



# R:BASE for Windows Tutorial

Welcome to the R:BASE for Windows Tutorial. Click on one of the following topics to learn about it.

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[Importing Data](#)

[Analyzing Data](#)

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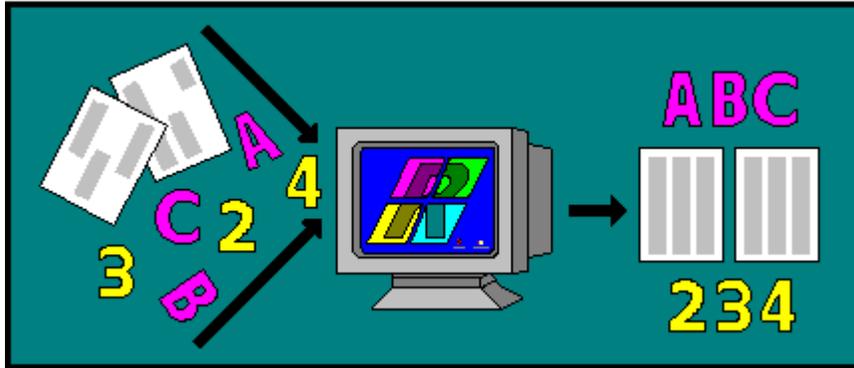
[Printing the Contents of a Window](#)

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## Overview

Welcome to R:BASE, a powerful relational database that makes your data very easy to access and analyze.





## Overview

R:BASE is a powerful relational database. You can access your data with the Data Browser, query your data with Query By Example, enter and edit data using custom forms, and print your data using reports. You can create applications without having to program. R:BASE provides multi-user mode and embedded SQL. The menus and tool bar work just like your other Windows programs. In addition, the Object Manager puts all your database features just a mouse click away.



**The R:BASE menu always has the options File, Tools, Utilities, Window and Help. This menu is dynamic; additional options are added depending on the action being performed. For example, when using the Data Browser, the options Edit, Sort, Calculate, and Layout are added.**

**The tool bar provides quick access to the most frequently used features in R:BASE; including all of the designers. For a description of each button, click the Help button and see the "Buttons" topic.**

**Help is always available. You can open Online Help by using the Help menu, or click the Help button. Online Help includes information about many topics, command syntax, and commonly used procedures.**

**Report**

A report allows you to print data from a table. A report can be as simple as a customer listing or it can summarize and sub-total data.

**Application**

**An application is a set of menus and menu options you define to perform specific actions on data in your database. The Application Designer makes it easy to build your own custom applications.**

**Multi-user mode**

**Multi-user mode allows two or more people to interact with the same network database. R:BASE ensures data integrity with automatic locking control.**

## **SQL**

**SQL, Structured Query Language, is a standard methodology established by ANSI (American National Standards Institute) and recognized in the database industry as the optimal way to query data. R:BASE uses SQL commands to retrieve or manipulate your data.**



# Overview

The Object Manager quickly provides access to database features, such as applications, views, forms, reports, and labels.



**Click on the tabs to work with specific features. The Object Manager lists everything defined for that area. For example, click the Forms tab and the Object Manager lists all the forms defined for the open database.**

**Click the buttons to perform specific actions and manage the database. For example, if forms are listed, click the Design button to modify the highlighted form, or click the Run button to use the form.**

**The area at the bottom of the Object Manager shows you a description of the selected item, or the current directory location for databases and applications.**

**The Help button provides context-sensitive help about the Object Manager.**

## **Labels**

**Labels, like reports, allow you to print data from your database. Labels can be printed on standard label stock, or you can specify custom formats.**

## **Views**

**A view is a query condition that you have saved.**





## Designing a Database

Before you can put data in your database, you must first set up the structure for your database. A good database design makes your data easy to work with; use the following guidelines when creating your database.

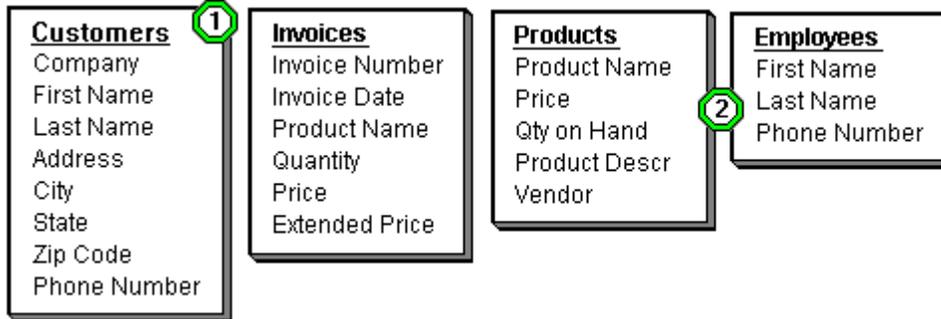
- **Think of your data in terms of lists.**
- **Create a unique identifying column for each group of data.**
- **Relate your data with linking columns.**
- **Maintain your data in “one-to-many” relationships.**
- **Keep your tables long and narrow.**



## Designing a Database

**Think of your data in terms of lists.** The data in a relational database is organized in tables. Each table contains information about a particular group or type of data, and is made of up of columns and rows.

First, identify the groups of data and pieces of information to store in your database. Use a sheet of paper for each group of data. Across the top of each sheet, write the name of the group of data to track, then list the pieces of information.



**The pieces of information to store about customers.**

**The first step is to identify the different pieces of information and group them together. These lists can change as you continue to design the database, such as the order, number, and name of items.**

## **Tables**

**Data is separated into groups according to the nature of the data. These groups are stored in tables. A table is like a list of things or events about one topic or group of information, such as lists of customers, products, employees, and invoices.**

## **Columns**

**Columns organize the data within a table. Each column contains one type of data. For instance, a table of customers might have a column for the name and a column for the address.**

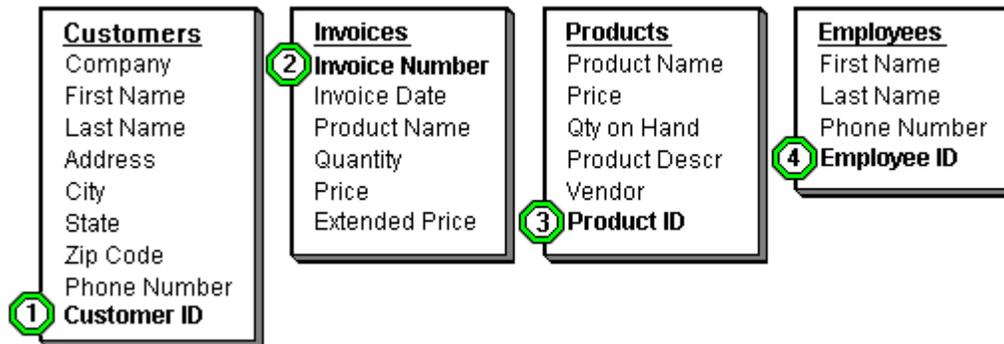
**Rows**

**A row in a table contains one set of data. For example, a table with customer information has one row of data for each customer.**



## Designing a Database

**Create a unique identifying column for each group of data.** In order to accurately access your data, each table must be able to uniquely identify each row. For instance, in a table of sales transactions, you must be able to tell each transaction apart. Although you can use names to identify rows, numbers are more reliable and you can guarantee that each number is unique. An "ID" column is an ideal way to uniquely identify rows. You can add an "ID" column to each table, such as a "Customer ID" to the table of customers, and "Employee ID" to the table of employees. A column that uniquely identifies rows is also called a primary key.



**The ID number is used to uniquely identify a row of data about a customer.**

**Invoice numbers are unique---the invoice number is used to uniquely identify a row. An ID column is not needed.**

**The ID number is used to uniquely identify a row of data about a product.**

**The ID number is used to uniquely identify a row of data about an employee.**

**Primary key**

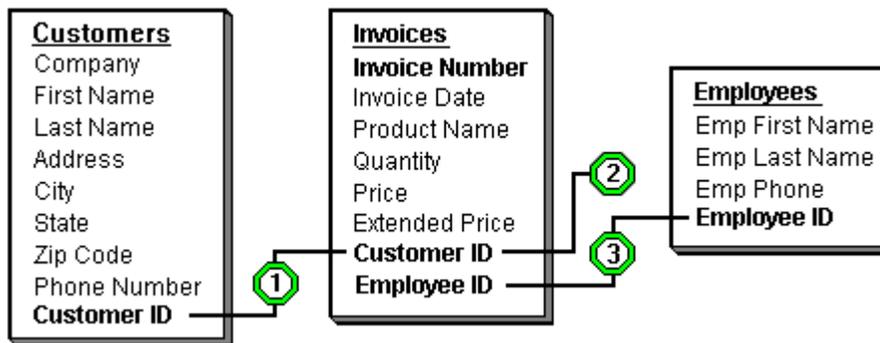
**A primary key is a unique identifier for a row of data in a table. For example, a social security number uniquely identifies a person and can be thought of as a primary key. A name, however, cannot be a primary key because people can have the same name.**



## Designing a Database

**Relate your data with linking columns.** A basic concept in a relational database is that data from one table is related to data in another table. By relating data, you can ensure that the same data is not stored twice in the database. Tables are related by linking columns, which are sometimes called common columns.

For example, the table of customers is related to the table of invoices--each invoice is related to the customer who made the purchase. Rather than include customer information both in the Customers table and the Invoices table, you can relate the tables. An ID column is usually used as the linking column. The linking column is the "Customer ID" column--put this column in the Invoices table to relate the two tables.



**The CustomerID column relates customer information from the Customers table to the Invoices table, identifying the customer who bought the merchandise.**

**Rather than storing the customer's name and address in the Invoices table, just the Customer ID is stored. By relating the tables with the Customer ID, you don't need to duplicate the customer information each time that customer makes a purchase. You reduce the amount of data that needs to be stored, making it easier to update customer information.**

**The EmployeeID column relates employee information from the Employees table to the Invoices table, identifying the employee who made the sale.**

## **Relating data**

**R:BASE links tables to eliminate redundant data and organize data more efficiently.**

**Linking column**

A linking column connects data in two different tables and defines a relationship between the tables. For example, the CustomerID column is in both the Customers table and the Invoices table, and it connects the customer information to the invoice information.

Linking columns do not have to have the same name in both tables.

### **Common column**

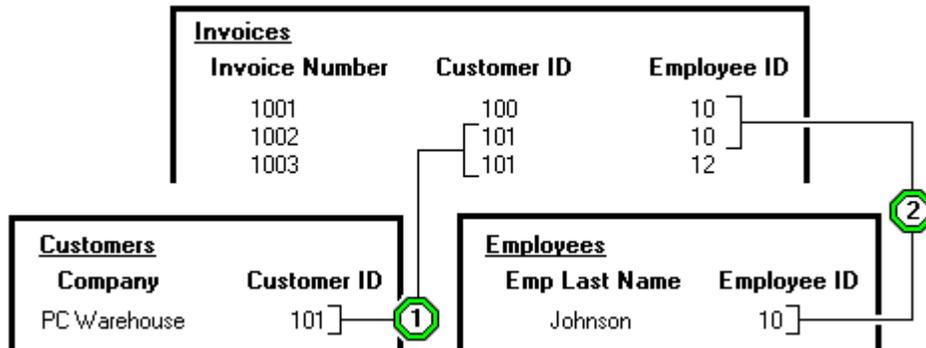
**A common column is a column that is used in more than one table, it has the same name in each table, and it should have the same information in each table. If columns from different tables have the same name but don't have the same information, the column names should be changed. For instance, the First Name column in the Customers table is different from the First Name column in the Employees table---one column lists customer names, the other lists employee names. Therefore, the First Name column in the Employees table has been changed to Emp First Name.**



## Designing a Databases

**Maintain your data in "one-to-many" relationships.** Customers are related to invoices because each invoice records which customer made the purchase. One customer can make many purchases, but each purchase is made by one customer. This relationship is called a "one-to-many" relationship. The Customers table is the "one" side, and the Invoices table is the "many" side---one customer to many invoices.

Check the table lists to make sure the linking ID columns are relating the tables in one-to-many relationships.



**The Invoices table (the *many* side) links to the Customer table (the *one* side) using the Customer ID column.**

**The Invoices table (the *many* side) links to the Employee table (the *one* side) using the Employee ID column.**

**Relationship**

**A relationship defines the way one table is related another table. The most common relationship is one-to-many. The other relationships between tables are one-to-one and many-to-many.**

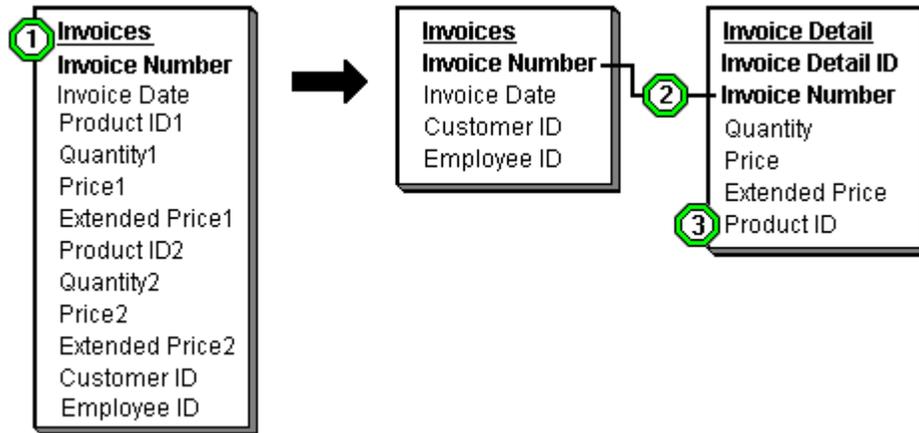
### **One-to-many**

**"One-to-many" indicates how data in one table is related to data in another table and is the most common type of relationship. The linking column between the tables defines the relationship. The column in the "one" side has no duplicate values. The column in the "many" side can have many rows of data for each distinct value in the "one" side.**



## Designing a Databases

**Keep your tables long and narrow.** A relational database is not like a spreadsheet; it works best with data stored in rows, not columns. For example, one invoice can have several detail lines. Instead of storing a transaction on one row with many columns that correspond to the number of detail lines, store general transaction data in one table, and store detail lines in another table, with one detail line per row. With this design, an invoice can have an unlimited number of detail lines.



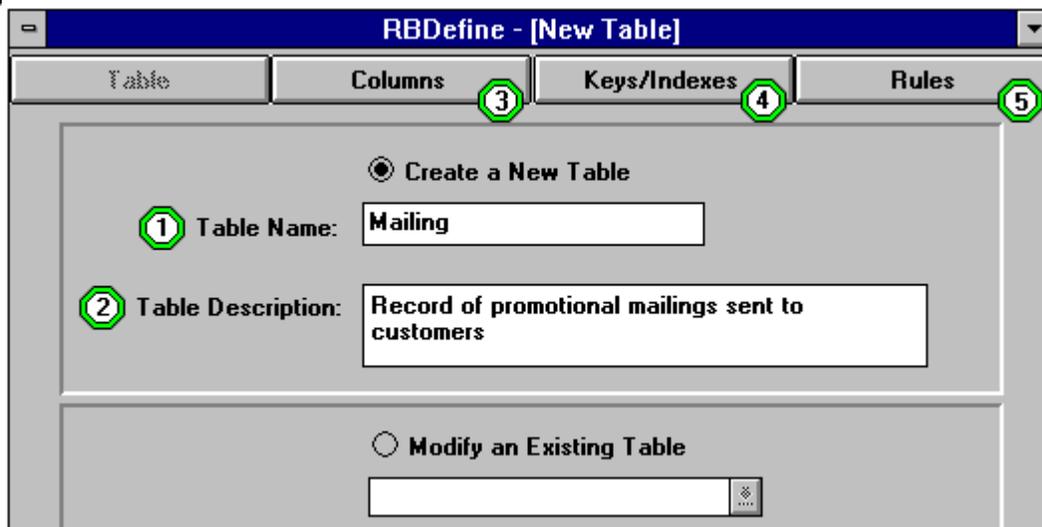
**A common design mistake is to put recurring elements into one row of data, rather than separate the elements into a "one-to-many" relationship. Recurring elements in one row, such as "Price 1", "Price 2", and "Price 3", creates an inflexible design, inefficient use of storage, and is difficult to query.**

**The Invoice Number column is used to relate invoice header information (the "one" side) with the detail line item information (the "many" side). In other words, you can have many detail lines for one transaction.**

**When the data is stored vertically, not horizontally, it is easy to query the database. For example, you can easily find out how many widgets were sold in December if the product ID number is stored in one column, Product ID. It is hard to find the answer if you need to search 10 different columns to find the Product ID.**

## Creating a Database

Once you have designed the database and determined how to group and store the data, you are ready to begin creating tables and columns. The Database Designer, also known as RBDefine, lets you create or modify tables. From the Tools menu, choose Database Designer or click the Database Designer button on the tool bar.



**RBDefine - [New Table]**

Table Columns **3** Keys/Indexes **4** Rules **5**

**Create a New Table**

**1** Table Name:

**2** Table Description:

**Modify an Existing Table**

**Create a new table by entering a table name in the "Table Name" field. A table name can be up to 18 characters and must be unique within your database.**

**You can enter a description for the table, such as a description of the type of data stored in the table.**

**Click on the Columns button to add, modify or delete columns in a table.**

**Click the Keys/Indexes button to add indexes and constraints to a database. You can define an index to retrieve data faster. You can apply constraints to tables to ensure that the correct type of data is entered.**

**Click the Rules button to add data entry rules---rules prevent invalid data from being entered in a table.**



## Creating a Database

Once you have named the table, you are ready to define the columns---click the Columns button. For each column, specify the data type, description, and other attributes about each data element. A column name can be up to 18 characters long and is unique within a table. Different tables can use the same column name as linking columns.

RBDefine - [Customer]							
Table		Columns		Keys/Indexes		Rules	
Keys	Column Name	Data Type	Length	Not Null	AutoNum	Computed	
P	custid	INTEGER		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	company	TEXT	40	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	custaddress	TEXT	30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	custcity	TEXT	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	custstate	TEXT	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

①      ②      ③      ④      ⑤      ⑥

**Enter the name of each column on a separate line. If you want to relate two tables, you can use the same column name in both tables. R:BASE remembers the column attributes for the column name; you only have to define it once.**

Select the type of data to be stored in the column from the drop-down list. Refer to the Data Types topic in online Help for complete information about each data type.

**A length must be specified for columns with the TEXT data type.**

**Check the "Not Null" check box to indicate that the field must always have a value. Later during data entry, if a user tries to enter a null value in this column, a message is displayed to remind users to put a value in this field.**

**Check the "AutoNum" check box to automatically number new rows with unique values as they are added to the table during data entry. R:BASE enters values in this column, starting with the beginning value and increment you specify. An autonumbered column makes a good primary key---this column uniquely identifies each row.**

**Check the "Computed" check box to indicate that the value of this column is computed from the values contained in other columns. You can compute numbers, such as price times quantity, or text values, such as combining a first and last name to form one complete name.**

**Data types**

A data type defines the type of data placed in a column. R:BASE only lets you enter data in this column if it matches its data type. For example, a DATE column would not accept the letters "ABCDE".



## Creating a Database

Each column can have an optional description and default value. Autonumbered and computed columns require additional information to complete the column definition.

When you have finished defining all the columns for one table, click the Tables button, click the Save button, then you can continue to define the next table and its columns.

The screenshot shows a dialog box for defining a column. It contains the following elements:

- 1** Description:
- 2** Initial value:
- 3** Increment:
- NULL Message:
- 4** A row of four buttons: , , , and

**You can enter a description for each column. The description provides more detailed information about the data stored in the column.**

**Enter the number at which to start the numbering sequence for an autonumbered column.**

Enter the number by which to increment each value for an autonumbered column. Usually, the numbers are incremented by 1.

**Click the "New Key" button to create an index or a constraint for the current column.**

**Default value**

A default value is automatically entered in this column unless the user changes it. For example, in a data entry form for entering employee information, you might want to define default values for the area code and state.



## Creating a Database

After defining the tables in your database, set up your indexes and constraints. An index is a cross reference to values in a table. It is used to find and sort data quickly. Constraints ensure data integrity by establishing automatic controls over data entry, deletion, and modification. The different types of constraints are primary key, unique key, foreign key, and not null.

**New Key/Index**

Primary Key

Unique Key

Index

Foreign Key

Not Null

Case Sensitive

Unique

Enter the name for this index :

TDateIndex

OK Cancel Help

**A primary key is a unique identifier for a row of data in a table---each row in the column has a unique value and cannot be blank. Each table should have a primary key to uniquely identify each row.**

**Unique Key**

Ensures that a column or set of columns uniquely identifies a row; in other words, each value in a unique-key column is unique.

**An index is used to quickly look up and sort data. Indexes are usually defined for columns with the INTEGER, DATE, and TEXT data types.**

**A foreign key refers to a primary key that is used in another table. For instance, customer information is in the Customers table--the primary key is the Customer ID. If you want sales transactions to refer back to the customer, you can have a Customer ID in the Invoices table to tell you who made the purchase without repeating the customer information. The Customer ID in the Invoices table is a foreign key. The foreign key refers to the information in the Customers table.**

**Depending on whether you are defining a constraint or an index, you can specify Not Null, Case Sensitive, and Unique attributes.**

**A column or set of columns that uniquely identify a row; in other words, each value in a unique-key column is unique. A unique-key constraint prevents duplicate (non-unique) and null values from being entered. The only difference between a unique key and a primary key is that you can define multiple unique keys per table.**

**Index**

Similar to using an index in a book, R:BASE uses indexes to quickly locate rows that correspond to values you specify.

**Primary Key**

Ensures that new values in a primary key column are unique. For example, you couldn't use the same invoice ID twice.

**Foreign Key**

Ensures that values in this column match values in the primary key column. For example, you couldn't enter a customer ID for an invoice unless that customer ID exists already in the Customers table.

**Not Null**

Ensures that values are not blank. For example, you couldn't leave the product ID number blank while entering a transaction.



## Creating a Database

In addition to constraints, rules can be defined to validate data entry. A rule ensures that data in a column meets certain specifications. Rules have a broader scope than constraints and allow definition of more varied data entry criteria. Rules are stored for each database and are enforced as you enter data.

**New Rule**

1 Rule Type: Specify a minimum value

2 Rule Column: minamount

Verification Table:

Verification Column:

Maximum Value:

Minimum Value: \$15.00

OK Cancel Help

Select the type of rule. In addition to the default rules, you can select "Custom rule" to define a rule to fit your particular data entry situation.

**A rule is applied to a specified column in the table you are currently working with.**

**Depending on the rule selected, additional parameters might be required.**





## Adding, Modifying, and Viewing Data

Once you have defined the database structure and set up the tables and columns for your database, you can begin adding information to the tables. You can use either the [Data Browser](#) or a [form](#) to enter data.

Data Browser				
	Custid	Company	Address	C
1	101	PC Warehouse	12 N. Main	
2				
3				
4				
←				

ID Number	<input type="text" value="101"/>
Company	<input type="text" value="PC Warehouse"/>
Address	<input type="text" value="12 N. Main"/>
City, State	<input type="text"/> <input type="text"/>
Zip	<input type="text"/>

**Data Browser**

The Data Browser displays information in a tabular format, similar to a spread sheet. You can see many rows of data at a time this way.

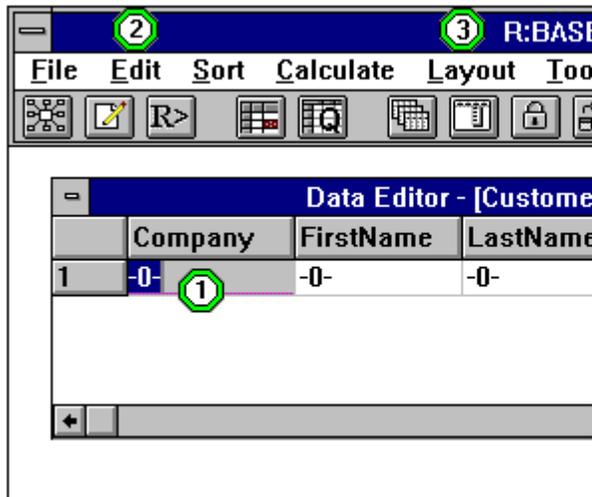
## **Forms**

**You can create a form for entering data. A form has spaces (fields) that correspond to the columns in the database. For example, a form for entering customer information has fields that correspond to name, company, and address columns from the Customers table.**



## Adding, Modifying, and V

To open the Data Browser, choose Data Browser from the Tools menu, or click the Data Browser button on the tool bar. If the table has no data yet, R:BASE prompts you to insert a row (click the Insert button). The Data Browser opens in the browse mode. To add data, choose Edit from the Tools menu. The Data Browser changes to the Data Editor.



**Enter a value in the column. To move to the next field, press [Tab] or use the mouse. To add a new row, choose Insert Row from the Tools menu.**

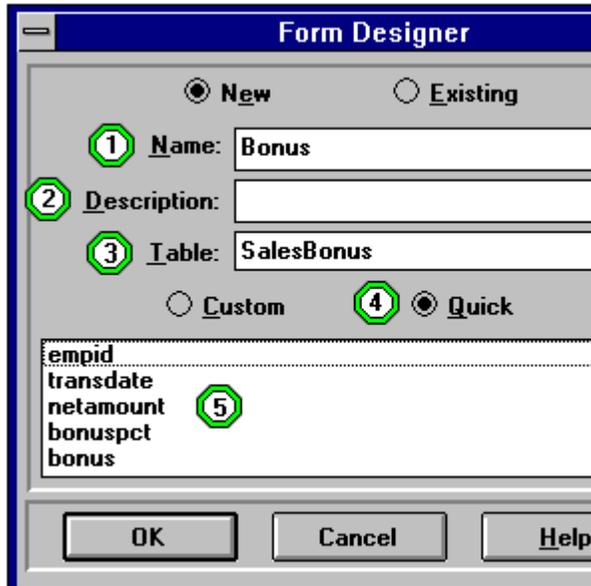
**Options on the Edit menu allow you to add, delete, and modify data. You can also switch to the browse mode.**

**Options on the Layout menu allow you to reorder columns, change the size of the cells, and change the color of the text and background. Customizing the display can help you see and edit data easier.**



## Adding, Modifying, and V

To add data using a form, you must first create it using the Form Designer---choose Form Designer from the Tools menu, or click the Form Designer button on the tool bar. A dialog opens for you to define the form.



The image shows the 'Form Designer' dialog box in Microsoft Access. It has a title bar with the text 'Form Designer'. Below the title bar, there are two radio buttons: 'New' (selected) and 'Existing'. Below these are three text input fields: 'Name' with the value 'Bonus', 'Description' (empty), and 'Table' with the value 'SalesBonus'. Below the text fields are two more radio buttons: 'Custom' and 'Quick' (selected). Below the radio buttons is a list of fields: 'empid', 'transdate', 'netamount', 'bonuspct', and 'bonus'. A green circle with the number '5' is next to 'netamount'. At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Help'.

**Name the form---the name can be up to 18 characters long.**

**Enter a description of the form.**

**The form is associated with the table to which you want to add data---select the table from the drop-down list. For example, if you want to use the form to enter customer information, select the Customers table.**

Select "Quick." R:BASE automatically places fields for the columns you select.

Select the fields' columns by clicking on the column names. For example, if you want to use the form to enter customer names, addresses, and company names, select the corresponding columns.



## Adding, Modifying, and Vi

Next, the "Form Designer" window opens, where you can customize the form's layout.

Options on the Layout menu allow you to change the text color and font. You can also add boxes and lines to the form, move and size fields, and include pictures using BLOBs. You can even add descriptive text.

When you have finished the form, choose File: Save Form.

The screenshot shows a window titled "Form Designer - Customers". Inside the window, there is a form with several text input fields. The fields are labeled as follows:

- company:
- custaddress:
- custcity:
- custstate:
- custzip:
- custphone:

Three green circles with numbers inside are used as callouts:

- Circle 1 is positioned over the top-left corner of the first input field.
- Circle 2 is positioned over the top-right corner of the first input field, with an arrow pointing to the top-right corner of the second input field.
- Circle 3 is positioned over the bottom-left corner of the last input field.

**BLOB (Binary Large Object)**

A column with the BLOB data type stores binary data. You can store pictures, video, or audio data.

Click the right mouse button on a field for layout options.

<b>Field Settings...</b> Edit Text...
Add Tiers...
<b>Font...</b> <b>Color...</b>
Picture Format.. Null Format...
<b>Context Help</b>

**Drag the handle bars to change the size of the field. Drag the entire field to change its location---field placement can make data entry easier.**

**You can also add descriptive text, such as a title or instructions. Choose Layout: Place Field, then select "Text" as the type of field to add, then enter the text.**



## Adding, Modifying, and V

Once you have created a form, you can use it to enter data---choose Run Form from the File menu, or click the Forms Runtime button on the tool bar.



**Run Form**

Run:

Edit

Enter

1

- emprans
- newprod
- prod
- product
- 2 transform

Description: Enter transactions

Where Clause

OK Cancel

**Select the form to use.**

**To add new rows of data, select "Enter."**



**You can use pop-up menus to display data---users can select values from the menu to enter in the field. You can define these custom pop-up menus when you create the form.**

**Colors and fonts are used to highlight fields for special attention.**

**A form can display multiple rows (or tiers) of data in an area called a region.**



## Adding, Modifying, and Vi

Once you have entered data in the database, you can view it and modify it. As with adding data, you can use the Data Browser and custom forms to view and modify data. The Data Browser displays many rows of data at once; a form displays data in a customized format with fields.

Data Browser				
	Custid	Company	Address	C
1	101	PC Warehouse	12 N. Main	T
2	102	Industrial	285 King S	F
3	103	Southwest	27 High St	V
4	104	PC Consultation	42 Castle	C

ID Number	101
Company	PC Warehouse
Address	12 N. Main
City, State	Tolt WA
Zip	55666



## Adding, Modifying, and V

To view data in the Data Browser, choose Data Browser from the Tools menu. You can use the horizontal and vertical scroll bars to view all of the data.

If you want to modify data, choose Edit from the Tools menu. The Data Browser changes to the Data Editor.



The screenshot shows a software window with a menu bar and a toolbar. The menu bar includes 'File', 'Edit', 'Sort', 'Calculate', 'Layout', and 'Tools'. The toolbar contains icons for various functions. Below the menu bar is a window titled 'Data Editor' with a table containing the following data:

	custid	company
1	100	Pc Distribution Inc.
2	101	Computer Distributors Inc.
3	102	Industrial Computers Inc.
4	103	Computer Mountain Inc.
5	104	Industrial Concepts Inc.
6	105	Pc Consultation And

**To modify data, simply type over the existing data.**

**Options on the Edit menu allow you to add, delete, and modify data. You can also switch to the browse mode.**

**Options on the Layout menu allow you to reorder columns, change the size of the cells, and change the color of the text and background. Customizing the display can help you see and edit data easier.**



## Adding, Modifying, and V

To view data in a form that you have already created, choose Run Form from the File menu, or click the Forms Runtime button on the tool bar.



**Run Form**

Run:

Edit  Enter

- emprans
- newprod
- prod
- product
- transform**

Description: Edit transactions

**3** Where Clause

Where

OK Cancel

**Select the form to use.**

To edit or view data, select "Edit."

**You can create an optional WHERE clause. This clause specifies the rows of data to display in the form. For instance, instead of displaying all invoice information, you could create a WHERE clause to display only those invoices over a certain amount.**



## Adding, Modifying, and V

Once the form is displayed, you can view and edit data.

<u>Forms</u> <u>Edit</u>	
<b>Company</b>	ABC Recycling
<b>First name</b>	Harold
<b>Last name</b>	Norris
<b>Address</b>	771 N. Pack St.
<b>City</b>	Great Falls
<b>State</b>	Montana

1

**You can use pop-up menus to display data---users can select values from the menu to enter in the field. You can define these custom pop-up menus when you create the form.**

**Colors and fonts are used to highlight fields for special attention.**

**A form can display multiple rows (or tiers) of data in an area called a region.**



## Importing Data

You can add data to your database tables by importing the data from another product. You can import data from other R:BASE databases and other software products such as Excel, Quattro Pro, Lotus, and dBASE. Standard ASCII files, delimited and fixed, and DIF files can also be imported.

To import data, choose Import/Export Database from the Utilities menu, or click the Import/Export button on the tool bar.



**Import / Export**

**Import**     **Export**

Selected **T**ype: Excel 4.0 (XLS)

Import **F**rom: SALES.XLS    **B**rowse

Append / **R**eplace: append     **A**utonum **O**n

Selected **T**able: TransMaster    **N**ew **T**able

**D**ate **F**ormat: MM/DD/(YY)YY     **A**dd "19" to two-digit year.

Exception **F**ile: EXCEPT.DAT

**You can import data (add data to tables in a database), or export data (copy data from a table into a file).**

**Choose the type of data to import, which is determined by the program providing the data. If the data comes from a product other than Excel, Quattro Pro, Lotus, or dBASE, you must put the data in an ASCII file. You can then import the data using an ASCII option.**

**The name of the file or worksheet containing the data. Use the Browse button to select the file.**

**You can add data to the end of a table, leaving the existing rows of data in the table, or you can replace all the data in the table with the data from the specified file.**

**Select the table to which you want to add data.**

**Dates can be stored in many different formats. Usually data is stored in the sequence of month, day, year. You can choose the format for the dates you want to import.**

**Sometimes, rows of data do not match the definition of the specified table. These rows are placed in the file you name here. When the import is complete, examine the data in this exception file and correct the mismatched data.**

## ASCII file

An ASCII file is a file that is made up of readable characters, such as letters and numbers. ASCII files are often used to transfer data from one program to another. The standard types of ASCII files are *delimited* and *fixed*.

**DIF**

**DIF is a standard ASCII file format used for transferring data. This format stores a row of data on separate lines--one line for each item in the row.**

**Delimited**

**Delimited is a standard ASCII file format used for transferring data. This format stores each row of data on a separate line in the file. Each item in the row is separated by a comma.**

**Fixed**

**Fixed is a standard ASCII file format used for transferring data. This format stores each row of data on a separate line in the file. Each item in the row is displayed in columns.**

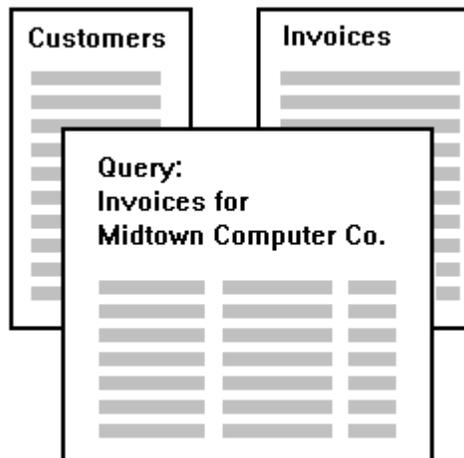




## Analyzing Data

The R:BASE relational database design makes it easy to ask different and complex questions about your data. Query By Example and the Data Browser work together to help you quickly and easily query your data. Query By Example lets you formulate the question, or query, to your database. The Data Browser displays the results of the query.

To start Query By Example, choose it from the Tools menu or click the QBE button on the tool bar.



## **Query By Example**

**Query By Example (QBE) is a method of querying data. By defining a query, or question, you can join data from related tables and analyze the results in the Data Browser.**



## Analyzing Data

You can create a query in the "Query By Example" window. The first step is thinking of the question, or query; what data do you want to see? Then, select the tables needed for the query. Next, you can specify what data you want to see---this part of the query is called the WHERE clause. Specify the query conditions using the WHERE Builder. For example, query conditions indicate the specific data you want to see, such as a list all the customers who made transactions over a certain amount. After you build the query, you can view the results in the Data Browser.

You can save the query and use it again---a saved query is called a *view*. You can also save the results of the query---the specific data---in a new table.

The screenshot shows the "Query By Example" window. On the left, a "List of Tables" pane (1) contains a list of tables: SalesBonus, StateAbr, Titles, TransDetail, and TransMaster. The "TransMaster" table is selected. Below the list are "Add" and "Remove" buttons. In the center, two tables are selected for the query: "Customer T1" (2) and "TransMaster T2". On the right, the generated SQL query is displayed (3):

```
SELECT  
T1.company, T1.custphone, T2.transid,  
T2.transdate, T2.invoicetotal  
FROM  
Customer T1, TransMaster T2  
WHERE  
T2.custid = T1.custid (4)  
ORDER BY  
...
```

**Select the tables to see data from. For example, if you wanted to list all the transactions for one customer, you need to select the Customer table and the TransMaster table.**

**The tables are joined automatically based on linking columns. For example, the linking columns between the Customer table and the TransMaster table is the Customer ID column, telling you which customers made the transactions.**

**Click on a table name  
with the right mouse  
button to display more  
QBE options in a  
pop-up menu.**

<p><b>Select Column(s) Remove Table Where Builder Sort Clause Browse Query Context Help</b></p>
---

**As you construct the query, R:BASE builds the corresponding SQL statement used to retrieve your answer.**



## Printing Labels

Most applications and businesses make labels using the data stored in their database. You can print mailing labels using data from a customer list, or you can print product or shipping labels. You can print labels on standard label stock, including laser labels.

To design a label, choose Label Designer from the Tools menu, or click the Label Designer button on the tool bar.



**Label Designer**

**N**ew     **E**xisting

① **N**ame: Mailing

② **D**escription: Labels for promotional mailings

③ **T**able: Customer

**C**ustom    ④  **Q**uick

⑤

custid	↑
company	
custaddress	
custcity	↓

OK    Cancel    Help

**Enter a one- to eighteen-character label name.**

**You can enter a description of the labels, such as the purpose.**

**Select the table from which the labels will retrieve data. For example, if you wanted to print mailing labels for customers, select the Customers table.**

Select Quick to have R:BASE automatically set up the labels with the fields you choose.

**The spaces (fields) on the label correspond to columns in the selected table---select the columns for which you want to display information. For example, for customer mailing labels, select the columns for the customer name, address, city, state, and zip.**



## Printing Labels

Next, specify the dimensions of the label. Choose Settings from the Layout menu, and select the type of label from the list of standard label templates. Then, in the "Label Designer" window, you can arrange the fields within the label boundaries.

**Label Settings**

1 **Size template:** 2 x 4 x 2 Laser  
4 x 1-7/16 x 1  
4 x 1-7/16 x 2  
1 x 4 x 2 Laser  
2 x 4 x 2 Laser  
3 x 5 x 1 Rotary File  
3 x 5 x 1 Index

**Labels across:**

Spaces **between Labels:** 4 4

Lines **after Label:** 1 1

Left **Margin:** 0 0

Top **Margin:** 0 0

Labels **down Page:** 0 0

2

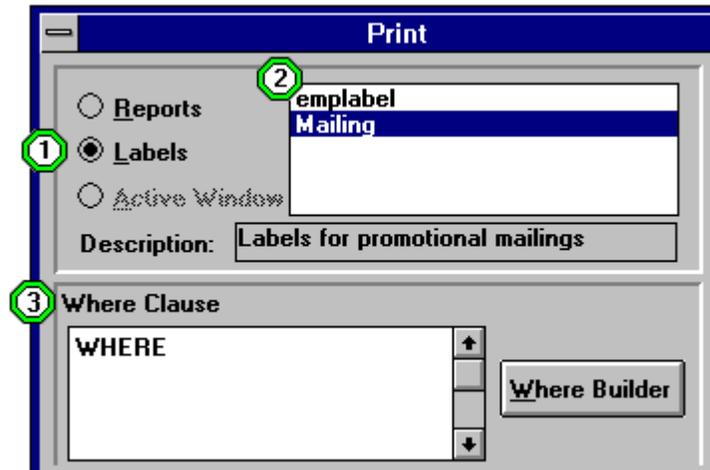
Select a standard label template to use.

**The label dimensions can be customized to fit any label stock. Select the template that fits your label the closest, then you can modify any of the dimensions as needed.**



## Printing Labels

Once the label has been designed, print the labels. Select Print from the File menu or click the Print button on the tool bar.



**Optionally, you can specify the rows of data to print by creating a WHERE clause. For example, you might want to print labels only for those customers who made transactions in the past year.**

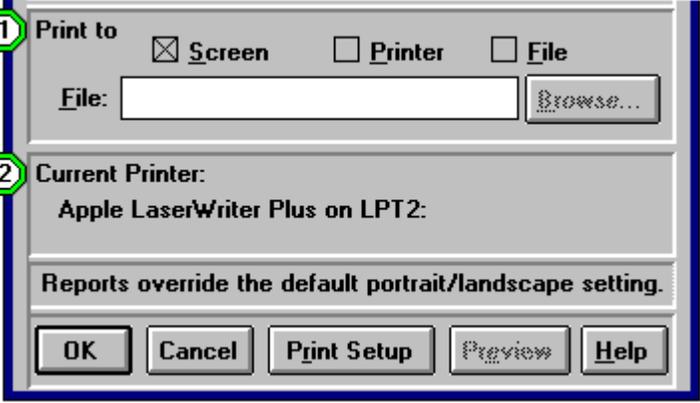
**Select Labels.**

**The labels that are defined for the current database are listed---select the label you want to print.**



## Printing Labels

Once you have selected the label and specified the data to print, choose where you want to print the labels.



1 Print to  Screen  Printer  File

File:

2 Current Printer:  
Apple LaserWriter Plus on LPT2:

Reports override the default portrait/landscape setting.

**Select the print destination(s). You can print the labels to the printer, to the screen as a preview, and to a text file. You can use text files in other programs such as a word processor.**

**The current printer setting is displayed---you can modify the printer setup if necessary.**



## Printing Reports

You can print data from a table or the results of a query; however, if you want to print data in a customized format, you can print a report. In addition to being able to include data from more than one table, reports allow you to compute totals, subtotals, and other calculations on your data.

To create a report, start the Report Designer by selecting it from the Tools menu, or click the Report Designer button on the tool bar.



**Report Designer**

**New**     **Existing**

① **Name:** Sales

② **Description:** Sales Transactions

③ **Table:** TransMaster

**Custom**    ④  **Quick**

⑤ transid  
custid  
empid  
transdate  
netamount

⑥  **Column-wise**     **Row-wise**

**Enter a one- to eighteen-character report name.**

**Enter a description of the report.**

Select the table or view from which the report will retrieve data. For example, to print a sales report, select the Customer table.

Select Quick to have R:BASE automatically set up the report with the fields you choose.

**The spaces (fields) on the report correspond to columns in the selected table---select the columns for which you want to display information. For example, to print a report on sales transactions, select the columns for the transaction ID, description, amount, and so on.**

For Quick reports, choose the format:

Column-wise places fields across the top of the page, displaying data in columns.

Name	Address

Row-wise places fields along the side of the page, displaying data in rows.

Name	
Address	



## Printing Reports

Next, the "Report Designer" window opens, where you can customize the report's layout.

Options on the Layout menu allow you to change the text font. You can also add boxes and lines to the report, move and size fields, and add descriptive text.

When you have finished the report, choose File: Save Report.

The screenshot shows a window titled "Report Designer - CustList" with a dotted grid background. The form contains the following fields:

custid:	<input type="text"/>	custphone:	<input type="text"/>
company:	<input type="text"/>		
address:	<input type="text"/>		
city, state & zipcode:	<input type="text"/>	<input type="text"/>	<input type="text"/>

Two green circles with numbers "1" and "2" are overlaid on the form. Circle "1" is positioned over the first empty text box (custid), and circle "2" is positioned over the second empty text box (custphone). The letters "PH" are visible in the top right corner of the grid, and "D" is visible in the bottom right corner.

Click the right mouse button on a field for layout options.

Field Settings...
Edit Text...
Add Tiers...
Font...
Color...
Picture Format...
Null Format...
Context Help

**You can also add descriptive text, such as a title. Choose Layout: Place Field, then select "Text" as the type of field to add, and enter the text.**



## Printing Reports

To print the report, choose Print from the File menu, or click the Print button on the tool bar.



**Print**

**Reports**  
 **Labels**  
 *Active Window*

comcheck  
CustList  
customer  
**invoice**  
product

Description: Customer billing invoice

**Where Clause**

WHERE prodview.transdate  
BETWEEN 1/1/95 AND  
1/31/95

Where Builder

**Optionally, you can specify the rows of data to print by creating a WHERE clause. For example, you might want to print invoices for a specific month.**

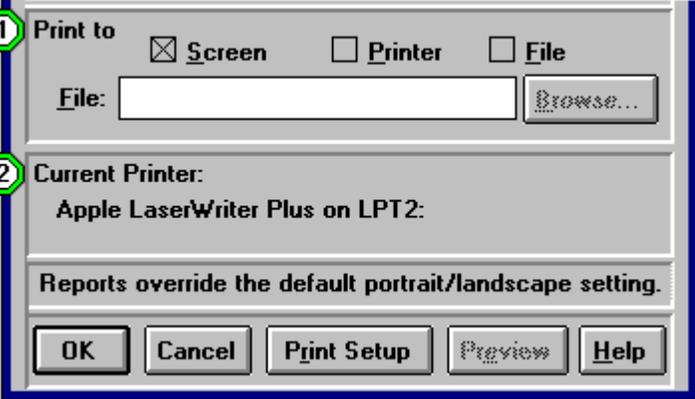
**Select Reports.**

**The reports that are defined for the current database are listed---select the report you want to print.**



## Printing Reports

Once you have selected the report and specified the data to print, choose where you want to print the report.



1 Print to  Screen  Printer  File

File:

2 Current Printer:  
Apple LaserWriter Plus on LPT2:

Reports override the default portrait/landscape setting.

**The current printer setting is displayed---you can modify the printer setup if necessary.**

**Select the print destination(s). You can print the reports to the printer, to the screen as a preview, and to a text file. You can use text files in other programs such as a word processor.**



## Printing Reports

The report can group data, print header and footer sections, include pictures and graphs through use of BLOB data types, and highlight areas of the report using different fonts.

①



Sold To: **Industrial Computers Inc.**

②

*invoice #*

*date*

*amount*

③

4785

02/07/95

\$1,950.00

4901

02/14/95

\$2,375.00

*Total Sales*

\$4,325.00

④

**A page heading section prints at the top of every page. It can include data from a related table. A company logo or picture can be placed in the heading. Using the new BLOB data type, graphs, charts, pictures, or bitmaps can be printed in any report section.**

**The detail section of a report is the main part of the report; for instance, in a sales report, the transactions are listed here.**

**A footer section can be used to print summary totals for a group of data (or breakpoint) that you define in the Report Designer.**

**A report can have custom titles and descriptions for the columns. Different fonts can be used to highlight items or headings.**



## Printing the Contents of a

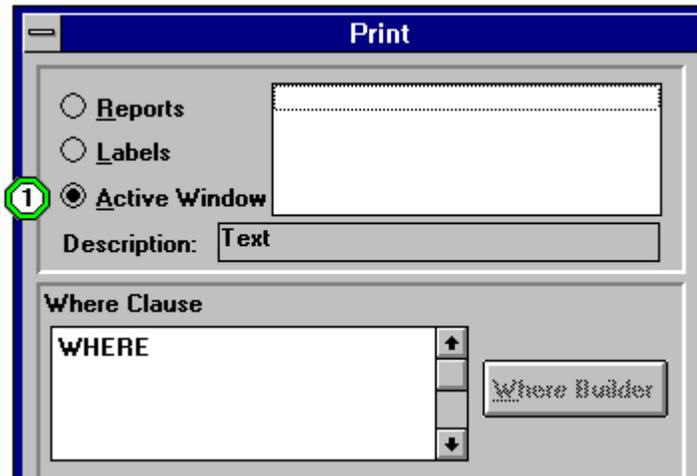
In addition to printing reports and labels, you can also print the contents of the Data Browser or Text Editor. For example, you can print the data in a specific table, the results of a query, or an open file in the Text Editor.

Data Browser - [ Invoice ]							
	transid	custid	empid	transdate	netamount	freight	tax
1	4760	100	133	01/02/94	\$32,400.00	\$324.00	\$2,624.
2	4780	105	160	01/08/94	\$9,500.00	\$95.00	\$769.
3	4790	104	129	01/09/94	\$6,400.00	\$64.00	\$518.
4	4795	101	102	01/11/94	\$176,000.00	\$1,760.00	\$14,256.
5	4800	105	160	02/22/94	\$194,750.00	\$1,947.50	\$15,774.
6	4865	102	129	02/22/94	\$34,125.00	\$341.25	\$2,764.
7	4970	103	131	02/23/94	\$152,250.00	\$1,522.50	\$12,332.
8	4975	101	102	02/26/94	\$87,500.00	\$875.00	\$7,087.
9	4980	101	102	02/27/94	\$22,500.00	\$225.00	\$1,822.
10	5000	101	102	02/28/94	\$40,500.00	\$405.00	\$3,280.
11	5010	107	131	03/02/94	\$108,750.00	\$1,087.50	\$8,808.



## Printing the Contents of a

To print the contents of the current window---the Data Browser or Text Editor---choose Print from the File menu, or click the Print button on the tool bar.



**Select Active Window to print the contents of the current window.**





## Making an Application

An application is a set of custom menus you design to automate tasks you perform in your database. An application can print reports and labels, display a form for entering or editing data, and display data in the Data Browser. The Application Designer presents an easy, step-by-step approach to creating your own custom application.

To start the Application Designer, select it from the Tools menu, or click the Application Designer button on the tool bar.



The screenshot shows the 'Application Express' dialog box. It has a blue title bar with the text 'Application Express'. Inside the dialog, there are several fields and options:

- A green circle with the number '1' is next to the 'Name:' label, which is followed by a text box containing 'concomp' and a small downward arrow button.
- Below that is the 'Window Title:' label followed by an empty text box.
- A second green circle with the number '2' is next to the 'New Application Style' section, which contains two radio button options: 'Pull-down Menus' (which is selected) and 'Pop-up Menus'.
- At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Help'.

**Enter a one- to eight-character name for the application.**

Select the type of application to create:

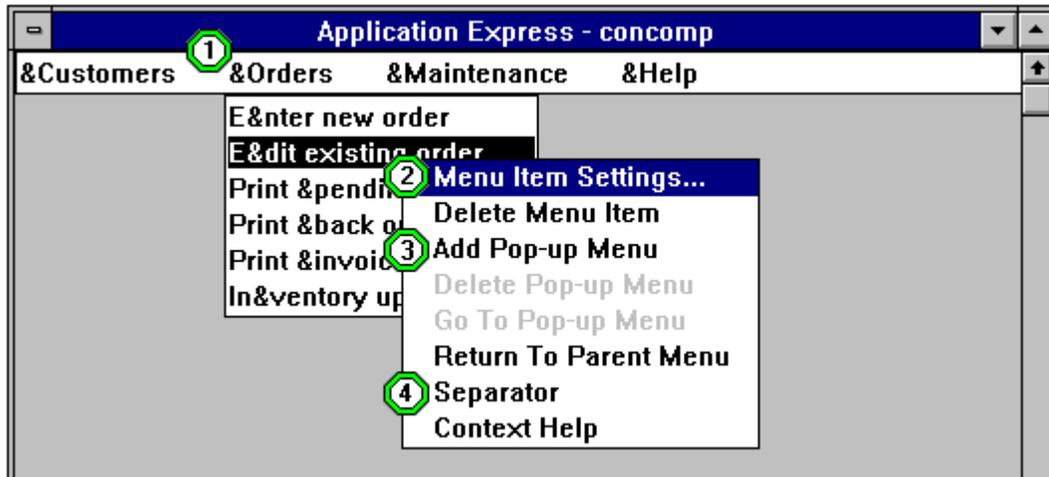
- A pull-down menu application has a menu bar across the top with menu options. When you choose an option, a submenu drops down with more menu options.
- A pop-up menu application displays a single pop-up menu with menu options. When you choose an option, a pop-up menu opens with more options.



## Making an Application

In the "Application Designer" window, enter the menu options for the main menu. Then, define the menu options for the submenus. Next, define the actions for the menu choices---click on a menu option with the right mouse button and choose Menu Item Settings.

Once you have finished the application, choose File: Save Application.



**Defines the action for the menu option when a user selects it. You can choose from the predefined menu actions, or you can create a custom action.**

**Instead of an action, a menu option can open another submenu. This submenu can also have menu options with actions you assign. To assign a pop-up menu, choose Add Pop-up Menu.**

**You can place a separator bar on a menu to group items together---choose Separator.**

**You can assign hot keys to menus and menu options. Place an ampersand (&) before the letter you want to use as a hot key. When you run the application, press [Alt] + the hot key letter to open the menu or choose the menu option.**



## **Making an Application**

To run an application, click the Apps tab in the Object Manager, select the application, and click the Run button. The R:BASE menu and tool bar are replaced by your custom menu. You can use your mouse or hot keys to open menus and choose menu options.



**Menu actions defined to add and edit data.**

**Menu actions defined to print reports.**

**A menu option with a hot key. Press [Alt] + the hot key letter, which is underlined, to choose the menu option.**



