3

Creating Reports: Advanced Techniques

Bringing data into your report is the crucial, first step in creating a lively and informative report, but there is much more you can do with that raw data using ReportSmith's data manipulation tools. This chapter describes how to manipulate data in reports, including:

- sorting data using criteria you set.
- grouping data into meaningful sets, either in the report or before creating it.
- creating summary fields.
- creating derived fields.
- creating report variables.
- creating a master/detail report.

Parts of a report

The illustration shown in Figure 3.1 depicts a typical report and labels the constituent parts. Although the particular arrangement of these parts will vary depending on the report type and style you have selected, the parts themselves remain constant and can be manipulated in a variety of ways. For example, you might choose to display the data displayed in ascending or descending, alphabetical or numerical order (based on fields you choose), or edit the information displayed in the headers or footers.

Figure 3.1: Parts of a typical report
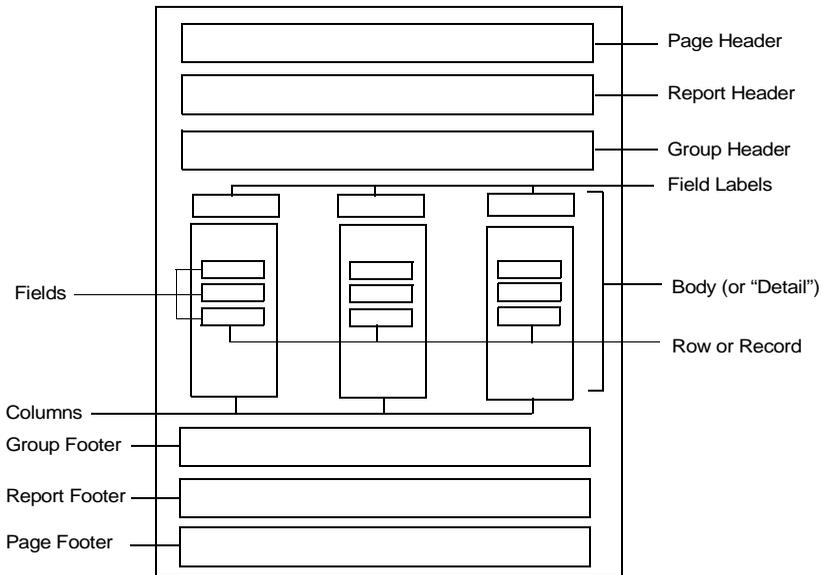
The action you perform on one selected item applies to all items in that category. For example, if you select a group footer and add a border, borders appear in all instances of that group footer.

Headers and footers

The page or report header typically contains information relevant to the report as a whole or to the particular page being viewed. For example, the report header might contain the report title, the date the report was created, and the author's name. The page header might contain the page number and a bitmap. Like the page or report header, the page or report footer also typically contains information relevant to the report as a whole or to the particular page being viewed.

The page header prints at the top of each page, and the page footer prints at the bottom of each page. The report header, which prints after the page header, is different because it prints only on the first page of the report. Similarly, the report footer, which prints before the page footer, also prints only on the first page of the report.

Group headers present information about the particular data group being viewed—for example, the group name and a brief description of the data contained in the group. Group footers might contain totals or other similar information.

Field labels

Field labels name the fields shown in the report. By default, ReportSmith uses the field names from the original data source (or the column alias) as the field labels in the report, but you can edit field labels as needed. Recurrence of field labels in the report can be controlled through ReportSmith's Insert|Field Labels menu command (explained later in this chapter).

Fields

Fields are items of data from the table(s) specified in your report query. For example, a field might contain a single customer's last name in a column named "Last name," with the data having been obtained from a source table called "Customers."

Sorting data

For the data in your report to be meaningful and easily read, it must be sorted into a discernible and logical order. You can sort data columns in a report in ascending or descending order (based on the data type contained in that column), combining and interrelating these actions to create a logical sort order for your report data.

ReportSmith offers two means of sorting data: the Sort buttons on the toolbar (located at the top of the ReportSmith application window), and the Tools|Sorting menu command.

Note: In some cases, ReportSmith sorts data for you, such as when you press a Header or Footer button.

■   To sort data with the toolbar:

1   Select a column in your report you want to sort:
   • In a columnar report, click the field label (column name) or the data contained in the column.
   • In another report type (form, or label), click the field itself in a data category (column) you want to sort.

2   Choose a Sorting button:
   • ![icon] to sort in ascending order.
   • ![icon] to sort in descending order.

Fields within the selected column are sorted in ascending or descending order.

Use the Tools|Sorting menu command to refine the sorting order or to construct a more sophisticated sort order.

■　To sort data using the menu command:

1　Choose Tools|Sorting.

—or—

Choose the Sorting option in the Report Query dialog box.

The Report Query - Sorting dialog box appears, as in Figure 3.2.

Figure 3.2: The Report Query- Sorting dialog box
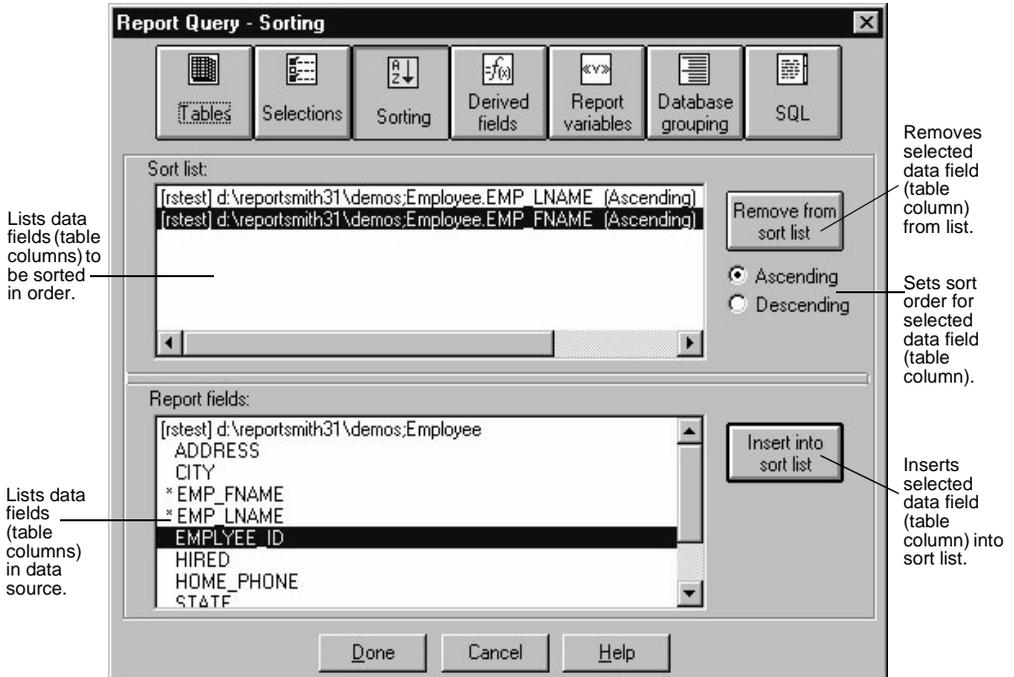
2　Select a field from the Report Fields list box, then choose Insert Into Sort List.

The selected field appears in the Sort List box. An asterisk appears beside sorted fields in the Report fields list box.

3　For each field in the sort list, choose Ascending or Descending as the sort order within that field.

Note:　The Ascending or Descending options apply only to records within this data field (table column). The listed order in the sort list is the order in which ReportSmith sorts data fields (table columns) themselves. Thus, in Figure 3.2, ReportSmith sorts the employee last names in ascending order (Allessandrini, Jones, Robinson, Williams, and so on). Then, within identical last names, ReportSmith sorts employee first names in ascending order (Allessandrini, Giovanna followed by Allessandrini, Pavel followed by Allessandrini, Xavier, and so on).

4 Repeat steps 2 and 3 for each field you want to add to the sort list.

5 When finish building the sort list, choose Done.

Note: Remember that, for purposes of data sorting, "report field" refers to all entries within a given table column, not just a single entry in that column.

■ To remove a sort instruction:

1 Select the data field in the Sort list box that you want to remove from the sort list.

2 Click Remove From Sort List button, as shown in Figure 3.2.

ReportSmith removes the data field from the Sort list box, as well as the asterisk next to the same data field in the Report Fields list box. Removing this asterisk indicates that the field is no longer selected for sorting.

3 Click Done in the Report Query - Sorting dialog box.

ReportSmith removes the sort criteria that you selected from the report and refreshes the report.

Grouping data

Besides sorting the data in report fields, you can "cluster" data into groups based on fields you select. For example, you might choose to display data grouped by customer name or by employee identification number. Like data sorting, data grouping can be arranged in hierarchical and interrelated patterns to create meaningful and easy-to-read blocks of data within your report.

ReportSmith enables you to group data:

• after you load it into your report, using Report Grouping.
• on the server before loading it into your report, with Database Grouping.

You can use both types of grouping in one report.

Report grouping

Use the Report Grouping command to group data after it has been loaded into your report. There are two ways to do this:

• Using the Header or Footer Super Grouper toolbar buttons.
• Using the Tools|Report Grouping menu command.

This section describes both methods.

■ To use the toolbar to group data:

1 Select a column on your report to use as a grouping basis.

2 Click the Header Super Grouper button 🗐 or the Footer Super Grouper button 🗐 to sort/group the data based on the selected field and to insert a header or footer in each group.

Headers and footers are discussed in detail later in this chapter.

■ To use the Tools|Report Grouping menu command to group data:

1 Choose Tools|Report Grouping.

The Define Groups dialog box appears, as shown in Figure 3.3.

Figure 3.3: The Define Groups dialog box

Toggles field list between data fields and derived fields.

Lists available fields.

Creates new group based on selected field.

Lists defined groups in this report

Deletes selected group.

Opens Group Properties dialog box.
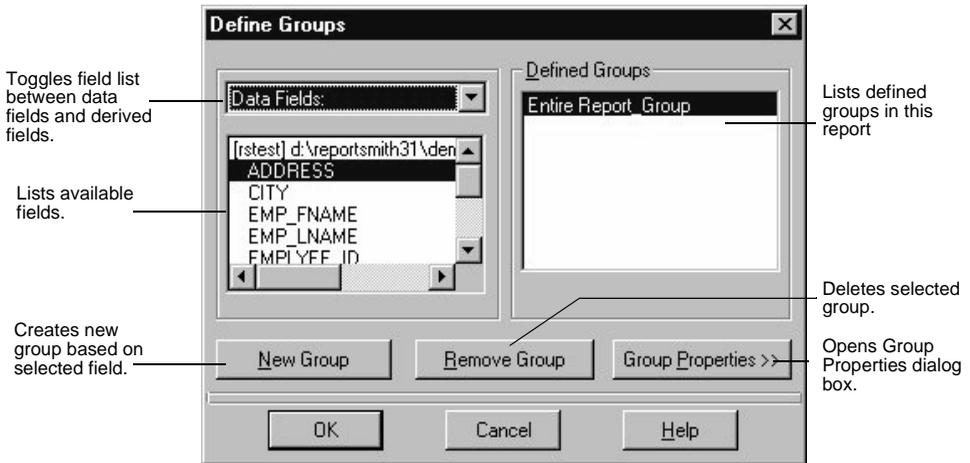
2 Select a field type from the upper left list box.

The type of field you select populates the list below it with field names associated with the data type. (The contents of this list depend on the types of fields contained in your report.)

3 Select a field, then choose New Group to place it into the Defined Groups list.

4 Repeat step 3 for each field by which you want to group.

5 Choose Group Properties.

The Group Properties dialog box appears, as shown in Figure 3.4.

Figure 3.4: The Group Properties dialog box

Name of group, typically the same as field on which it is based.

Defines grouping. "Same value" creates single group as long as field value is the same. "Every ___ records" prompts for exact number of records in each group.

Lists fields in table. Fields with duplicate values suppressed are marked with an asterisk.

Resets group properties.

Suppresses duplicate values in selected field.
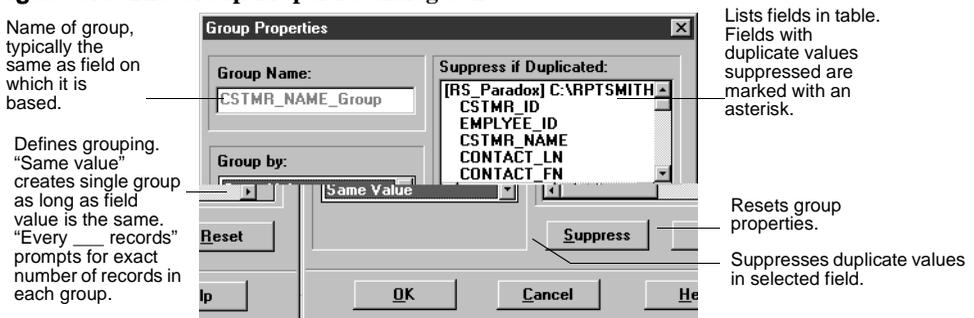
6 Use the features of this dialog box, as shown in Figure 3.4, to set the appropriate group properties.

7 Click OK to set the properties for the defined group and return to the Define Groups dialog box.

8 Click OK to complete the group definition.

ReportSmith now groups the report data according to the parameters you have set in the Define Groups and Group Properties dialog boxes.

Note: When using this grouping method, sort the data before grouping it to avoid unnecessary entries.

Inserting a header or footer

When using report grouping, you can choose to create groups based on a selected field and insert a header or footer in each occurrence of that group. ReportSmith offers you two methods for placing headers or footers into your report:

- Header and Footer toolbar buttons
- The Insert|Headers/Footers menu command

Note: When you use the Header or Footer Super Grouper toolbar buttons, ReportSmith sorts *and* groups the data based on the field you select and places a header or footer into each group. To insert a header or footer for data already sorted and grouped, use the Insert|Headers/Footers menu command.

■ To sort and group data with the Header and Footer Super Grouper buttons:

1 Select the column in your report by the data you want to group.

In the following example, the ACCT_NBR column has been selected.

2 Choose the Header Super Grouper button 🔲 or Footer Super Grouper button 🔲 on the toolbar.

ReportSmith sorts and groups the data, and inserts a header or footer. Figure 3.5 shows a group footer that appears with each group (customer name), showing the number of sales to that customer.

Figure 3.5: **Group Footer**

Footers

ReportSmith sorts and groups your data based on the field you selected. Additionally, it labels the header. In the preceding example, the header is called "Group Header ACCT_NBR group."

■ To insert a header or footer using Insert|Headers/Footers:

Note: Unlike using the Header and Footer Super Grouper buttons, you must first sort and group your data <u>before</u> using Insert|Headers/Footers. For further details on how to sort and group data, please refer to "Sorting data" on page 49 and "Grouping data" on page 51.

1 Choose Insert|Headers/Footers.

The Header/Footer dialog box appears, as shown in Figure 3.6.

Figure 3.6: **The Header/Footer dialog box**

2 Choose a Group Name, and then select a Group Type option.

3 Repeat step 3 for each group you want to create. (The preceding example inserts a page header.)

4 Click OK to close the dialog box. ReportSmith displays the results of grouping in your report.

Database grouping

You can also use ReportSmith's database grouping feature to "filter" data before loading it into your report. This can often boost performance when dealing with large numbers of records or when summarizing data. For example, suppose you have a database containing information about 10,000 employees from ten departments, and you want a report displaying a sum of salaries in each department. To increase performance, you would use Database Grouping to have ReportSmith evaluate the data on the server and then download just the ten records containing the summary information.

■ To group data on the server:

1 Choose Tools|Database Grouping.

—or—

2 Choose the Database Grouping option in a Report Query dialog box. The Database Grouping dialog box appears, as shown in Figure 3.7.

Figure 3.7: The Database Grouping dialog box
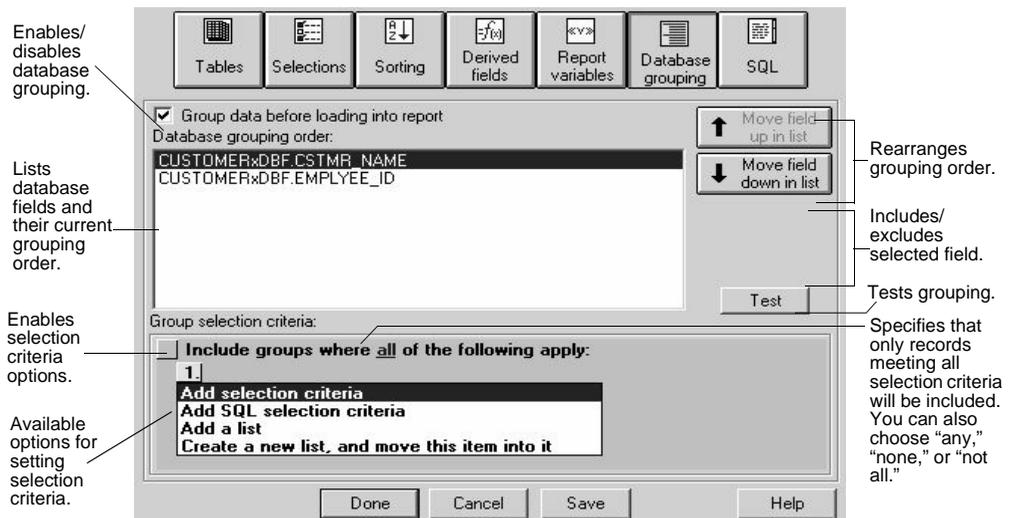
3 Choose Group Data Before Loading Into Report.

A list of fields from your report appears in the Database Grouping Order window, and options in the dialog box become enabled. The upper portion of the dialog box defines the fields by which you want to group, generating an SQL Group By clause. The lower portion of the dialog box sets which groups to include in your report and their selection criteria by generating an SQL Having clause.

4 Select a field by which to group and use the ordering buttons to position it in the list. The order in which you place fields in the list is hierarchical, moving from highest to lowest grouping order.

5 Include or exclude a field from grouping, as appropriate.

The Exclude Field option is disabled for tables that contain a unique value. This means you must group by every field that contains a unique value per record. Conversely, you can exclude fields that do not contain a unique value per row, such as calculated fields.

Use the Tables - Columns dialog box to explicitly exclude from the report any database field you do not want to use in a database grouping,

6 To select groups to include in your report, insert a sentence into the selection criteria in the lower portion of the dialog box and choose an operator:

• "All" specifies that records must meet *every one* of the following selection criteria.

• "Any" specifies that records need only meet *any one* of the following selection criteria.

• "None" specifies that records must *not meet any* of the following selection criteria.

• "Not all" specifies that records must meet *at least one* of the following selection criteria, but *must not meet all* of them.

7 Choose Test before loading data into your report to find and eliminate any errors in your query before ReportSmith executes the underlying SQL.

8 Click Done when you have finished database grouping.

Searching for data

ReportSmith searches your reports to locate specific data. It also displays the number of items found on each page.

■ To search for data:

1 On the Edit menu, choose Find.

ReportSmith displays a Find dialog box.

Figure 3.8: Find dialog box
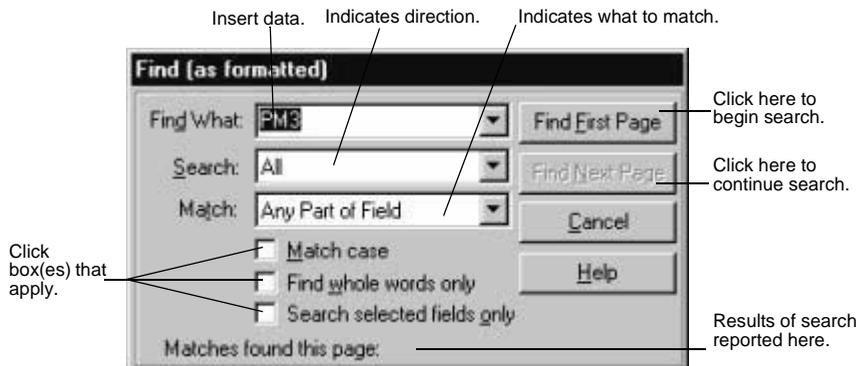
2 In the Find What text box, type the data you are searching for.

3 In the Search text box, select the direction in the report you want ReportSmith to search: up, down, or all of it.

4 In the Match text box, select the part of the entry you want ReportSmith to match: any part, whole, or start of the field.

5 Check the box(es) that apply:
   a. **Match Case —** This command is case sensitive.
   b. **Find Whole Words Only** — ReportSmith finds only the entire word, not series of characters used as a prefix, suffix, or root of a word.
   c. **Search Selected Fields** — This is reserved for data in a columnar report. ReportSmith searches only those fields in the report you select.

6 Click Find First Page.

ReportSmith identifies the data it finds with a blue box and records the number of items found on that page. ReportSmith activates The Find Next Page button.

If the report has multiple pages, click Find Next Page. ReportSmith continues searching until all instances of the specified data that match the requirements are found. ReportSmith displays a message box indicating the search is complete.

Specifying selection criteria

The data sorting and grouping you have performed up to this point have been based primarily on *columns*, but you can also choose which *rows* to display in your report by specifying selection criteria.

Selection criteria limit the data set to display only specific records, reducing the size of data and making it more focused. ReportSmith includes a record in your data set only if it meets your criteria. You can specify one criterion or multiple criteria for ReportSmith to match your data. The following example specifies multiple criteria: records where HIRED is greater than or equal to January 1, 1992 or TITLE is equal to "Sales."

By changing the selection criteria so that both conditions must be met—HIRED must be greater than January 1, 1992 *and* TITLE must be equal to "Sales"—the data can be refined even farther:

EMPLOYEE ID	Last Name	First Name	Hired	Title
E1-23	Rimbaud	Arthur	2/28/1992	Sales
E3-25	Keats	John	8/9/1992	Sales
E2-12	Ginsberg	Allen	6/6/1992	Sales

Employee Report

ReportSmith offers you two ways to specify selection criteria for your reports:

- The Selections dialog box
- The Field Selection Criteria dialog box

This section explains both methods.

Note: When specifying selection criteria, use the SQL "wildcard" characters to indicate unknown or variable portions of the criterion. The "_" (underscore) character is used to represent any single, valid alphanumeric character—this is roughly equivalent to using the "?" character in DOS commands. When you are not sure of either the specific characters or how many of them there will be, use the "%" (percent) character instead—this is roughly equivalent to using the "*" character in DOS commands.

Using the Selections dialog box

You can use ReportSmith's Selections dialog box to specify which records you want to display on your report. You can use English sentences (as opposed to SQL) to construct the selection criteria, building a basic outline which you can modify. You can also use SQL to create your selection criteria.

To specify selection criteria:

1 Choose Tools|Selections

—or—

In the Report Query dialog box, choose the Selections option.

The Report Query - Selections dialog box appears, as shown in Figure 3.9.

Figure 3.9: The Report Query - Selections dialog box (default view)

Specifies that only records meeting all selection criteria will be included. You can also choose "any," "none," or "not all."

Opens list of options for adding selection criteria.
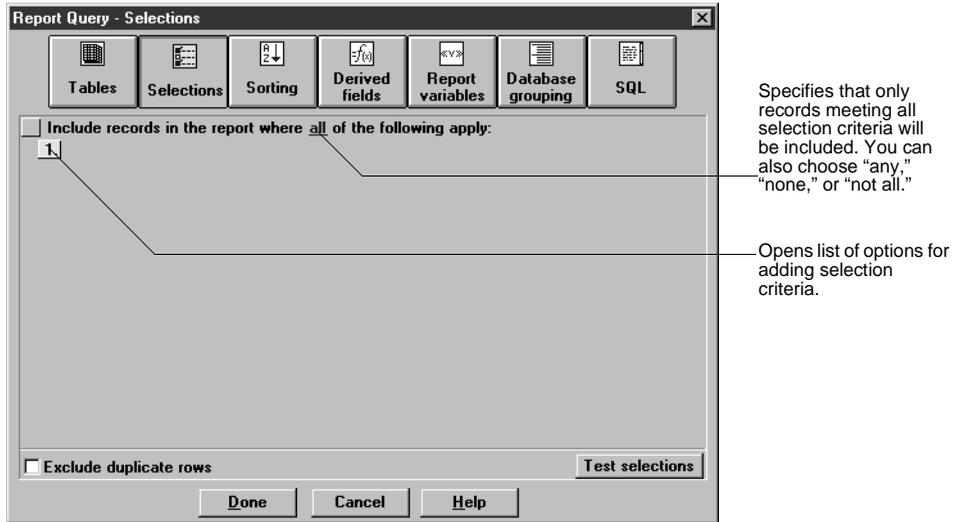
2 Click the number where you want to place a new sentence. (In the preceding dialog box, click on **1.**)

   ReportSmith displays a list of choices for adding or deleting items.

3 Choose the Add Selection Criteria option.

4 In the resulting sentence, click each underlined section to select from a list of options for that section until the sentence represents the desired selection criterion.

5 Check the Exclude Duplicate Rows option to avoid including any rows that contain the same data as another row.

   As you choose items in a sentence, ReportSmith dynamically alters the outline of the sentence.

The following example shows the selection criteria used to create the data listings shown at the beginning of this section. The user first clicked the number and chose Add Selection Criteria, then clicked on each section of the displayed sentence to view a list of choices for that section. For example, clicking on EMPOYEE.TITLE in the following example opens a list of available fields while clicking on Sales opens an edit box into which you can type the text to be matched.

Once a sentence has been entered and modified, you can click the sentence's number again to view the list of options for adding more selection criteria or deleting existing criteria.

After you create your selection criteria, press the Test Selections button to see the number of records that they retrieve.

- To delete an item or a list:

    1 To delete a list, select the number corresponding to it.

    —or—

    To delete an item in a sentence, click to select it.

    2 Press the *Delete* key or select Delete This Item from the drop-down list.

    If you select a list, ReportSmith removes the list and its subcriteria from the construct. If you select an item, ReportSmith removes that item.

Using the Field Selection Criteria dialog box

By using the Field Selection Criteria dialog box, you can choose fields for your selection statement.

- To open the Field Selection dialog box:

    1 Right-click a column, then choose Selection Criteria from the pop-up menu.

    —or—

    Choose Tools|Field Selection Criteria.

    The Field Selection Criteria dialog box appears, as shown in Figure 3.10.

Figure 3.10: The Field Selection Criteria dialog box
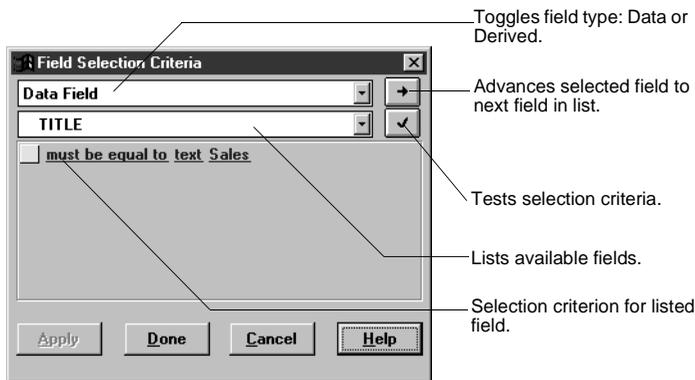
2 Use the features of this dialog box, as shown in Figure 3.10, to set the appropriate field selection criteria.

Use this dialog box to create basic selection criteria for a report from the report surface (instead of navigating through the Report Query dialog boxes).

You can also drag and drop fields from your report into the selection criteria.

- To set field selection criteria by dragging and dropping, select a field value on your report and drag it into the dialog box. ReportSmith creates the selection criterion for you.

The following example shows how the user dragged "Yates" from the CONTACT_LN column and dropped it into the field selection criteria line.

ReportSmith modifies the selection criteria according to the field you drag and drop into the dialog box.

You see the "grab" cursor when you drag and drop items from your report and place them into the dialog box. Depending on the selection criteria you create, you'll see one of the following drop cursors:

■ ➡ ■	If you drop the field in the current area, you insert the text field you grabbed into the current area.
➡ ✛	If you drop the field in the current area, you add selection criteria.

■ To change the selection criteria directly in the completed report:

1 Open a report and select a column you'd like to modify.

2 Right-click and choose Selection Criteria from the pop-up menu.

—or—

Choose Tools|Field Selection Criteria.

The Field Selection Criteria dialog box appears. If necessary, you can choose from the drop-down list boxes to select the field type and particular field whose criteria you want to modify.

3 Click on **may be any value** (the default selection criterion) to see a list of options and select the appropriate criterion from the list.

4 Select the appropriate criterion from the drop-down list.

Depending on the criterion you select, ReportSmith inserts default list types for the criterion statement or appends additional criteria for you to further narrow the field selection.

If you have specified a selection criterion that involves use of a list (such as the must be in list statement, for example) ReportSmith inserts additional criteria: **of values**, specifying that the list will be one of values and not a formula, and **<values>**, for you to specify the values making up the list.

■ To specify list values:

1 In the Field Selection Criteria dialog box, specify a "list-type" selection criterion, then click on **<values>.**

The List Editor dialog box appears, as in Figure 3.11.

Figure 3.11: The List Editor dialog boxFigure 3.11

Toggles item types: text, formula, or report variable.

Entry box for user-specified text. Becomes a list for formula or report variable item types.

Deletes selected item from list.

Clears entire item list.

Adds specified item to list.

Replaces selected list item with new item.
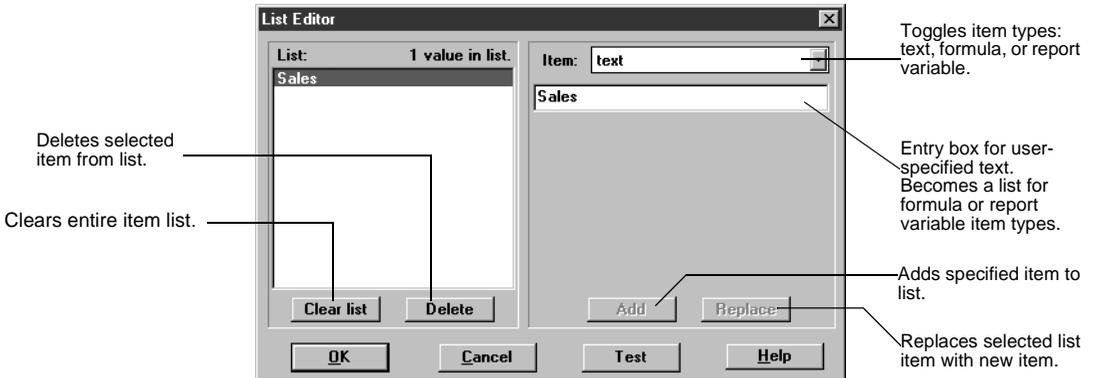
2 Use the features of the List Editor, as shown in Figure 3.11, to enter items and create a list of values.

—or—

Drag and drop the relevant data from the report into the List box of the List Editor dialog box.

3 Choose Test to test the list validity, or choose OK to close the List Editor dialog box and return to the Field Selection Criteria dialog box.

Note: If you entered your selection construct incorrectly, ReportSmith returns an error message. If this happens, correct the errors and test the list validity until you receive a success message.

4 In the Field Selection Criteria dialog box, choose Done to exit.

ReportSmith applies the modified selection criteria to your report and regenerates it for you with the specified values.

The changes you make in the Field Selection Criteria dialog box appear in the Selection dialog box.

Creating a derived field

A *derived field* is a custom field that doesn't exist in your tables, but is created from values contained in fields that *do* exist in those tables. You can create a derived field by combining two or more fields or by applying a calculation or formula to a field. For example, you might create a derived field by combining the EMP_FNAME and EMP_LNAME fields from your table, creating one field (FULLNAME) which contains both first and last employee names.

You can create two types of derived fields with ReportSmith:

• SQL-derived fields
• Macro-derived fields

SQL-derived fields

SQL-derived fields rely on Structured Query Language statements to specify the parameters used in the derivation.

■ To create a SQL-derived field:

1 Choose Tools|Derived Fields

—or—

Choose the Derived Fields option in a Report Query dialog box.

2 Enter a name into the Derived Field Name box. This name cannot be a table column name; it also becomes the field label for the derived field if you insert it as a column in your report.

The Report Query - Derived Fields dialog appears, as shown in Figure 3.12.

Figure 3.12: The Report Query - Derived Fields dialog box
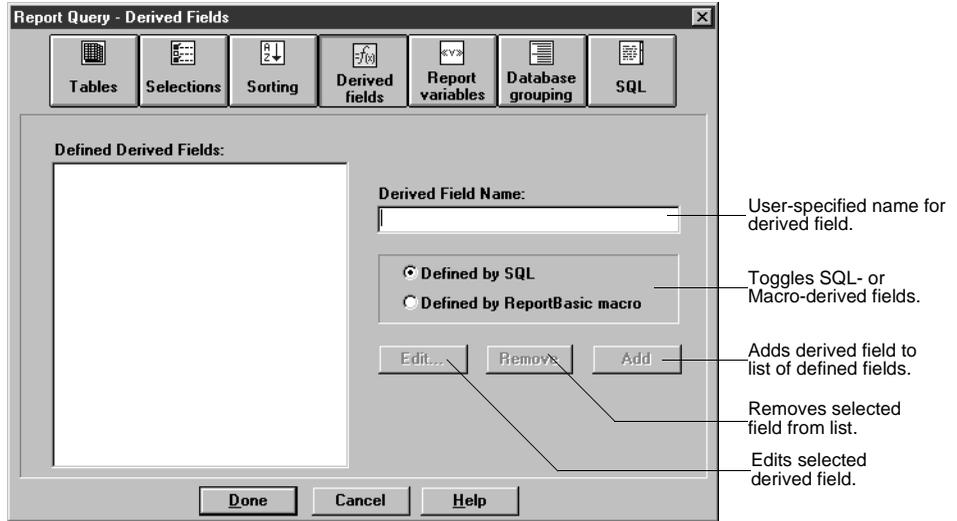
3 Choose the Defined By SQL option.

Note: Typically, ReportSmith uses SQL code to get the results of the derived field. This means your database, rather than ReportSmith itself, calculates the derived data.

4 Click Add.

ReportSmith displays the Edit Derived Field dialog box, as shown in Figure 3.13.

Figure 3.13: Edit derived field dialog box

Field List Box toggles between data fields, derived fields, and report variables.

Operator List Box lists operator categories to use in building the SQL query.

Function List Box lists function, constant, and keyword categories to use in building the SQL query. The options that display here depend on the type of database to which you are connected.

Data Fields: ▼	Arithmetic: ▼	String functions: ▼

CUSTOMERxDBF -- [DBASE
  CSTMR_NAME
  EMPLYEE_ID
	x+y Addition
	x-y Subtraction
	x*y Multiplication
	x/y Division
		LOWER(string) - Convert to l
		UPPER(string) - Convert to u
		TRIM(string) - Removes spac

Inserts selected fields, operators, or functions in the formula

Insert	Test	Clear	Cut	Copy	Paste	Undo	Zoom

Initiates a test run of the SQL formula.

Derived Field Formula:

OK   Cancel   Help   Load   Save

Formula window displays SQL statement as it is being built.

Incorporates formula into selected report.

Stores formula for future use.

5 Select elements from the Field, Operator, and Function list boxes (in any order). Click Insert after each selection. ReportSmith displays the selections in the Derived Field Formula Window.

6 When the formula is complete, check it for accuracy by clicking the Test button. ReportSmith will display an error message if any part of the formula is invalid.

Derived Field Error ✕

Invalid use of keyword. Line Number: 1 Token: BETWEEN

OK
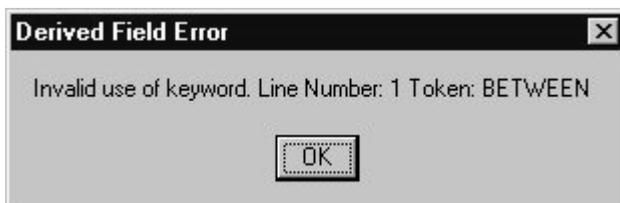
Edit the formula until you receive a successful message.

Derived Field ☒

Derived Field OK.

[OK]

7 The formula is correct. You have several options:

Click Save— ReportSmith stores the formula in the rptsmith.ini file for future use and returns to the Report Query-Derived Field dialog box.

—or—

Click Load— ReportSmith includes the formula in any selected report and returns to the Report Query-Derived Field dialog box.

Note: You may need to edit the formula according to the data fields selected. You edit the formula directly in the rptsmith.ini file or after loading it into another report.

8 Click Done. ReportSmith displays the new report.

Macro-derived fields

Typically, ReportSmith uses SQL code to obtain the results of a derived field formula, meaning that your database calculates the derived data. However, there may be information you need to show in a field that cannot be created by your database. For example, to derive a percent of a total, you need to select the Defined by a ReportBasic Macro option to create the derived field locally because SQL code can't access summary fields, which are calculated locally.

Note: This section is intended only as an overview of macro-derived fields to compare and contrast them to SQL-derived fields. A full discussion of macros appears later in this manual, and a reference to ReportBasic macros and their functions appears in Chapter 11: "Macro reference" on page 247.

To create a macro-derived field,

1 Choose Tools|Derived Fields

—or—

Choose the Derived Fields option in a Report Query dialog box.

The Report Query - Derived Fields dialog appears, as shown in Figure 3.12.

2 Enter a name into the Derived Field Name box. This name cannot be a table column name; it also becomes the field label for the derived field if you insert it as a column in your report.

3 Choose Defined by ReportBasic Macro, and then choose New.

The Choose a New Macro dialog box appears, as in Figure 3.14.

Figure 3.14: **The Choose A Macro dialog boxFigure 3.14**

Opens Edit Macro dialog box for creation of new macro(s).

Displays name of loaded macro, or accepts user-specified name of new macro.

Runs selected macro.
Loads existing macros.

Lists macros active for this report.

Removes selected macro from list of active macros.

Saves named macro.

Creates/edits macro links.

Toggles list of global or report-specific macros.

Saves macro to a new name and/or location.

Edits selected macro.

4 Choose New to create a new macro, or choose Load to add an existing macro to the Active Macros list.

The Edit Macro dialog box appears, as in Figure 3.15

Figure 3.15: **The Edit Macro dialog box**

Lists available report commands, dataset objects, NewReportDialog objects, and report objects.

Lists available data fields, derived fields, report variables and summary fields, grouped by originating data source.

Lists BASIC functions, BASIC statements, dialog box functions, and branching/looping statements.

Shows macro formula as it is being built.

Sets default values for macro argument (parameters).

ReportSmith has placed the first and last lines of your formula into the formula window. You do not need to re-enter them.

5 Enter the macro code into the Macro formula text box, or drag and drop from the boxes at the top of the window, to create your macro formula.

6 Choose Test to test your formula. If ReportSmith finds errors, correct them and press the Test button until you receive a success message.

7 When you have built the macro to your satisfaction, choose OK to return to the Choose A Macro dialog box.

8 In the Choose A Macro dialog box, choose OK to return to the Derived Fields dialog box.

9 Choose Done to exit the Derived Fields dialog box.

ReportSmith automatically inserts the derived field for you.

Creating a summary field

Once you have grouped the data shown in a report, you can create *summary fields* to perform operations on grouped data. For example, you might want to calculate the sum of order amounts from a particular customer. The data would be grouped under the customer's name, so you can create a summary field to total the order amounts for that group. After creating them, you can place summary fields in headers or footers, to provide quick overviews of the group data.

As with derived fields, ReportSmith provides two ways of creating summary fields:

- The ReportSmith toolbar
- ReportSmith menu commands

■ To create a summary field using the toolbar,

1 Select the column to which you want to apply the summary operation.

2 Click the operation you want to perform on the column.

For each group, sums values in selected column.

For each group, calculates average (mean) of values in selected column.

For each group, counts number of field entries in selected column.

For each group, finds maximum value in selected column.

For each group, finds minimum value in selected column.
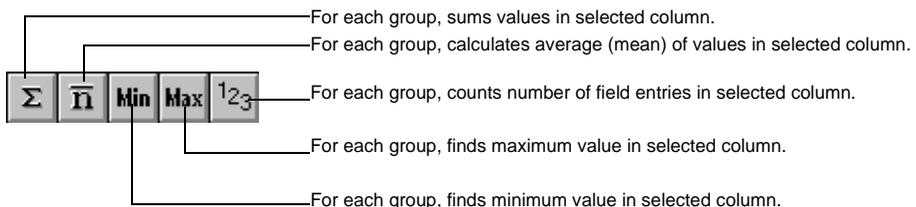
ReportSmith inserts the summary field into each footer you have created in your report. If you have not defined footers in your report, ReportSmith displays a message informing you to insert footers so that you can see the summary fields.

■ To create a summary field using the Tools|Summary Fields menu command,

    1 Select Tools|Summary Fields.

    The Summary Fields dialog box appears, as shown in Figure 3.16.

Figure 3.16: The Summary Fields dialog boxFigure 3.16

Lists all report groups. Select group to which summary field applies.

Lists summary fields and the report fields/tables from which they are created.

Removes selected summary field from group.

Lists report fields from which to create summary field.

Creates summary field and adds it to selected group.

Lists summary operations to be performed on selected report field (column).

    2 Select the appropriate report group and report field.

    3 Select the operation you want ReportSmith to perform in the Summary Operation list box. Table 3.1 shows the available summary functions:

Table 3.1: Summary Field operations

Operation	Function
Average	Calculates the average (mean) value for a selected numeric field.
Count	Calculates the number of records in the selected group.
First	Selects the first value in the selected group.
Last	Selects the last value in the selected group.
Maximum	Calculates the maximum (highest) value in the selected group.
Minimum	Calculates the minimum (lowest) value in the selected group.
Std Deviation	Calculates the average standard deviation from the mean in a large report of data, as the square root of the variance.
Sum	Sums values for a selected group.
Variance	Calculates the variance from the mean in a report of data, as the square of the standard deviation. It is the measure of the amount by which all values in a group vary from the average value in the group.
Cumulative Sum	Calculates a cumulative ("running") total for the group. In a page header/footer, it represents the total for the page.

Note: These operations are intended for *group* summary fields. See "Creating a summary field" on page 68 concerning how to insert a *page* summary field.

 4 Choose Add to Group to create a summary field based on the field and operation you chose .

 5 When you finish creating summary fields, choose OK.

Note: In order to view summary fields, you must insert headers or footers into the report.

■ To insert headers and footers,

 1 From ReportSmith's Insert menu, select Header/Footer option.
   ReportSmith displays a dialog box.

 2 Select Group Name.

 3 Click Group type.

 4 Click OK.

 Then,

■ To view summary fields,

 1 From the Insert menu, click Field.
   ReportSmith displays Insert Field dialog box.

 2 From the drop down list, choose Summary Fields.

 3 In the Field Name list box, select the field you wish to view.

 4 Drag and drop the selected field in the appropriate location of the header or footer.
   A summary is printed for the entire column.

 Once you have created a summary field, you may want to save your report.

■ To save the report,

 1 On the File menu, choose Save As.
   ReportSmith displays the Save As dialog box.

 2 In the Save In text box, choose the location in which to save your report.

 3 In the File name text box, type the name of your report.

 4 In Save as Type text box, select the format for saving your report.

Note: .rpt is the default type. If you select any other type, ReportSmith displays a 'Retain Formatting' box at the bottom of the Save As dialog box.

Figure 3.17: Save As dialog box
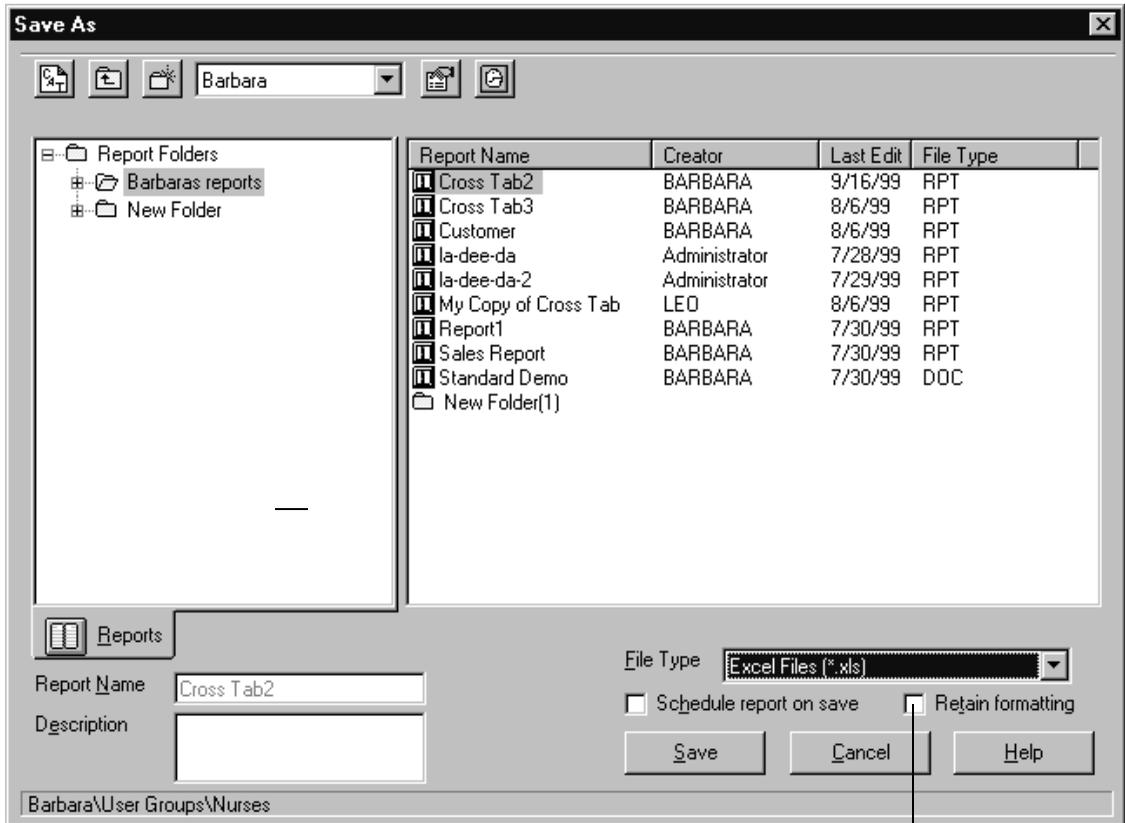
Click here to retain
new formatting.

5 Click the box to save the report with the new formatting.

Note: There are limitations to the formatting ReportSmith can reproduce. Generally, simple reports consisting of columns and rows (i.e. Columnar and Crosstab reports) work best. Complex reports, such as those involving random placement of graphical items, are not formatted exactly.

Creating a report variable

Besides derived fields and summary fields, you can add dialog boxes to your reports that prompt a user for specific information. These are called *report variables*. With them, you can customize a report to obtain different results depending on data the user enters in the dialog box. For example, you might want a user to specify a particular customer identification number so that your report can extract detailed data for that customer. Or, you might ask the user to specify the earliest date to show in the report. Neither of these parameters is preset or inflexible; they can each change depending on user input, and the report results change to reflect that input.

Data types and entry types

When creating a report variable, you have five data types to choose from:

- String
- Number
- Date
- Time
- Date and Time

There are also four entry types from which to choose. Any entry type can be used with any of the data types listed above:

- Type-in
- Choose from a list
- Choose from a table
- Choose between two values

The following table summarizes entry type options when paired with each data type:

Table 3.1: Data type and entry type pairing options

Data type	Entry options	Function
String	Type-in	Requires a user to type a response to the report variable. When you select this option, you can use the Maximize Size option to designate the maximum number of characters a user can enter. The default number is 2000.
	Choose from a list	Requires a user to select a response to the report variable from a list box. When you select this option, you must also specify the allowed values (values the user can select) in the Allowed Values list box.
	Choose from a table	Requires a user to choose values from tables and fields you've selected.

Table 3.1: Data type and entry type pairing options (continued)

Data type	Entry options	Function
	Choose between two values	Requires a user to choose a Yes or No value from a Message box or to choose from one of two values in a Dialog box. (The report variable returns the corresponding data value.) Specifies user prompts in the prompt boxes.
Number	Type-in	Requires a user to type the number response to the report variable. When you select this option, you must also specify additional parameters: • **Signed** determines whether a user can type a + or – sign. Disabled by default. • **Maximum** specifies the largest number a user can type. • **Minimum** specifies the smallest number a user can enter. • **Decimal** determines the number of decimal placesa user can enter. • **Spin** indicates that a spin button (an up and down arrow) appears beside the response area to allow a user to use the mouse to change the entered value.
	Choose from a list Choose from a table Choose between two values	See entry options under String, above.
Date	Type-in	Requires users to enter a date (in the format you have specified) in response to the report variable.
	Choose from a list	Requires users to select (from allowed values you have specified) a response to the report variable.
	Choose from a table	See entry options under String.
	Choose between two values	Requires users to: • Choose a Yes or No value from a Message box and then enter the date value using the spin and calendar buttons. —or— • Choose from one of two values in a Dialog box.
Time	Type-in	Requires a user to enter a time in a format you have specified.
	Choose from a list Choose from a table Choose between two values	See entry options under Date.
Date/ Time	Type-in Choose from a list Choose from a table Choose between two values	See entry options under Date and Time.

■ To create or modify a report variable,

    1 Choose Tools|Report Variables.

    The Report Query - Report Variables dialog box appears, as shown in Figure 3.18.

Figure 3.18: The Report Query - Report Variables dialog boxFigure 3.18
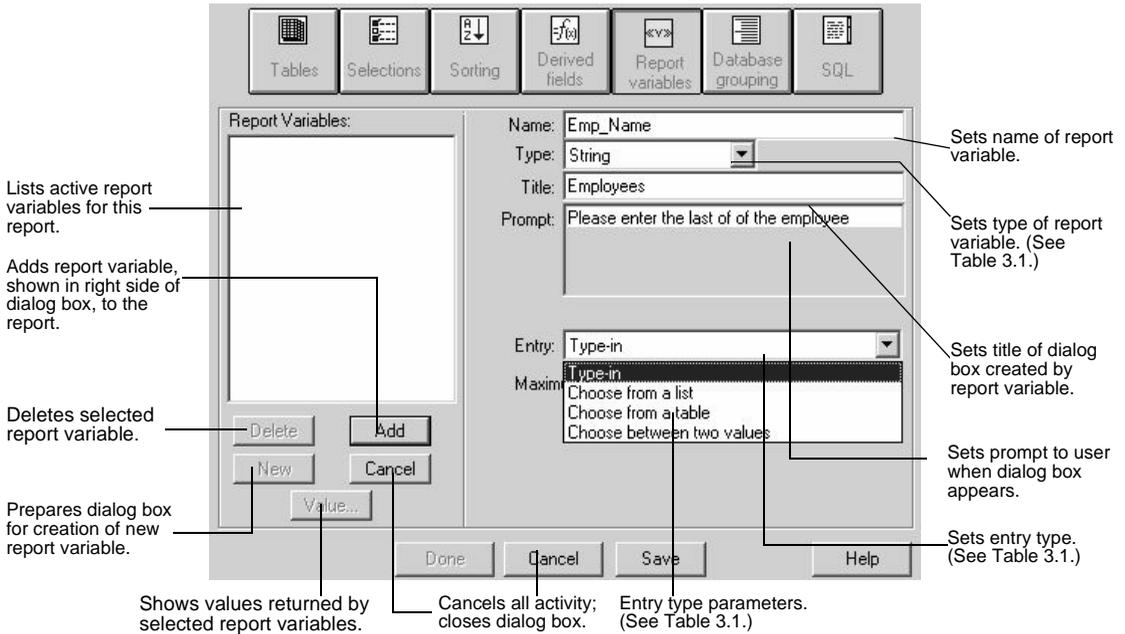
    2 In the Report Variables dialog box, select the report variable you want to modify from the Report Variables list.

      —or—

    In the right half of this dialog box, enter appropriate values for a new report variable.

    The settings for the selected report variable appear in the options.

    3 Modify settings as appropriate, and then choose Done.

Sample report variables

This section shows you how to create two report variables. The first prompts the user to enter the start date for the report so that sales by employee are selected after that date. The second prompts for the name of the salesperson whose sales you want to include in your report. You must include these report variables in a selections formula, letting you filter data before running the report.

This section describes the following:

- Creating a report variable
- Deleting a report variable
- Changing values within a report variable
- Modifying an existing report variable
- Using table-driven values for report variables
- Displaying versus using different values

Example 1: Entering or choosing a value

This example report variable prompts the user to enter a "start date" for the report. The report will list only data containing dates equal to or later than the date the user enters. The report variable created in this example is called STARTDATE.

1 Select Tools|Report Variables.

—or—

Press the Report Variables button in a Report Query dialog box.

The Report Query - Report Variables dialog box appears, as shown in Figure 3.19.

Figure 3.19: The Report Query - Report Variables
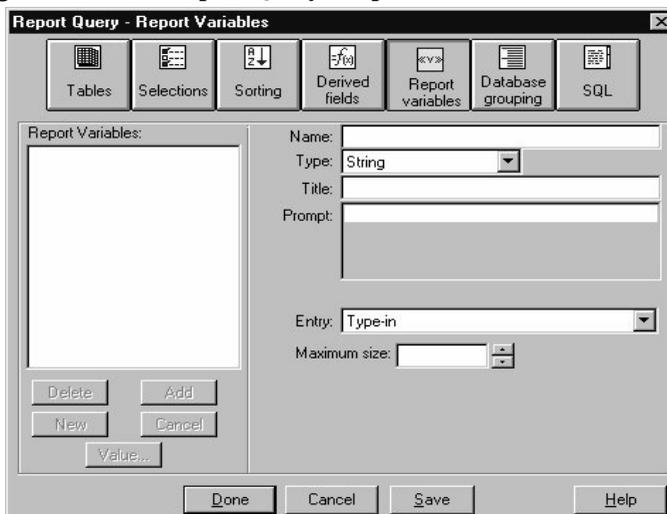
Use the Report Query - Report Variables dialog box to create report variables by entering information into each of the text entry boxes and choosing appropriate options.

2 Type the name STARTDATE for your report variable into the Name box.

Note: Names must begin with a letter and contain only letters, numbers, and underscores. If you use a report variable in selection formulas or derived-field formulas, you must type the report variable name *exactly* as it was entered when created, distinguishing between uppercase and lowercase letters.

3 Enter report variable options as follows:

- Use the Type combo box to choose *Date* as the type of response.
- Enter *Start Date* as the title for the example report variable. This is the title of the dialog box that appears when the report variable is activated.
- In the Prompt box, type the exact wording you want to appear as the user prompt—for example: Please enter the start date for this report.
- Use the Format combo box to choose *Default* (mm/dd/yyyy) as the date format.
- Use the Entry combo box to set ***Type-In*** as the method the user uses to specify values.

4 Choose Add to add the report variable you defined to the Report Variables list. You can view the dialog box created by the report variable by selecting the variable in the Report Variables list and choosing Value.

Setting a date value

When the dialog box created by your report variable appears, it prompts you to specify a start date for the report. To set a date value for a report variable, you can either type it in manually, or use ReportSmith's calendar.

■ To use ReportSmith's calendar in a report variable, click the calendar button next to the text entry box to see the calendar, then set the appropriate year, month, and day from the calendar.

Example 2: Choosing from a list

This example creates a second report variable called *Salesperson.* Instead of using the Entry option - Type-In, use the Entry option - Choose from a list, which enables you to type a list of names from which users can choose.

■ To create the *Salesperson* report variable,

1 Enter Salesperson as the name of the variable.

2 Select String as the variable Type.

3 Enter Salesperson as the name of the variable.

4 In the Prompt box, enter a prompt for the user:

Which salesperson do you want to see?

5 Choose From A List from the Entry drop-down list.

Now, you need to create a list of data from which the user can choose. Notice that when you select this option, settings in the dialog box change to display settings for Choose From A List.

6 Click the long text box beneath the Allowed Values list box, then enter the following values into the text entry box below, pressing the Add button (or the *Enter* key) after each one to add it to the Allowed Values list:

Blake
Ginsberg
Keats
Pound
Rimbaud
Snyder

As you enter the values, the Report Query - Report Variables dialog box looks similar to Figure 3.20.

Figure 3.20: Report Query - Report Variables dialog box - Creating a Report Variable
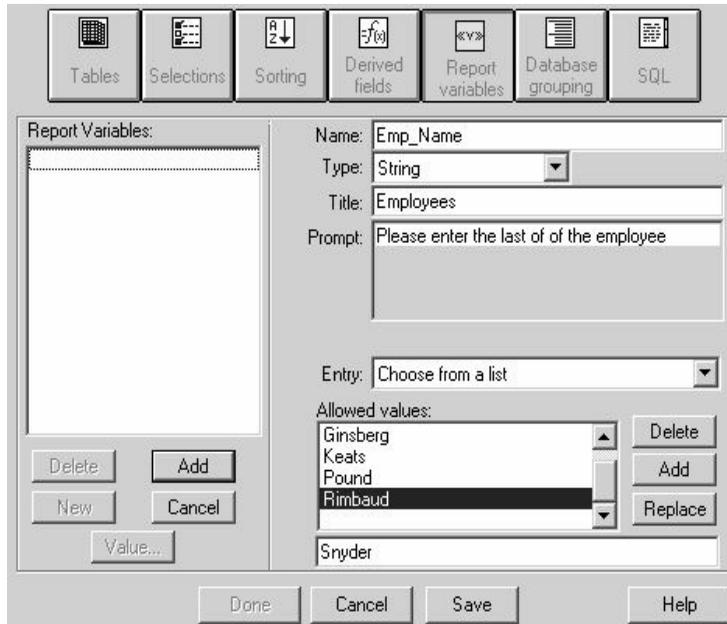
After you create this variable, you add it to the report list and test it before closing the Report Query - Report Variables dialog box.

7 Choose Add in the Report Variables frame to add the Salesperson report variable to the Report Variables list, then double-click the Salesperson variable to view and test the resulting dialog box.

Tip: Before you delete a report variable, make sure it isn't used anywhere else in your report.

After you create report variables, choose the Selections option of the Report Query dialog box to insert them into your selection criteria. By inserting the report variables into the Selection formula, ReportSmith selects only the necessary data to insert in your report based on the user's responses to the prompts.

■   To insert a report variable into the Selection formula,

Note: Your results for this procedure may vary depending on the database to which you are connected. For this exercise, connect to dBase (IDAPI) and add the following tables to your report: Customer.dbf and Employee.dbf.

1 Select Tools|Selections.

—or—

Click the Selections button in a Report Query dialog box.

ReportSmith displays the Report Query - Selections dialog box.

2 Click the highlighted "1." and choose Add Selection Criteria from its drop-down list, as shown in Figure 3.21.

Figure 3.21: Report Query - Selections dialog box

ReportSmith inserts a selection criteria line which you can alter to suit your report needs.

3 Click the field to the right of "data field", then choose from the drop-down list the field name for employees' last names. In this exercise, the field name is EMP_LNAME, as shown in Figure 3.22.

Figure 3.22: Report Query - Selections dialog box

4 Click "text" and choose "report variable" from the drop-down list, as shown in Figure 3.23.

Figure 3.23: Report Query - Selections dialog box
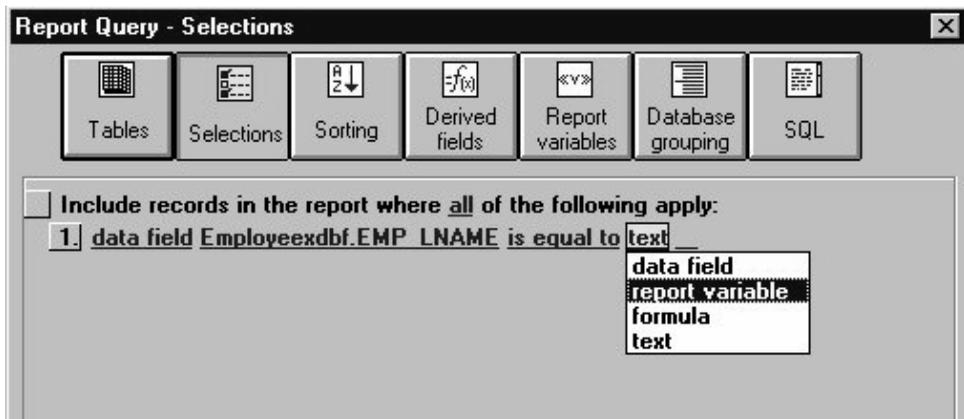
ReportSmith inserts your selection followed by Start Date,the first of the two variables you created.

5 Click "StartDate" and choose "Salesperson" from the report variable drop-down list as shown in Figure 3.24.

Figure 3.24: Report Query - Selections dialog box
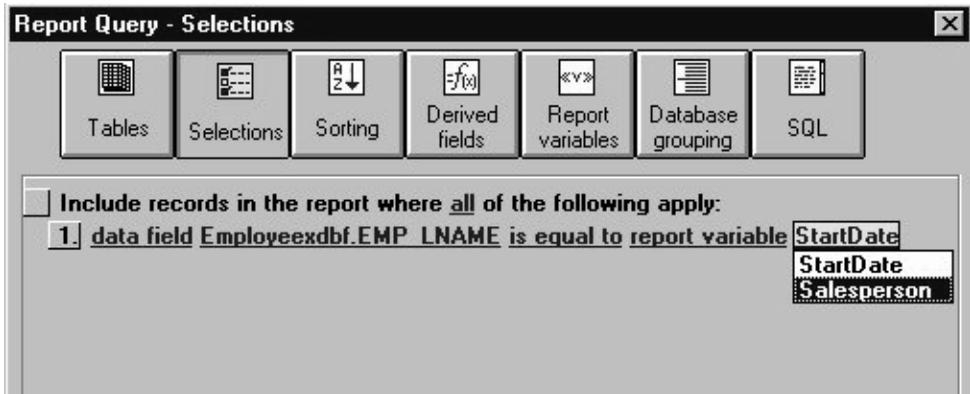
ReportSmith inserts the Salesperson variable into the selection criteria.

6 Choose Done to close the Report Query - Selections dialog box.

Now, ReportSmith displays only those records of the salesperson that you request when prompted.

Example 3: Choosing table-driven values

ReportSmith enables you to use values from a column in one of your tables to create a list of values for a report variable. Rather than typing a list of values, you can simply display fields from your database. This eliminates the need for manually typing and updating values if your data changes, ensuring that your reports always contain the most up-to-date data.

■ To use table-driven values,

1 Open the Report Query - Report Variables dialog box, then enter a name for your report variable, choose a data type, enter a title, and a prompt.

2 Under Entry, select Choose From A Table. The dialog box displays associated settings.

3 Choose Table.

The Select List Table For Report Variable dialog box appears, as in Figure 3.25.

Figure 3.25: The Select List Table for Report Variable dialog box

4 If necessary, navigate to the drive and directory containing the appropriate table. Then select it and choose OK to return to the Report Query - Report Variables dialog box.

Note: You can use a different table or data source type than the one you used to create your report. For example, if you have a dBASE report, but you have saved a list of values you want in a FoxPro table, you can connect to FoxPro here and use that table.

5 Choose Field(s).

The Report Variable Fields dialog box appears, as shown in Figure 3.26.

Figure 3.26: The Report Variable Fields dialog box

Value user will *see*.

Value actually *used* by report variable.
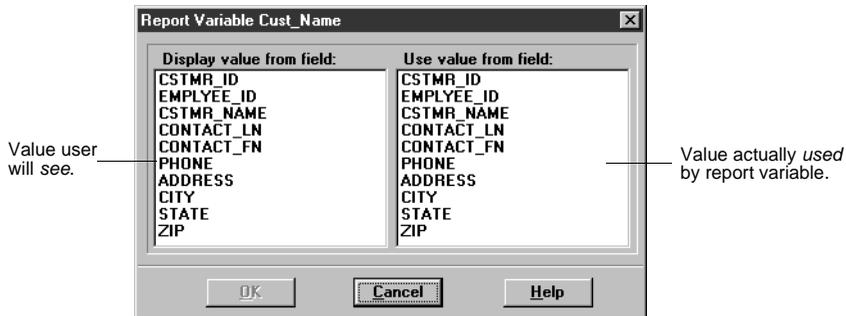
6 Under Display Value from Field, choose a field to display to the user and a field for the report variable to use. Then choose OK to return to the Report Query - Report Variables dialog box.

7 Add the new variable to the variables list, then choose Done.

Note: In most cases, the fields you choose for Display Value from Field and Use Value from Field are the same. However, there are some cases when you want to *display* one field but *use* another.

For example, suppose you have two columns in your table: EMP_LNAME and EMPLYEE_ID. The EMPLYEE_ID field has an index that enables you to search through it quickly, so you want your selection criteria to search that field. However, you don't want your users to have to know employee ID numbers in order to run a report. In this case, you display an employee's name for your user to select while using the employee's ID number as the value for your selection criteria.

Creating a master / detail report

Up to this point, the data manipulation techniques presented in this chapter have dealt with a single report query. However, by using the Insert|Detail Reports menu command, you can also build reports using more than one query.

Queries are linked on a *key*—a column or data category containing a unique value for each record—to define a relationship between the master report and the subquery, or detail. Generally, the master report has one record per key value while the detail report contains many records per key value.

An example of a master/detail report is your bank statement: at the top, it displays your name (a unique value) and the account numbers (at least one, and possibly several values). Below that, the statement displays withdrawals for each account number—several records for each account. You could also have another section which displays deposits for each account number. In this example, the statement itself represents a master report in which your name is a unique value. Within this master report, the account numbers then represent detail reports, in that there may be several account numbers for each customer name.

Information in each section originates from different tables with different qualifications. Furthermore, each section might have its own formatting and totals.

The report created to generate the preceding example can describe several different queries:

- "Customer=Bob Smith," to create the master report (the statement itself) and show associated account numbers

- "Customer=Bob Smith AND AcctNum=12345 AND TransactionType= DEPOSIT," to create a "Deposit" detail report containing several entries for this account number.

- "Customer=Bob Smith AND AcctNum=67890 AND TransactionType= DEPOSIT," to duplicate the preceding query, but for another account number.

ReportSmith makes creation of master/detail reports a quick, easy, and streamlined process of creating the master report and linking tables to create detail reports.

Note: You can create master/detail reports *only* for columnar reports.

■ To create a master/detail report,

1 Create a new columnar report to serve as the master report template, adding the table to be used as the master data source.

2 From the ReportSmith main menu, choose Insert|Detail Reports.

The Master/Detail Reports dialog box appears, as in Figure 3.27, with "Master Report" as the default name for the master query.

Figure 3.27: The Master/Detail Reports dialog box
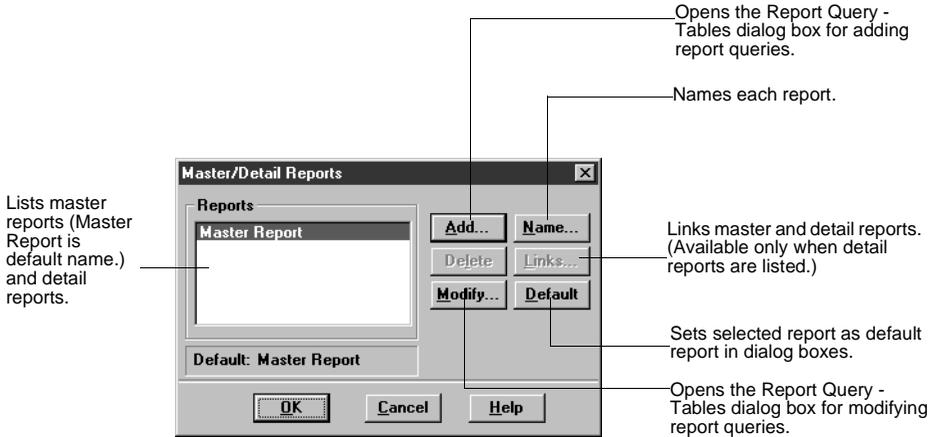
3 To add another query (representing a detail report) to your report, choose Add.

The Report Query - Tables dialog box appears.

Specify the appropriate tables and fields for this detail report query, add them to the query, and choose Done in the Report Query - Tables dialog box.

The Link Master/Detail Reports dialog box appears, as in Figure 3.28.

Figure 3.28: The Link Master/Detail Reports dialog box
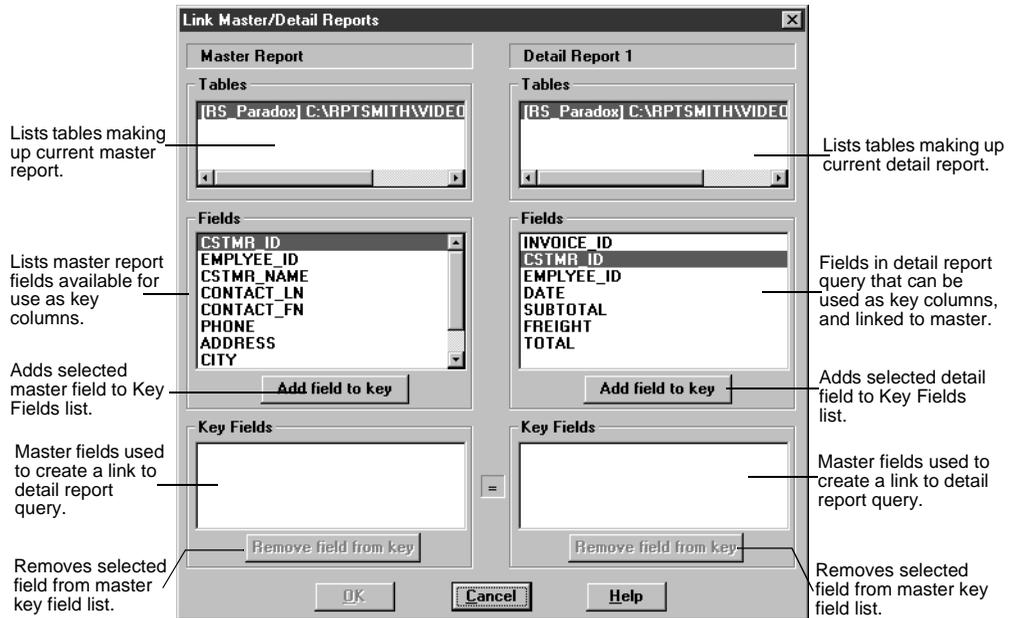
4 Use the common fields ReportSmith has selected in each table for linking tables, or select another common field to link the tables. Place at least one common field into both Key Fields list boxes and choose OK.

5 In the Master/Detail Reports dialog box, choose OK to load records into your report.

Note: Choose View|Boundaries to see the distinct sections of your report: Main Report 1, and Detail Report 1.

Naming master/detail reports

Each time you create a detail report, ReportSmith creates a default name for it. The master detail report you create is called "Master Report." The next is called "Detail Report 1," then "Detail Report 2" and so on. The name of the detail report appears in the report group to which it corresponds.

You can rename a master report or a detail report so it's more easily recognizable and memorable. For example, you might want to change "Master Report" to "Customer Report" and "Detail Report 1" to "Videos Rented."

Displaying field labels for master/detail reports

By default, ReportSmith displays field labels for each detail report the first time a master record appears on the page. You can customize the display of field labels by using the Insert|Field labels command.

- To customize the field label display for detail reports,

    1 With your report open, choose Insert|Field Labels.

    The Insert Field Labels dialog box appears, as in Figure 3.29Figure 3.29. Select a detail report from the combo box listing the master report and all detail reports.

Figure 3.29: The Insert Field Labels dialog box

    2 Turn on Group Header/Footer and New Page options and choose OK.

    Labels now appear for each set of data displayed for the detail report and each time a page break occurs in the report.

Inserting a field into a master/detail report

You can use the Insert Field dialog box to insert a particular field into the main report area or a detail report within the master report. You can place a field only into a section built on the associated query. If you try to place it into the wrong detail report—one that doesn't contain that field in the associated report query—an error message appears. Placement bars appear in appropriate drop-zones.

- To insert a field into a detail report,

    1 With your report open, choose Insert|Field.

    The Insert Field dialog box appears, as inFigure 3.30.

Figure 3.30: The Insert Field dialog box

Lists report into which field will be inserted.

Toggles field list: data fields, derived fields, report variables, summary fields.

Lists fields of selected type in applicable data sources
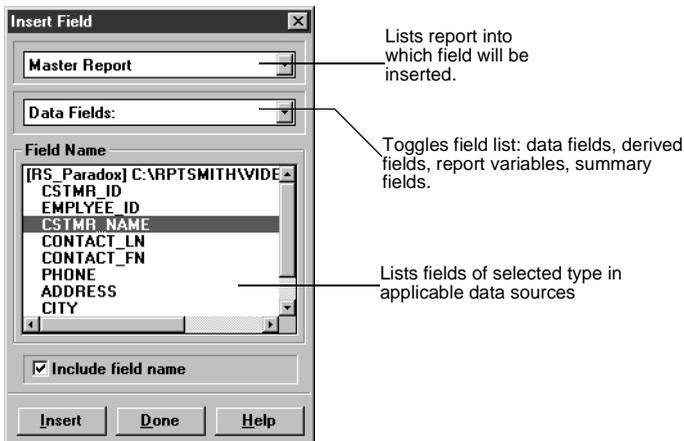
2 Use the features of this dialog box, as shown in Figure 3.30, to specify the report into which the field will be inserted, the field type, and the specific field. You can also choose whether to display the name of the field.

3 Choose Insert to activate drag-and-drop capability.

4 Drag and drop the selected field into the appropriate section of the report.

5 When you finish inserting fields, choose Done to close the Insert Field dialog box and return to ReportSmith.

Applying report styles to master/detail reports

Often, you find that you need certain sections of a master/detail report to be displayed in slightly different ways. For example, you might simply want to highlight the section breaks between each detail report. This is easy to do, using ReportSmith's report styles.

■   You can apply formatting styles to each detail report to emphasize different aspects of the report. You can also apply one formatting style to an entire report.

1 With your report open, choose Format|Report Styles.

2 Choose a detail report to which you want to apply a style.

3 Select a style and press Apply. Do this for each detail report you want to format.

Creating crosstab reports

A crosstab report displays fields from one or more database tables in a spreadsheet format. The values in a crosstab are calculated using functions such as sum, average, maximum, minimum, or count.

Crosstabs can consist of any number of rows, columns, and values, as in Figure 3.31, but can be inserted only into the header or footer of a report.

Figure 3.31: An example of a crosstab report

Types of crosstabs

You can create numerous types of crosstabs, combining multiple rows, multiple columns, and multiple values. Some common variations are:

• Value-only
• Single-row/single-column
• Single-row and single-column combination
• Multi-column/multi-row

Value-only

The Value-only crosstab consists of only two cells: the value field label and the grand total value.

This report creates a summary total for one data field (by row or by column). The data set can be an entire report if you place the crosstab in a global header or footer (that is, a page or report) or it can be a section of the data if you place it in a group header or footer. You can make this type of crosstab by specifying only one data field as a value in the crosstab.

Single-row/single-column

A single-row or single-column crosstab is based on a single report row or column and a value. For example, the crosstab shown below is based on the single column of DATE and a value of QUANTITY.

1993 Movie Sales Per Quarter

Qtr 1	Qtr 2	Qtr 3	Qtr 4	Total
i40.00	20.00	$7.00	i99.00	66.00

Likewise, the crosstab shown below illustrates one possibility for using a single row (EMP_LNAME) and a value of QUANTITY.

1993 Movie Sales Per Salesperson

Blake	$12.00
Ginsberg	$27.00
Keats	$34.00
Pound	$21.00
Snyder	$72.00
Total	$166.00

Note: While it is entirely possible to create single-row or single-column crosstabs with no values, you will probably find these combinations of little worth, as they produce points of reference (such as quarterly dates or salesperson names) with no data.

Single-row and single-column combination

The single-row and single-column combination crosstab provides another level of detail. It includes a row, a column, and a value. Each summary value is a total based on the row as a subset of the column.

Column

CSTMR_NAME				
Charlene's Films	Complete Video	LaserMan Vids	Movie Madness	Total

Row — EMP_LNAME

	Charlene's Films	Complete Video	LaserMan Vids	Movie Madness	Total
EMP_LNAME	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
Blake	$1,033	$690	$880	$0	$2,603
Keats	$0	$0	$0	$886	$886
Total	$1,033	$690	$880	$886	$3,489

Row grand totals

Report Grand total

Column grand totals

In the example above, CSTMR_NAME is the column and EMP_LNAME is the row. The values within the crosstab are salesperson Blake's total sales for each customer (video store), and salesperson Keats' total sales for each customer (video store). There are also column grand totals (sales per video store customer) and row grand totals (sales per salesperson) and a report grand total that combines the column and row grand totals (total sales).

Multi-column/multi-row

The Multi-column crosstab provides an extra level of information within a column. It consists of two or more columns and values.

1993 Movie Sales Per Quarter

	Quarter 1					
	V1			V2		
	Action	Cartoons	Munchies	Action	Cartoons	Munchies
Blake	No Sale	No Sale	No Sale	No Sale	No Sale	$4.00
Ginsberg	No Sale	No Sale	No Sale	No Sale	No Sale	No Sale
Keats	No Sale	No Sale	No Sale	No Sale	No Sale	$8.00
Pound	No Sale	No Sale	No Sale	No Sale	No Sale	$9.00
Snyder	No Sale	No Sale	No Sale	No Sale	No Sale	$12.00
Total	No Sale	No Sale	No Sale	No Sale	No Sale	$33.00

The secondary column you select is a subset of the primary, or first, column you select. A tertiary column becomes a subset of the secondary column, and so on. Therefore, the value of each field within a subsidiary column is calculated based on the value of each field within the "owner" column. These can be likened to grouping levels in a columnar report.

In the example above, DATE is the *primary* column, appearing as "Quarter 1" in the report (There are, of course, additional quarters not shown in this example.). VENDOR_ID is the *secondary* column, appearing in this example as "V1, V2..." and so on. The tertiary column is CATEGORY, shown here within each vendor identification number, which is in turn shown within each quarter. Finally, a single row was specified, using the EMP_LNAME field. The grand total row adds the column totals to come up with total sales for each product category.

Multi-row crosstabs work in exactly the same way, except that you are now working with nested levels of rows rather than columns. Of course, you can also combine multiple levels of both rows and columns depending on the level of detail you want to show in your report.

Note: While it is entirely possible to create multi-row or multi-column crosstabs using only multiple rows (with no columns or values) or only multiple columns (with no rows or values), you may find these combinations of little worth, since they produce either points of reference (such as quarterly dates) with no data, or vice versa.

Crosstab creation methods

ReportSmith offers three ways to create a crosstab report:

- Choose the Crosstab report type when creating a new report.
- Base a crosstab report on an existing columnar report by using the Crosstab Reports dialog box.
- Select columns within an existing columnar report and click the Crosstab toolbar button.

Creating a new crosstab report

Creating a new crosstab report begins the same way as beginning any other type of report: you need to specify database tables and fields, then define the crosstab.

■ To create a new crosstab report,

1 Choose File|New or click the New Report toolbar button [image]. Then select Crosstab as the report type and specify an appropriate style.

2 Choose OK to begin specifying tables and fields for the crosstab report.

3 Add appropriate tables and fields to your report query, remembering to create links for the tables in your report query.

4 Choose Done.

The Crosstab Report dialog box appears, as in Figure 3.32. See "Using the Crosstab Reports dialog box" on page 92 for detailed instructions on using this dialog box to build your crosstab.

Creating a crosstab from a columnar report

Use this method if you already have a columnar report on which you'want to base the crosstab and to predefine specifications such as sorting, value hierarchy, and field labels in the Crosstab Report dialog box.

■ To create a crosstab from an existing columnar report,

1 Open a columnar report with a header or footer (This can be a group header/footer, a page header/footer, or a report header/footer.).

2 If necessary, choose View|Boundaries.

By default, ReportSmith displays report area boundaries, showing you where you may place the crosstab once it has been created. If you share your ReportSmith installation with other users, you might need to turn on boundaries.

3 Choose Insert|Crosstab.

The Crosstab Report dialog box appears, as in Figure 3.32 on page 92, with the fields of the columnar report listed in the Name list box. See "Using the Crosstab Reports dialog box" on page 92 for detailed instructions on using this dialog box to build your crosstab.

Creating a crosstab by selecting columns (visual method)

When using this method, you can select up to three columns to form the basis of a crosstab. The first column you select in the columnar report becomes the crosstab row. The second column selected in the columnar report becomes the crosstab column, and the third selection becomes the crosstab Value.

Note: Selecting only two columns from a columnar report creates a single-row crosstab. Selecting only one column creates a Value-only crosstab. To use more than three values for your crosstab, you must specify the rows, columns, and values for the crosstab using the Crosstab Report dialog box. See "Creating a crosstab from a columnar report" on page 90 for details.

■ To create a crosstab using the visual method,

1 With a columnar report open and active, choose View|Boundaries if they are not already displayed.

By default, ReportSmith displays report area boundaries, showing you where you may place the crosstab once it has been created. If you share your ReportSmith installation with other users, you might need to turn on boundaries.

2 *Ctrl*-click a column to become the crosstab row, then repeat this step to create the crosstab column and value.

3 Choose Insert|Crosstab.

ReportSmith displays a drop cursor when the mouse pointer is over a header or footer, letting you know you may place the crosstab here. If the mouse pointer is over an area that cannot accept a crosstab, the cursor changes to the international symbol for "No."

You can choose to hide the columnar report, displaying only the crosstab. Use the Format Section dialog box, discussed in Chapter 4, to set this option.

Using the Crosstab Reports dialog box

Figure 3.32: The Crosstab Reports dialog box

Toggles listed types of report fields: data, derived, or crosstab calculated fields.

Title of crosstab report.

Optional description of crosstab report.

Lists report fields available for use in crosstab rows and options.

Table fields to appear as columns in a crosstab report.

Deletes selected crosstab column.

Sets crosstab report options.

Sets crosstab column options.

Sets crosstab report style for this crosstab.

Deletes selected row value.

Table fields to appear as rows in crosstab report. (First listing is primary row; all subsequent listings are subsets.)

Sets crosstab row options.

Sets crosstab value options.

Deletes selected crosstab row.

In a crosstab, as in a spreadsheet, you read rows from left to right and columns from top to bottom. The Crosstab Reports dialog box creates these rows and columns by enabling you to drag and drop report fields to specify that they will be columns, rows, or row values.

■ To specify the rows and columns of your crosstab report, select the report fields you want to use as rows and columns, and then drag and drop each field to the appropriate location.

The first field listed as a crosstab row becomes the primary row—for example, "ProductCat" as the first row listing would list product categories in rows. Each subsequent row listing becomes a subset of the field immediately above it. For example, listing "EmpLastName" below "ProductCat" would create primary row headings by category, with each employee's last name listed and grouped within each product category.

The fields in the Columns box determine how the data will be grouped within each row. In the preceding example, you might list "Date" as the column field. This will produce a crosstab report with dates as column heads (perhaps grouped by quarters), with product categories as primary row headings, and employees' last names as secondary row headings within each group delineated by the product categories.

■ To specify the value shown in each cell, drag the appropriate field(s) into the Values box.

The fields placed in this box represent the values to be displayed across each row. In the preceding example, you might drag a field named "Amount" (representing each salesperson's dollar sales per quarter) into the Values box. Assuming the relevant tables are properly linked, the crosstab report now shows sales amounts per salesperson per quarter, as in Figure 3.37.

Setting options

You are not restricted to predetermined formats for crosstab reports or any of the elements that make them up—in fact, the combinations of options are nearly limitless! For example, note that Figure 3.37 on page 97 shows totals for both rows (each salespersons's sales in that product category) and columns (total sales for each quarter). This is a result of a single crosstab option setting.

Setting crosstab column options

When setting options for your crosstab report, it's often more useful to take a "building block" approach, setting options for the columns, rows, and values before setting options for the report as a whole.

■ To set crosstab column options,

1 In the Crosstab Reports dialog box, choose Options in the Columns group box.

The Crosstab Column Options dialog box appears, as in Figure 3.33 on page 94.

Note: The exact configuration of this dialog box will vary, depending on the data type of the field selected in the Columns box when you choose Column Options. This figure shows column options for the "Date" data type.

Figure 3.33: The Crosstab Column Options dialog box

Original name, data type, and label for the column. (The label need not be the same as the original name.)

Optional heading for any subtotal created by selected calculation.

Selected calculation is performed on each column for each row. Results are then shown in new columns that ReportSmith creates.

Sort order for columns, reading left to right.

Custom values to use with a custom sort order.

Set date range to be included in crosstab.

Groups column data (dates) by day, week, month, quarter, or year.

Display format for column groups.

Sets first month of fiscal year or quarter.

Check to display all records in range, including zero-value records.

Crosstab Column Options

Name: DATE
Type: Date
Label: DATE

Subtotal Heading: Calculation:
                           <none>

Sort Order   Custom Values
  ○ Ascending
  ○ Descending
  ○ None
  ○ Custom

Date Options
Jan 1 1 to Dec 31 9999

Group by: Format:
Quarterly   Qtr 1

First month of year: □ Display Range
January

    OK   Cancel   Alias...   Help

2 Set column options as appropriate, then choose OK to return to the Crosstab Reports dialog box.

Setting crosstab row options

After setting the crosstab column options, move on to setting row options which operate in much the same way.

■ To set crosstab row options,

1 In the Crosstab Reports dialog box, choose Options in the Rows group box.

The Crosstab Row Options dialog box appears, as in Figure 3.34.

Figure 3.34: The Crosstab Row Options dialog box

Name: EMPLOYEE_ID
Type: Character
Label: EMPLYEE_ID

Original name, data type, and label for the row. (The label need not be the same as the original name.)

Subtotal Heading:
Calculation: <none>

Optional heading for any subtotal created by selected calculation.

Selected calculation is performed on each row for each column. Results are then shown in new rows that ReportSmith creates.

Sort Order
○ Ascending
○ Descending
○ None
○ Custom

Custom Values

Sort order for columns, reading left to right.

Custom values to be used with a custom sort order.

OK   Cancel   Alias...   Help

Note: The exact configuration of this dialog box will vary depending on the data type of the field selected in the Rows box when you choose Row Options. This figure shows Row options for the "Date" data type.

2 Set row options as appropriate, then choose OK to return to the Crosstab Reports dialog box.

Setting crosstab value options

The final "building block" crosstab option to be set is that of the crosstab values. The values are the data displayed in the individual, non-labeled cells of the crosstab.

■ To set crosstab value options,

1 In the Crosstab Reports dialog box, choose Options in the Values group box.

The Crosstab Value Options dialog box appears, as inFigure 3.35.

Figure 3.35: The Crosstab Value Options dialog box

Name: QUANTITY
Type: Numeric
Label: QUANTITY

Original name, data type, and label for the value field. (The label need not be the same as the original name.)

Summary Heading: Total
Calculation: Sum

Heading for automatically generated summary of values.

Calculation performed on values to obtain summary.

Shown Value
○ Values
○ Percent of Row
○ Percent of Column
○ Percent of Total

Value shown in summary of values, after value calculation (above) is performed. For example, summed values in a column will be shown as a percentage of the total report value.

OK   Cancel   Help   Edit

2 Set value options as appropriate, then choose OK to return to the Crosstab Reports dialog box.

Setting crosstab options

After setting options for crosstab columns, rows, and values, you need to move from the "building block" phase of option setting to options that affect the crosstab as a whole. For example, you can choose to display/hide field labels or specify text to display in place of null values.

■ To set crosstab options,

1 In the Crosstab Reports dialog box, choose Options under the field name list.

The Crosstab Report Options dialog box appears, as in Figure 3.36.

Figure 3.36: The Crosstab Report Options dialog box

Automatically calculates total of each row and each column; creates associated display row and column.

Uses a fixed size for all crosstab cells.

Uses a "%" format for percentage values.

Displays arrangement of value fields. (Applies only if there are multiple values in a single crosstab.)

Heading for automatically generated totals of rows and columns (if "Totals" option is checked).

Text string to use in place of null (zero or "empty") values.

2 Set crosstab options as appropriate, then choose OK to return to the Crosstab Reports dialog box.

A completed crosstab example

The following figure shows one example of a completed crosstab report.

Figure 3.37: An example of a crosstab report

1993 Movie Sales Per Quarter

		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Tota
Action	**Blake**	No Sale	No Sale	No Sale	$51.00	**$51.00**
	Ginsberg	$29.00	$1.00	$25.00	$24.00	**$79.00**
	Keats	$38.00	$21.00	No Sale	$3.00	**$62.00**
	Pound	No Sale	No Sale	No Sale	$11.00	**$11.00**
	Rimbaud	$9.00	No Sale	No Sale	$33.00	**$45.00**
	Snyder	No Sale	No Sale	$0.00	$74.00	**$77.00**
Cartoons	**Blake**	No Sale	No Sale	No Sale	$9.00	**$9.00**
	Ginsberg	$4.00	$5.00	No Sale	$4.00	**$14.00**
	Keats	$7.00	$7.00	No Sale	$44.00	**$68.00**
	Pound	No Sale	No Sale	$8.00	$43.00	**$56.00**
	Rimbaud	No Sale	No Sale	No Sale	$4.00	**$14.00**
	Snyder	No Sale	No Sale	$7.00	$71.00	**$75.00**
Total		$87.00	$55.00	$40.00	$799.00	$581.00

The crosstab report shown above is the result of the entry options described earlier:

- The "primary row heading" field (the first field listed in the Rows box of the Crosstab Reports dialog box) was the ProductCat field of a table called Products.

- The "secondary row heading" field (the second field listed in the Rows box of the Crosstab Reports dialog box) was the EmpLastName field of a linked Employees table.

- The "columns" field was the Date field of a linked Detail table.

- The "values" field, shown in each non-labeled cell, was the "Amount" field of the linked Detail table.

Note: The field labels on the columns in Figure 3.37 do not match the field names from which they are drawn because ReportSmith allows for different field labels to be specified by the user.

Modifying a crosstab report

ReportSmith offers several ways for you to modify a completed crosstab report. You can:

- Use the Crosstab Report dialog box discussed in "Using the Crosstab Reports dialog box" on page 92.
- Drag and drop rows and columns as needed directly in the completed crosstab.
- Directly edit crosstab cell values.
- Use the ReportSmith ribbon discussed in "Formatting characters" on page 122.
- Use the Crosstab Toolbar to apply styles, borders, row/column inversion, and the like.

Using the crosstab toolbar or pop-up menu

The crosstab toolbar provides mouse-click shortcuts for many crosstab modifications. For the most part, the buttons on the crosstab toolbar, shown in Figure 3.38, correspond to commands found on the crosstab pop-up menu which appears when you right-click a selected crosstab.

■ To use the crosstab toolbar, choose Tools|Crosstab.

Figure 3.38: The Crosstab Toolbar

Crosstab Styles opens Report Styles dialog box for selection of crosstab style.

Select All selects entire crosstab.

Invert swaps crosstab columns and rows.

Modify opens Crosstab Report dialog box for adding, deleting, or rearranging crosstab fields.

Borders opens Borders dialog box for applying border to selected crosstab element(s). Borders are discussed in Chapter 3.

Chart creates Microsoft Graph object from crosstab data.

Delete eliminates entire crosstab.

The crosstab pop-up menu, like the crosstab toolbar, provides commands unique to formatting and editing crosstabs. The primary difference between the two is that the pop-up menu adds two menu commands not found on the crosstab toolbar:

- The Options command opens the Crosstab Options dialog box.
- The Deselect command removes the selection box from the entire crosstab.

Note: To locate the pop-up menu, you must have the cross tab selected before you right-click.

As you can with any report, you can apply a variety of formatting and editing choices to crosstab reports. Report formatting is discussed in detail in Chapter 4.

Creating label reports

ReportSmith offers you a remarkably fast and efficient way to create and print labels, by importing the necessary data and applying either a pre-formatted report style or one of your own creation. Because ReportSmith supports a variety of report styles designed to work with standard Avery-style labels, you may never need to modify the default styles, but—as with all report styles—it's both possible and easy to do so if you want to.

For example, Figure 3.39 shows one such label report, containing mailing labels to customers of a video supply service. Each label contains the video supplier's logo, as well as fields for the customer's name and full address.

Figure 3.39: **A sample label report**

- ■ To create a label report,

  1 Choose File|New, and then choose the Label Report type.

  2 Choose Styles to specify an appropriate label style, and then choose OK to return to the Create A New Report dialog box.

  See Chapter 1 if you are unsure of how to create a new report or choose report types and styles.

  The Report Query dialog box appears, where you can specify the table to use in creating your labels. Label reports typically use only a single table, containing names and addresses for the labels, so you need not establish table links.

  3 In the Report Query - Tables dialog box, choose Table Columns, and then select the columns you want to appear on each label. (Typically, this will include all information necessary for disk labels or mailing labels.)

  4 Choose OK to return to the Report Query - Tables dialog box, and then choose OK again to begin creation of your label report.

Inserting the label fields

Once you have specified the table and columns to be used in your label report, ReportSmith displays a report containing blank label templates, and the Insert Field dialog box appears, as in Figure 3.40.

Figure 3.40: The Insert Field dialog box

Displays field name next to its value.
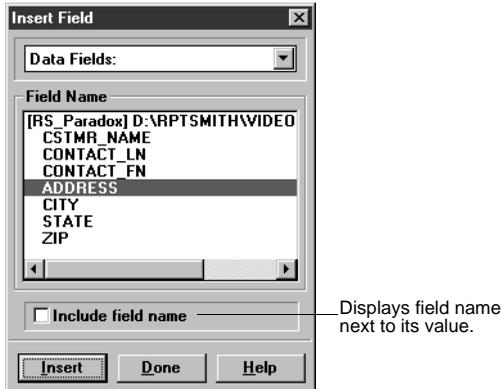
You are now ready to insert and place the fields that will make up the label. ReportSmith does not attempt to "second guess" exactly where you will want these fields placed on each label, or whether you will want to use a graphic, so the label report contains only blank templates, ready for you to create a label to exactly suit your particular needs.

■ To insert and place label fields,

1 If you are not already using the ReportSmith rulers, choose View|Ruler to activate both vertical and horizontal rulers.

2 In the Insert Field dialog box, select the appropriate field type (typically Data Fields), and then select the first label field—for example, CSTMR_NAME.

3 Choose Insert.

   The Insert Field cursor appears.

4 Using the rulers and the "x,y coordinates" shown in the status bar as guides, move the Insert Field cursor to the desired location of the first label field, then click to insert the field.

   This field will now appear in the same relative location on each label, and ReportSmith now displays the appropriate values for this field on the labels.

5 Repeat step 4 for each additional label field.

Tip: If you anticipate changing the formatting of label fields to a larger font size at a later time, it's a good idea to allow a little extra vertical space when initially placing and inserting those fields. You can always "fine tune" placement to achieve just the look you want.

Adjusting the name field

When you placed the fields that make up the names on your labels—typically a last name and a first name contained in separate fields—you probably noticed that one of two things happens:

- If you allow room for the longer first names, you have large gaps between short first names and the accompanying last names, or
- If you base the spacing on short first names, first and last names overlap when the first name is long.

The solution to this dilemma is to create an SQL-derived field that will trim blank characters off both the first and last names, and concatenate (join) the two to create a smoothly spaced single name for the your labels.

You have already seen an overview of SQL-derived fields on page 63. You follow those same techniques to create this field.

To create this SQL-derived field,

1 Choose Tools|Derived Fields

—or—

Choose the Derived Fields option in a Report Query dialog box.

The Report Query - Derived Fields dialog appears.

2 Enter a name into the Derived Field Name box. This name cannot be a table column name; it also becomes the field label for the derived field if you insert it as a column in your report.

3 Choose Defined by SQL, then choose New.

The Edit Derived Field dialog box appears.

4 Enter a name for the new macro, then choose New.

The Edit Macro dialog box appears.

5 Enter the following code into the Macro Formula box. (This code should be entered on a single line; it is shown on two lines here for space considerations. You can also drag and drop these items from the appropriate list boxes to create this formula.)

```
{fn RTRIM("CUSTOMER"."CONTACT_FN")} + ' ' + {fn
RTRIM("CUSTOMER"."CONTACT_LN")}
```

6 Choose OK to return to the Report Query - Derived Fields dialog box, then choose Done to complete creation of your derived field.

The next step is simply to substitute the new derived field for the older, separate first-name and last-name fields.

■ To substitute the derived field,

1 Select and delete the last name field in the label.

2 Select the first name field, making a note of its x,y coordinates, then delete it.

3 Choose Insert|Field.

The Insert Field dialog box appears.

4 From the Field Type drop-down box, choose Derived Fields.

5 Select your derived field, and then choose Insert.

The Insert cursor appears.

6 Click a label in the old location of the first-name field to insert and place the new derived field.

The name field now consists of smoothly and evenly spaced first and last names on every label, as in Figure 3.41

Figure 3.41: Improved spacing in label fields

Note: The preceding figure also shows another SQL-derived field that trims and concatenates the City, State, and Zip fields so that the city name is always followed by a comma, a space, and the state abbreviation. The state is, in turn, always followed by two spaces and the zip code. The result is a professional-looking label with clean and consistent spacing.

You can also format the fields of a label report, just as you would a field of any other report type. See Chapter 4 for details on formatting and printing your label reports.

Converting a report

ReportSmith has a Report Conversion Utility which allows you to convert a report without writing a macro. This function is able to handle changes in the database, field and table name changes, and field deletions. You do, however, need to create a .rcv file to accomplish this. Please see your Database Administrator for assistance in creating this file. For more detailed information on the Report Conversion Utility, see Chapter 8, "The Report Conversion Utility".

■ To convert reports:

1 Open the ReportSmith catalog, and click the CNV button..
ReportSmith reminds you with a Convert Reports message box to:

"Always back up all .RPT files before converting."

2 Click OK.
ReportSmith displays a Convert Reports dialog box.

Select the location of the directory that contains reports to be converted.

Select location of .rcv file (Report Configuration File).

Unchecked - creates error log.
Checked - interrupts report conversion with error message.
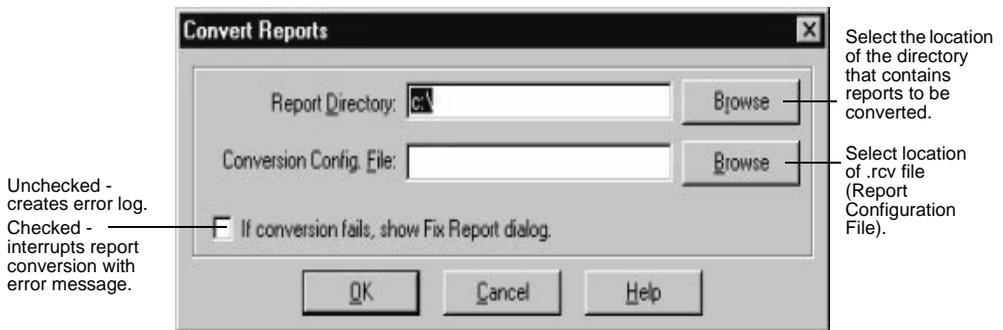
3 Type the location of the report in the Report Directory dialog box.

—or—

Use the Browse button to select the location.

4 Type the location of the .rcv file in the Conversion Config. File dialog box.

—or—

Use the Browse button to select the location.

5 Check the ""If conversion fails, show Fix Report dialog" box.

ReportSmith interrupts the conversion process if there is an error and displays the SQL Execution Error dialog box to correct it.

You must correct the error before ReportSmith continues the conversion process.

—or—

Leave the box unchecked.

ReportSmith creates a log recording all the errors. This log displays after the attempted conversion is complete, allowing the records to run through the conversion process unattended. You can then correct any reported errors.

6 Click OK.

The conversion occurs based on the requirements. ReportSmith opens each report, makes the necessary changes, and closes each one.

Saving a report

When you have filtered and arranged the data in your report to your satisfaction, you will need to save it in order to begin work on another report or to exit ReportSmith.

■ To save a report,

1 Click the Save toolbar button 🖫 or choose File|Save.

2 In the Save As dialog box, navigate to the drive and directory where you'd like to store your report.

3 Select a file type from the Files of Type list*:*

- Default ReportSmith format (*.RPT)
- Report Query File form (*.RQF—saves the *query only*, not report formatting)
- PD Format (*.PDF - saves data and formatting)
- Excel format (*.XLS—saves data only, not formatting)
- Text file format (*.TXT—saves data only, not formatting)
- Lotus 1-2-3 format (*.WKS—saves data only, not formatting)
- Comma-delimited text (*.CSV—saves data only, not formatting).
- Data Interchange Format (*.DIF—saves data only, not formatting)
- Quattro file format (*.WKQ—saves data only, not formatting)

4 Enter a name for your report into the Filename text box, and then choose OK.

Printing to HTML

You will notice Print to HTML is also an option. This allows you to print the report to an HTML file and, subsequently, to send (publish) it via the Internet.

■ To print to an HTML file:

1 Select Print to HMTL option.

ReportSmith prompts with the Html Print Setup dialog box.

Figure 3.42: HTML Print Setup dialog box

Click here.
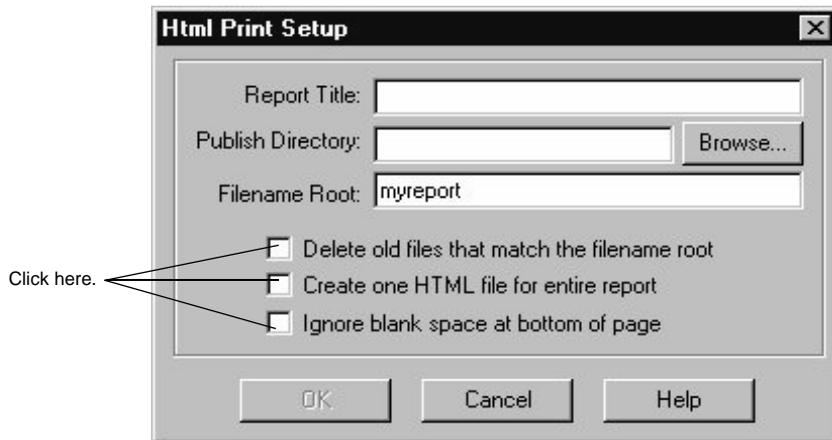
2 a.) Type the name of your report in Report Title.

   b.) Using the Browse Button, select the directory in which to save your report.
      —or—
      Type the name of the directory.

   c.) Type the Filename Root.

3 Check the necessary instructions by clicking the appropriate check box.

4 Click OK.

   ReportSmith saves your report in HTML format.