QUERY MAKER

End Users Guide

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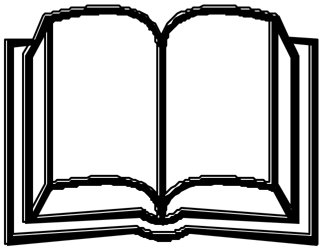
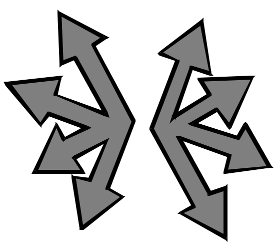
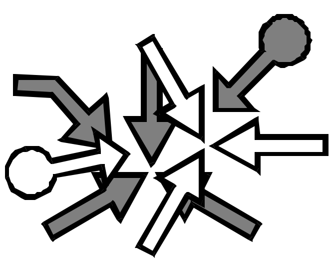
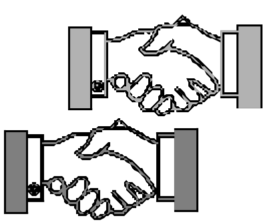
Query Maker User Guide

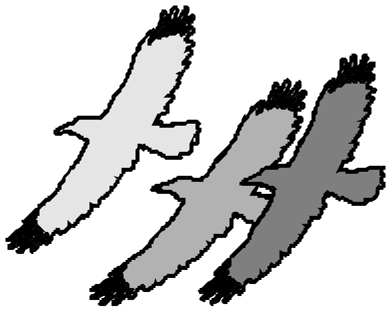
Introduction

Welcome to Query Maker, a tool for extracting meaningful information from your computer database. Query Maker simplifies the process of executing and creating your own queries and reports.

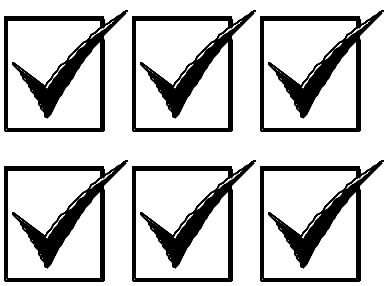
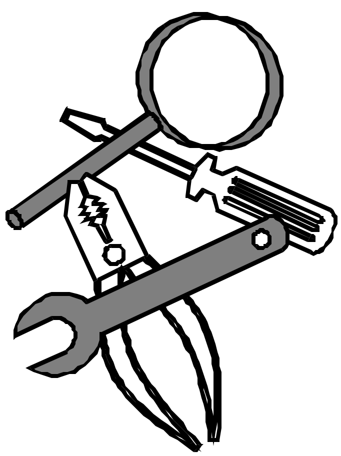
Features of Query Maker

Uses everyday language 	Database programmers work with language limitations that often result in cryptic abbreviations. Query Maker solves this problem by: • Displaying field names in plain English phrases. • Listing comparison options in plain English rather than in mathematical symbols • Letting you focus on results rather than on programming logic.
Offers a full range of analysis options 	You can find data by picking up to 18 different comparison operators. Operators use English terminology like: *Begins with*, *Ends with*, *Exactly matches* and *Sounds like.* You can easily summarize the data you find. You can calculate totals, averages, counts or find the largest or smallest values.
Lets you build complex query scenarios 	Each query can contain up to 10 conditions (such as "amount is greater than $100"). Each condition can contain up to 12 comparison values (e.g., "city equals Chicago, Los Angeles or New York") allowing for a total of 120 comparisons per query. Furthermore, you can connect the conditions with AND/OR logic and specify parentheses to clarify the order of operations for your conditions. For example, "amount is greater than $100 and (city equals Chicago, Los Angeles or New York)".
Fully exploits the relationships in your data 	Query Maker extracts meaningful information even when it's spread across different tables in your database. This enables you to see all the needed information together in one set. For example, this would allow you to see the items purchased by each customer even though items purchased and customers are stored in two different tables.

Features, continued

<table>
<tr><td>Eliminates tedious and repetitive work.
</td><td>Query Maker automatically saves your settings so you won't have to respecify them every time you run a query. You can give each query a descriptive title to make it easy to recognize every time you need it.

You can also copy and then modify existing queries instead of writing each new one from scratch.

When you want to view sets of information based on changing values, Query Maker lets you create fill-in queries. For example, suppose you want to run weekly sales reports for totals over a certain threshold, but the minimum threshold changes. Every time you run this query, Query Maker will ask you to fill in the minimum sales threshold.</td></tr>
<tr><td>Delivers results in the most useful formats
</td><td>Query Maker can display results in the form of:
On-screen tabular views (a browse window)
Reports
Text files
Mail-merge files
Databases
Lotus or Excel spreadsheets
When you output the query to a report, Query Maker helps you modify the page layout and preview the results on screen before printing. The modified report form is saved as part of the query for future use.</td></tr>
<tr><td>Flexibility in shaping how your queries work
</td><td>You have the power to set up each query to work exactly the way you want:
Select which fields should appear in the query results.
Arrange the fields in any order.
Pick up to nine fields to sort on, with ascending or descending order for each field.
Select up to three fields for grouping results.
Specify any number of summaries: averages, totals, counts, maximum or minimum values.
Eliminate or include duplicate records at your option.
Browse the results in a tabular view before outputting the information to a report or a file.</td></tr>
</table>

Getting Started

A Few Important Definitions

Database A database is a collection of one or more tables that are interrelated.

Table A table is a collection of records stored in the same file. Each horizontal row of a table contains a single record and each vertical column contains a single field.

Record A record is a collection of fields related to a particular case, such as an event, part, person or transaction.

Field A field is a column or category that holds information in your table. For example, in a table that holds customer information, a field could hold customer names, companies or phone numbers.

Filter A filter is a set of criteria or conditions that lets you indicate which records to include in your query results (e.g., "Only customers from California who purchased more than $100").

Query A query is a specialized view of information in your database. It may contain all fields and records or a filtered subset. The records in a query may be sorted, grouped and summarized in different ways.

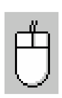
Report A report is the output of a query. The report can be a printed document or a file written to disk such as a database table, spreadsheet or text file.

Using Buttons

Query Maker operations are activated by pressing on-screen "buttons". Some people call them push buttons because they look like the three-dimensional buttons you find on mechanical devices.

For example, when we say, press or click an 

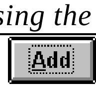
button, you select the button by:


Using the mouse:

Click on 

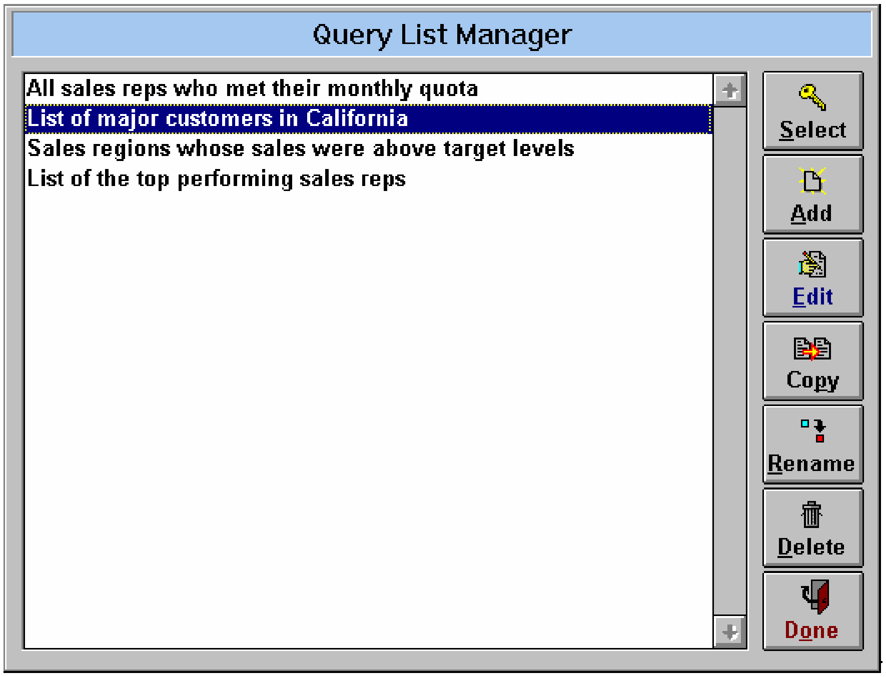
with the primary mouse button (the *left* mouse button on most computer systems).


Using the keyboard:

Move to 

by pressing **Tab** or the cursor arrow keys until a darkened border appears around the button. Then press the **Enter** key.

The Query List Manager



The *Query List Manager* is Query Maker’s “control panel.” It is a screen showing titles of previously saved queries. These queries may have been created by you, or by your colleagues, or by a programmer.

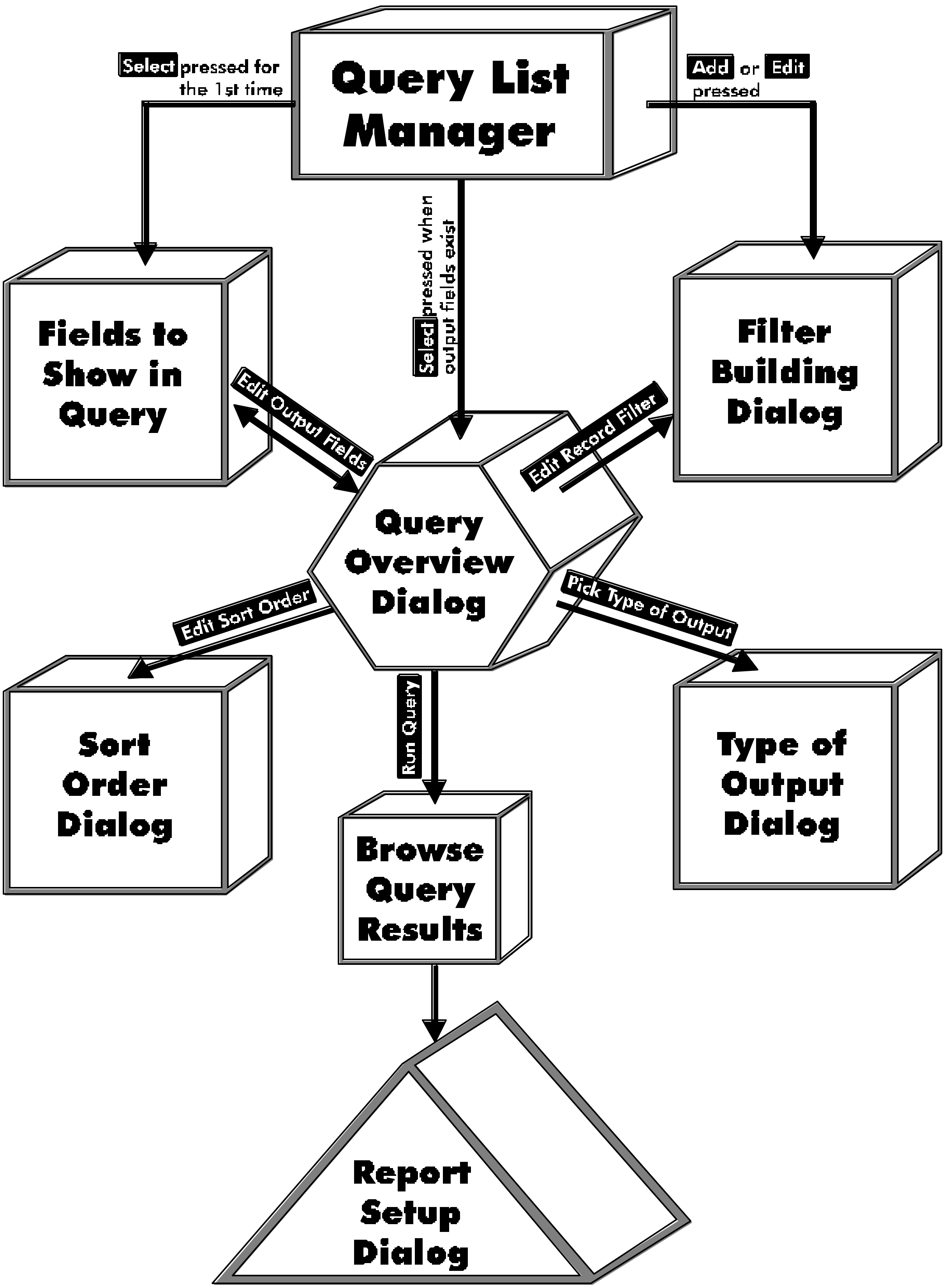
To choose an existing query to work with, highlight it with an arrow key or with the mouse.

You can then perform an action on this highlighted query by pressing one of the buttons listed horizontally across this screen's bottom.

If using a keyboard, you can switch between the query list and the buttons with a left or right arrow key.

Select	Add	Edit	Copy	Rename	Delete	Done
Selects current query to setup and run.	Creates new query.	Modifies query's filter.	Makes a copy of the current query.	Changes title of the current query.	Permanently removes the current query.	Returns you to your prior application.
Takes you to Query Overview Dialog	*Takes you to Filter Building Dialog.*	*Takes you to Filter Building Dialog.*	*Will prompt you for a new title.*	*Will prompt you for a new title.*	*Will ask you to confirm your intention*	*Will save any changes you have made.*
This dialog lets you pick output table fields, a record sort order, group and summary fields, and what type of report to generate.	This dialog guides you through a step-by-step process of specifying a record filter. When done, press **Select** to run this new query.	A filter is the set of criteria that indicate which records are to be included in the query results.	After picking a query to copy and pressing this button, you will be asked for a new title. To customize your new query, press **Edit**.		When you delete a query, any associated reports are also permanently removed.	

The Relationships between Query Maker's dialog screens



To Run an Existing Query

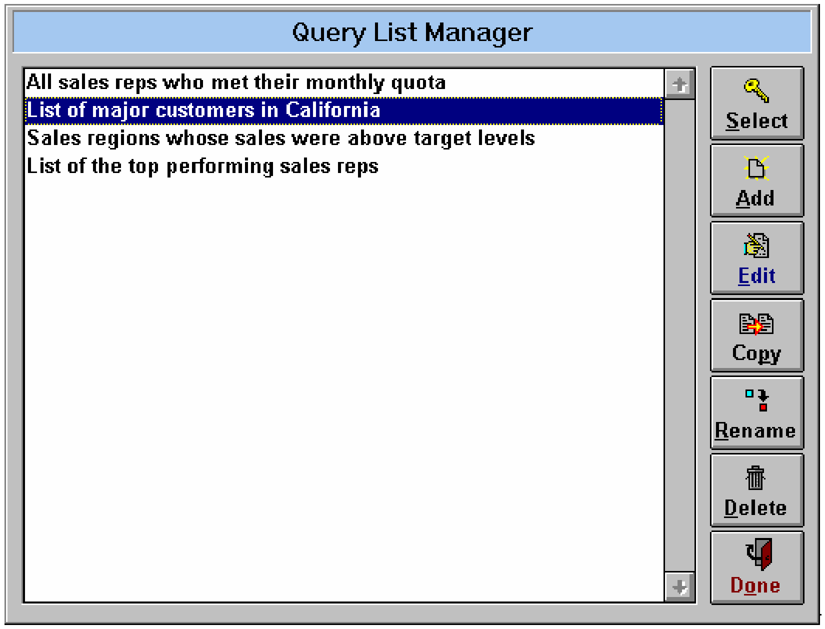
If you have at least one query displayed in the Query List Manager, you can run a query to analyze your data.

To run a query:

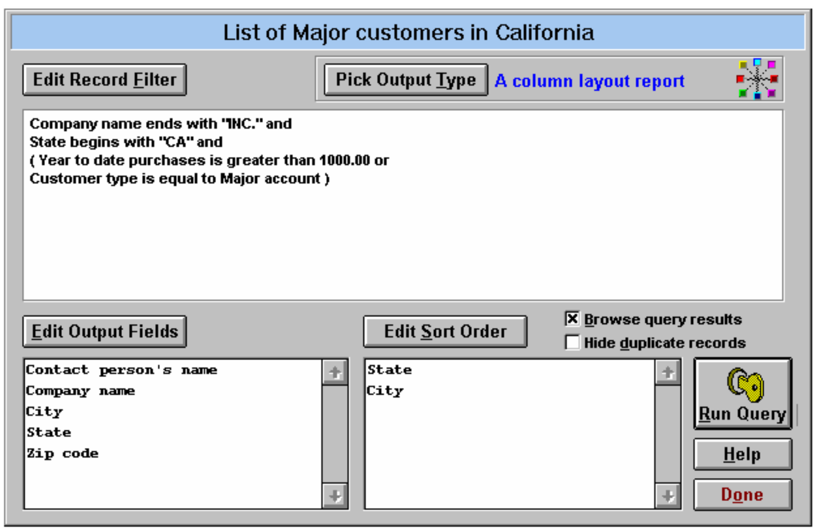
1. In the Query List Manager, highlight the query you want to run.

   Press **Select** to pick the highlighted query. If you are selecting this query for the first time, you will be taken first to the *Select Fields to Show In Query* dialog. Otherwise, you will be taken to the *Query Overview* dialog.

   NOTE: If using a mouse, you can select a query by double clicking on it. If using a keyboard, you can select a query by first highlighting it and then pressing the left or right arrow key to go to the **Select** button and pressing Enter.



2. In the *Query Overview* dialog you can either modify your query or press **Run Query** to start. If you have chosen to send the output to a report, you will be taken to the *Report Setup* dialog (explained later). The type of modifications you can make include:



- Review or change your record filter.
- Change which fields to include in the query output.
- Select what type of report or output to generate.
- Pick a record sorting order.
- Choose fields to group and summarize.

(For more information on these topics, see *Selecting the Type of Output* and *Using the Report Setup* dialog).

To Create a New Query

When in the *Query List Manager*, you can create new queries. When creating a query, you can either add it from scratch or you can copy an existing query and then modify it.

To Create a Query from Scratch

STEP 1: Go to the Query List Manager and press **Add**.

Type in a title for this new query. When done, you will be taken to the *Filter Building* dialog.

STEP 2: Input from one to ten filter conditions to indicate which records should appear in the query results.

When done, press **Done** to return back to the Query List Manager.

STEP 3: Press **Select** to pick fields to appear in the output table. When done, you will be taken to the *Query Overview* dialog in which you can run the query.

To Create a Query by Copying

STEP 1: Go to the Query List Manager and highlight the query you want to copy.

Press **Copy** to bring up a title dialog box. Type in a title for this new query. When done, you will be returned to the *Query List Manager*.

You will now have an exact copy of the query you selected including its filter, output fields, sort fields and report form, if any.

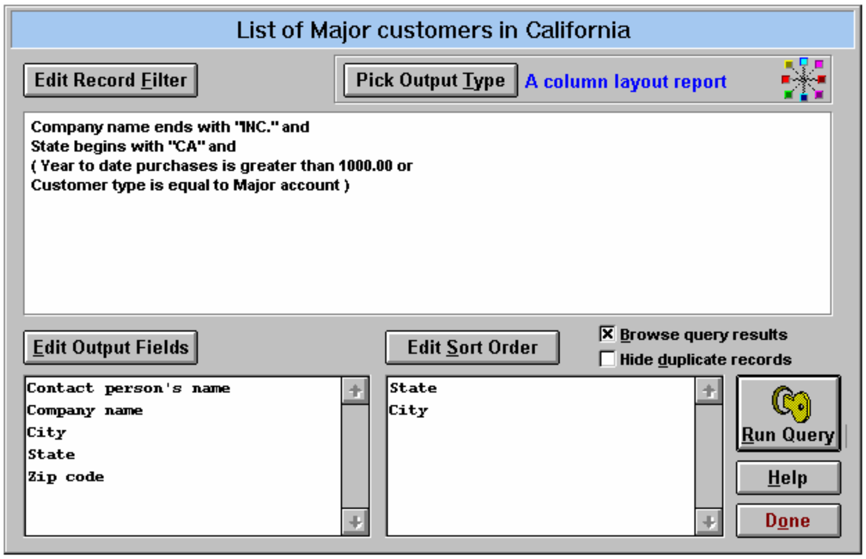
STEP 2: Press **Edit** to go to the *Filter Building* dialog to modify the query's filter conditions if necessary.

When done, press **Done** to return to the Query List Manager.

STEP 3: Press **Select** to go to the *Query Overview* dialog and run the query.

To Modify a Query

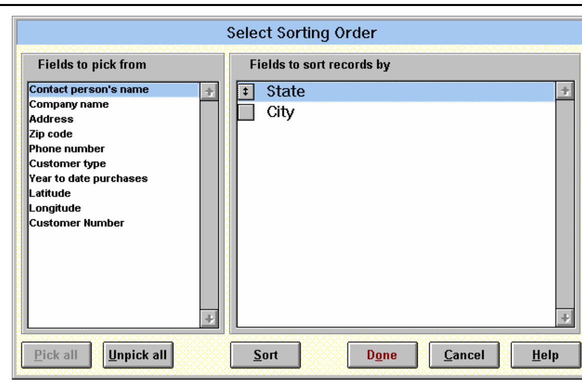
The Query Overview Dialog

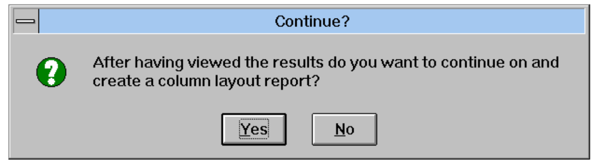


The *Query Overview* dialog is the place where you may:

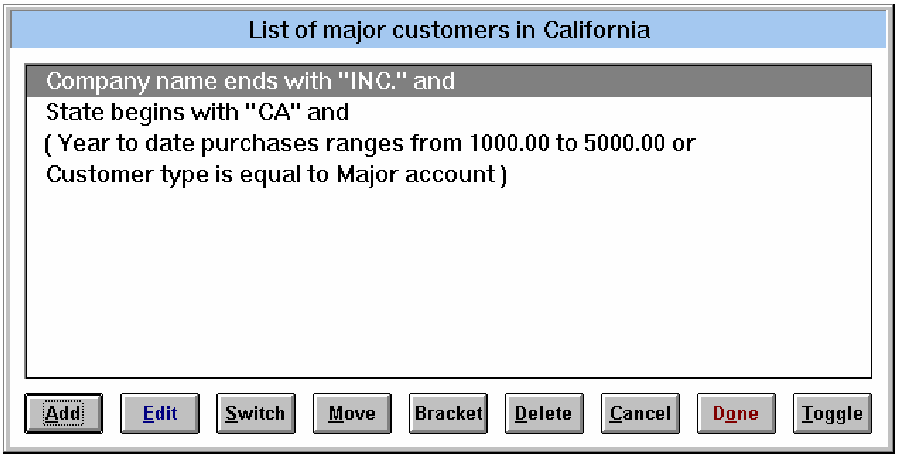
- Review or change your record filter.
- Select which fields to show in the query output.
- Select what type of report or output to generate.
- Pick a record sorting order.
- Run your query and generate your query output.

To access this dialog, highlight a query in the *Query List Manager* and press **Select**

Button	Action	Description
Edit Record Filter	Displays the *Filter Building* dialog.	Lets you set the conditions that the records must meet to be included in the query results (e.g. only those customers in New York). (See *The Filter Building* Dialog.)
Pick type of output	Displays the *Type of Output* dialog.	Lets you select what format Query Maker should use for your query results (report, table, worksheet, etc.) (See *Selecting the Type of Output.*)
Edit Output Fields	Displays the *Select Fields to Show in Query* dialog.	Allows you to select which fields Query Maker will include in the query results (See *Selecting Fields to Show in Query*.)
Edit Sort Order	Displays the sort order dialog which lets you specify how Query Maker will sort the records that are included in the query. You can specify up to 9 fields to sort the results on. (See *Picking the Record Sort Order*.)	

☒ Browse query results	If you check this option, then after pressing the **Run Query** button, you will see the query results in an on-screen table *before* Query Maker outputs to your chosen output type. When done browsing, you can continue by mouse clicking the window's close box or by pressing the Esc key.	After exiting the browse window, you will be asked if you wish to proceed.  This allows you to check your work before you generate a report or output file.
☐ Hide duplicate records	Eliminates duplicate records from the result.	A duplicate record is a record where every field matches every field in another record. When you check this box, Query Maker will create a result set with only one instance of such records. • This option makes for smaller result sets, but increases query processing time.
Help	Displays descriptive help text.	
Run Query	Prepares and displays query results.	Selects the records that match the filter conditions you specified and either shows you these results in a browse window (if the above described *Browse query results* is checked) or directly generates the output type you requested (e.g. report, text files, spreadsheet).
Cancel	Exits from dialog.	Saves all of your changes and returns you to the Query List Manager.

The Filter Building Dialog



Every query is an attempt to extract a subset of information contained within your database system. The *Filter Building* dialog is where you specify a set of *conditions* to determine the subset you are seeking. This set of conditions is your *filter*.

You can access this dialog from the Query List Manager by pressing the **Add** or **Edit** button.

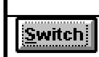
What is a Condition?

A condition is a “phrase” that defines the set of data you are seeking. For example, "Amount is greater than $1000". A condition consists of:

1. a field name (e.g., "Amount")
2. a relational operator (e.g., "is greater than")
3. a comparison value (e.g., "$1000").

- Each condition you *add* can *narrow* the results of the query. That is, fewer records may be included in the query results.
- Each condition you *delete* can *expand* the results of the query. That is, more records may be included in the results.
- Each query can contain up to 10 conditions.

These are the actions you can perform in the *Filter Building* dialog:

Button	Action	Description
	Add a new condition.	You will be prompted to select a field, pick a relational operator and type in a comparison value.
	Edit an existing condition.	Change a condition's field, operator, comparison value (or any combination of these). These terms are explained below.
	Switch a condition's connector between an AND and an OR.	If two conditions are connected by an "AND", both must be true (e.g., car color is blue and car make is Ford). If, however, two conditions are connected by an "OR", either can be true (e.g., car is either blue or a Ford).

Move	Move the position of a condition within the list of conditions.	If you are mixing both "AND" and "OR" connectors or are using parentheses, the order of the conditions can determine which records are included in the query results.
Bracket	Place or remove parentheses around two or more conditions.	Complex queries may have several AND and OR connectors. The placement and organization of these connectors can make a difference in the results. (See *Making the Right Connections*. in this section)
Delete	Delete a condition from the list.	Deleting a condition will generally *widen* the results of the query.
Cancel	Exit this dialog without saving.	This will undo any changes you made while you were in this Filter Building Dialog.
OK	Save and exit.	This will save your work and return you to the Query List Manager.
Help	Display help.	This will display information you may find helpful.

AND / OR Connectors

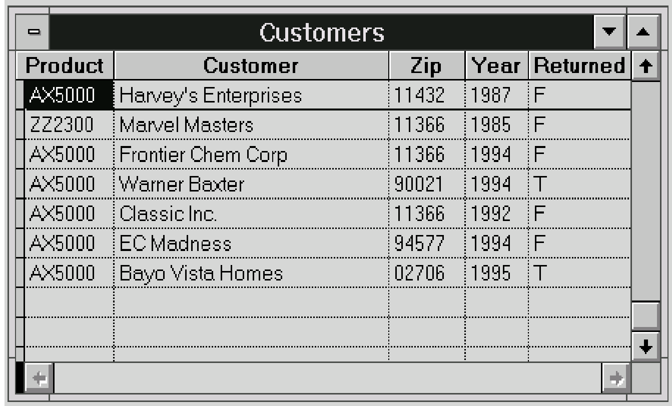
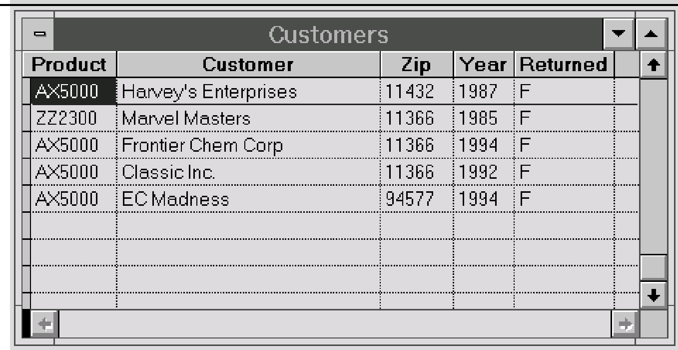
A *filter* consists of one or more *conditions*. Conditions can be strung together with *AND* and *OR* connectors. How you connect the various conditions makes a big difference in the results:

	Filter	Results
AND	Customer ZIP exactly equals “11366” ***AND*** Product exactly equals “AX5000”	Every record included in the query results must meet *both* conditions. The customer ZIP must be 11366 and the product purchased must be AX5000. RULE: The conditions on *both sides* of the AND connector must be true.
OR	Customer ZIP exactly equals “11366” ***OR*** Product exactly equals “AX5000”	Records included in the query results must meet *either* condition. The results will show *all* customers in ZIP code 11366 and *all* customers who purchased product number AX5000. RULE: *Only one side* of the OR condition must be true.

Query Maker makes one pass across your data, examining each record for all conditions and then either accepts or rejects the record for inclusion in your output.

Making the Right Connections

If you create queries with many **AND** and **OR** conditions, be sure to use brackets (parentheses) to ensure you get the results you are expecting. Parentheses dictate how the query is interpreted. The query is evaluated first in the innermost parentheses. Without parentheses, the query conditions are evaluated from left to right.

<table>
<tr><th>To Get This</th><th>Use This Query</th><th>Result</th></tr>
<tr>
<td>All orders for product AX5000 as well as customers in ZIP code 11366 who have not returned merchandise.</td>
<td>Product Exactly Matches "AX5000"
OR
(ZIP Code Exactly Matches "11366" AND Returned is False)</td>
<td>
<table>
<tr><th colspan="5">Customers</th></tr>
<tr><th>Product</th><th>Customer</th><th>Zip</th><th>Year</th><th>Returned</th></tr>
<tr><td>AX5000</td><td>Harvey's Enterprises</td><td>11432</td><td>1987</td><td>F</td></tr>
<tr><td>ZZ2300</td><td>Marvel Masters</td><td>11366</td><td>1985</td><td>F</td></tr>
<tr><td>AX5000</td><td>Frontier Chem Corp</td><td>11366</td><td>1994</td><td>F</td></tr>
<tr><td>AX5000</td><td>Warner Baxter</td><td>90021</td><td>1994</td><td>T</td></tr>
<tr><td>AX5000</td><td>Classic Inc.</td><td>11366</td><td>1992</td><td>F</td></tr>
<tr><td>AX5000</td><td>EC Madness</td><td>94577</td><td>1994</td><td>F</td></tr>
<tr><td>AX5000</td><td>Bayo Vista Homes</td><td>02706</td><td>1995</td><td>T</td></tr>
</table>
</td>
</tr>
<tr>
<td>Orders for product AX5000 as well as customers from ZIP code 111366.
In both cases, we want to show records for only kept merchandise. So the Returned is False condition appears as a separate factor on the other side of the AND connector.</td>
<td>(Product Exactly Matches AX5000"
OR
ZIP Code Exactly Matches "11366")
AND
Returned is False</td>
<td>
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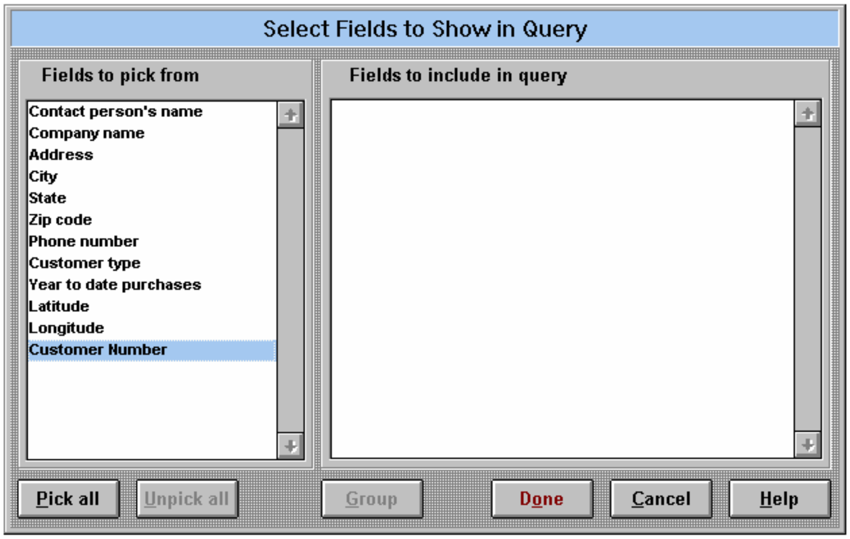
<tr><td>AX5000</td><td>Classic Inc.</td><td>11366</td><td>1992</td><td>F</td></tr>
<tr><td>AX5000</td><td>EC Madness</td><td>94577</td><td>1994</td><td>F</td></tr>
</table>
</td>
</tr>
</table>

For another example that illustrates the importance of using parentheses with AND/OR connectors, see Appendix A.

Selecting Fields to Show in Query



When you design your query, you need to think about what you'd like to appear in the results. In most cases you won't need to see *every* field in the database.

The *Select Fields to Show In Query* dialog is where you specify which fields you want to see when the query is run.

You will be shown this dialog the first time you press **Select** on a query you have highlighted in the Query List Manager.

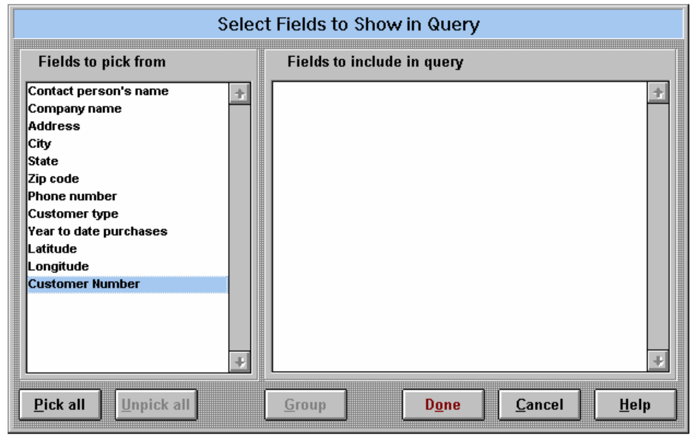
If you select a query that has already been assigned fields, you will be taken directly to the *Query Overview* Dialog.

By pressing these buttons, you can select fields to appear in your query results:

Button	Action
Pick all	Selects all fields to display in the query results. To select a single field, you can either: • Double mouse click on it. • Use the arrow keys navigate to it and then press the **Enter** key. To unselect a field, just repeat this action on the selected field.
Unpick all	Unselects any fields in the set of fields to include in the query results.
Group	Displays the *Select Group Field Type* dialog which gives you two organizing functions: • To break up your query result into subgroups. • To calculate and show summary information on selected fields. (For more information, see the next section, *Picking Group And Summary Fields.*)
OK	Saves your selected fields and takes you to the *Query Overview* Dialog.
Cancel	Exits this dialog without saving any changes that you made.
Help	Displays descriptive help text.

Selecting Output Fields: An Example

Suppose you want to provide your best sales person with a list of recent contacts for a telephone-based sales campaign. *For the output you will want to see Contact person's name, customer number, company name and phone number*. Here are the steps for specifying the output fields for this example:



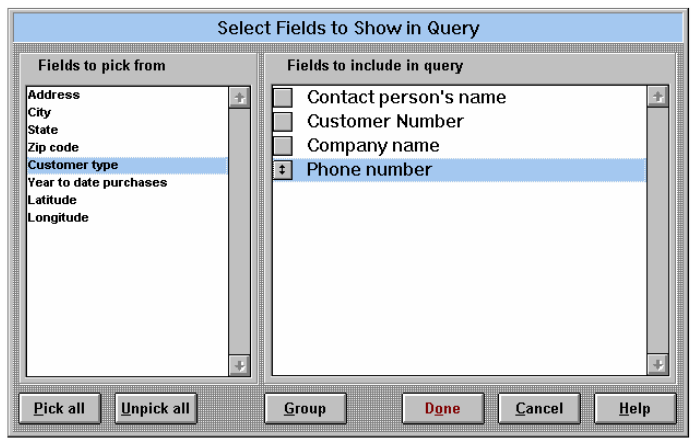
1. In the Query List Manager, highlight the query you want, then press the **Select** button.

   If this is the first time you selected this query, you will see the field selection dialog to the left. If you have already selected output fields, you will be taken directly to the *Query Overview* Dialog.

   If that happens, press the **Edit output fields** button to go to this *Select Fields to Show in Query* dialog.

2. To select the fields you want, move the mouse cursor over the *Fields to pick from* list (left side of screen).

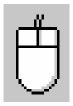
3. Double click on each of the fields you want to select:
   - Contact person’s name
   - Customer number
   - Company name
   - Phone number



As you double click on each of the desired fields, Query Maker lists them in *Fields to include in query* (right side of screen).

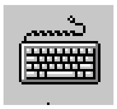
Changing the Order of Output Fields

In the course of selecting output fields, you may wish to change their order or position. In a report, the order of the vertical columns displaying your query's data is determined by the order of fields that you have selected. You can change the order in the following ways.



Using the mouse:

1. Select a field by clicking on the button to its left.
2. Drag the field to its new position and release the button.



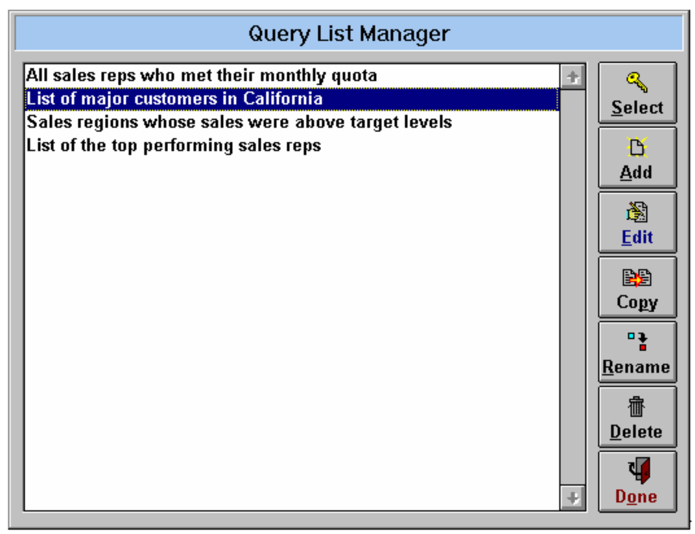
Using the keyboard:

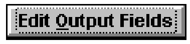
1. Use the tab or arrow key to highlight the field you want to move.
2. Hold down the control key while pressing an up or down arrow key until the field is in its new position, then release.

Selecting Output Fields When the Query has been Selected Previously

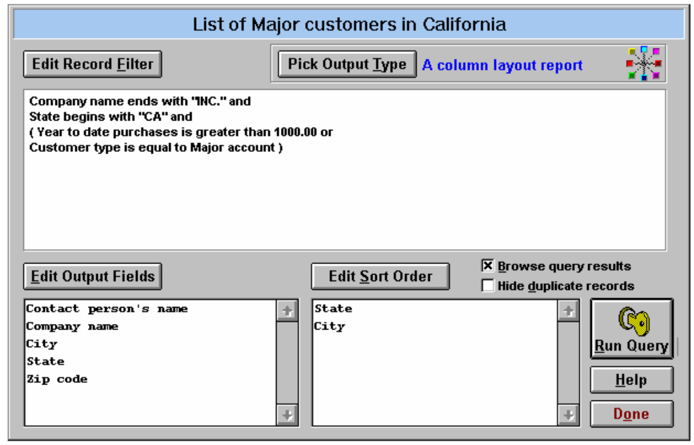
If the query has already been created and you want to change the list of output fields:

1. Go to the Query List Manager and select the query you want to work with.



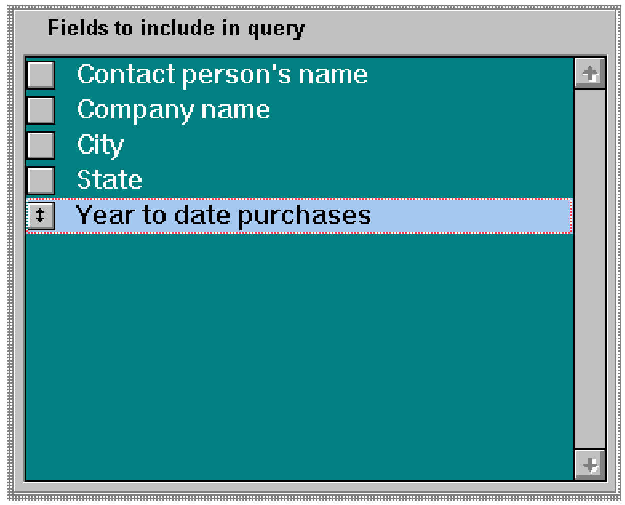
2. In the *Query Overview* dialog, press 

to display the previously selected output fields and make them available for editing.



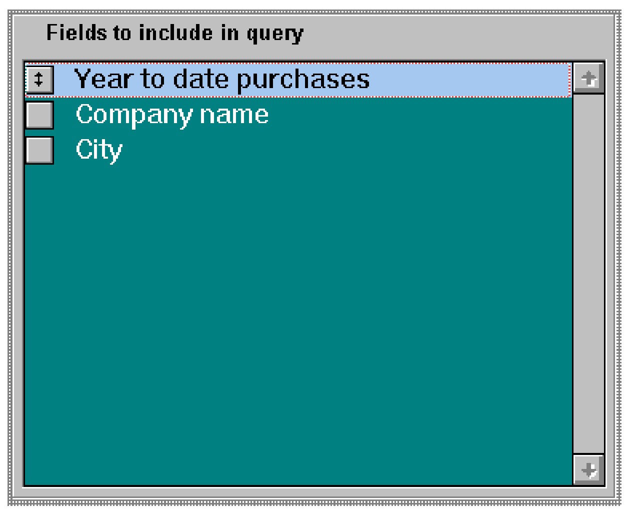
Query Maker will present the *Select Fields To Show In Query* dialog.

The previously specified list of output fields differs from what you need right now. (For example, you don't want **State** or **Contact person's name**.



3. Eliminate the **State** and **Contact person's name** fields by clicking on them in the right side *Fields to include in query* column.

4. Next, click on the move button to the left of the **Year to date purchases** field and drag it to the top of the list so it looks like this:



Picking Group and Summary Fields

When you are in the previously described *Select Fields to Show in Query* dialog, you can also designate fields to summarize your numeric data. Your summary options include:

Option	Description	Example
Totals	Sum of a field across a range or group of records	Total sales for each day.
Counts	Number of records in a group	Count for each product in your inventory.
Averages	Average value of a field in a group	Average sale made by each salesperson.
Minimum	Highest value of a field in a group	Single largest order received in each region.
Maximum	Lowest value of a field in a group	Single smallest order received in each region.

How to Group and Summarize

To summarize on a numeric field, you need to designate at least two fields. One field needs to be designated as a group field and one as a summary field. A group and summary field are defined as follows:

1. Group field- the field that Query Maker will use to cluster information when building the summary value (e.g. use state to group sales records so all sales in the same state are combined into one set).

2. Summary Field- The field that you want to perform calculations on (e.g. calculate total sales by state).

An Example

In the following example, the report will summarize *year to date sales* (a summary field) by state (a group field). Each record in the query results will show the year to date sales for a single state.

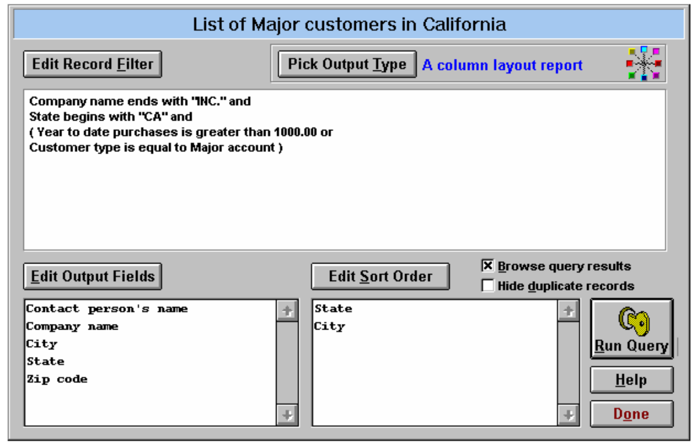
Before you start:

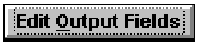
- Select a query.
- Specify these two output fields:

  State

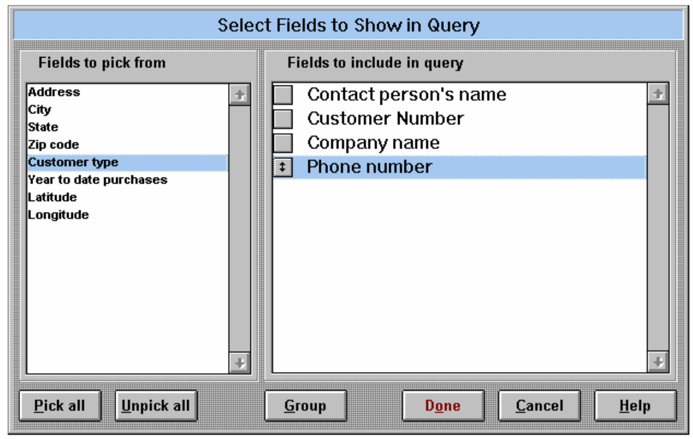
  Year-to-date purchases

1. After you have selected your query in the Query List Manager and picked your output fields, you will be taken to the query overview dialog shown at right. (See *Using the Query Overview* Dialog.)



2. To choose summary and group fields, press the  button. This action takes you to the *Select Fields to Show in Query* dialog.

The right-side column of this dialog shows the fields that will be displayed in the query results. The left-side column shows the available fields that have not yet been selected.

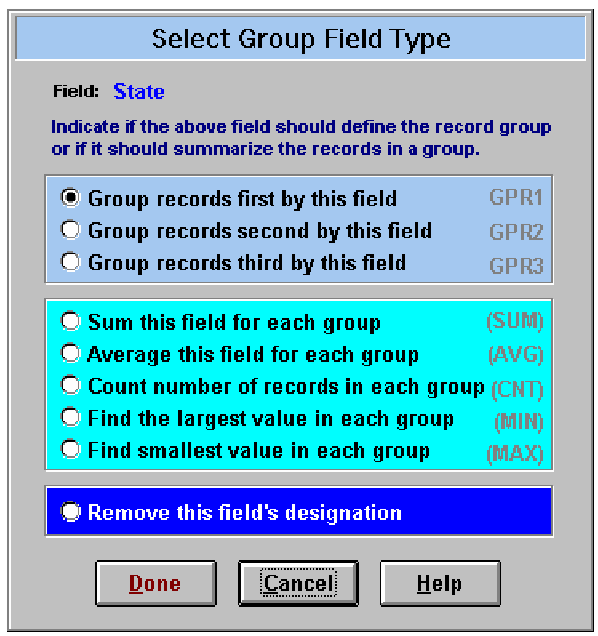


3. In the right-side column, highlight the **State** field with your mouse or arrow keys.

Press the  button to go to the group dialog

The *Group* dialog shows your selected field at its top. The first three options let you indicate the level of grouping.

Query Maker permits up to three different levels of group fields. (See Multiple Levels of Grouping)



4. The option you want is . Selecting this tells Query Maker to group together records by the State that the sale was made in.

5. Press  to save your group field selection and return to the *Select Fields to Show in Query* dialog shown in Step 3.

The (*Sum*) indicator now appears on *Year to date purchases*.

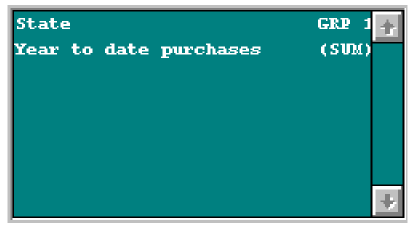
6. In the right column, highlight the field named: **Year to date purchases**

   Next, click on the **Group** button again. This will display the same dialog you saw in Step 3.

7. Pick the **Sum this field for each group** option. This will tell Query Maker to add the numbers stored in the *Year to date purchases* field for each record in each state.

8. Press **OK** to save your selection and return to the *Select Fields to Show in Query* dialog.

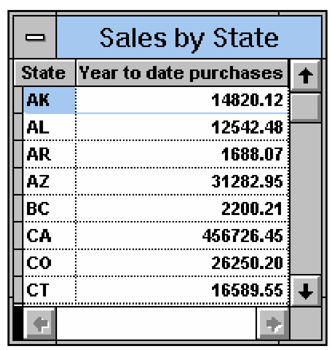
9. Press **OK** again to return to the Query Overview dialog. The panel in the lower left-hand corner will show your two output fields next to their group and summary designations.



10. You are now ready to run the query by pressing the **Run Query** button.

Running this query will select those records that match your filter condition and produce the summary table shown at right.

Note that each state record shows the sum of all purchases in that state.



State	Year to date purchases
AK	14820.12
AL	12542.48
AR	1688.07
AZ	31282.95
BC	2200.21
CA	456726.45
CO	26250.20
CT	16589.55

Multiple Levels Of Grouping

Query Maker allows you to create up to three levels of grouping.

An Example

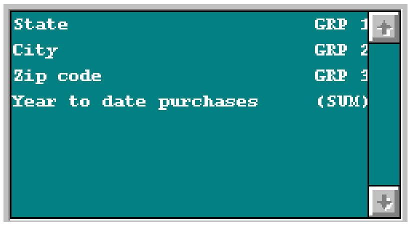
In this example, we will create a report on your customers. At the first level, we want to see the report's records grouped by customer state. But within each state, we want to see records grouped by city. Within each city, we want to see totals for each zip code.

1. Set *State* so that it is marked with a GRP 1 indicator. (See *Picking Group and Summary Fields*)

2. Set *City* so that it is marked with a GRP 2 indicator.

3. Set *ZIP Code* so that it is marked with a GRP 3 indicator.

In the *Query Overview* dialog, the field list in the lower left corner will look like this:

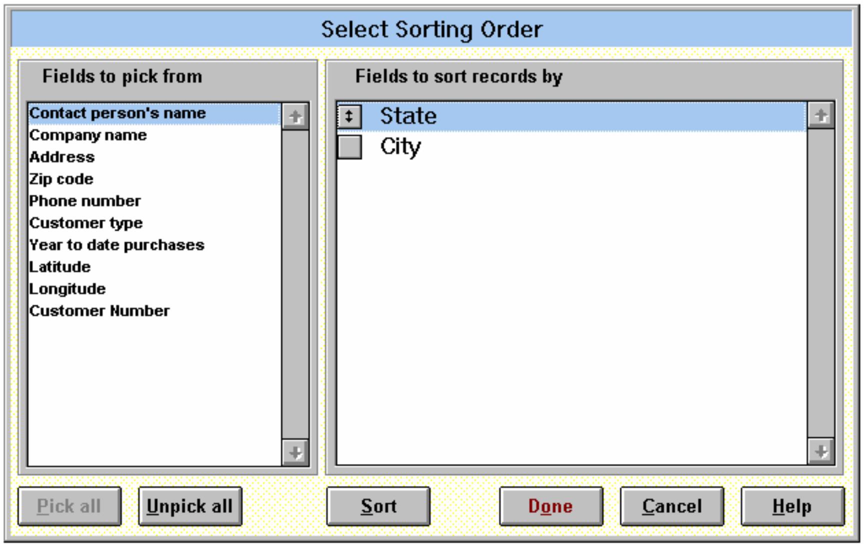


After you run the query, the report might look something like this:

State	City	Zip code	Year to date purchases
AK	Bethel	99559	14820.12
AL	Huntsville	35802	2244.58
AL	Opelika	36801	10297.90
AR	Little Rock	72205	1688.07
AZ	Mesa	85204	2523.50
AZ	Phoenix	65020	17777.06
AZ	Phoenix	85021	655.91
AZ	Phoenix	85040	2684.18
AZ	Phoenix	95040	348.34
AZ	Scottsdale	85253	543.28
AZ	Scottsdale	85254	5331.48
AZ	TEMPE	85282	1419.20
BC	Victoria	V8W 1	2200.21
CA	Agoura	91301	6892.47
CA	Antioch	94509	1757.96
CA	Arcadia	91006	6176.09

Note how the records are first sorted by state, then sorted by city within state, then by zip code within city. The final column shows the sales for each zip code.

Sorting the Output Records



This dialog lets you determine how your results will be sorted.

To select a sort field by mouse, double click on it. To select by keyboard, highlight it and press **Enter**.

You may specify up to nine different sort fields.

Pick all	N/A	This button is disabled because you specify sort fields one at a time.
Unpick all	Removes all fields from the *Fields to sort records by* list.	This allows you to clear all previous sort selections and display information in the order it appears in the database.
Sort	Alternates a selected sort field between an ascending sort order and a descending sort order. (Sort is ascending unless you specify otherwise.) 1. Highlight a field in the *Fields to sort records by* list. 2. Press **Sort** to toggle between ascending and descending order.	If you have specified descending order, then the *DOWN* indicator appears:  Note: If you have specified more than one sort field, changing the status of ascending or descending does not move fields to a different position in the *Fields to sort records by* list. (The first field in the list is sorted before the second and so on.)
OK	Saves your sort specifications and exits this dialog.	You return to the Query Overview Dialog.
Cancel	Exits without saving changes.	You return to the Query Overview Dialog.
Help	Displays descriptive help text.	

Note: You can change the order of fields in the sort list in the same way that you reorder output table fields (See *Selecting Fields to Show in Query*.)

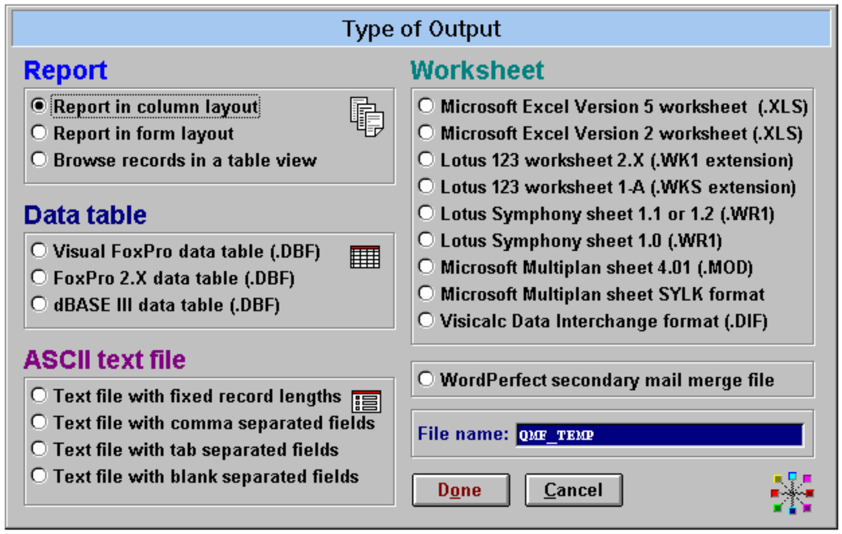
Selecting the Type of Output

Query Maker lets you send the results of a query to a variety of formats including reports, worksheets, databases and text files. Alternately, you can view your query results on screen without writing the results to another format. To select any of these output options, follow the steps below.

1. Display the *Query Overview* dialog by selecting the query in the *Query List Manager*.

2. In the *Query Overview* dialog, press **Pick type of output**.

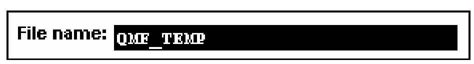
3. Query Maker will display the *Type of Output* dialog shown at left.



4. Select the type of output you prefer by clicking on the associated button.

   For example, if you want a standard report, click on:

5. If you have specified one of the options shown to the right, fill in a filename that Query Maker can use to save the output:



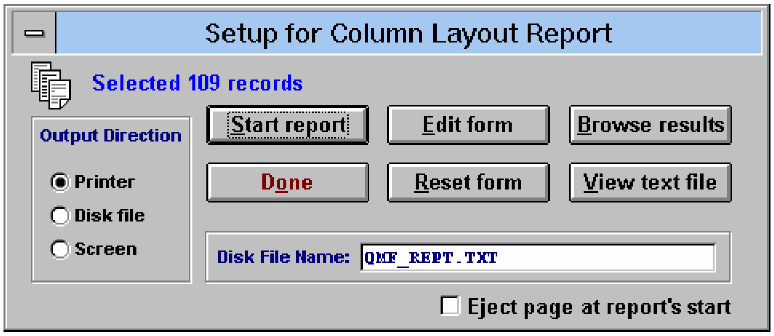
   Note that your file name must always begin with the letters "QMF". This is required to prevent you from accidentally overwriting a data or program file being used by this application.

   The type of output options that require a file name include the Database, Mail-merge, Text file and Worksheet options.

6. Press **OK** to save your choices and exit this dialog.

Creating Reports

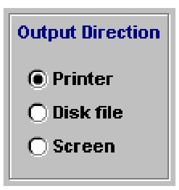
Using the Report Setup Dialog

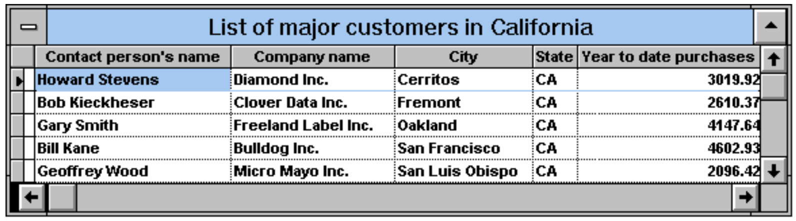


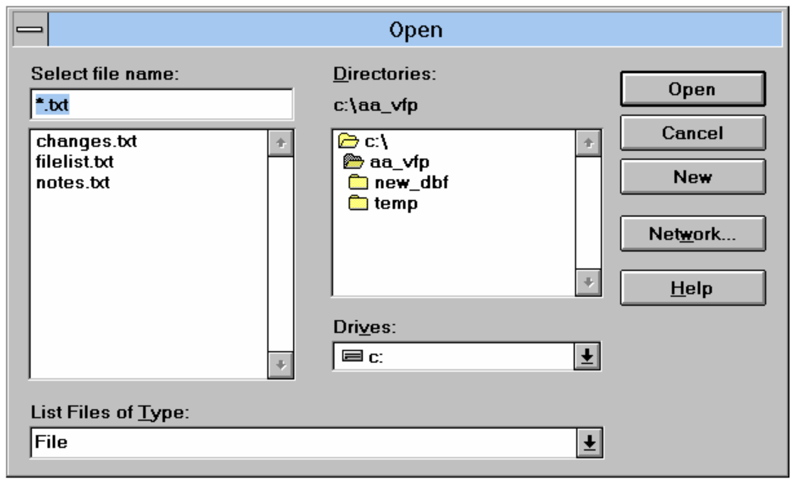
In the *Query Overview* dialog, if you have chosen to output to a report and pressed **Run Query**, you will be taken to this *Report Setup* dialog.

This screen lets you customize the appearance of your report, preview the report on screen and then print it.

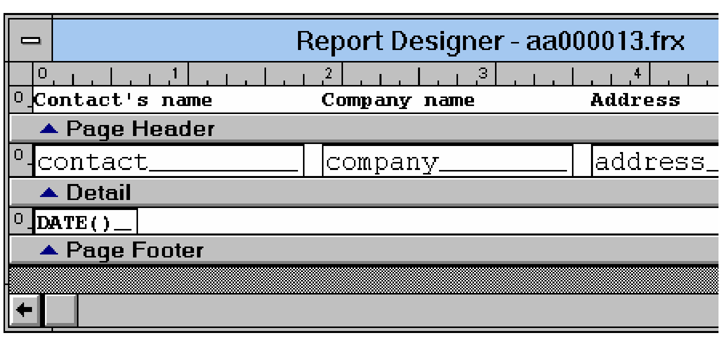
Your options in the *Report Setup* dialog are as follows.

Button	Action	Description
	Specifies where to send the report.	• **Printer**- sends hard copy output to your printer. • **Disk file** - writes the report contents to a text for import into a word processor. • **Screen**- displays a screen preview of the report.
	Activates report preparation.	Generates the report and sends it to the printer, disk file or screen destination you selected.
	Displays a report form so you can edit it.	For more information on modifying report forms, see *Modifying a Report Form.* NOTE: Don't specify fields that are missing from the Query Maker dialog: *Select Fields To Show In Query*. Reports cannot find such fields unless they are part of the query.

<table>
<tr><td>Browse results</td><td>Displays an on-screen table view of the query results. After viewing the browse, Query Maker returns you to this Report Setup dialog.</td><td>
</td></tr>
<tr><td>Done</td><td>Dismisses the dialog without outputting the report and returns you to the prior screen.</td><td>You are returned to the Query Overview dialog.</td></tr>
<tr><td>Reset form</td><td>Query Maker will restore the report form to its original state. This is the state it was in the first time you ran the query.</td><td>Changes are eliminated:
- Report forms return to a single-line columnar format with fields in the same order as you specified them in the Fields to Show in Query dialog.</td></tr>
<tr><td>View text file</td><td>Displays the contents of any ASCII text file on your computer’s disk.

The main purpose of this feature is to display the contents of text files written to disk. If you want to view a report, it will be easier to read if you select a screen output destination rather than send it to disk and view it here.</td><td>
</td></tr>
<tr><td>☐ Eject page at report's start</td><td>If checked, then a page eject will be sent to your printer before the report starts printing.</td><td>You will only need to do this if you notice that the first page of your report contains information from the last document that was sent to your printer.</td></tr>
</table>

Modifying a Report Form

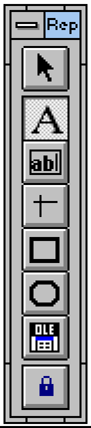


When you press the **Edit form** button in the *Report Setup* dialog, you will be taken to the report design window.

While in this window, you can customize many aspects of your report using the following tools.

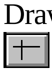
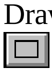
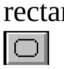
The Report Controls Toolbar

The **Report Controls Toolbar** provides a set of tools for modifying your report form. To open this toolbar, pull down the **View menu** (Alt+V) and click on the **Report Controls Toolbar** menu option. These tools include:



Tool name	Action Performed by Tool
Section pointer	Lets you to select objects in the report form.
Text tool	Adds text to the report form.
Field tool	Adds a field or expression to the form.
Line tool	Draws a line.
Rectangle tool	Draws a rectangle.
Rounded-rectangle tool	Draws a rounded rectangle or circle.
Picture/OLE tool	Adds a picture or OLE object to the report form.
Lock button down	Keeps above tool button pushed down for multiple uses

Adding and Modifying Report Objects

Editing Action	How to Perform
Editing text 	To add or edit text in your report such as a label or description, first mouse click the text tool. Next, click in the Report Design window where you want to add or edit the text. Type in the desired text.
Drawing lines 	To draw a line in your report, first click the line tool. Next, position the cursor where you want the end of the line to be and drag until the line is the desired length, then release the mouse button.
Drawing rectangles 	To draw a rectangle in your report, click the rectangle tool. Next, position the cursor where you want a corner of the box to be, and drag until the box is of the desired size, then release the mouse button.
Drawing rounded rectangles 	To draw a rectangle with rounded corners in your report, first click the Rounded-Rectangle tool. Next, position the cursor where you want a corner of the rounded rectangle to be, and drag until the rounded rectangle is the desired size. To indicate how rounded your rectangle should be, double-click on the rounded-rectangle object to open the *Round Rectangle* dialog. In this dialog, you can pick the shape of the rounded rectangle, from slightly rounded to completely oval.

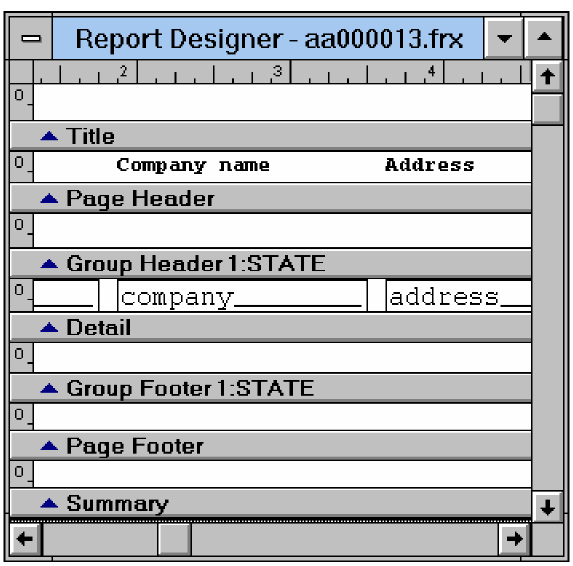
Inserting more fields or expressions	To add a new field or expression to your report, first click the Field tool. Next, click in the form where you want the field to appear. Do not add fields to the report that are missing from the Query Maker dialog named *Select Fields to Show in Query*. Reports will not work unless the fields they contain are part of the query.
Inserting pictures	To insert a picture or graphic in your report, first click the Picture tool. Next, click and drag a marquee to the desired size in the Report Layout window. The *Report Picture* dialog will then open.

Notes on Selecting Objects

1. Mouse click on an object to select it.
2. Click and drag the selection marquee around several objects to select them as a set.
3. Shift+click on multiple objects to select them together as a set.
4. When objects are selected, you can move them or resize them with the mouse. You can also change their font, and color by choosing menu options from the Format (Alt+O) pull-down menu.
5. Double-click on objects to open dialogs that let you change their attributes.
6. When finished changing selected objects, press the selection pointer, to unselect them.
7. To exit and save your changes, press **Control+W**. To exit without saving changes, press the **Esc** key. In either case, you will be returned to the *Report Setup* dialog.

Report Band Types

The horizontal bars that span the column width of your report separate the report into band types. The various types of bands you can modify include:



Band Type

Title band: Contains text that appears before main report begins.

Page Header band: Displayed at top of each page of the report.

Group Header band: Displayed at top of each data group.

Detail band: Makes up the report's body & contains output fields.

Group footer band: Displayed at bottom of each data group.

Page Footer Band: Displayed at bottom of each report page.

Summary Band: Displayed at the end of the main report.

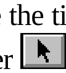
To adjust the vertical location of the various bands, mouse click on them and while holding the mouse button down, drag them up or down. All report forms start out with only a *Page Header band* and a *Detail band*. If you want additional bands, you must add them by selecting them from the *Report* pull-down menu explained on the next page.

Using the Title/Summary Dialog

This dialog allows you to indicate whether a title and/or summary band should be included in the report

You can access this *Title/Summary* dialog when you choose the Title Summary option of the Report pull-down menu.

The *Title/Summary* dialog contains the following options:

Option	Action performed if selected
Title Band	If you check this box, you will include a title band in your report. Checking this option does not add a title to your report, it just opens up a space to put it. In order for a title to appear, press the text tool  button, click in the open space above the title band and type in your title. When done typing, press the selection pointer  button.
New Page	If you check this box, a page eject will be issued after the Title is printed. This causes the title band to appear on its own page.
Summary Band	If you check this box, you will include a summary band in your report. As with the title band, for a Summary Band to appear, you must type it into the report form.
New Page	If you check this box, a page eject will be issued before the Summary band is printed. This causes the report Summary band to appear on its own page.

Creating a Detail/Summary Report

A Detail/Summary report allows you to see both detail and summary records. A detail record contains copies of the fields from the database you queried. A summary record collapses or combines two or more detail records into a single record. For example, suppose you want to generate a sales report that shows each individual sale record and also shows the total sales by state. To do this, you would select one field in your report form to be a group field and another field to be a summary field. A group field is a field whose values remain constant across a set of records. A summary field summaries the records in each group. How you do this is explained in this section.

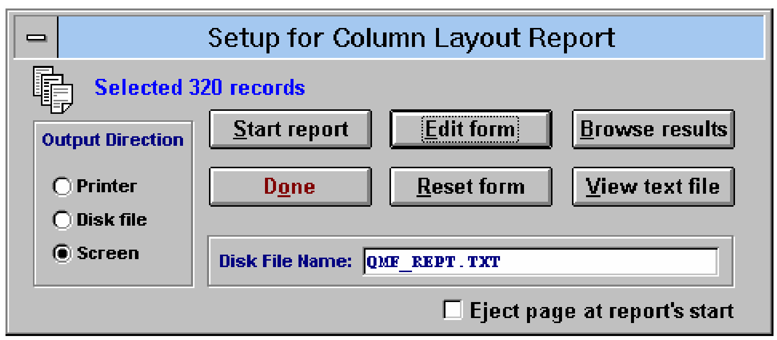
Continuing the above example, if each record in your file represents a sale, you would select the field that holds the state the sale was made in to group your records by. That is, the records would be grouped together by state. A group only makes sense if you also select at least one other field to summarize each group with. In this example, you would select a numeric field that holds the amount of the sale. For a summary statistic, you might select the "Sum" statistic to total the sales by state for the year. However, you could choose an "Average" to show the average sale size by state or choose a "Count" to show the number of sales made in each state. The statistics available to you include:

Count:	Number of records in the group.
Sum:	Total of all values in the group
Average:	Mean or average value of the group.
Lowest:	Single lowest value in the group.
Highest:	Single highest value in the group.
Std. Deviation:	Standard deviation in the group.
Variance:	Variance (or degree of variation) in the group.

While you can select any field to count, the other statistics require you to select a numeric field. Below is a step-by-step example.

This example below assumes that you are querying a file of sales records. From this file, you selected the two output table fields of **Year to date sales** and **State**. In this example, you will create a Detail/Summary report that groups by state and summarizes sales for each state.

STEP 1: Go to report setup

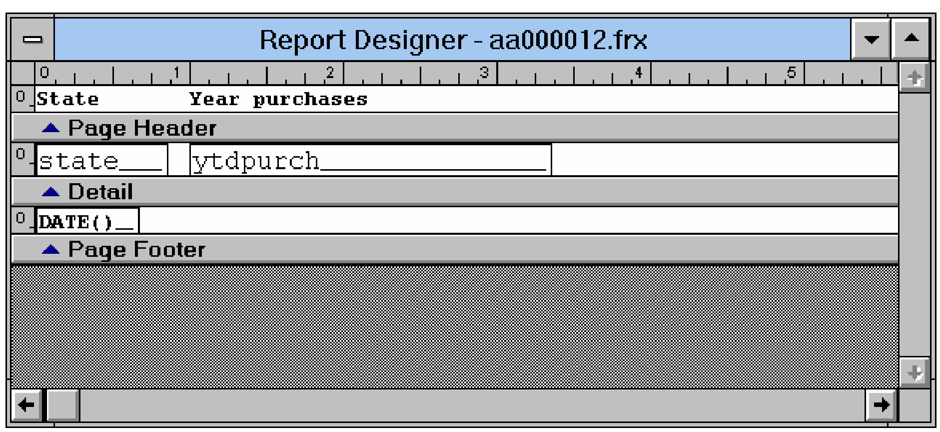


Run a query that has **State** and **Year to date purchases** selected as output table fields. This will take you to the *Report Setup dialog*.

Press the 

button to access the Report Designer.

STEP 2: Open Report Designer



After pressing the 

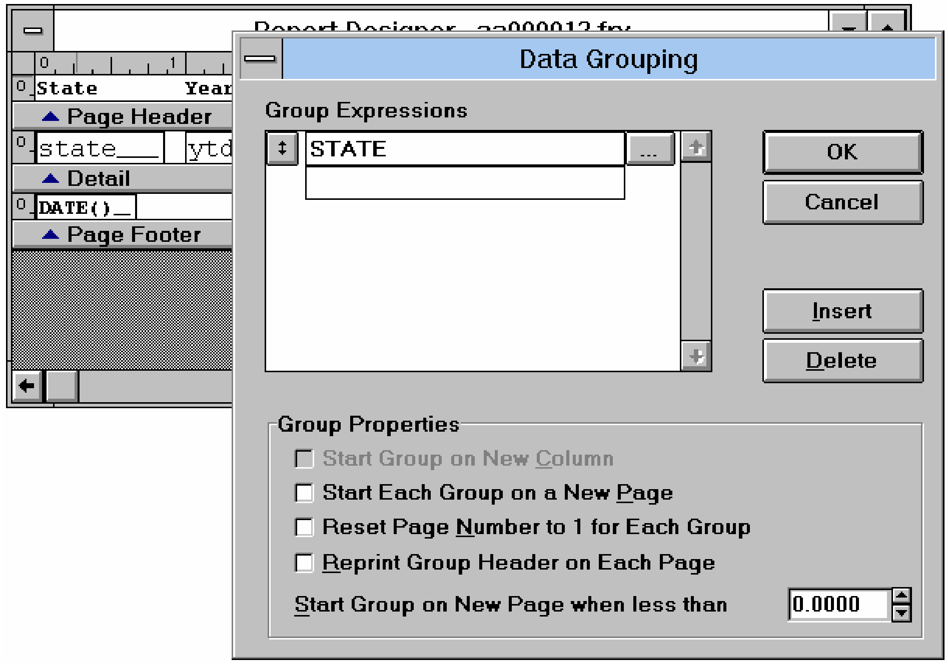
button, you will be shown your report form as it exists in the *Report Designer dialog*.

Pull down the **Report menu** by pressing **Alt+R** or by clicking on the **Report** pull-down menu pad. Next, select the menu option reading **Data Grouping...**

STEP 3: Data Grouping Dialog

Before you can enter a group field, you must first mouse click in the empty text box at the top of the **Group Expressions** list. Once the cursor is sitting in this text box, type in the name of the group field, which in this case is **STATE**

Click the **OK** button to return to the *Report Designer*.



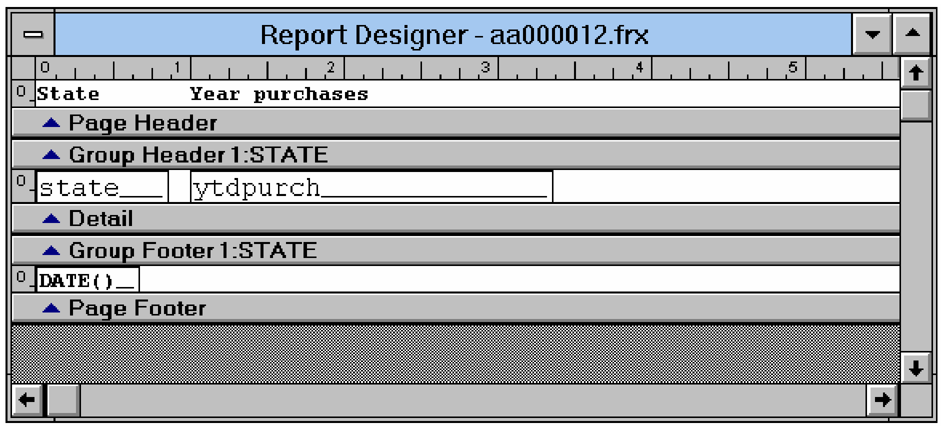
STEP 4: Return to report form

The *Report Designer* will now show your report form with two new horizontal bands. Near the top of this report form directly under the **Page Header** band will appear the first new band labeled:

Group Header 1: STATE.

Additionally, directly after the Detail band will appear the second new band labeled:

Group Footer 1: STATE



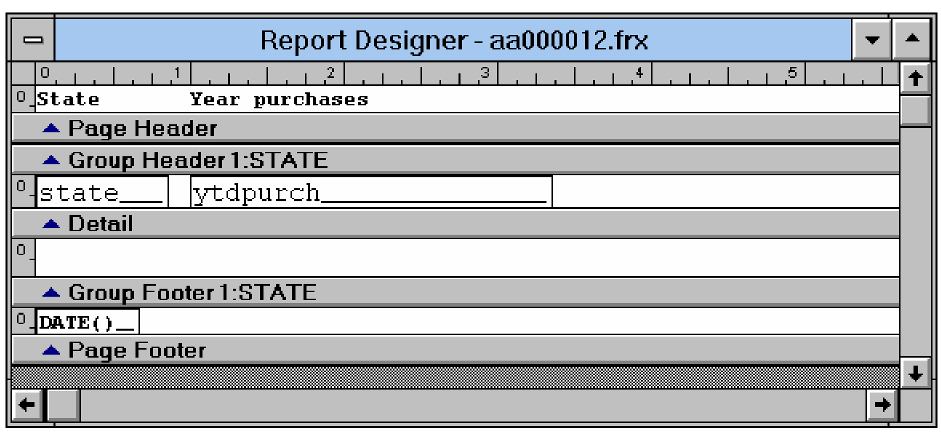
Now that you have selected a field to group records by, you must insert a summary field in your form. This summary field will display a statistic such as a total or average for the records in each group.

STEP 5: Make space for sum

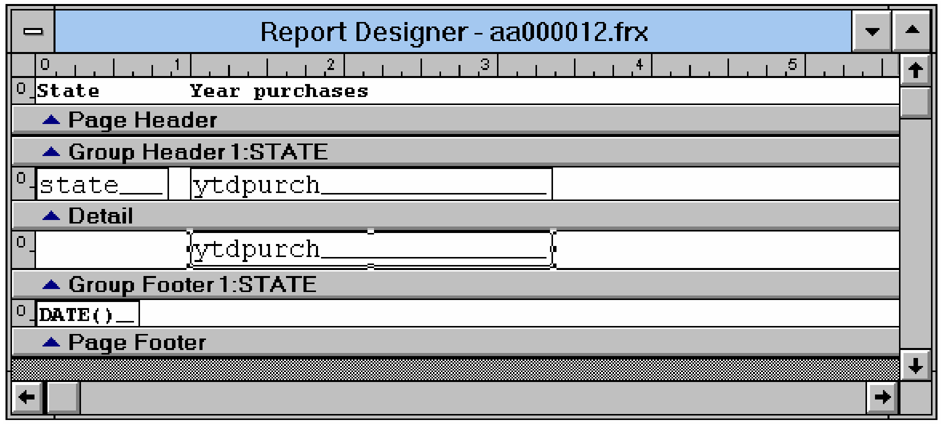
Before you can insert a summary field, you must first open up a space in the report form to hold it. To make this space, click on the band:

Group Footer 1: STATE

Then, while holding the left mouse button down, drag the mouse downward to create the space.



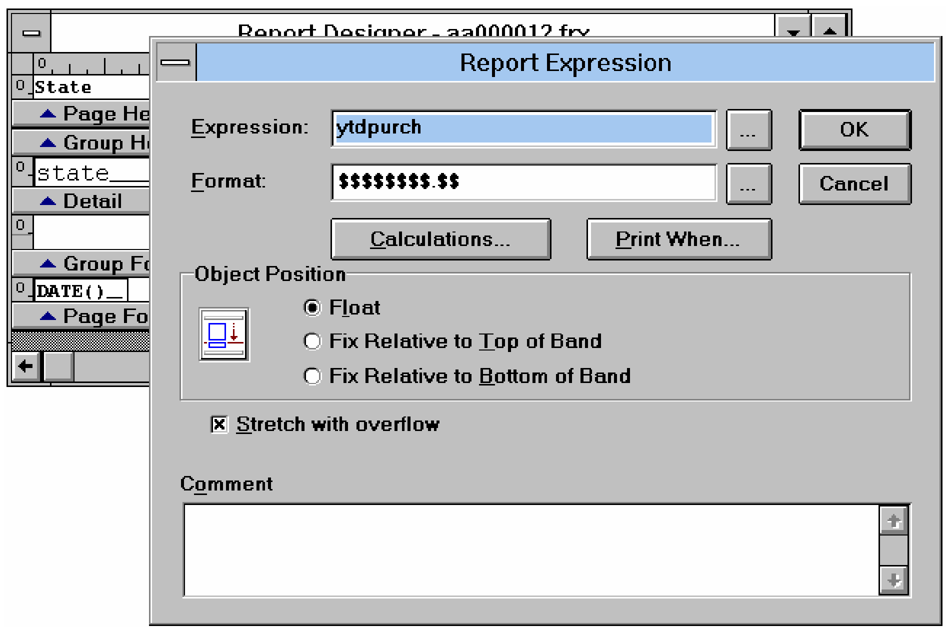
STEP 6: Insert sum field



In this new space, insert the name of the field to be summarized. The best way to do this is to copy this field from the detail band in your report form. First select the **'Year to date purchases'** field named **ytdpurch** which appears directly above the Detail band. Copy it to the clipboard by pressing Control+C. Next, paste in a copy of this field by pressing Control+V. Click and drag this pasted field to position in the newly opened space above the band:

Group Footer 1: STATE

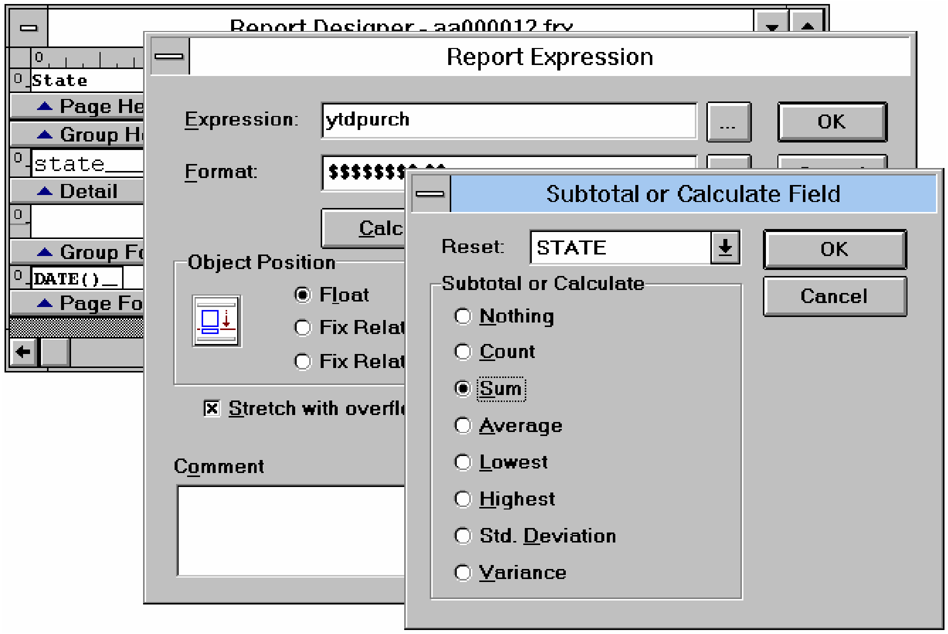
STEP 7: Open Expression



Once this summary field is in place, you must indicate which type of summarization should be performed. To do this, first double click on the **Ytdpurch** field you just copied to the Group Footer band. This will open the *Report Expression dialog* shown to the right.

Now click on Calculations...

STEP 8: Open Calculate Dialog



After clicking Calculations..., you will see the *Subtotal or Calculate Field dialog*.

Click on the type of summarization you want, which in this case is Sum.

Now click **OK** to exit. This will take you back to the *Report Expression* dialog. Click **OK** to exit this dialog and return to the *Report Designer*.

To preview your report while still in this designer, pull down the report menu (Alt+R) and select the **Preview** option.

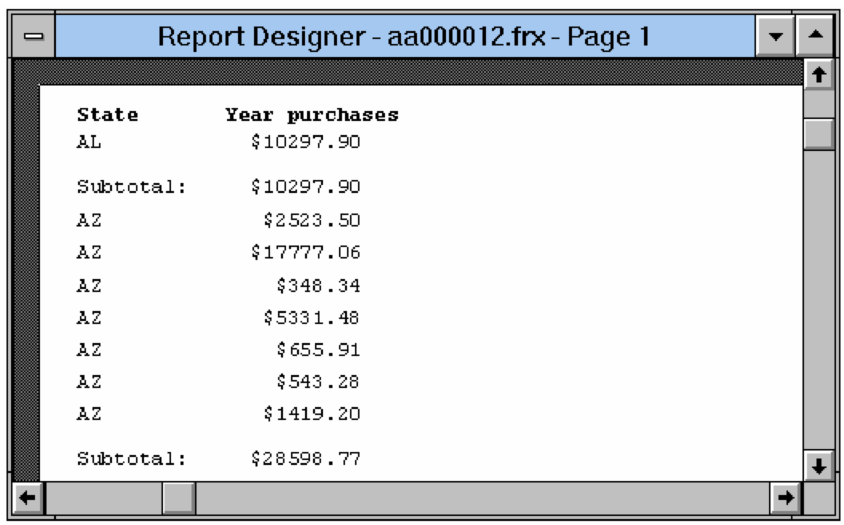
When done, you can exit and save by pressing the Control+W keys. This will return you to Query Maker's *Report Setup* dialog.

To make your report clearer, insert a description next to your summary field. To do this, first make sure the **Report Controls Toolbar** is visible. If it isn't, pull down the **View menu** (Alt+V) and click on the **Report Controls Toolbar** option. Next, click on the Text tool button. Click in the blank region to the left side of this summary field and type in a description such as **Subtotal:** When done, click on the selection pointer button, then press **Control+W** to exit and save

STEP 9: View report

After exiting the Report Designer, you will return to the *Report Setup Dialog* shown in STEP 1. To preview your report before printing, pick the output direction of **Screen** and click Start report.

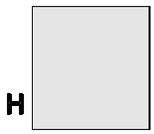
You will see something as shown to the right. To print your report, change the output direction to **Printer** and click **Start report** again.



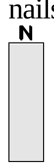
APPENDIX A: Another AND/OR Example

In the following example, we wish to know what combinations of purchases customers have made in a hardware store. In this way, we can identify cross-selling opportunities. The customers we will investigate have purchased some combination of hammers, nails and glue.

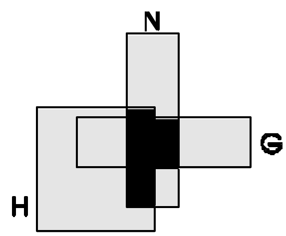
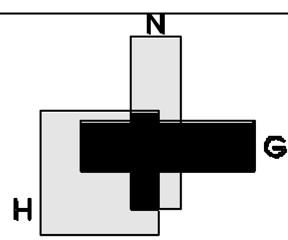
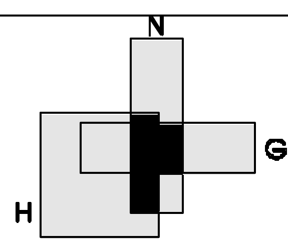
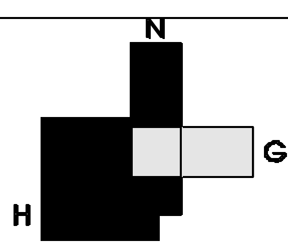
Customers who purchased a hammer.



Customers who purchased nails.



Customers who purchased glue.

Query Condition	Illustration of Outcome	Description of Outcome
Product *equals* Glue OR Product *equals* Hammer AND Product *equals* Nails		Here we have selected all glue or hammer customer who have also purchased nails.
Product *equals* Glue OR (Product *equals* Hammer AND Product *equals* Nails)		Here we have selected those customers who have either glue or a set of hammer and nails.
(Product *equals* Glue OR Product *equals* Hammer) AND Product *equals* Nails		This is the same as the first set of conditions. We have used brackets to confirm left to right processing.
(Product *equals* Hammer OR Product *equals* Nails) AND (Product *does not equal* Hammer and Product *does not equal* Nails)		Here we have identified all the customer with either hammer or nails, but not both.