filters the records displayed.

On the “Link” tab, you use the “For subreport:” drop-down to choose which subreport to link to from the drop-down displayed. Then in the “Container Report field(s) to link to” list, select the report field or underlying database field which will serve as the basis for the link between the data in the two reports. Then click the “>” arrow button to move the selected field(s) into the “Field(s) to link to:” list at the right side of the dialog box. At the bottom of the dialog box, use the drop-down at the left side of the dialog box to select the parameter field to use from the primary report, and the associated field from the subreport to use for the link from the drop-down at the right side of the dialog box. Once the association between the fields has been created, just click “OK” at the bottom of the dialog box. Then you can click into the position within the report at which you want to place the linked subreport.

# ADVANCED REPORTING TOOLS

## 13.8- Report Alerts:

You can set report alerts to notify the user of conditions or information in a report that are outside of the defined “norm.” Many times in business you will want to see these types of reports, which are often called “exception reports,” because they can alert you to potential problems. Crystal Reports uses report alerts to identify and notify the user when certain specified criteria are met. For example, you could create a report alert which informs the management staff with a custom message when sales for a specified period are under a certain specified value.

To create a report alert, choose “Report| Alerts| Create or Modify Alerts...” from the Menu Bar. This will launch the “Create Alerts” dialog box. You can click the “New” button in the dialog box to launch the “Create Alert” dialog box. Here you must type a name for the alert into the “Name” text box. You can then type the message that you want to display when the condition which you will set is met into the “Message” text box. If you wish to create a formula that displays a text value or makes reference to other report fields, you can instead click the “X+2” button to the right of the “Message” text box and then create the formula in the “Formula Editor” which you will display when the criteria is met.

Click the “Condition...” button to invoke the Formula Editor where you can create the formula, that when met, will trigger the display of the message which you created. Then click “Save and Close” in the Formula Editor window to return to the “Create Alert” dialog box. You can then click “OK” in this dialog box to return to the “Create Alerts” dialog box. Note the “Enabled” checkbox is checked, which indicates that the alert is “on.” You can always return to an alert that you wish to temporarily deactivate and uncheck this checkbox to turn an alert “off” without having to delete the alert.

If you wish to delete an alert which you created but no longer need, you can select the name of the alert from the “Create Alerts” dialog box and then click the “Delete” button to delete the selected alert. You can also click on the name of an alert in this dialog box and then click “Edit...” to edit the selected alert’s condition or message if needed. You can also click the “New...” button to create as many additional alerts as you feel you need for the report. When you are finished, you can click the “Close” button to return to the report. When you preview the data or refresh the report data, any alerts will be triggered if they meet the criteria which you specified. They will appear in their own “Report Alerts” dialog box, where you can see the name of the alert and the message which was entered. In this dialog box, you can select the name of the alert which was triggered and then click the “View Records” button to view the data records which triggered the report alert. When you are finished reviewing the data, you can click the “Close” button in the “report Alerts” dialog box.

## 13.9- Report Alert Functions:

Crystal Reports contains three functions which evaluate the status of the alerts within a report. These functions all return a “True” value or “False” value (boolean) used for evaluating the status of alerts. You can use these functions to determine whether or not an alert has been activated. You can use the “*IsAlertEnabled*” function to determine if the “enabled” checkbox is checked for an alert. You can use the “*IsAlertTriggered*” function to determine if the record being evaluated is triggering the alert. You can use the “*AlertMessage*” function to return the message (or the formula) that was typed into the “Message” text box in the “Create Alert” dialog box.

# ACTIONS-

# ADVANCED REPORTING TOOLS

## CREATING A RUNNING TOTAL FIELD:

1. Click on the “Running Total Fields” entry in the “Field Explorer” pane.
2. Click the “New” button in the toolbar at the top of the “Field Explorer” pane to launch the “Create Running Total Field” dialog box.
3. In the “Running Total Name:” text box you can type a name for the running total field.
4. In the “Summary” section, you select which field’s values to calculate. Click on the field to summarize within the “Available Tables and Fields:” list at the left side of the dialog box, and then click the “>” arrow button to move the selected field into the “Field to summarize” text box at the right.
5. Use the “Type of summary” drop-down to select what type of summary calculation to perform over the chosen field.
6. In the “Evaluate” section you can set the parameters under which the calculation will be performed for the selected field’s values. You can select the “For each record” option to calculate the chosen function for every record in the report. You can also choose the “On change of field” option to calculate a value based on the change to the value shown in another field. If you do choose that option, then click on the field to use for the changing values in the “Available Tables and Fields” list at the left of the dialog box and click the “>” arrow button to move it into the “On change of field” text box at the right side.
7. You could also choose the “On change of group” option button in the “Evaluate” section to evaluate the selected field on the change of a grouped value. If you choose this option, then select which group’s values you want to use from the drop-down to the right of the “On change of group” label.
8. You can also select the “Use a formula” option button and then click the “X+2” button to invoke the “Formula Editor.” In the Formula Editor, you can create a formula that, when evaluated and found to be true, will then perform the selected calculation of the chosen field.
9. In the “Reset” section, you can choose under which conditions the running total will be reset back to zero. If you select “Never,” the field’s values will never be set back to zero in the report.
10. If you select the “On change of field” option button in the “Reset” section to have the running total field get reset back to zero on the change of value to a specified field. If you select this option, then select by which field you want to reset the value from the list displayed in the “Available Tables and Fields:” list at the left side of the dialog box, and click the “>” arrow button to move the selected field into the text box displayed.
11. If you select the “On change of group” option, and then select by which group’s changing values you wish to reset the running total back to zero from the drop-down which appears. You can also click the “Use a formula” option button, and then click the “X+2” button to invoke the “Formula Editor.” In the “Formula Editor,” you can create a condition that, when met, will reset the value of the running total field back to zero.
12. Once you have set the desired attributes of the running total field, just click “OK” in the “Create Running Total Field” dialog box.
13. The field that you created will then be displayed in the “Field Explorer” pane. You can then insert it into your report just as you would any other type of field.

# ACTIONS-

# ADVANCED REPORTING TOOLS

## CREATING A PARAMETER FIELD- (2011, 2008 & 11):

1. Select the "Parameter Fields" option in the "Field Explorer" pane, and then click the "New" button in the toolbar at the top of the pane.
2. In the "Create New Parameter" dialog box, type the name of the parameter field that you want to create into the "Name:" text box.
3. You can then use the "Type:" drop-down to select the data type of the parameter.
4. In the "List of Values:" area, you can either select the "Static" option or the "Dynamic" option. Note that your choice changes what fields are available in the dialog box.
5. If you select the "Static" option, then you can provide a list of values from a database field from which the user can choose by selecting the name of the desired database field from the "Value Field" drop-down.
6. You can use the "Description Field:" drop-down to choose a database field which describes the contents of the "Value Field" choice, if needed.
7. If you wish to manually type a list of values and, optionally, descriptions; then you can either click into the first row of the "Value" column to begin entering the parameter values, or you can click the "Insert" button to append a new entry to the list of values.
8. In the value list, you can click into any entry made, and then click the "Delete" button, which looks like a black 'x,' to delete the selected entry.
9. You may also click the "Move Up" and "Move Down" arrow button to move the selected choice up or down through the list of values.
10. You can use the "Actions" drop-down button to perform various commands on the value list shown. If you selected to use a database field value, then you must select the "Append all database values" command to load the values from the selected field(s) into the value list.
11. You can select the "Clear" command to remove all list values shown.
12. You can import a delimited list of values from a text file by clicking the "Import..." command choice. This launches a separate dialog box, which you can use to browse for and open the desired delimited text file.
13. You can select the "Export..." command to export a manual list to a delimited text file using the "Save As" dialog box.
14. If you choose "Dynamic" in the "List of Values:" section, then you have different choices to make in this section.
15. If you have a cascading parameter choice, meaning it uses multiple fields, then type whatever you would like to have displayed as the prompting text for the cascading parameter into the "Prompt Group Text:" text box. You can use this with single-field prompts, as well, but the title shows up at the top of the parameter dialog box prompt and not over the individual fields.
16. To create a new list of field values from which the user can select, ensure that the "New" choice is selected in the "Choose a Data Source:" section. You can then select from the list of fields in the current data source by using the "Insert" button or by clicking into the first empty row of the "Value" column.
17. You can select any field entered into the list and click the "Delete" button to delete the field.
18. You can also reorganize a selected value by clicking the "Move Up" and "Move Down" arrow buttons.
19. If you would like to use a secondary field for the description of the field selected in the "Value" column, then you can choose a field for that purpose to the right in the "Description" column.
20. In the "Parameter" column, you can click on a value to unbind it from the parameter. You can also click it to bind an unbound parameter value.
21. You can set the desired options for each value in the "Options" area. The choices from which you can select change depending on whether or not you selected "Static" or "Dynamic" value fields.

(cont...)

# ACTIONS-

## ADVANCED REPORTING TOOLS

### CREATING A PARAMETER FIELD- (2011, 2008 & 11- CONT.):

22. For all "Static" values that are not "Boolean" (logical) values, you can set the following parameter options by clicking into the "Setting" column and entering or changing the value.
23. In the "Prompt Text:" option, you can enter the text that you want to appear as the parameter prompt.
24. You can choose "True" or "False" for the "Prompt With Description Only" to only allow the description field choices to be viewed in the parameter prompt (True), or to show both the value and description fields (False).
25. You can enter a default parameter value to use in the "Default Value" option.
26. If you select "True" in the "Allow custom values" option, then the users can type in their own values in addition to selecting from the value list. If set to "False," then they must only choose from the values shown in the list.
27. If the "Allow multiple values" option is set to "True," then the parameter prompt will allow multiple values to be selected. This also enables you to set both the "Allow discrete values" and "Allow range values" options to "True," as well. Normally, you can only select one of the two options.
28. You can set the "Allow discrete values" option to "True" to allow for only singular parameter values to be selected. Although there can be multiple, singular values- this means that there are no ranged parameter values, such as all values from \$100 to \$1,000.
29. You can set the "Allow range values" option to "True" to allow ranged parameter value choices.
30. You can use the "Min length" option to enter the minimum number of characters that can appear as a value entry.
31. You can also use the "Max length" to enter the maximum number of characters that could appear as a value entry.
32. You can use the "Edit Mask" option to enter a field mask that restricts the possible range of characters that your users could input, if desired.
33. When setting static, boolean parameter options, you can set the "Prompt Text," "Prompt With Description Only," and "Default Value" options, as normal.
34. You can also enter the "Boolean group #" option to set the number of the group to which you wish to add the selected boolean value. When a user select a group of boolean values, they can set the same values or different values to each parameter in the group.
35. If the "Exclusive Group" option is set to "True," users can only select a single "True" boolean value from the boolean options presented in the group. If set to "False," then the users can set multiple options in the group to "True."
36. If you selected a "Dynamic" set of values, then you can set the "Prompt Text," "Prompt With Description Only," "Allow multiple values," "Allow discrete values," and "Allow range values" options, as normal.
37. In addition, you can use the "Sort Order" option to select how to sort the field's data values in the parameter prompt. The values can be sorted in either ascending (A-Z, 1-9) order or descending (Z-A, 9-1) order by either the value field or the description field.
38. Once you have set the desired parameter options, click "OK" in the "Create New Parameter" dialog box to create the new parameter field.

# ACTIONS-

## ADVANCED REPORTING TOOLS

### CREATING A PARAMETER FIELD- (10):

1. Select the "Parameter Fields" option in the "Field Explorer" pane and then click the "New" button in the toolbar at the top of the pane to launch the "Create Parameter Field" dialog box.
2. Type the name of the parameter field that you want to create into the "Name:" text box.
3. In the "Prompting text:" text box, type the text that you want to have appear when the report prompts you to enter the parameter value.
4. You can use the "Value type:" drop-down to select the data type of the parameter.
5. If you click the "Default Values..." button in this dialog box, you will open the "Set Default Values" dialog box. You can use this dialog box to set a default value to be used in case the user doesn't specify a value. You can also use this dialog box to create a list of preset values from which the user can select the value to use for the parameter when refreshing the report data.
6. In the "Set Default Values" dialog box, you can restrict the possible values from which the user could select to values from a database table by specifying the name of the table from the "Browse table:" drop-down.
7. Select which field in the table to use from the choices in the "Browse field:" drop-down. The values will then appear in the "Select or enter value:" list at the left side of the dialog box.
8. If you had the values listed in a text file which you wanted to import, you could instead click the "Import..." button to launch the "Open" dialog box where you could select the text file with the values which you wanted to use, and then click "Open" to list the values in the "Select or enter value:" list.
9. You can then use the arrow buttons to move the selected list items to and from the "Default Values" list at the right side of the dialog box.
10. You can even click into the text box that is immediately below the "Select or enter value:" label and type in the value which you wish to add to the default values list. Then click the ">" arrow button to move it to the default values list.
11. In the "Default Values" list you can click on a listed element to select it. You can then click the "Set Description..." button to change the description used for the selected value, if desired.
12. Notice that if the elements added to the "Default Values" list aren't in the desired order, you can select an entry and then click the "Up" and "Down" arrows in the upper right corner of the list to reorganize the entries, if desired.
13. In the "Options" section, you can check the "Length limit" checkbox to restrict the data entry of the parameter to a specified size range. You can then type a "Min Length" and a "Max Length" into the text boxes provided.
14. If you instead prefer to specify an input mask to use for the parameter, you can type an input mask using accepted masking characters into the "Edit mask:" text box.
15. You can also set the "Display:" drop-down to either "Value and Description" or "Description" to choose what will be shown in the pick list used by the report user.
16. If you want to sort the entries shown in the default values list, you can choose a sorting method from the "Order:" drop-down. You can then use the "Order based on:" drop-down to choose to sort either by the "Values" or "Descriptions" used.
17. When you have made any changes to the settings of the default values used by the parameter field that you want to apply, click "OK" to return to the "Create Parameter Field" dialog box.
18. In this dialog box, if you want the user to be able to choose more than one value from your list of default values, check the "Allow multiple values" checkbox. Otherwise, the user will only be allowed to specify a single value from the list of defaults specified.

(cont...)



# ACTIONS-

## ADVANCED REPORTING TOOLS

### CREATING A PARAMETER FIELD- (10): CONT.:

19. If you select the “Discrete value(s)” option, you can choose multiple, individual values to use for the parameter.
20. If you select “Range value(s)” instead, you can select a range of values between which all of the other values would also be selected.
21. You could also choose “Discrete and Range Values” option to allow for the selection of both ranged and discrete values for the parameter.
22. You can also check the “Allow editing of default values when there is more than one value” checkbox, if you wish to enable that feature.
23. Whenever you have the desired settings for the type of parameter field you want to create set in the “Create Parameter Field” dialog box, click “OK” to create the parameter field.

### ENTERING PARAMETER VALUES- (2011, 2008 & 11):

1. You can “refresh” report data by selecting “Report| Refresh Report Data” from the Menu Bar, if needed.
2. When you refresh report data that contains parameterized values, Crystal Reports invokes a dialog box asking if you wish to “Use current parameter values” or “Prompt for new parameter values.” Select the desired option and then click “OK” to continue.
3. When you are initially entering a parameter value, or if you select to re-enter parameter values when refreshing report data, you will do so through the “Enter Values” dialog box. In this dialog box, you will set or enter the desired values to use for each parameter shown. After initially selecting parameter values, all parameters will retain their last setting, and you only need to select and change the value of the parameters that you need to, in order to display the data you want to see in the “Preview.”
4. Once you have entered the values to use, click “OK” to apply the new parameters.

### ENTERING PARAMETER VALUES- (10):

1. If necessary, you can force a “refresh” of the data by selecting “Report| Refresh Report Data” from the Menu Bar.
2. When you do this in a report that contains parameterized values, Crystal Reports invokes a dialog box asking if you wish to “Use current parameter values” or “Prompt for new parameter values.” Select the desired option and then click “OK” to continue.
3. In the “Enter Parameter Values” dialog box, you will see the names of the report parameters listed in the “Parameter Fields:” list.
4. You can click on a parameter listed to display its settings and the parameter’s prompt below the list. The last selected value for the parameter is displayed at the bottom of the dialog box. You can click the “Reset” button to reset all the parameter values back to their default values, if needed. Otherwise, all parameters will retain their last setting, and you only need to select and change the value of the parameters that you need to in order to display the data you want to see in the “Preview.”
5. Depending on the type of parameter that you created, you enter the value or range of values to use for each parameter into the text box(es) or drop-down(s) at the bottom of this dialog box. The value or values which you then specify are used to by the parameter to select records, display the chosen value, format fields, or whatever else you may use parameter values for in a report.
6. Once you have entered the values for use, click “OK” to apply the new parameters.

# ACTIONS-

# ADVANCED REPORTING TOOLS

## CREATING A SUBREPORT:

1. Select "Insert| Subreport..." from the Menu Bar or click the "Insert Subreport" button in the Insert toolbar.
2. In the "Insert Subreport" dialog box, select how you want to create the subreport using the two options displayed: "Choose an existing report" or "Create a subreport with the Report Wizard." If you select the first option, then click the "Browse..." button to invoke the "Open" dialog box where you can choose which report you want to embed as a subreport within the main report. If you wanted to create the subreport "on-the-fly" within the primary report, you can instead choose the latter option button and then click the "Report Wizard..." button to launch the Report Wizard dialog box which steps you through the creation of a standard report.
3. You can check the "On-demand subreport (similar to a hyperlink)" checkbox to create a subreport which doesn't display its data until the user double-clicks on the subreport link to drill-down and display the subreport data on another "Preview" tab.
4. Assuming you wanted to create an unlinked subreport, you could just click the "OK" button at this point and then click into the report at the place where you wanted to display the subreport data. However, if you wanted to create a linked subreport, you must then click the "Link" tab in the "Insert Subreport" dialog box.
5. On the "Link" tab, you use the "For subreport:" drop-down to choose which subreport to link to from the drop-down displayed.
6. Then in the "Container Report field(s) to link to" list, select the report field or underlying database field which will serve as the basis for the link between the data in the two reports.
7. Click the ">" arrow button to move the selected field(s) into the "Field(s) to link to:" list at the right side of the dialog box.
8. At the bottom of the dialog box, use the drop-down at the left side of the dialog box to select the parameter field to use from the primary report, and the associated field from the subreport to use for the link from the drop-down at the right side of the dialog box.
9. Once the association between the fields has been created, just click "OK" at the bottom of the dialog box.
10. Then click into the position within the report at which you want to place the linked subreport.

## CREATING REPORT ALERTS:

1. Choose "Report| Alerts| Create or Modify Alerts..." from the Menu Bar to launch the "Create Alerts" dialog box.
2. Click the "New" button in the dialog box to launch the "Create Alert" dialog box.
3. Type a name for the alert into the "Name" text box.
4. Type the message that you want to display when the condition which you will set is met into the "Message" text box. If you wish to create a formula that displays a text value or makes reference to other report fields, you can instead click the "X+2" button to the right of the "Message" text box and then create the formula in the "Formula Editor" which you will display when the criteria is met.
5. Click the "Condition..." button to invoke the Formula Editor where you can create the formula, that when met, will trigger the display of the message which you created. Then click "Save and Close" in the Formula Editor window to return to the "Create Alert" dialog box.
6. You can then click "OK" in this dialog box to return to the "Create Alerts" dialog box.

# ACTIONS-

## ADVANCED REPORTING TOOLS

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### ENABLING AND DISABLING REPORT ALERTS:

1. Choose “Report| Alerts| Create or Modify Alerts...” from the Menu Bar to launch the “Create Alerts” dialog box.
  2. Select the name of the alert to turn on or off from the list shown, and then click the “Edit...” button.
  3. If the “Enabled” checkbox is checked, the alert is “on.” You can always uncheck this checkbox to turn an alert “off” without having to delete the alert.
  4. Click “OK” when you are finished to return to the “Create Alerts” dialog box.
- 

### DELETING REPORT ALERTS:

1. Choose “Report| Alerts| Create or Modify Alerts...” from the Menu Bar to launch the “Create Alerts” dialog box.
  2. Select the name of the alert to delete from the list shown, and then click the “Delete” button to delete the selected alert.
- 

### EDITING REPORT ALERTS:

1. Choose “Report| Alerts| Create or Modify Alerts...” from the Menu Bar to launch the “Create Alerts” dialog box.
2. Select the name of the alert to edit from the list shown, and then click the “Edit...” button to edit the selected alert in the “Edit Alert” dialog box.
3. Click “OK” when you are finished making your changes to the report alert.

# EXERCISES-

## ADVANCED REPORTING TOOLS

### Purpose:

1. To be able to apply advanced reporting tools to enhance reports in Crystal Reports 10.

### Exercises:

1. Open Crystal Reports 10 and click “Cancel” in the “Welcome to Crystal Reports” dialog box.
2. Select “File| Open...” from the Menu Bar to launch the “Open” dialog box.
3. Navigate to the “My Documents” folder where you stored the “Customer Order Report” which we created in the “Chapter 11- Exercise.”
4. Click on the “Customer Order Report” to select it, and then click the “Open” button to open it.
5. Click on the “Parameter Fields” entry to select it, and then click the “New” button in the toolbar at the top of the “Field Explorer” pane.
6. In the “Create Parameter Field” dialog box, type “Customer” into the “Name:” text box.
7. In the “Prompting text:” text box you can type the following text: “Select the names of the customers for which you wish to view the sales totals from the drop-down below.”
8. Select “String” from the “Value type:” drop-down.
9. In the “Options” section, check the “Allow multiple values” checkbox.
10. Ensure that the “Discrete value(s)” option is selected.
11. Click the “Default Values...” button to launch the “Set Default Values” dialog box.
12. Use the “Browse table:” drop-down to select “Customer.”
13. Use the “Browse field:” drop-down to select “Customer Name.”
14. Click the right-pointing, double-arrow button “>>” to move the selected values from the list at the left side of the dialog box to the list at the right side of the dialog box.
15. In the lower right corner, select “Alphabetical ascending” from the “Order:” drop-down.
16. Ensure that “Value” is selected from the “Order based on:” drop-down.
17. Click “OK” at the bottom of the dialog box to return to the “Create Parameter Field” dialog box.
18. Click “OK” at the bottom of the “Create Parameter Field” dialog box.
19. Select “Report| Select Expert...” from the Menu Bar.
20. In the “Choose Field” dialog box which appears, click on “Customer.Customer Name” to select it.
21. Click “OK” to launch the “Select Expert” dialog box.
22. On the “Customer.Customer Name” tab, use the drop-down to select “is equal to” at the left side of the dialog box.
23. Use the drop-down which appears to the right to choose **{?Customer}** from the top of the drop-down list.
24. Click “OK” to set the selection criteria.
25. Select “File| Print Preview” from the Menu Bar to view the report on the “Preview” tab. If you already have a “Preview” tab, you can just switch to the “Preview” tab and then choose “Report| Refresh Report Data” from the Menu Bar to invoke the “Enter Parameter Values” dialog box.
26. In the dialog box, use the “Discrete Value” drop-down to select “Aruba Sport.”
27. Click the “Add” button to add them to the “Value” list box.
28. Use the “Discrete Value” drop-down to choose “Bikefest.”
29. Click the “Add” button to add them to the “Value” list box.
30. Click “OK” to view the sales totals for the two selected customers.
31. Select “File| Save” from the Menu Bar.
32. Select “File| Close” to close the report.

# EXERCISES-

# ADVANCED REPORTING TOOLS

## Purpose:

1. To be able to apply advanced reporting tools to enhance reports in Crystal Reports 2011, 2008 & 11.

## Exercises:

1. Open Crystal Reports 2011, 2008 or 11.
2. Select "File| Open..." from the Menu Bar to launch the "Open" dialog box.
3. Navigate to the "My Documents" folder where you stored the "Customer Order Report" which was created in the "Chapter 11- Exercise."
4. Click on the "Customer Order Report" to select it, and then click the "Open" button to open it.
5. Click on the "Parameter Fields" entry to select it, and then click the "New" button in the toolbar at the top of the "Field Explorer" pane.
6. In the "Create New Parameter" dialog box, type "Customer" into the "Name:" text box.
7. Select "String" from the "Type:" drop-down.
8. Select "Static" from the "List of Values:" choices.
9. Select "Customer Name" from the "Value Field" drop-down.
10. Select "Customer Name" from the "Description Field" drop-down.
11. Click the "Actions" button and select "Append all database values."
12. In the "Options:" section, enter the following "Prompt Text:" string: "Select the names of the customers for which you wish to view the sales totals from the drop-down below."
13. Set the "Prompt With Description Only" option to "True."
14. Set the "Allow custom values" option to "False."
15. Set the "Allow multiple values" option to "True."
16. Ensure that the "Allow discrete values" option is set to "True."
17. Click "OK" at the bottom of the "Create New Parameter" dialog box.
18. Click the "Select Expert" button within the Experts toolbar.
19. In the "Choose Field" dialog box which appears, click on "Customer.Customer Name" to select it.
20. Click "OK" to launch the "Select Expert" dialog box.
21. On the "Customer.Customer Name" tab, use the drop-down to select "is equal to" at the left side of the dialog box.
22. Use the drop-down which appears to the right to choose **{?Customer}** from the top of the drop-down list.
23. Click "OK" to set the selection criteria.
24. Select "File| Print Preview" from the Menu Bar to view the report on the "Preview" tab. If you already have a "Preview" tab, you can just switch to the "Preview" tab and then choose "Report| Refresh Report Data" from the Menu Bar to invoke the "Enter Values" dialog box, if needed.
25. In the "Enter Values" dialog box, select "Aruba Sport" from the "Available Values:" list.
26. Click the ">" button to add "Aruba Sport" to the "Selected Values:" list.
27. Select "Bikefest" from the "Available Values:" list.
28. Click the ">" button to add "Bikefest" to the "Selected Values:" list.
29. Click "OK" to view the sales totals for the two selected customers.
30. Select "File| Save" from the Menu Bar.
31. Select "File| Close" to close the report.