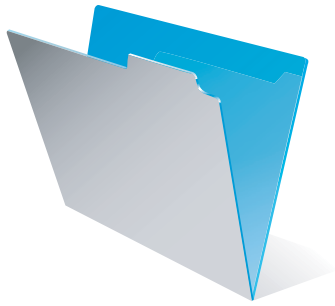

FileMaker® Pro 8

User's Guide

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For more information, visit our web site at www.filemaker.com.

Edition: 01

Contents

Preface
Introducing FileMaker Pro

FileMaker® Pro is the leading workgroup database software for quickly creating and sharing solutions adapted to your business needs. Powerful features, broad platform support, and an easy-to-use interface make FileMaker Pro indispensable for anyone who needs to track and manage people, projects, and information.

Using this manual

This *User's Guide* contains an introduction to FileMaker Pro features and provides step-by-step instructions on the most common FileMaker Pro tasks. You may need to refer to FileMaker Pro Help for detailed information on more advanced product features.

Using FileMaker Pro documentation

The FileMaker Pro documentation provides a learning path to productivity, installation instructions, online Help, and more.

The following manuals are included:

- *FileMaker Pro User's Guide* (this manual): contains key concepts and basic procedures
- *Installation Guide for FileMaker Pro and FileMaker Pro Advanced*: contains installation instructions
- *FileMaker Instant Web Publishing Guide*: describes how to make FileMaker Pro databases accessible to web browser users over an intranet or the Internet
- *Customizing Starter Solutions*: describes how to customize the included database template files for your own needs
- *Installing FileMaker ODBC and JDBC Client Drivers*: describes how to install the drivers needed to access a FileMaker data source via ODBC and JDBC
- *FileMaker ODBC and JDBC Developer's Guide*: describes concepts and details to help you share FileMaker data with other applications, using ODBC and JDBC

Where to find PDF documentation

Most PDF manuals are located in the folder where you installed FileMaker Pro. If you installed FileMaker Pro in the default folder location, the PDF manuals are located here:

Windows: C:\Program Files\FileMaker\FileMaker Pro 8\English Extras\Electronic Documentation

Mac OS: Macintosh HD/Applications/FileMaker Pro 8/English Extras/Electronic Documentation

PDF manuals for ODBC and JDBC are on the FileMaker Pro CD, in the /xDBC/Electronic Documentation folder.

To view the PDF files, you need a PDF reader. In Mac OS X, you can use either the built-in Preview application or Adobe® Reader®. Windows users need Adobe Reader. If you do not have Adobe Reader, you can download it from the Adobe web site at www.adobe.com.

Important You can download PDFs of FileMaker documentation (and any updates) by choosing Help menu > Downloads and Updates.

All of the PDF files use the tagged Adobe Portable Document format (PDF). Tagged PDF files work with assistive technology such as the screen readers JAWS for Windows and Window-Eyes. For more information about tagged PDF files, see the Adobe web site at www.adobe.com.

Online Help

FileMaker Pro Help provides comprehensive step-by-step instructions on FileMaker Pro features. You can open Help from the Help menu in FileMaker Pro.

There are three ways to access Help:

- Browse the Help table of contents to locate topics by subject.
- Search for particular topics by entering keywords.
- Get information about the currently displayed dialog box by pressing F1 (Windows) or ⌘-? (Mac OS).

Templates, examples, and more information

FileMaker Pro includes database template files (Starter Solutions) that you can use to quickly get started. When you start creating databases, check the list of templates to see if one is available that suits your needs.

The English Extras folder contains references and examples to help you with specific features such as XML support.

You can find more information, tips, and database ideas on the FileMaker web site at www.filemaker.com.

Suggested reading

Here are some suggestions for using the documentation to help you learn how to do specific tasks in FileMaker Pro.

Type of user	Suggested reading
Data entry person	Chapter 1, "Using databases," in this guide
Small business owner or educator who creates a basic database to start, then improves it over time	Chapter 2, "Creating databases," in this guide. As features are added to the database, refer to Help
Database administrator	This guide Help, for information on advanced topics *FileMaker Instant Web Publishing Guide*
New FileMaker Pro user	*Installation Guide for FileMaker Pro and FileMaker Pro Advanced* This guide
User upgrading from a previous version	*Installation Guide for FileMaker Pro and FileMaker Pro Advanced* Chapter 6, "Converting FileMaker databases from previous versions" in this guide Help

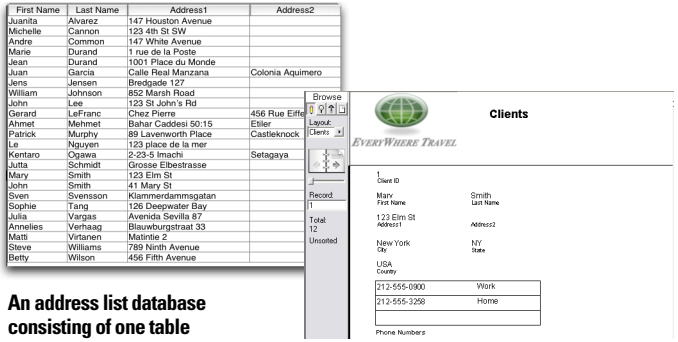
Note If your database was developed using FileMaker Pro Advanced, you may see customized menus or tooltips for layout objects. For an overview of these features, see Help.

FileMaker Pro overview

Here is an overview of the capabilities of FileMaker Pro.

Creating simple or complex databases

With FileMaker Pro you can create simple databases consisting of just one database table, such as an address list, or you can create a complex database with relationships and multiple database tables. For example, you can create a complex database that relates two tables based on a single common value, such as a serial number or an ID number.



First Name	Last Name	Address1	Address2
Juanita	Alvarez	147 Houston Avenue	
Michelle	Cannon	123 4th St SW	
Andre	Common	147 White Avenue	
Marie	Durand	1 rue de la Poste	
Jean	Durand	1001 Place du Monde	
Juan	Garcia	Calle Real Manzana	Colonia Aquimero
Jens	Jensen	Bredgade 127	
William	Johnson	852 Marsh Road	
John	Lee	123 St John's Rd	
Gerard	LeFranc	Chez Pierre	456 Rue Eiffe
Ahmet	Mehmet	Bahar Caddesi 50:15	Etiler
Patrick	Murphy	89 Lavenworth Place	Castleknock
Le	Nguyen	123 place de la mer	
Kentaro	Ogawa	2-23-5 Imachi	Setagaya
Jutta	Schmidt	Grosse Elbestrasse	
Mary	Smith	123 Elm St	
John	Smith	41 Mary St	
Sven	Svensson	Klammerdammsgatan	
Sophie	Tang	126 Deepwater Bay	
Julia	Vargas	Avenida Sevilla 87	
Annelies	Verhaag	Blauwburgstraat 33	
Matti	Virtanen	Matintie 2	
Steve	Williams	789 Ninth Avenue	
Betty	Wilson	456 Fifth Avenue	

An address list database consisting of one table

A database consisting of multiple tables, with a portal to display records from a related table

You can organize your databases as a single table in a single file, as multiple tables in a single file, or as multiple tables in multiple files.

FileMaker Pro provides database templates designed for business, education, and personal purposes. The templates can be quickly customized to suit your needs.

For more information about creating databases, see chapter 2, "Creating databases."

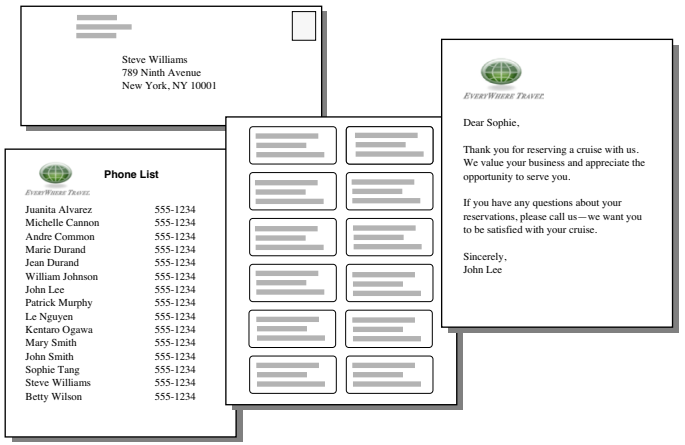
Using layouts to display, enter, and print data

FileMaker Pro layouts determine how information is organized for viewing, printing, reporting, finding, and entering data. Layouts do not store your data—they just display it.

Database files can have many different layouts, which display data in a variety of ways. Within one database file, you can design separate layouts for entering data, reporting summaries, printing mailing labels, publishing a database on the web, and so on. You can change a layout's design without affecting the data or other layouts for the file. When you change the data in a field, the changes are reflected in the same field on all the layouts in the database.

In a layout, you choose, arrange, and modify fields and field labels, create reports, add buttons to initiate scripts, add graphics and text, and specify printing options.

There are six types of layouts and one view that you can create with the New Layout/Report assistant. Use these different types for various purposes, like displaying a data entry screen or printing a totaled sales report or mailing labels. You can customize each layout further by using the design tools that are available in Layout mode.



The same data can be arranged differently with multiple layouts

For more information about creating layouts, see "Creating layouts and reports" on page 53.

Finding, sorting, and replacing data

Features for finding, sorting, and replacing data allow you to manipulate your data in many ways.

You can find records that meet criteria you specify, such as records entered on a certain date or addresses in a particular city. You can open another window in order to perform different searches on the same data.

You can rearrange records in order to view or print them in a different sequence. You can sort fields alphabetically, numerically, by date, or by a custom sort order.

First Name	Last Name	Address1	Address2
Juanita	Alvarez	147 Houston Avenue	
Michelle	Cannon	123 4th St SW	
Andre	Common	147 White Avenue	
Marie	Durand	1 rue de la Poste	
Jean	Durand	1001 Place du Monde	
Juan	Garcia	Calle Real Manzana	Colonia Aquimero
Jens	Jensen	Bredgade 127	
William	Johnson	852 Marsh Road	
John	Lee	123 St John's Rd	
Gerard	LeFranc	Chez Pierre	456 Rue Eiffel
Ahmet	Mehmet	Bahar Caddesi 50:15	Etiler
Patrick	Murphy	89 Lavenworth Place	Castleknock
Le	Nguyen	123 place de la mer	
Kentaro	Ogawa	2-23-5 Imachi	Setagaya
Jutta	Schmidt	Grosse Elbestrasse	
Mary	Smith	123 Elm St	
John	Smith	41 Mary St	
Sven	Svensson	Klammerdammsgatan	
Sophie	Tang	126 Deepwater Bay	
Julia	Vargas	Avenida Sevilla 87	
Annelies	Verhaag	Blauwburgstraat 33	
Matti	Virtanen	Matintie 2	
Steve	Williams	789 Ninth Avenue	
Betty	Wilson	456 Fifth Avenue	

You can search for and replace data across multiple fields, similar to the way you find and replace data in word processing applications.

For more information about finding, sorting, and replacing data, see "Finding records" on page 23, "Sorting records" on page 33, and "Finding and replacing data" on page 32.

Protecting databases with accounts and privilege sets

You can restrict what users see and do in a database file by defining accounts and privilege sets. Accounts authenticate users who are attempting to open a protected file. Each account specifies an account name and (usually) a password. Any user that cannot specify valid account information won't be able to open a protected file. A privilege set specifies a level of access to a database file. Each account is assigned a privilege set, which determines the level of access when someone opens a file using that account.

Extended privileges determine the data sharing options that are permitted by a privilege set, such as whether a privilege set permits users to open a shared file or view a database in a web browser.

For more information about accounts and privilege sets, see chapter 5, "Protecting databases with accounts and privilege sets."

Creating scripts to automate tasks

Scripts can do simple tasks like setting print orientation or complex tasks like preparing a customized mailing to clients.

For example, you could define a script that creates a thank you letter to clients in your clients database who have made a purchase in the last week. The script composes a letter customized to each client. The script then switches to Preview mode and pauses so that you can see what the letter looks like before it prints. The whole task is started by clicking a button on a layout.

You use the ScriptMaker™ feature in FileMaker Pro to build scripts by selecting from a list of FileMaker Pro script steps, specifying options, and arranging the steps in the correct order to perform the task.

For more information about scripts, see "Automating tasks with scripts" on page 37.

Sharing and exchanging data

A benefit of storing data in FileMaker Pro is sharing your data with others. You can share your data with other FileMaker Pro users on a network, use the web publishing capabilities to share data over the web, or use ODBC (Open Database Connectivity) and JDBC (Java Database Connectivity) to share FileMaker Pro files with ODBC- and JDBC-compliant applications.

If your computer is connected to a network, you and other Windows and Mac OS FileMaker Pro users can use the same database file simultaneously. FileMaker Pro Network Sharing supports the sharing of files with up to five concurrent users.

Note If you need to share files with more than five concurrent users on a network, FileMaker recommends the use of FileMaker Server.

You can quickly and easily publish FileMaker Pro layouts as web pages, which allows anyone with a web browser on your intranet (or the Internet) to access your FileMaker Pro databases.

With FileMaker Pro accounts and privilege sets, you can make your web databases secure.

Using SQL (Structured Query Language) queries, you can get data from FileMaker Pro files to create charts, generate reports, and analyze your data with ODBC- and JDBC-compliant software applications. You can also use FileMaker Pro as an ODBC client application, accessing data sources such as Microsoft Access or Oracle databases. For more information about using, and the limitations of using, ODBC and JDBC with FileMaker Pro, see Help.

For more information about sharing and exchanging data, see chapter 4, “Sharing and exchanging data.”

Saving and sending databases in other formats

FileMaker Pro lets you save data in different file formats, such as Microsoft Excel worksheets and Adobe PDF files, so you can give the files to users who do not have FileMaker Pro. You can automatically email the files after saving them. For more information, see “Saving and sending data in other formats” on page 84.

New features

Information sharing features

For more information on this feature	See
Saving data in Adobe PDF and Microsoft Excel format	“Saving and sending data in other formats” on page 84
New command to send emails	“Sending email messages based on record data” on page 85
Importing data from another file into a new table in the current file. This allows you to consolidate data previously stored in separate databases.	“Methods of importing data into an existing file” on page 85
Export data in Excel format (.xls)	“About the exporting process” on page 88

Usability improvements

For more information on this feature	See
New tool for creating and managing tab controls (tabbed panels) on layouts	"Creating layouts and reports" on page 53
New Field/Control Setup dialog box makes it easier to create and edit checkbox sets and other controls that display data from a value list	"Setting up checkbox sets and other controls on a layout" on page 62
New scroll wheel support for Windows and the Mac OS	Help
Adding text notes to tables in the relationships graph	"Working with the relationships graph" on page 76
Support for variables in file paths	Help
By default, fields on the current layout are listed first when you sort records, replace field contents, export records, or send email	Help
Improved database templates, called Starter Solutions	The *Customizing Starter Solutions* guide
Improved Instant Web Publishing. For example, create and use your own home page instead of the default Database Homepage	"Publishing databases on the web" on page 88
New menu commands to navigate through records and layouts	Help
Performing finds in Browse mode using shortcut menus	"Performing quick finds based on data in one field" on page 25 and "Finding records that match multiple criteria" on page 29
New tools to align objects in Layout mode and in the relationships graph	Help

Ensure data accuracy

For more information on this feature	See
New auto-complete capability for text fields	"Entering and changing data in fields" on page 22
Visual spell checking	Help
New drop-down calendar style for data entry	"Setting up checkbox sets and other controls on a layout" on page 62

Functions and script steps

For more information on this feature	See
New function to return a value from a script	Help
New path functions for calculating a file's location and name	Help
Setting a variable to a specified value in a script or calculation expression	Help
New Get, Logical, Text, and Text Formatting functions	Help
Enhancements to the Go to Related Record script step	Help
Exporting records in Microsoft Excel format using the Export Records script step	Help
Restricting the Windows script step selections to the windows in the current file	Help
New Save Records as Excel and Save Records as PDF script steps	Help
Sending single and multiple email messages with the Send Mail script step	Help

Chapter 1
Using databases

This chapter explains the basics of how to:

- open, close, and save files
- create records in a database
- add and edit data in fields
- find records using different criteria
- omit records from the found set
- find and replace data
- sort data
- print data, scripts, table and field information, and the relationships graph
- use scripts

Note See Help for detailed, comprehensive information and step-by-step procedures about using FileMaker Pro.

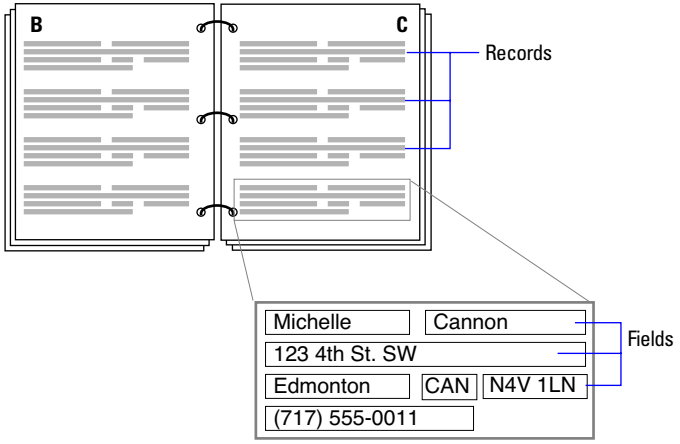
About database fields and records

A *database* is a collection of information, or data, that you can organize, update, sort, search through, and print as needed. Your own address book or filing cabinet is an example of a simple database. With the address book and filing cabinet, you store similar pieces of information organized for easy retrieval.

With a filing cabinet, you must choose a way to sort your data, for example, alphabetically by last name or by region. By storing contacts and addresses in FileMaker Pro, you can organize your information in many ways. You can sort your information by country, city, last name, or even sort by all three of these fields.

An invoicing system is an example of a more complex database, with multiple related tables, multiple layouts, and calculated fields.

You can also view a subset of your data, for example, only invoices for a particular month. A database doesn't just hold information—you use a database to organize and analyze information so that you understand its significance.



Your address book is like a database

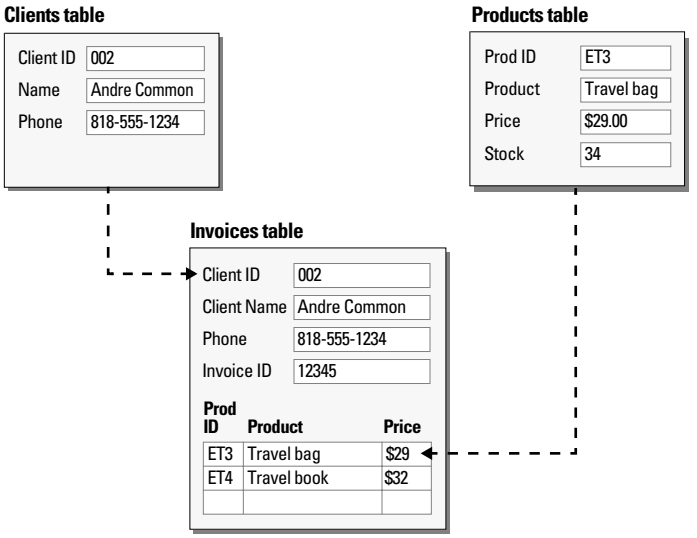
Fields are the basis of a database *table*. Fields are used to store, calculate, and display the data you enter into a *record*. Each piece of information in a record—like name, ID number, and telephone number—is stored in a field.

A database *table* contains one or more records. Each record contains fields that hold similar information about one subject or activity. For example, the fields on a record in the Clients table contain address information for one client.

A database can consist of one file with one table, which might hold the names, addresses, and telephone and fax numbers of all your clients.

A database can also consist of several files, each of which can contain one or more tables that, together, contain all the information about related topics (sometimes called a database system). Using the relational capabilities of FileMaker Pro, you can join information between files and tables to create a *relational database*.

For example, one table can show you which clients bought a particular item and a related table can show how much they paid.



To enter data in a database table, you make a new record and enter values into the fields that belong to that record. Values can be typed into a field, imported from another application, or entered in a number of other ways.

Opening files

To open a file if FileMaker Pro isn't running, choose one of the following methods:

- Double-click the FileMaker Pro file.
- Drag the file onto the FileMaker Pro application icon.
- Double-click the FileMaker Pro application icon. In the New Database dialog box, select Open an existing file, then click OK, then double-click the filename.

To open a file if FileMaker Pro is already running:

1. Choose File menu > Open.
2. Double-click the name of the file to open.

If you're asked for an account name and password, type them in the Password dialog box, then click OK.

To open a file that is being shared over a network:

1. Choose File menu > Open Remote.
2. In the Open Remote File dialog box, select View for a list of hosts.

Choose	To display
Favorite Hosts	Hosts you previously added as favorites
Local Hosts	FileMaker Pro hosts on your TCP/IP subnet
Hosts Listed by LDAP	FileMaker Pro hosts available through the specified LDAP server

3. To see the available files from a host, select the host. In the Available Files list, select the file you want to open.

Or, for Address, type the network path (for example, `fmnet:/hostIPaddress/fileName`).

4. Click Open.

You might be required to enter an account name, password, and domain name (Windows only), depending on how FileMaker Network Sharing is configured on the host.

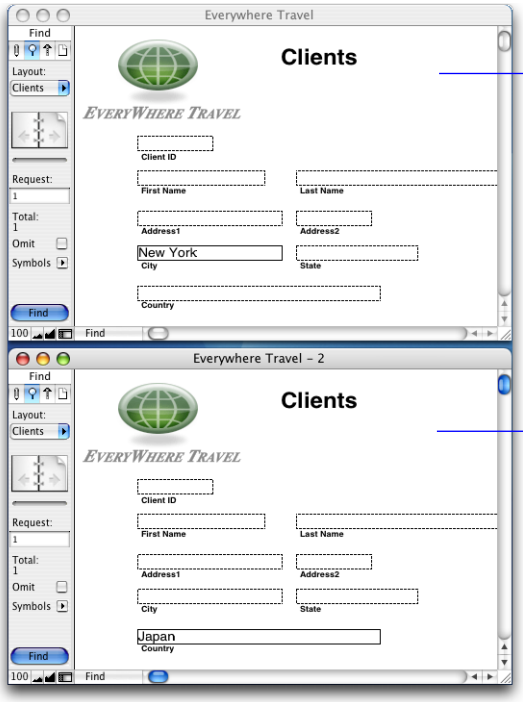
To open and share a file, see "Enabling file sharing and hosting files" on page 82.

Note You can open a FileMaker Pro for Windows file on the Mac OS, and vice versa. If you intend to move files across platforms, it's best to include the .fp7 extension in the filename. If you add or remove filename extensions, you must re-specify the file references for related files and files with external scripts.

Opening multiple windows per file

You can open more than one window per file. This allows you to view the same layout in separate windows, or simultaneously view different layouts in the same file. You can perform find or sort operations independently in the different windows.

To open an additional window, choose Window menu > New Window. Another window appears. Initially, the window displays the same layout, sort order, and found set as the previously active window.



To view a different layout in the new window, choose a layout from the Layout pop-up menu in the status area. You can also choose a layout by choosing View menu > Go to Layout. For information on finding records, see "Finding records" on page 23. For information on sorting records, see "Sorting records" on page 33.

For more information about opening multiple windows, see Help.

Closing windows and files

You can close FileMaker Pro windows and files as you would in most Windows and Mac OS applications.

To close a window, do one of the following:

- Windows: Double-click the document icon in the upper left corner of the document window.
- Windows: Click the close box in the upper right corner of the document window.
- Mac OS: Click the red close button in the upper left corner of the document window.
- Choose File menu > Close.

To close a file, use the procedures above to close all the open windows for a file.

Note Even if you close a file, it may remain open as a hidden file if the window of any other file is displaying data from that file. (For example, another window may be displaying related data from the file you attempted to close.) FileMaker Pro will close the file when you close all the dependent windows.

Saving files

FileMaker Pro saves the changes you make to your file as you work. You can save a copy of your file as a backup or save a clone of your file with no data. To save a copy of your file in a non-FileMaker format, see "Saving and sending data in other formats" on page 84.

Some minor changes to files are not always saved with the file. For details, see the next section, "When FileMaker Pro saves a file."

Important Always save a copy before you make extensive changes. You can't restore data after you delete a field from the Define Database dialog box or remove records using the Delete Record or Delete All commands.

To save a copy of your file:

1. Make the file you want to save the active file, and choose File menu > Save a Copy As.
2. Navigate to where you want to save the copy on your hard disk.
3. For File name (Windows) or Save As (Mac OS), type a filename.
4. For Save as type, choose FileMaker Files (Windows only).
5. For Save a (Windows) or Type (Mac OS), choose one of the following options:

Choose	To
Copy of current file	Duplicate the entire file, including the tables, field definitions, layouts, scripts, page setup options, and data. Duplicating a file is useful before you make extensive changes.
Compacted copy (smaller)	Compact the entire file into less disk space by reclaiming unused space in the file. Saving a compacted copy is useful if you edit many records frequently.
Clone (no records)	Save a file's tables, field definitions, layouts, scripts, and page setup options, without the data. Make a clone when you want a template of the file.

6. Click Save.

When FileMaker Pro saves a file

In FileMaker Pro, the following actions do not cause the file to be saved:

- Displaying a different record or layout
- Sorting records or modifying a sort order
- Performing find operations such as Find, Show All Records, Omit Record, or modifying a find request
- Changing the position and size of windows or hiding/showing the status area
- Changing layout object default settings
- Changing ruler display settings

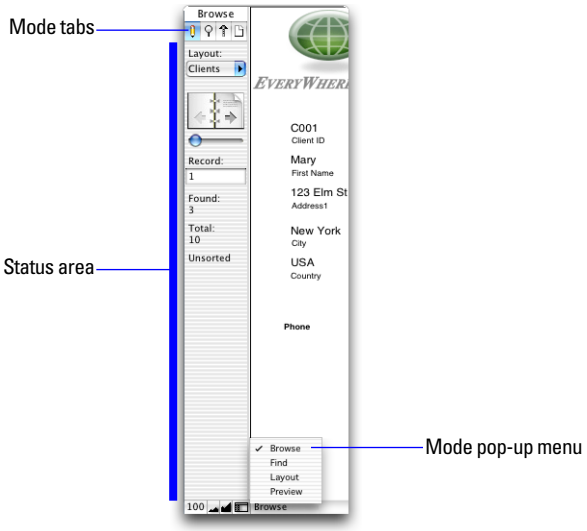
If you perform any of the above actions without also performing an action that does cause a save (such as modifying data), the change won't be saved when you close the file. FileMaker Pro considers the above actions to be minor changes, and they are not saved with the file unless the file is also modified in a more significant way.

For example, if you open a file, perform a find, then close the file, FileMaker Pro does not save the found set with the file. However, if you open a file, add a new record, perform a find, then close the file, FileMaker Pro will save the found set as well as the new record with the file.

For more information about saving files, see Help.

About modes

You work with data in FileMaker Pro in Browse, Find, Layout, or Preview mode. You can choose a mode from the View menu, the Mode tabs in the status area, or from the mode pop-up menu at the bottom of the document window.



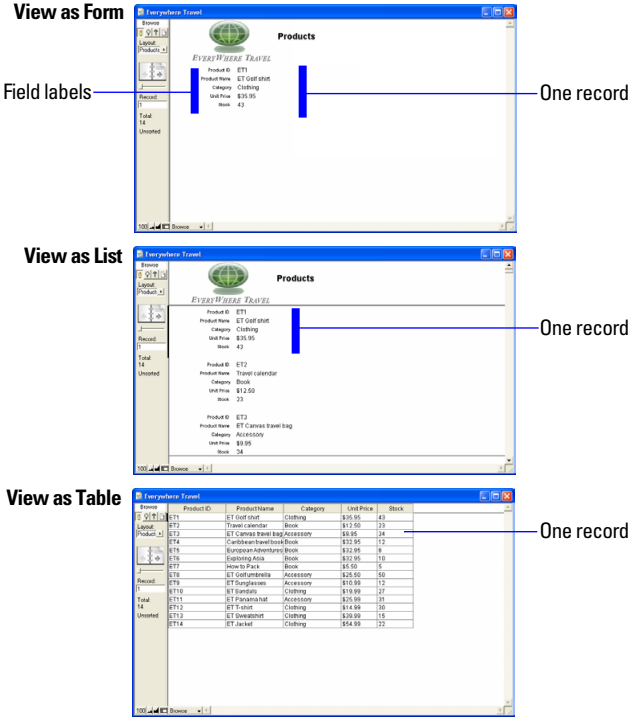
Use this mode	To
Browse mode	Work with the data in a file. You can add, view, change, sort, omit (hide), and delete records. Browse mode is where you'll do most of your work, such as data entry.
Find mode	Search for particular records that match a set of criteria. You can then work with this subset of your records, called the *found set*. After you find a group of records, FileMaker Pro returns to Browse mode so you can begin working with them.
Layout mode	Determine how information is presented on your screen or in printed reports, labels, and forms. Design layouts for specific tasks, like data entry or printing invoices or envelopes. Select and arrange fields and other objects to modify an existing layout or create new layouts.
Preview mode	See how data in forms or reports will look before you print. Preview mode is especially useful for viewing layouts with multiple columns (like mailing labels) and reports with summaries.

Viewing records

FileMaker Pro provides three views of each layout: form, list and table. When you change views, you temporarily change the way records display or print.

To view records	Do this in Browse mode or Find mode
Individually	Choose View menu > View as Form.
In a list	Choose View menu > View as List.
In a spreadsheet-like table	Choose View menu > View as Table.

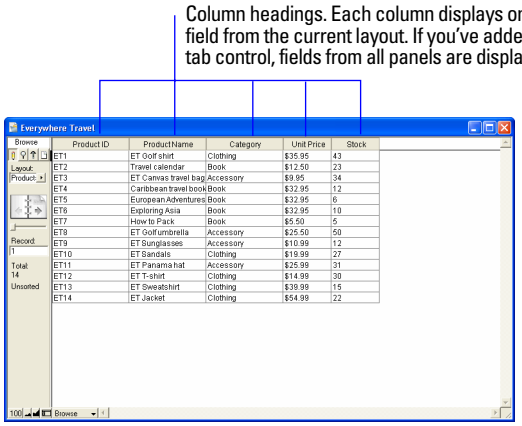
The following illustration shows the same layout in three views.



Viewing records in table format

While viewing records in table format, you can make one or more of the following changes to columns and records:

To	Do this
Reorder columns	Click a column heading and drag it to a new location.
Resize a column	Move the pointer to the edge of the column heading. When the pointer changes to a double arrow (↔), drag it to the desired size.
Set a precise column width	Select one or more columns, then right-click (Windows) or Control-click (Mac OS). Choose Set Column Width from the shortcut menu. In the dialog box, type a width, choose units from the list, then click OK.
Sort records	▪ Click a column heading. ▪ Select one or more columns, right-click (Windows) or Control-click (Mac OS), then choose a sort order from the shortcut menu. If you select multiple columns, the order of the columns (left to right) determines the sort order. **Note** You must have Sort data when selecting column selected in the Table View Properties dialog box. (In Layout mode, select this option by right-clicking (Windows) or Control-clicking (Mac OS), then choosing Layout Setup from the shortcut menu. In the Layout Setup dialog box, click the Views tab, then click Properties.)

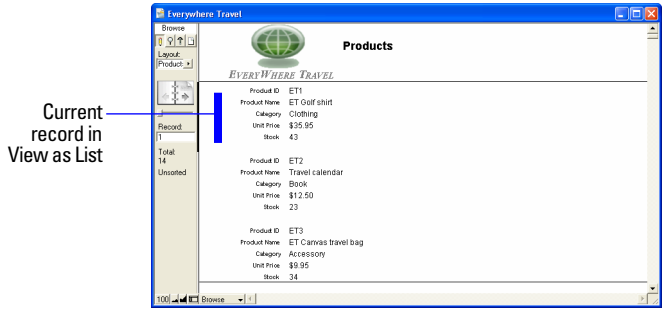


View as Table

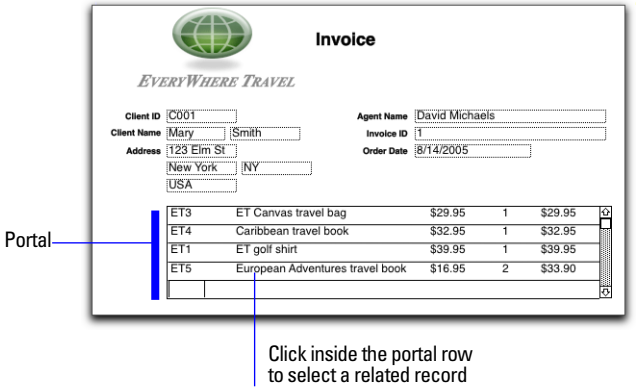
Selecting the active record

In Browse mode, a table has one active (selected) record at a time for each window. For more information about working with multiple windows, see "Opening multiple windows per file" on page 15.

In this view	The active record is
View as Form	The record that you're displaying.
View as List or View as Table	The record that's marked with a solid bar along the left side. To work with another record, click in the record to make it active.

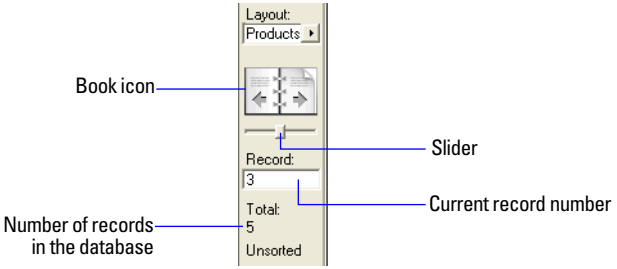


To select a related record in a portal, select the portal row (click inside the row but outside any fields in the row). For information about related records and portals, see chapter 3, "Working with related tables and files."



Moving through records

To move from one record to another, use the book icon in the status area.



To move	Do this
To the next record in the current table	Click the right page of the book icon or choose Records menu > Go to Record > Next.
To the previous record in the current table	Click the left page of the book icon or choose Records menu > Go to Record > Previous.
Quickly to a specific record	▪ Click the current record number, type the record number you want, then press Enter (Windows) or Return (Mac OS). ▪ Press Esc, type the record number, then press Enter or Return. ▪ Choose Records menu > Go to Record > Specify, then type the number of the record.
Quickly through records	Drag the slider right or left to move forward or backward.
Through records in View as List or View as Table	Use the scroll bar on the right side of the window.
To a record with a unique value that you know	See "Finding records" on page 23.

You can also use a mouse scroll wheel to move through records. For more information, see Help.

For more information about viewing records, see Help.

Adding and duplicating records

When you add or duplicate records, FileMaker Pro stores new records at the end of the current table. In Browse mode, you see the new record after the current record, or after the last record in the found set (the set of records made active by a find request).

- If records are sorted, the new record appears immediately after the current record.
- If records are unsorted, the new record appears after the last record in the found set. For more information, see "Sorting records" on page 33.

To	Do this in Browse mode
Add a new blank record	Choose Records menu > New Record. You see a blank record with one field selected.
Quickly add a record with the same or similar data as an existing record	Select the record to duplicate. Then, choose Records menu > Duplicate Record. (See "Selecting the active record" on page 19.)
Add or duplicate related records	See the next section.

Note If a file is locked or write-protected, or if you don't have access privileges to create records, FileMaker Pro will not add or duplicate records.

If the field is defined to automatically enter field values, you see those values entered in the new record. See "Defining automatic data entry" on page 50.

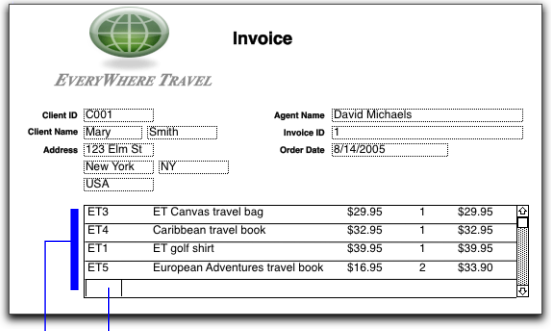
To enter or change values in the new record, see "Entering and changing data in fields" on page 22.

Adding and duplicating related records

If you're working with records in related tables, you can add records to a related table when you enter data in a record in the current table.

Note You can only add related records from the current table if the relationship is defined to allow the creation of related records. If a related table is in a write-protected file, or if you don't have access privileges to create records, FileMaker Pro will not add or duplicate records. (See "Creating relationships" on page 76.)

To	Do this in Browse mode
Add a record to a related table	▪ If the related field is in a portal, type data into the field in the last (empty) row of the portal, then press Enter. ▪ If the related field isn't in a portal, type data into the field, then press Enter.
Duplicate a record that is displaying related data	Be sure no records in a portal are selected, then choose Records menu > Duplicate Record.
Duplicate a related record in a portal	Select the record in the portal, then choose Records menu > Duplicate Record.



For more information about adding and duplicating records, see Help.

Deleting records

When you delete a record, you *permanently* discard the data in all the fields in that record.

Important You can't retrieve deleted data, and you can't undo the action of deleting records. Before you delete records, consider making a backup copy of your file.

If you're working in a relational database and the option to delete related records is selected in the Edit Relationship dialog box, FileMaker Pro deletes related records when you delete a record.

To delete	Do this in Browse mode
One record	Select the record to delete. Choose Records menu > Delete Record, then click Delete.
A related record	Select a portal row in the current table by clicking inside the row but outside any fields in the row. Choose Records menu > Delete Record, then click Delete. **Note** To delete related records, Allow deletion of portal records must be selected in the Portal Setup dialog box.
A group of records	Make sure the found set contains only the records you want to delete. (See "Finding records" on page 23.) Choose Records menu > Delete Found Records, then click Delete.
All records in a database	Choose Records menu > Show All Records, then choose Records menu > Delete All Records.

Entering data

Note If a file is locked or write-protected, or if you don't have privileges to edit certain records or fields, you may not be able to modify data.

Selecting a field

To	Do this in Browse or Find mode
Select a field	Click in the field.
Select the contents of a field	Select the field, then choose Edit menu > Select All.
Move to the next field in the tab order	Press Tab. **Note** To set the Return or Enter key(s) to move to the next field, in Layout mode, select the fields, then choose Format menu > Field/Control > Behavior. Buttons and tab controls can be included in the tab order. Fields on tab panels that are not in front are skipped.
Move to the previous field in the tab order	Press Shift-Tab (or Shift-Return or Shift-Enter, if enabled).
Move to items in a value list	Press the arrow keys.

Entering and changing data in fields

You can enter or import data up to the character limit for the field type. You can view and print only the data that fits within the field boundaries.

To	Click in the field in Browse mode, then
Enter data in a text field	Type the text (up to 1 billion characters). **Note** In a field set up to auto-complete, you see suggestions based on what you type.
Enter data in a number field	Type the values (from 10^{400} to 10^{-400}).
Enter data in a date field	Type one date on one line in the field. Type the day, month, and year as numbers (for example, 3/3/2005), separated by a nonnumeric character like – (minus) or / (forward slash). **Note** You cannot use a : (colon) as a date separator. **Important** If you enter dates with two-digit years, FileMaker Pro converts them to four-digit year dates using a conversion method described in Help. To avoid misinterpretations during conversion, always enter dates with four-digit years.
Enter the current date in a date, number, or text field	Choose Insert menu > Current Date. Select the date using the drop-down calendar, if available.

To	Click in the field in Browse mode, then
Enter data in a time field	Type the time of day (or time duration) as: ■ hours ■ hours and minutes ■ hours, minutes, and seconds ■ hours, minutes, seconds, and fractional seconds Separate hours, minutes, and seconds by a nonnumeric character like : (colon). Separate fractional seconds by a . (period). Type the time of day in 24- or 12-hour format, with or without AM or PM. (AM is assumed for a time less than 12:00.)
Enter the current time in a time, number, or text field	Choose Insert menu > Current Time.
Enter data in a timestamp field	Type the date and time (for example, 10/15/2005 3:15:05 PM). Type the day, month, and four-digit year as numbers, separated by a nonnumeric character like - (minus) or / (forward slash). **Note** You cannot use a : (colon) as a date separator. Then type the time of day as: ■ hours and minutes ■ hours, minutes, and seconds ■ hours, minutes, seconds, and fractional seconds ■ Type AM or PM if the time is not in 24-hour format Separate hours, minutes, and seconds by a nonnumeric character like : (colon).
Enter the current date and time in a timestamp field	Choose Insert menu > Current Time. Select the date using the drop-down calendar, if available.
Insert a tab character in a field	Click where you want to insert the tab. Press Ctrl+Tab (Windows) or Option-Tab (Mac OS).
Delete data from a field	Select the data, then press Backspace or Delete.
Add data to a container field	For information, see Help.
Insert a file in a container field	For information, see Help.
Add data to value lists (fields formatted as radio or option buttons, checkboxes, lists, or menus)	For information, see “Setting up checkbox sets and other controls on a layout” on page 62.
Edit, format, or check the spelling of text in a field or edit dictionaries	For information, see Help.

Finding records

To find records, work in Find mode. You type *criteria* (the value or values to find) into fields in a *find request*, which looks like a blank record. When you perform a find, FileMaker Pro searches through all the records in a table, comparing the criteria you specify with the data in the table. Records with data matching the criteria become the *found set*, which is the subset of records being browsed. Records that don’t match are omitted. You can constrain (narrow) or extend (broaden) the found set.

You can work with just the records in the found set. For example, you can view, edit, calculate summaries for, sort, print, delete, export, or replace data in these records. You can also open a new window in order to perform different find requests on the same data.

You can’t perform a find in summary fields, container fields, or fields defined with the global storage option.

Making a find request

To make a find request:

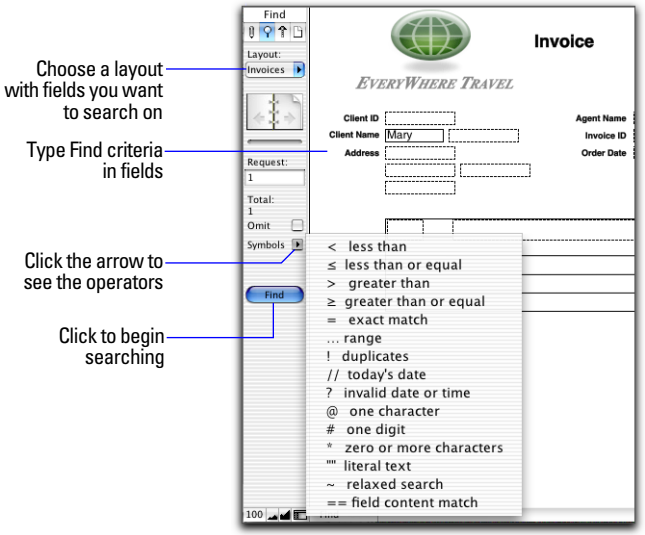
1. Go to a layout that has fields you want to enter criteria in.

You can change layouts and enter criteria on more than one layout.

2. Choose View menu > Find Mode.

3. In the find request, select a text, number, date, time, timestamp, or calculation field to use for finding, then type a value in the field.

You can use the Symbols pop-up menu to help you enter criteria that include operators.



4. Click Find in the status area, or choose Requests menu > Perform Find.

You can do one or more of the following during or after performing a find request:

To	Do this
Cancel a find operation before it is finished and leave the previous found set unchanged	Press Esc (Windows) or ⌘-period (Mac OS).
Change or refine criteria after performing a find request	See "Viewing, repeating, or changing the last find" on page 32.
Narrow an existing found set	See "Constraining (narrowing) a found set" on page 29.
Broaden an existing found set	See "Extending (broadening) a found set" on page 30.
Show all records again	In Browse mode, choose Records menu > Show All Records. In Find mode, choose Requests menu > Show All Records. You don't need to choose Show All Records before performing finds. FileMaker Pro always searches all records in the tables you specify unless you have narrowed the existing found set.
Open another window in order to perform different find requests on the same data	Choose Window menu > New Window.

Performing quick finds based on data in one field

You can perform quick finds based on field data without having to go to Find mode. You can perform a find based on an entire field or a selection of text within a field. For more information, see Help.

1. In Browse mode, select the text in a field you want to use for the find.

2. Right-click (Windows) or Control-click (Mac OS) the selected text. From the shortcut menu, choose Find Matching Records.

Finding text and characters

Search for text in text fields, or in calculation fields that return a text result.

Unless you search for phrases and exact matches, the field can contain other values in addition to the one(s) you specify, and the values can be in any order. For example, typing `hotel` in a field named Accommodation finds records for Hotel, Discount Hotel, and Hotel, Luxury.

To find	Type this in the field	Examples
Words that start with specific characters (works with fields that use any language except Japanese)	The characters.	`Chris Smith` finds Chris Smith, Smith Chris, Chris Smithson, and Smith Christenson
Words that start with specific characters (Japanese field only)	The characters between = and *.	▪ = 小田 * finds 小田 , 小田山 , and 小田川 ▪ `=Chris* =Smith*` finds Chris Smith, Smith Chris, and Smith
Words that contain specific characters in a Japanese field	The characters.	京都 finds 京都 , 東京都 , and 京都府
A phrase or sequence of characters	The text, including spaces and punctuation, between the double quotation marks (").	`"Marten and Jones Interiors"` finds Marten and Jones Interiors but not Jones and Marten Interiors `", Ltd."` finds all companies with ", Ltd." in the name, but not those without the comma.
Words with one or more unknown or variable characters	One wildcard character (@) for each unknown character.	`Gr@y` finds Gray and Grey `@on` finds Don and Ron but not Bron
Invalid characters	?	Invalid characters display as blank characters **Note** To find the ? character, search for "?"
Words with zero or more unknown or variable text characters in a row	* for all unknown characters.	`Jo*n` finds Jon and John `J*r` finds Jr. and Junior `*phan*` finds Phan and Stephanie
Digits in a text field	A # character for each digit.	`#` finds 3 but not 30 `##` finds 30 but not 3 or 300
Symbols or other non-alphanumeric characters, such as punctuation or spaces	The characters, including spaces and punctuation, between the double quotation marks (").	"@" finds @ (or an email address, for example) "," finds records containing a comma " " finds three spaces in a row
Words with accented characters	The text, including spaces and punctuation, between the double quotation marks (").	"`òpera`" finds òpera but not opera (`òpera` without quotes finds both òpera and opera)

To find	Type this in the field	Examples
Partial phrases (a sequence of words or characters)	Characters, punctuation, and spaces between quotation marks (""). Use * to find this text in the middle of a longer text string.	`*"son & Phillips"` finds Johnson & Phillips and Paulson & Phillips
Case-sensitive text	Change the default language for indexing the field to Unicode. **Note** This procedure will change the order in which records sort. For more information, see Help.	`fred` finds fred but not Fred
Japanese characters using a relaxed search method that does not differentiate between Hiragana/ Katakana, Voiced/Semi-Voiced/Unvoiced Kana, Small/Regular Kana, and Kana Voiced/Unvoiced Iteration Marks (Available only in Japanese-indexed fields)	~ (tilde) followed by the character.	~は finds は , ば , ぱ , ハ , バ , and パ
A character with special meaning, such as database syntax recognized by FileMaker Pro: @, *, #, ?, !, =, <, >, "	\ followed by the special character.	`\"Joey\"` finds "Joey" `joe\@abc.net` finds the email address joe@abc.net
Exact matches of the text you specify	== (two equal signs)	`==John` finds John but not John Smith `==John Smith` finds John Smith but not Smith, John or John Smithers
Exact matches of whole words you specify	=	`=Market` finds Market, Market Services, and Ongoing Market Research but not Marketing or Supermarket `=Chris =Smith` finds Chris Smith or Smith Chris but not Chris or Christopher Smithson
Ranges of information	See "Finding ranges of information" on page 28.	

Finding numbers, dates, times, and timestamps

Numbers, dates, times, and timestamps should be entered in the corresponding field types (or calculation fields returning the corresponding field type) to ensure correct behavior when finding them. See "About choosing a field type" on page 44.

Important To avoid confusion when working with dates, always use four-digit years. For more information, see the Help topic "Conversion of dates with two-digit years."

To find	Type this in the field	Examples
A number in a number field or in a calculation field that produces a numeric result	The number, in the format used when the file was created (unless Use System Formats is chosen)	`.50` finds .5, .50, and $.50
A Boolean number in a number field or in a calculation field that produces a Boolean result	`1` to find True values `0` to find False values	`1` finds 1 `0` finds 0

To find	Type this in the field	Examples
A date in a date field or in a calculation field that produces a date result	The date as digits, separated by a nonnumeric character, in the format used when the file was created (unless Use System Formats is chosen)	`3/3/2005` finds 3/3/2005, March 3, 2005, and 3-3-2005
Today's date in a date field or in a calculation field that produces a date result	//	`//` finds April 4, 2005 (when the current date is 4/4/2005)
A time in a time field or in a calculation field that produces a time result	The time as digits, separated by colons, in the format used when the file was created (unless Use System Formats is chosen)	`12:53:09` finds 12:53:09
A timestamp in a timestamp field or in a calculation field that produces a timestamp result	The date as digits, separated by a nonnumeric character, then the time as digits, separated by colons, in the format used when the file was created (unless Use System Formats is chosen)	`3/3/2005 12:53:09 PM` finds 3/3/2005 12:53:09 PM
Invalid dates, times, timestamps, or calculated date or time results	`?`	`?` finds: Next Tuesday or 2/33/2005 in a date field, or midnight in a time field
Invalid data (fields containing no numbers) in a number field or calculation field that produces a numeric result	`?`	`?` finds: twelve but not 12 or twelve30
Dates on a day of the week in a date or timestamp field	The day of the week **Note** Full or short day names (for example, `Friday` or `Fri`) are acceptable in day of week searches	`Tuesday` finds all dates that occur on a Tuesday `=Thu` finds all dates that occur on a Thursday
Any valid value for a date or time component in a date, time, or timestamp field	`*` or leave component unspecified, while specifying the other components you want to find	`3/3/*` finds the 3rd day of March in any year `*:15` finds times that are 15 minutes after any hour `1/1/* 7 PM` finds timestamps in the 7 o'clock hour on January 1st in any year **Note** When the year is unspecified, the current year is assumed. `3/3` finds the 3rd day of March in the current year
Ranges of information	See the next section.	

Finding ranges of information

To find values that are	Use this operator	Examples
Less than a specified value	<	<40 <9/7/2005 <M
Less than or equal to a specified value	<= or ≤ (Mac OS)	<=95129 ≤05:00:00 <=M
Greater than a specified value	>	>95129 >9/7/2005 >M
Greater than or equal to a specified value	>= or ≥ (Mac OS)	>=100 >=9/7/2005 ≥8:00 ≥M
Within the range you specify. A range is different based on the data type: ■ Numbers: least to greatest ■ Dates and times: earliest to latest ■ Text: first to last word, based on the index order of words (not the sort order)	.. or ... (two or three periods)	12:30...17:30 1/1/2005..6/6/2005 A...M

To find dates	Type this in the field
In June, 2005	6/2005
From July 1997 through October 1998	7/1997...10/1998
That occur on a Friday	=Friday
From the 10th through the 16th of October or November, 2006 (if the date format is MM/DD/YYYY)	{10..11}/{10..16}/2006
That occur on March 1st between 1868 and 1912 in the Japanese Emperor Year era of Meiji	m*/3/1
That occur on December 31st between 1930 and 1940 in the Japanese Emperor Year era of Showa	S{5..15}+12+31

To find times	Type this in the field
In the 3 o'clock hour, not including 4:00 PM	3 PM
Between 8:00 AM and 8:59:59 PM	8 AM..8 PM
In the morning	AM
Any of the times 4:30, 5:30, 6:30 PM	{4..6}:30 PM

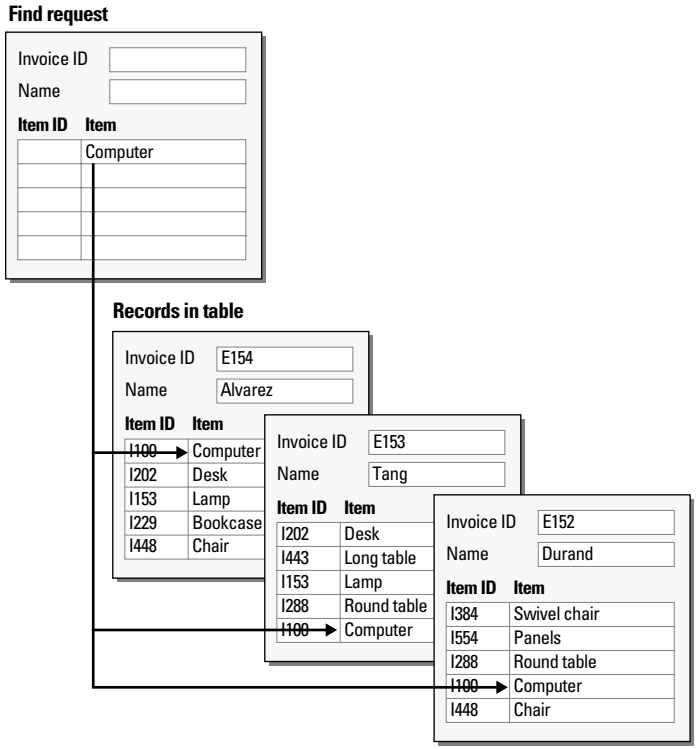
To find timestamps	Type this in the field
In the 3 o'clock hour today	// 3 PM
In the 7 o'clock hour in May, 2005	5/2005 7 PM
That occur on a Monday in 2006	=Mon 2006
From the 10th through the 16th of November, 2006 and from 3:00 PM to less than 6:00 PM (if the date format is MM/DD/YYYY)	11/{10..16}/2006 {3..5} PM

Finding data in related fields

You can enter find criteria in related fields that are displayed in a portal or directly on a layout.

When you perform a find in a related field, FileMaker Pro displays all the records that have a related record matching the criteria you enter. For example, suppose you have an invoice file that displays line items as related records in a portal. To find all invoices listing a computer, type `Computer` in the Item field in the portal. For information about related fields, see chapter 3, "Working with related tables and files."

For information about omitting related records, see "Finding records except those matching criteria" on page 30.



Finding empty or non-empty fields

To find fields that are	Type this in the field
Not empty (i.e., fields that have data)	*
Empty	=

Finding duplicate values

You can find all records for which one or more fields contain duplicate values. For example, you might want to find all records that aren't unique, then examine them to decide which records to use or delete.

To find all duplicate records, choose View menu > Find Mode and type ! in the field.

Finding records that match multiple criteria

You can narrow or broaden your search by using more than one criterion.

Logical AND search

To narrow your search, enter criteria in as many fields as needed to make your request specific, then click Find.

You can narrow find results incrementally, looking for more specific detail as you search your database. See the next section.

Constraining (narrowing) a found set

For example, after searching for all of the employees who work in Sales, you can narrow the search to find all of the employees in Sales named Alvarez:

1. In Find mode, perform a find to find all of the employees who work in Sales.

FileMaker Pro displays the found set in Browse mode.

2. Switch back to Find mode and type the criteria to narrow the search (type `Alvarez` in the Last Name field).

3. Choose Requests menu > Constrain Found Set.

The found set now consists of employees in Sales named Alvarez.

Note To quickly constrain the found set in Browse mode, use the shortcut menu. Click in the field (or select a partial value in the field), then right-click (Windows) or Control-click (Mac OS), and choose Constrain Found Set.

Logical OR search

To widen your search, enter criteria in the first request. Choose Requests menu > Add New Request. Enter the second (set of) criteria. Continue adding requests for each (set of) criteria, then click Find.

You can navigate among multiple requests using Go to Request on the Requests menu or using the book icon in Find mode.

Examples:

- To include customers in New York and customers in Paris in the found set, type `New York` in the City field in the first request, then type `Paris` in the City field in the second request.
- To include companies with more than 100 employees and companies with more than $100 million in assets, type `>100` in Number of Employees in the first request, then type `>100,000,000` in Capitalization in the second request.
- To include 6th grade students who are in Algebra and 7th grade students who are in Geometry, type `6` in Level and `Algebra` in Course in the first request, then type `7` in Level and `Geometry` in Course in the second request.

You can broaden a found set to expand your search to include additional applicable records without starting over. See the next section.

Extending (broadening) a found set

For example, after searching for customers in New York, you can broaden the search to also find customers in Hong Kong:

1. In Find mode, perform a find to find customers in New York.

FileMaker Pro displays the found set in Browse mode.

2. Switch back to Find mode and type the criteria to broaden the search (type `Hong Kong` in the City field).
3. Choose Requests menu > Extend Found Set.

The found set now consists of customers in New York and Hong Kong.

Note To quickly extend the found set in Browse mode, use the shortcut menu. Click in the field (or select a partial value in the field), then right-click (Windows) or Control-click (Mac OS), and choose Extend Found Set.

Records that match one set of criteria but not another

To narrow your search by excluding records that meet specified criteria (for example, to find vendors in New York state that are not in New York City), see "Finding some records while omitting others" on page 31.

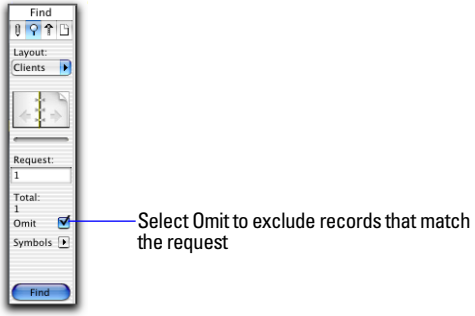
Finding records except those matching criteria

You can exclude (omit) records while performing a find. In other words, you can find information in your database that "does not equal" your specified criteria. For example, you can find all invoices except those created in the past 30 days.

Finding records that don't match criteria

For example, to find all sales records except those for the city of London:

1. In Find mode, type criteria for the records to omit.
2. Select Omit in the status area.



3. Click Find.

Finding some records while omitting others

For example, to find vendors in the state of New York, except those in New York City:

1. In Find mode, type the criteria for the records to find (type `New York` in the State field.)
2. Choose Requests menu > Add New Request.
3. Type criteria for the records to exclude (type `New York` in the City field.)
4. Select Omit.
5. Click Find.

Keep these points in mind:

- You can have Omit criteria in more than one request.
- FileMaker Pro works through the requests in the order you create them. For example, in a Clients database with clients in the US and France:
  - If the first request finds all clients in Paris and the second request omits all clients in the USA, the found set contains all clients in Paris, France but none in Paris, Texas or anywhere else in the USA.
  - If the order of the requests is reversed (the first request omits all clients in the USA and the second request finds all clients in Paris), the found set includes all clients in Paris, France and in Paris, Texas, but no records for clients elsewhere in the USA.
- To omit a related record from a portal row (or set of related records), you must change the relationship or the value in at least one of the match fields so that the record is no longer related. For information about related fields, see chapter 3, "Working with related tables and files."
- You can open another window in order to perform different find requests on the same data. See "Opening multiple windows per file" on page 15.
- To omit records from a found set after performing a find, see "Hiding records from a found set and viewing hidden records" on page 32.

Deleting and reverting requests

To delete a request, go to the request you want to delete, then choose Requests menu > Delete Request.

To restore a request to the way it was when you last committed it, choose Requests menu > Revert Request. Requests are committed, for example, when you click out of all fields, go to a different layout or request, or perform a find.

Viewing, repeating, or changing the last find

To view the most recent find criteria, choose Records menu > Modify Last Find. Then, to return to the found set, choose View menu > Browse Mode. To repeat the find, click Find. Or you can modify the find criteria, then click Find.

Hiding records from a found set and viewing hidden records

All records that are not in the found set are omitted, or hidden. You can omit additional records from the found set without doing a new find.

Important Omitted records are temporarily excluded from the found set. They still exist in the database.

To	Do this
Omit a specific record	Display or select the record to omit, then choose Records menu > Omit Record.
Omit a series of records	Display or select the first record in a number of consecutive records to omit, then choose Records menu > Omit Multiple. In the Omit Multiple dialog box, type the number of records to omit, then click Omit.
View the omitted set	Choose Records menu > Show Omitted.
Bring back all the records in the file	Choose Records menu (Browse mode) or Requests menu (Find mode) > Show All Records.

Finding and replacing data

As in a word processing application, you can find and replace data across multiple fields (including related fields) in a record or in a find request, across a found set of records or find requests, or across text objects in a layout. You can search for data in any type of field except container fields and fields that are not modifiable.

If you have added a tab control to a layout, when you find and replace data in Browse and Find modes, FileMaker Pro only finds and replaces data in the tab panel that is in front. In Layout mode, FileMaker Pro finds and replaces data in all tab panels.

1. In Browse, Find, or Layout mode, choose Edit menu > Find/Replace > Find/Replace.
2. In the Find what box, type the data you want to search for. In the Replace with box, type the replacement data.

You can't replace data in fields that are formatted as pop-up menus, radio buttons, or checkboxes. These fields will be counted and reported as skipped at the end of a Replace all operation.

3. Set the search options you want to use.

Select	To
An option from the Direction list	Choose the search direction: Forward, Backward, or All.
Match case	Search for only those occurrences in which the capitalization matches the data you specified in the Find what box. **Note** In files that contain Japanese data, a find with the Match case option cleared does not simultaneously find both the half-width and full-width version of the same character. To comprehensively find and replace both characters, make sure you perform separate finds for both the half-width and full-width character.
Match whole words only	Search for only those occurrences that are whole words or are bounded by spaces and/or punctuation characters.

Select	To
An option in Search across	In Browse mode, search across all records in the current layout or just in the current record. In Find mode, search across all find requests in the current layout or just in the current find request. **Note** In Layout mode, FileMaker Pro searches just in the current layout.
An option in Search within	In Browse and Find modes, search within all fields in the current layout or just in the current field.

4. Click one of the buttons to perform the type of find/replace operation you want.

Click	To
Find Next	Search for and select the next occurrence of the Find what data.
Replace & Find	If there is selected data that matches the Find what data: Replace the Find what data with the Replace with data, search for and select the next occurrence. If there is no selected data that matches the Find what data: Search for and select the first occurrence of the Find what data.
Replace	Replace the Find what data with the Replace with data.
Replace All	Replace all occurrences of the Find what data with the Replace with data. At the end of the Replace All operation, you see a summary of the number of occurrences found and replaced.

For more information about finding and replacing data, see Help.

Sorting records

FileMaker Pro stores records in the order they were added to the file. Sorting temporarily rearranges records, so you can view, update, or print them in a different sequence.

You choose the fields whose contents you want to sort by. The first sort field arranges the records based on the field's contents. The second sort field arranges records when two or more records have the same value in the first sort field, and so on. You can sort records in ascending order, descending order, or in a custom order.

The records remain sorted until you perform a find, add new records, or sort the records again.

To sort the records in the current found set:

1. In Browse mode, choose Records menu > Sort.

2. In the Sort Records dialog box, choose fields for sorting, in the order you want them sorted by, and sort options.

To choose a sort field visible on the current layout, no matter what table it is in, choose Current Layout (LayoutName) from the table list, then double-click a field in the list.

To choose a sort field that is in the current layout's table, whether or not it is on the current layout, choose Current Table (TableName) from the table list, then double-click a field in the list.

For information about sort options, see Help.

3. Click Sort.

To cancel before sorting is finished, press Esc (Windows) or ⌘-period (Mac OS).

Note You can sort records on one field without opening the Sort dialog box by using the field's shortcut menu.

For more information about sorting records, see Help.

Previewing and printing databases

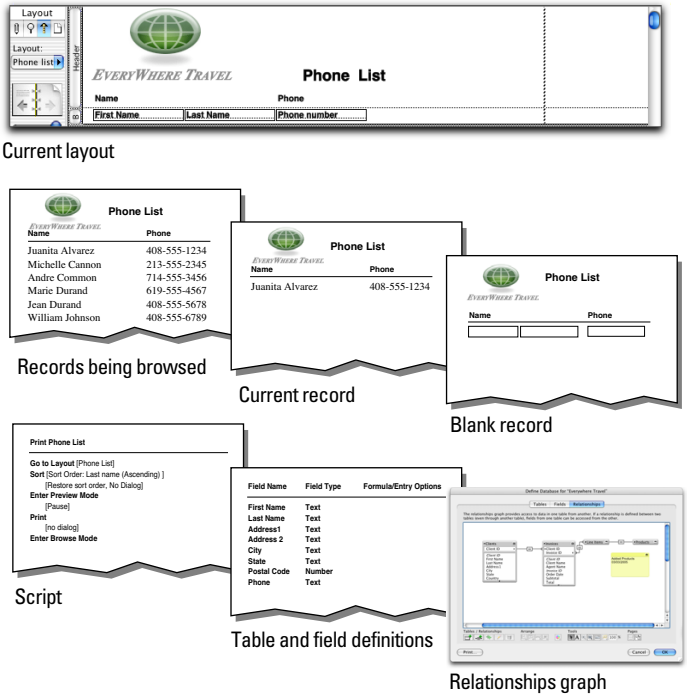
With FileMaker Pro, you can print:

- all the records in the database, a subset of the records, or only the current record
- a blank record to create a paper form
- definitions of scripts, fields, tables, and relationships to see the structure of your database
- data saved as a PDF file

FileMaker Pro prints records using the current layout. You can create layouts to print the same data in different ways. For example, you can print records one by one, in a columnar list, or in a complex sorted report with totals, headers, and footers. You can also create layouts for mailing labels or envelopes.

The New Layout/Report assistant (in Layout mode) makes it easy to create such layouts and reports. See "Creating layouts and reports" on page 53.

You can print data based on the current layout or you can print information about the structure of the database



You can control page margins, remove blank space, and keep specified objects from printing.

Previewing data on a layout

When you switch to Preview mode, you see the layout as it appears on the printed page. You can't enter or edit information in fields in Preview mode.

In Preview mode, you see:

- how many records fit on a printed page
- how the pagination settings you choose affect page breaks
- subsummary parts with calculated summary fields
- variable information supplied by FileMaker Pro, like page numbers, the current date, and so on
- the page margins you define
- how fields set with sliding options close up blank space
- records arranged in columns if the Layout Setup is defined to print in columns
- the tab panel in the front if the page contains tab controls

To preview data on a layout, you follow the same preliminary steps that you perform when you print, including specifying a printer and printing options and verifying that the found set contains the records you want to preview (see steps 1 through 4 in the next section, "Printing records"). Then, choose View menu > Preview Mode.

Printing records

You can print information from your database, or you can print a blank record in order to print a blank "form."

To print records:

1. If you have more than one printer, specify which one you want to use.

2. Confirm printing options by choosing File menu > Print Setup (Windows) or File menu > Page Setup (Mac OS), then click OK.

For information about printer options, refer to your printer and system documentation.

3. Use the Layout pop-up menu to switch to the layout you want to use.

4. Make sure the found set is the way you want it by:

- using Find mode and commands on the Records menu to change the found set
- sorting the records

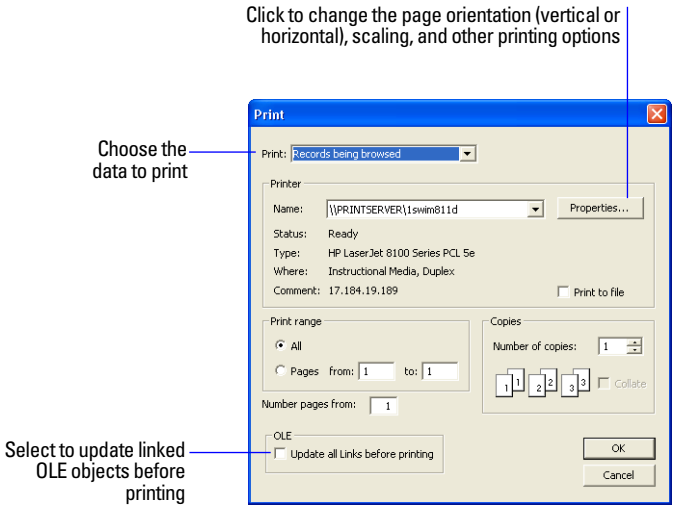
5. Choose View menu > Preview Mode to see exactly how your paper copy will look.

Some items, like summary fields, subsummary parts, sliding objects, records arranged in columns, and variable information like page numbers, appear correctly only in Preview mode. If a record contains tab controls, only the tab panel that is in the front is printed.

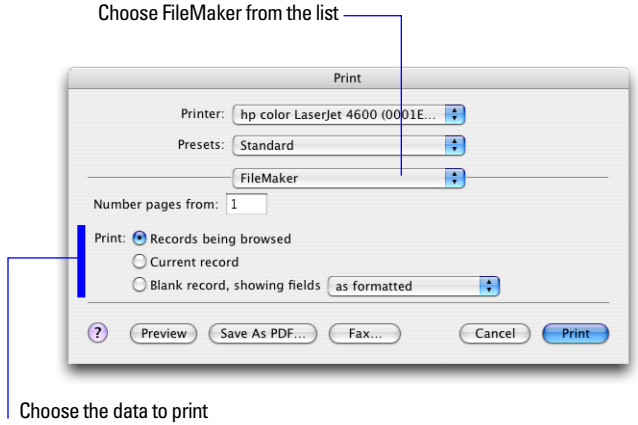
6. Choose File menu > Print.

7. In the Print dialog box, for Print, choose an option (Windows) or choose FileMaker from the pop-up menu (Mac OS).

To print	Choose
All records (or only records in the found set)	Records being browsed
Only the record currently selected in Browse mode	Current record
A blank record using the current layout (use this option to print a blank "form")	Blank record, showing fields, then choose a formatting option



Print dialog box (Windows)



Print dialog box (Mac OS)

8. Select the print range, number of copies and other printing settings, then click OK (Windows) or Print (Mac OS).

Printing scripts

You can print a list of all script steps for one or more scripts in a file.

To print scripts:

1. Choose Scripts menu > ScriptMaker.

2. In the Define Scripts dialog box, select the script or scripts you want to print.

To select more than one contiguous script in the list, Shift-click the scripts. To select more than one non-contiguous script, Ctrl+click (Windows) or ⌘-click (Mac OS) the scripts.

3. Click Print.

4. Click OK (Windows) or Print (Mac OS).

The selected script steps and options are printed.

Printing table and field information

To print table or field information:

1. Choose File menu > Define > Database, then click the Tables or Fields tab.

2. Select the table(s) or field(s) you want to print.

To select more than one contiguous table or field in the list, Shift-click the tables or fields. To select more than one non-contiguous table or field, Ctrl+click (Windows) or ⌘-click (Mac OS) the tables or fields.

3. Click Print.

4. Click OK (Windows) or Print (Mac OS).

The field names, field types, and formulas or data entry options are printed for each selected table.

Printing the relationships graph

You can print a graphical representation of your database by printing the relationships graph.

1. Choose File menu > Define > Database, then click the Relationships tab.

2. Click  to display page breaks in the relationships graph.

3. Click  to display the Print Setup (Windows) or Page Setup (Mac OS) dialog boxes.

4. Click Print.

5. In the Printing Options dialog box, choose an option.

- Choose Print graph on multiple pages to print the graph on more than one page.
- Choose Print graph on one page to resize the graph to fit on one page.

6. Click Continue.

7. Click OK (Windows) or Print (Mac OS).

For more information about previewing and printing databases, see Help.

Automating tasks with scripts

Scripts can do simple tasks like setting print orientation or complex tasks like preparing a customized mailing to clients. Scripts can incorporate conditional decisions (if-else statements) and perform repetitive tasks (loop statements).

You use the ScriptMaker feature in FileMaker Pro to build scripts by selecting from a list of FileMaker Pro script steps, specifying options, and arranging the steps in the correct order to perform the task.

Use scripts to combine and automate tasks like:

- switching to another layout or mode
- finding, sorting, and printing records
- importing data from the same source

Procedures for creating scripts and a reference to all FileMaker Pro script steps (organized alphabetically or by category) are available in Help.

Backing up database files

Routine backups are imperative for any document stored on a computer. It is easier to restore a backed up database than it is to recreate it. How often you should back up depends on the amount of data you are adding to your databases, and how difficult it would be to recreate your files if they become corrupt.

For very important files, it's a good idea to routinely store backups at an off-site location.

For an example of a backup script, see Help.

Setting preferences

You can customize the appearance and behavior of FileMaker Pro to suit the way you work by changing standard settings called *preferences*. Preferences affect the behavior of the application and are not specific to any file.

Settings in the File Options dialog box affect the current file's default layout, opening and closing scripts, login information, and spelling.

To set application preferences:

1. Windows: Choose Edit menu > Preferences.

Mac OS: Choose FileMaker Pro menu > Preferences.

2. In the Preferences dialog box, click a tab, then set the options you want to use.

To set file preferences:

1. Choose File menu > File Options.

2. In the File Options dialog box, click a tab, then set the options you want to use.

For more information about setting application and file preferences, see Help.

Chapter 2
Creating databases

This chapter explains the basics of how to:

- plan a database
- define and modify fields
- define tables
- create layouts
- work with fields, objects, and parts on a layout

Note See Help for detailed, comprehensive information and step-by-step procedures about using FileMaker Pro.

Planning a database

A well-designed database promotes consistent data entry and retrieval, and reduces the existence of duplicate data among the database tables. Relational database tables work together to ensure that the correct data is available when you need it. It's a good idea to plan a database on paper first.

Follow these general steps to plan a database:

1. Determine the purpose for your database, or the problem you want to solve. For example, "to keep a list of my customers," "to manage my inventory," or "to grade my students."

If other people will use the database, be sure to talk with them about the data they will need.

2. Consider the information you will store in your database. Typically, information falls into broad categories. Accurately identifying these categories is critical to designing an efficient database, because you will store different types and amounts of data in each category. For example, a database intended to track sales has categories such as "products," "invoices," and "customers." A database that records student grades has categories such as "students," "classes," and "assignments."

3. Once you've determined the broad categories, consider how these categories are related. This can be done by writing simple sentences that describe how the categories interact, such as, "teachers teach classes," "students are assigned to classes," and "students complete assignments." Each of these pairs suggests a relationship between the data in one category and the data in the other category.

4. Once you've identified your categories of information, you are ready to organize your database.

In database terminology, these categories of information are referred to as *tables*. Tables are used to group data containing a common element or purpose. For example, you might use one table to store names and addresses, while you use another table to store transaction details, such as date of sale, item number, unit price, and so on.

Typically, databases are organized in one of three ways:

- A single table in a single file. Use a single table if you need to track data in one category only, such as names and addresses.
- Multiple tables in a single file. Use multiple tables if your data is more complex, such as students, classes, and grades.
- Multiple tables in multiple files. Use multiple files if you need to share the same data among several different database solutions. For example, you can store your tax rates or shipping information in a separate file if you plan to use that information in more than one solution.

Note Use relationships to share data between tables in the same file or with tables in external files. Other database elements, such as scripts and access privileges, are stored at the file level; therefore, some complex solutions will benefit from using multiple files.

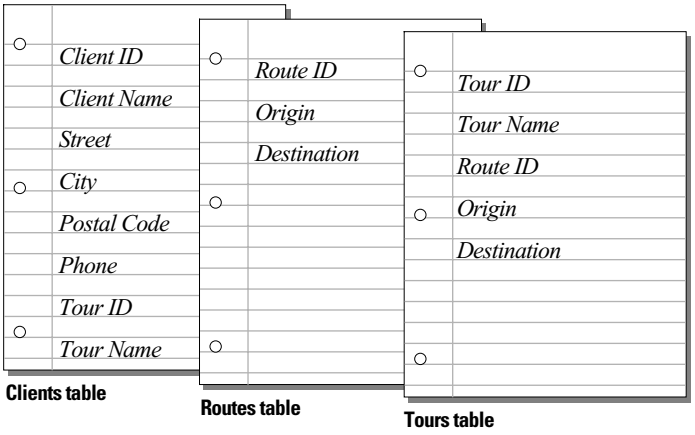
5. Determine the database tables and the data they will include, and, in turn, which fields you will need.

Tip To make it easy to search and sort records, create separate fields for first and last name, titles, (like Mr. or Dr.), and items in addresses (city, state or province, country, and postal code). Separating your data into multiple fields at the time of data entry can make it easier to generate future reports. For example, using separate fields to capture transaction details such as the date, item number, quantity, and unit price of each transaction makes it easier to compile summary and subsummary reports at the end of a week, month, or year.

6. Decide which fields will contain common data among the tables.

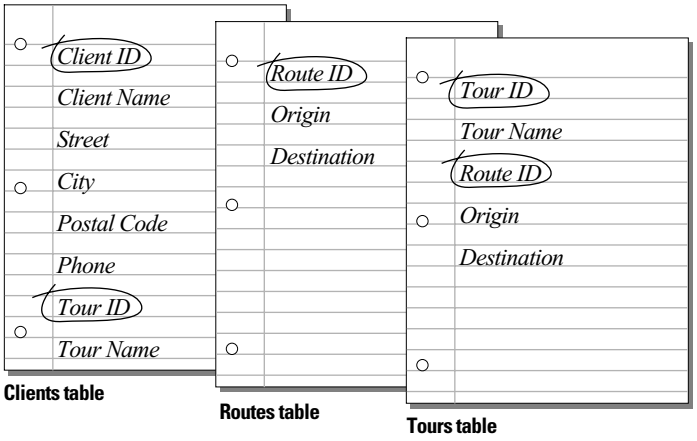
For example, a database for a travel agency might include these tables: a Clients table, which stores client information; a Routes table, which stores route information; and a Tours table, which stores the tours and their current prices.

A Clients table might have fields for a client identification number, and the client's name, address and phone number. A Routes table might have fields for a route identification number, the departure city, and the destination city. A Tours table might have fields for a tour identification number and tour name.



7. Determine the match fields for each table, and circle each one in your plan.

For more information, see "About match fields for relationships" on page 72.

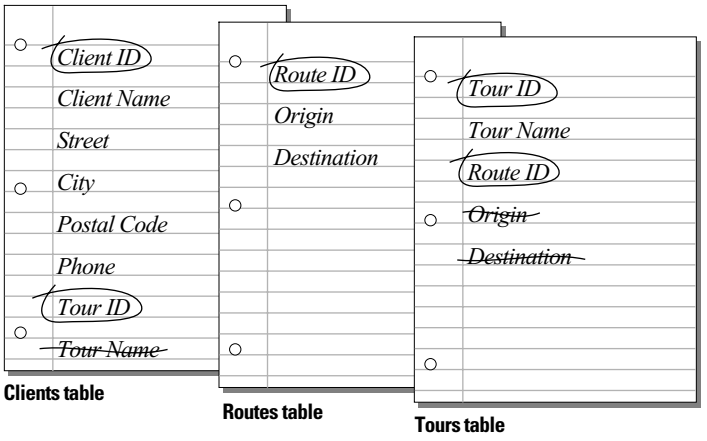


For example, in the Clients table you might want to assign each client a unique, identifying number. You wouldn't enter a client identification number into the table unless you had a new client to add, so the existence of a client number determines the existence of a record.

8. For each table, decide which fields will store data, and which ones will be used from other (related) tables.

Each table has only one subject, and all fields in a table describe only that subject.

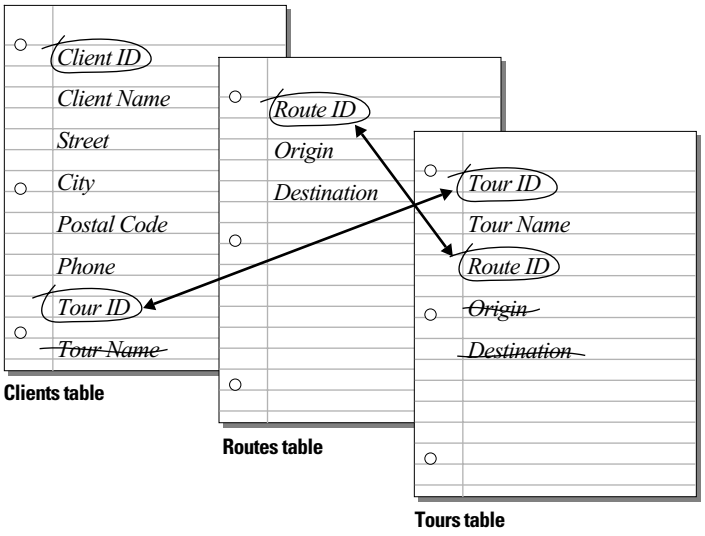
For example, the fields in one record of the Clients table together store all the information about one client.



Based on a table's subject, you can see where it makes sense to store the data and where to use data from a related table. Other than match fields, all fields should appear only once in your database. Cross out occurrences of fields that don't pertain to the table's subject.

9. Determine the relationships between the tables. In your plan, draw a line from each match field in a table to the corresponding match field in the related table.

What establishes a relationship between tables is that their match fields contain matching data.



Relationships also make it possible to group your data to resolve complex queries. For example, relationships can be used to determine current inventory levels, sales projections, and other tasks where it is necessary to query data across multiple tables. For more information about relationships, see chapter 3, "Working with related tables and files."

10. Determine whether you need to share your database with other users, and how they will access the file.

For more information about sharing databases, see "Sharing databases on a network" on page 81.

11. Consider who will use the database and whether you want to restrict access to it. When you create the database, assign access privileges as needed.

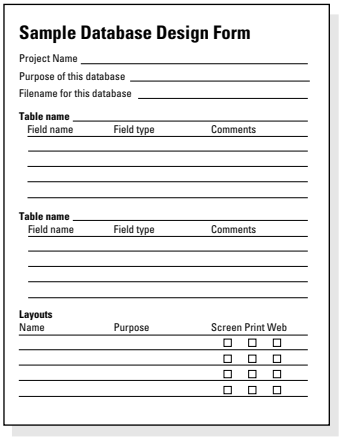
For more information about accounts and privilege sets, see chapter 5, "Protecting databases with accounts and privilege sets."

12. Decide what layouts you need, and plan a separate layout for each task.

For example, create separate layouts for printing labels or envelopes.

For more information about creating layouts, see "Creating layouts and reports" on page 53.

13. Create a form such as the one shown below to list the files and tables you need and the fields for each table. Also list the forms and reports you will generate from each table.



Sample Database Design Form

Project Name _____

Purpose of this database _____

Filename for this database _____

Table name _____

Field name | Field type | Comments

Table name _____

Field name | Field type | Comments

Layouts

Name | Purpose | Screen | Print | Web

14. Create your database.

Creating a FileMaker Pro file

You can create a file from a FileMaker Pro *template*, or Starter Solution—a predefined database file that you can modify to suit your needs. Or, you can create a file without using a template.

Tip You can also create a file by making a copy of an existing FileMaker Pro file. See "Saving files" on page 16.

If you didn't install templates and want to use them, see the *Installation Guide for FileMaker Pro and FileMaker Pro Advanced*.

1. In FileMaker Pro, choose File menu > New Database.

2. In the New Database dialog box, do the following:

To	Do this
Create a file using a template	Click Create a new file using a template, then double-click the name of a template.
Create a file without using a template	Click Create a new empty file, then click OK.
Open an existing file	See "Opening files" on page 14.

If Show templates in New Database dialog box isn't selected in the General tab of the Preferences dialog box (or if the templates aren't installed), the New Database dialog box doesn't appear. Skip to the next step.

3. In the dialog box that appears, type a name for the file and choose a different folder, if needed.

Windows: For Save as type, select FileMaker Files. If you don't type a filename extension, FileMaker Pro adds .fp7 to the filename. (To view filename extensions in Windows, see the Windows operating system Help.)

4. Click Save.

The Define Database dialog box appears.

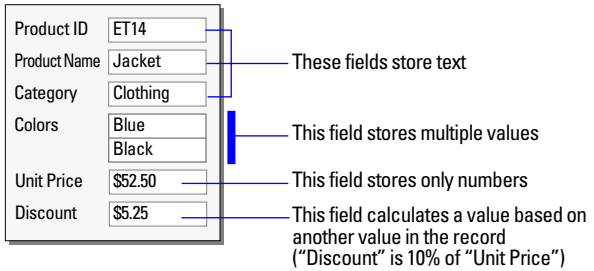
FileMaker Pro automatically creates the first table and the first layout. The table and the layout are given the same name as the file.

To define fields, see the next section.

For more information about creating FileMaker Pro files, see Help.

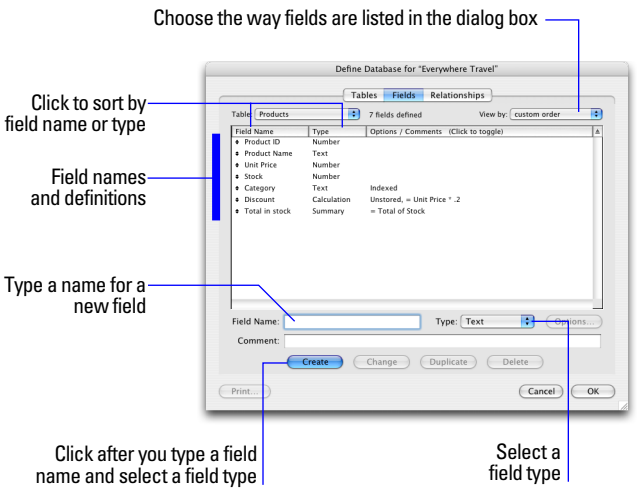
Defining database fields

To define a new field, you give it a name and select a field type. Then you select options that determine how the field interprets, enters, calculates, stores, and displays data. These characteristics make up the *field definition*. See "Setting options for fields" on page 49 for information on setting these options.



See "Formatting field data on a layout" on page 63 for information about setting options for field formats, which control how data appears on a layout.

The following sections describe how to define fields using the Fields tab in the Define Database dialog box.



About naming fields

Follow these guidelines when naming fields:

- Field names must be unique. They can contain up to 100 characters.
- Use descriptive names that clearly identify the contents of the field. Avoid abbreviations, acronyms, or other terms that may cause confusion.
- Don't use any of the following symbols or words in the field name:
  - , (comma) + – * / ^ & = ≠ > < ≥ ≤ ( ) [ ] { } " ; (semicolon) : (colon) :: (relational indicator) $ (variable indicator)
  - AND, OR, XOR, NOT, or the name of any FileMaker Pro function
- Don't begin a field name to be used in a calculation formula with a space, period (.), or number.
- Use _ (underscore) in place of a space to avoid restrictions in ODBC (Open Database Connectivity) or JDBC (Java Database Connectivity), exporting, web publishing, and other operations.
- If you're exchanging data with another application, check the field naming restrictions in the file formats supported by the other application.
- If you're using ODBC or JDBC to share FileMaker Pro data, avoid using SQL keywords in field names.

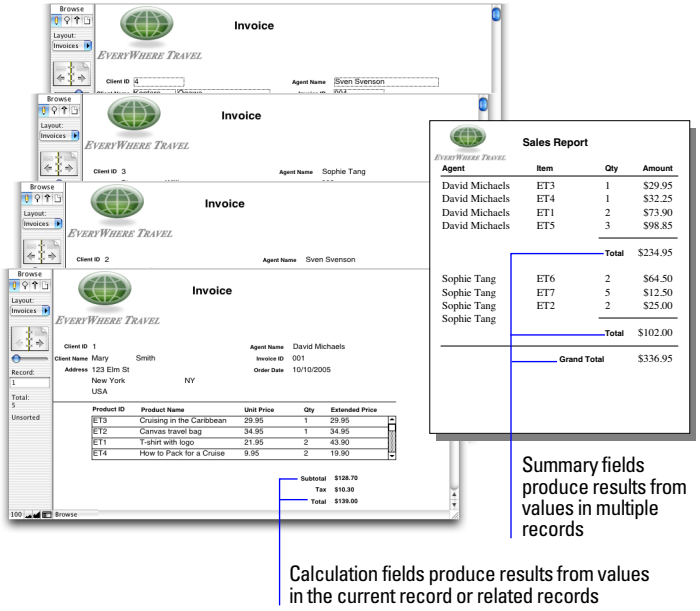
About choosing a field type

When you define a field, you select a field type based on the kind of information the field will contain. The field type determines what kind of data can be entered and what kinds of operations FileMaker Pro can perform with the data.

FileMaker Pro uses the field type to interpret the data for tasks like sorting records and performing calculations.

Select this field type	If the field data will be
Text	Up to approximately 1 billion letters, symbols, and/or numbers used as text per field repetition, limited by available RAM and disk space. Indexes nominally based on the first 100 characters of each word or value. Text fields may contain carriage returns.
Number	Values up to 800 digits or other characters, and the negative values of the same range. Number fields can also contain Boolean values (0 or 1), to indicate, for example, true, false, yes, and no. Number fields can't contain carriage returns.
Date	Dates only. Uses the Gregorian calendar with a range of 1/1/0001...12/31/4000. Month, day, and year order is based on system settings when the file is created.
Time	Times only. A time field can contain the hours, minutes, and seconds portion of a time. A time field can contain a negative time duration, for example,-08:40:00.
Timestamp	Dates and times to reference a fixed point in calendar time. For example, 10/25/2004 2:39:46 AM

Select this field type	If the field data will be
Container	■ Graphics, movies, photos, bitmaps, sounds of up to 4 GB per field ■ Documents, including Microsoft Word or Excel files, PDF files, and so on ■ Multimedia file types supported by QuickTime 6.0 or later (Win) or QuickTime 6.4 to 6.5.2 (Mac OS) ■ software ■ OLE objects (Windows)
Calculation	The result of a calculation formula that uses field values from the current record or related records. The formula can use values of all field types. The result can be one of these types of data: text, number, date, time, timestamp, or container.
Summary	A value that's produced by summarizing field values from more than one record in the same table.



Keep these points in mind:

- Any field type except summary can store a global value. For more information, see "About storage and indexing options" on page 52.
- Be sure to use a date field (instead of a text or number field) to store dates. To avoid confusion when using dates, always use four-digit years.
- Use text fields instead of number fields to store postal codes, phone numbers, and other values with leading zeroes or characters like hyphens or parentheses.
- Although you can't find or sort records based on a container field, you can define a text field to describe or identify the contents of the container. Then, you can find or sort records based on the data in that text field.
- To change the way data is displayed in text, number, date, time, and timestamp fields, see "Formatting field data on a layout" on page 63.

Defining text, number, date, time, timestamp, or container fields

1. With the database open, choose File menu > Define > Database.

2. In the Define Database dialog box, click the Fields tab.

3. If your file contains more than one table, select the appropriate table from the Table list.

4. For the Field Name box, type a name for the field.

See "About naming fields" on page 44.

5. For Type, select a field type.

See "About choosing a field type" on page 44.

You can enter a description of the field in the Comment box.

6. Click Create.

7. To define options for the field, click Options.

For more information about field options, see Help.

To	Do this in the Options for Field dialog box
Automatically enter values into the field	Click the Auto-Enter tab, select the options, then click OK. See "Defining automatic data entry" on page 50.
Make sure data is entered into the field correctly	Click the Validation tab, select the options, then click OK. See "Defining field validation" on page 50. **Important** To avoid confusion when using dates in FileMaker Pro, set field validation options to make sure dates are always entered with four-digit years.
Make the field repeating	Click the Storage tab, then select Maximum number of repetitions. Type the number of repetitions (up to 1000), then click OK. For more information, see Help.
Select options for indexing the field	Click the Storage tab, select the options, then click OK.
Make the field use one value for all records in the file	Click the Storage tab, select Use global storage, then click OK.
Create a link between the "parent" data field and the Furigana "child" field, so that when you input Kanji characters into the "parent" field, the corresponding Kana reading appears in the Furigana "child" field.	Click the Furigana tab, select Use Furigana Field, the Furigana field, and the Kana reading input format, then click OK. **Note** This option is available if your operating system is configured to support Japanese text entry. Available for text fields only.

8. Continue to define fields, or click OK.

Defining calculation fields

1. With the database open, choose File menu > Define > Database.

2. In the Define Database dialog box, click the Fields tab.

3. If your file contains more than one table, select the appropriate table from the Table list.

4. For Field Name, type a name for the field.

See "About naming fields" on page 44.

5. For Type, select Calculation.

You can enter a description of the field in the Comment box.

6. Click Create.

You see the Specify Calculation dialog box.

7. If necessary, for Evaluate this calculation from the context of, choose a table from the list.

Setting the context for a calculation is only necessary when you're creating a calculation field in a *source table* that has two or more occurrences in the relationships graph. The source table is the table defined in the Tables tab of the Define Database dialog box. The choice you make may affect the calculation results, particularly if your calculation will include fields in related tables.

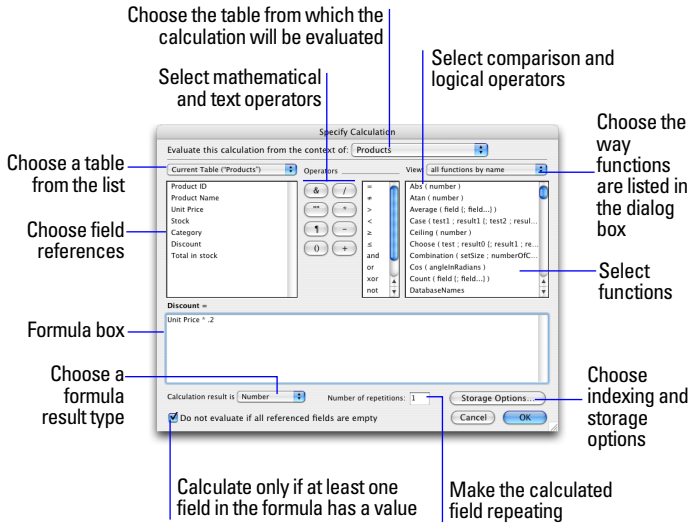
8. Build a formula for your calculation.

Click where you want the item to appear in the formula box, then do the following. You can also type the formula into the box.

To add a	Do this
Reference to a field	In the field list, double-click a field name. To display field names from another table, choose a table from the table list.
Mathematical or text operator	In the keypad in the dialog box, click an operator. (Quotation marks and parentheses are copied to the formula as a pair, with the insertion point blinking in the middle).
Comparison or logical operator	For Operators, choose an operator from the list.
Constant value	Type the value. A constant can be text, number, date, or time. Use date constants with the functions Date and GetAsDate, time constants with the functions Time and GetAsTime, and timestamp constants with the functions Timestamp and GetAsTimestamp Text constants can be up to 29998 characters long.
Function	In the functions list, double-click a function (a predefined, named formula that performs a specific calculation and returns a single, specific value). In the formula box, replace the placeholder parameter with a value or expression.

Procedures for working with formulas and a reference to all FileMaker Pro functions (organized alphabetically or by category) are available in Help.

9. Select calculation options for the field.



To	Do this
Set the field type of the result	Choose a data type for Calculation result is <value>. Choose the correct type for the result you want. See "About choosing a field type" on page 44.
Make a calculated field repeating	Select Number of repetitions, then type the number of repetitions.
Perform the calculation only when all referenced fields have a value (so you don't display zero as a result)	Select Do not evaluate if all referenced fields are empty. When enabled, FileMaker Pro does not evaluate a calculation if all fields used by the calculation are empty. This typically improves performance. Clear this option if you always want FileMaker Pro to calculate a result, even if a referenced field is empty or has never been modified.

10. To select indexing and global storage options for the field, click Storage Options, select options in the Storage Options dialog box, then click OK.

11. Click OK to close the Specify Calculation dialog box.

12. Continue to define fields, or click OK.

For more information about defining calculation fields and the use of context in calculations, see Help.

Defining summary fields

Use summary fields to calculate values such as subtotals, averages, and grand totals across multiple records. For example, a summary field can display in a report the grand total of all sales in the month of May.

Tip Use the New Layout/Report assistant to quickly create a report with grouped data (data in a summary field). See "Creating layouts and reports" on page 53.

The value in a summary field can change depending on where you place the field on a layout, how many records are in the found set, whether the records are sorted, and which mode you're using.

If you're modifying a layout that contains a summary field, you must know about layout parts to get the results you want (see "Working with parts on a layout" on page 67).

1. With the database open, choose File menu > Define > Database.

2. In the Define Database dialog box, click the Fields tab.

3. If your file contains more than one table, select the appropriate table from the Table list.

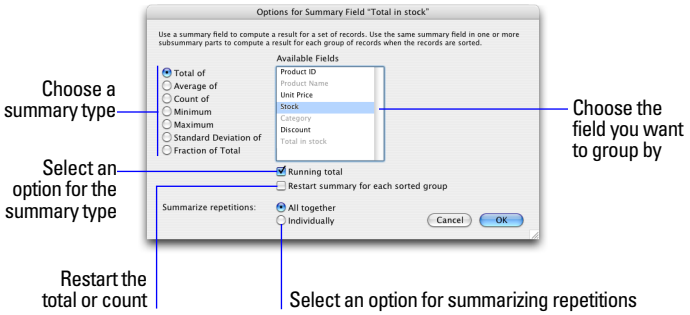
4. For the Field Name box, type a name for the field.

See "About naming fields" on page 44.

5. For Type, select Summary, then click Create.

6. In the Options for Summary Field dialog box, select a summary type, then select the name of the field you want to group by.

Select this type of summary	To summarize values in a field in the found set of records by
Total of	Calculating the total of values in the field
Average of	Calculating the average of values in the field
Count of	Counting the number of records that contain a value for the field. For example, if a field contains 100 values (one value for each record), the result of the count is 100.
Minimum	Finding the lowest number, or the earliest date, time, or timestamp for a field
Maximum	Finding the highest number, or the latest date, time, or timestamp for a field
Standard Deviation of	Finding how widely the values in a field differ from each other. This option calculates the standard deviation from the mean of the values in a field. (The formula is *n*-1 weighted, following the normal standard deviation.)
Fraction of Total of	Calculating the ratio of the value in the field to the total of all the values in that field. For example, find what fraction of total sales can be attributed to each salesperson.



7. Select an option, if applicable, for the summary type.

Options change according to the summary type you select in the previous step.

For this summary type	Select	To
Total of	Running total	Show the cumulative total for the current and all previous records. To restart the running total for each sorted group, also select Restart summary for each sorted group. Then, from the fields list, select the field that the sort will be restarted from.
Average of	Weighted average. In the list of fields that appears, select the field that contains the weight factor	Determine the average in one field based on a value in another field that's used as a weight factor
Count of	Running count	Show the cumulative count of the current and all previous records. To restart the running count for each sorted group, also select Restart summary for each sorted group. Then, from the fields list, select the field that the sort will be restarted from.
Standard Deviation of	by population	Calculate population standard deviation, where the formula is *n*-weighted
Fraction of Total of	Subtotaled. In the list of fields that appears, select a field to group by. (When you return to Browse mode, sort by this field to calculate the value correctly.)	Calculate a fraction of the total based only on a group of records

8. Select an option, if applicable, for summarizing a repeating field.

Select	To
All together	Calculate a single summary value for all repetitions in the field
Individually	Calculate a summary value for each repetition

9. Click OK.

10. Continue to define fields, or click OK.

For more information about defining fields, see Help.

Setting options for fields

You can set field options when you define a field, or at a later time. You can set options for:

- entering default data into a field
- checking data against validation requirements
- making a repeating field
- creating an index
- storing a global value
- Furigana fields (Japanese language fields only)

Some field options help ensure the accuracy and consistency of your data. For example, if you type Frnc instead of France into the Country field, you won't find that record when you later search for all customers from France. To be sure that all country names are entered correctly, you can define a value list containing the names, then select the Member of value list validation option for the Country field. When you enter data into the field, the data must match a value in the list.

For more information on value lists, see "Setting up checkbox sets and other controls on a layout" on page 62.

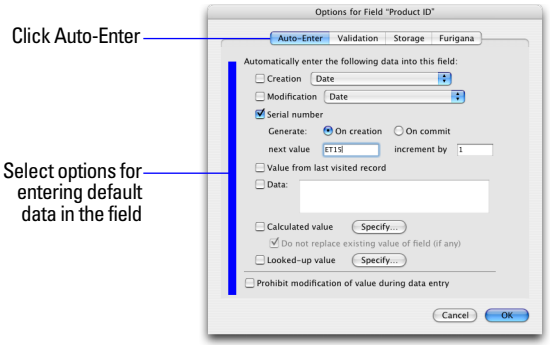
To set options for summary fields, see "Defining summary fields" on page 48.

Defining automatic data entry

To automatically enter a default value into a field for each record:

1. With the database open, choose File menu > Define > Database.
2. In the Define Database dialog box, click the Fields tab.
3. If your file contains more than one table, select the appropriate table from the Table list.
4. Double-click a field in the fields list.
5. In the Options for Field dialog box, click the Auto-Enter tab and select options. (The available options depend on the field type.)

To	Do this
Enter a date, time, timestamp, user name, or account name when the record is created or modified	Select Creation or Modification, then choose an option from the list.
Assign a sequential number to the field in each record	Select Serial number. Select On creation to assign the number when a record is created. Select On commit to assign the number when the record is committed. For next value, type a starting value (for example, 1001), then type the number to increment by.
Enter the value from the previously accessed record	Select Value from last visited record.
Enter data you specify	Select Data, then type up to 255 characters.
Enter the result of a calculation in the field	Select Calculated value, define the formula in the Specify Calculation dialog box, then click OK. For more information about the Specify Calculation dialog box, see "Defining calculation fields" on page 46. Select Do not replace existing value of field (if any) to prevent overwriting data already present.
Enter a value that's copied from a field in the same or a different table or file	Select Looked-up value, define the lookup, then click OK. See "Creating lookups" on page 79.
Prevent users from changing an automatically entered value	Select Prohibit modification of value during data entry.
Turn off automatically entered data	Clear all selected checkboxes.



6. Click OK to close the Options for Field dialog box, or click another tab to set additional field options.

Defining field validation

You can select field validation options to ensure that data is entered into the field correctly. FileMaker Pro displays a message if you enter data incorrectly.

Important To avoid confusion when using dates in FileMaker Pro, set date field validation options to make sure dates are always entered with four-digit years.

1. With the database open, choose File menu > Define > Database.
2. In the Define Database dialog box, click the Fields tab.

3. If your file contains more than one table, select the appropriate table from the Table list.

4. Double-click a field in the fields list.

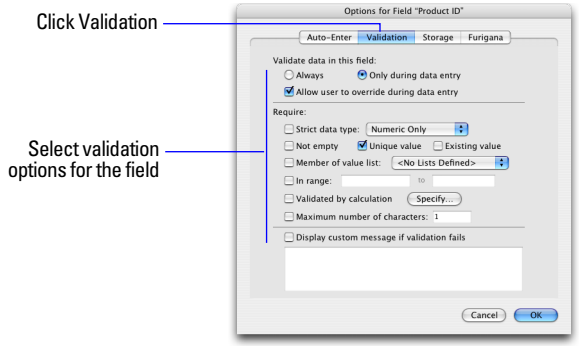
5. In the Options for Field dialog box, click the Validation tab.

6. Specify how FileMaker Pro handles an invalid entry.

For Validation options for this field, select Always for ongoing field validation, or Only during data entry to limit validation to instances when data is being entered. Deselect Allow user to override during data entry if you want to prevent users from entering invalid data.

7. Select validation options for the field.

To require that the entered value	Select
Contains only numbers	Strict data type, then choose Numeric Only from the list
Is a date containing numeric values for the month and day, and four digits for the year (for example, 5/12/2004)	Strict data type, then choose 4-Digit Year Date from the list
Is a time containing numeric values for hours and minutes between 00:00 and 23:59 (seconds are optional)	Strict data type, then choose Time of Day from the list
Is not blank	Not empty
Does not duplicate a value found in this field in other records	Unique value
Matches another value in the same field in any other record	Existing value
Matches a value in a specified value list	Member of value list, then choose an existing value list or define a new one
Is within a specific range of letters, numbers, dates, or times	In range, then type the beginning and ending values
Matches the result of a calculation	Validated by calculation, then enter a calculation in the Specify Calculation dialog box. Select or clear Validate only if field has been modified. Then click OK. The result must be Boolean—true or false. The result is true when the result is any number except zero; any other result (zero, no data, or non-numeric data) is false. For more information about the Specify Calculation dialog box, see "Defining calculation fields" on page 46.
Does not exceed the specified number of characters	Maximum number of characters, then type the maximum number of characters allowed



8. To display a custom message when the data doesn't meet the validation requirements, select Display custom message if validation fails, then type up to 255 characters.

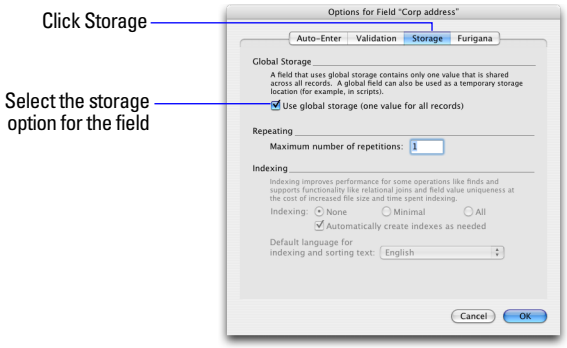
9. Click OK to close the Options for Field dialog box, or click another tab to set additional field options.

For more information, see Help.

About storage and indexing options

FileMaker Pro provides options for indexing fields and for storing the results of calculations. You can:

- Create an *index*, which is a list of the values stored in a field. An index greatly speeds searches, but takes up space on your disk. You can index text, number, date, time, and timestamp fields. You can also index calculation fields if the results are text, numbers, dates, times, or timestamps.
- Store the result of a calculation field in your database, or you can tell FileMaker Pro to perform the calculation only when needed (*unstored*). Storing the result is faster but takes up more space on the disk. You can specify storage options for text, number, date, time, timestamp, and calculation fields.
- Set any field (except summary fields) to share one value across all records in a file if you select Use global storage in the Storage tab of the Options for Field dialog box. Fields defined with global storage are also referred to as *global fields*.



For more information about setting field options, see Help.

Defining database tables

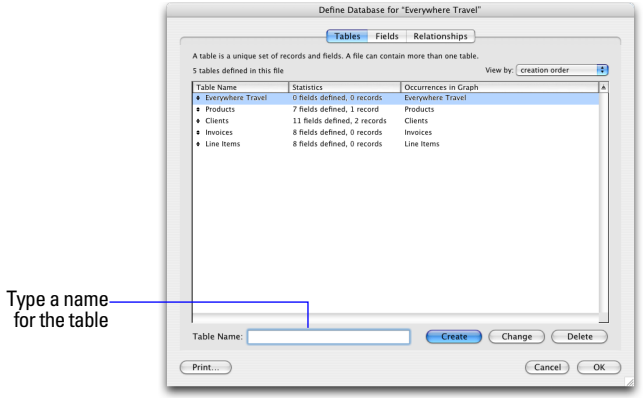
Use database tables to organize and group your data by a common characteristic or principle. Your database can contain as many tables as you need to organize your data (limited only by the amount of storage space on your hard disk).

In addition to storing data, FileMaker Pro uses tables to describe relationships in the relationships graph, and establish the *context* for layouts and some calculations. In FileMaker Pro, context is the starting point from which calculations and scripts are begun and from which a relationship is evaluated in the relationships graph.

When you create a new file, FileMaker Pro automatically creates the first table and the first layout. The table and the layout are given the same name as the file.

You create additional tables in the Define Database dialog box.

1. With the database open, choose File menu > Define > Database.
2. In the Define Database dialog box, click the Tables tab.



3. In the Table Name box, type a name for the table, then click Create.

The table can be renamed or deleted. Tables you add to a file are automatically displayed in the relationships graph.

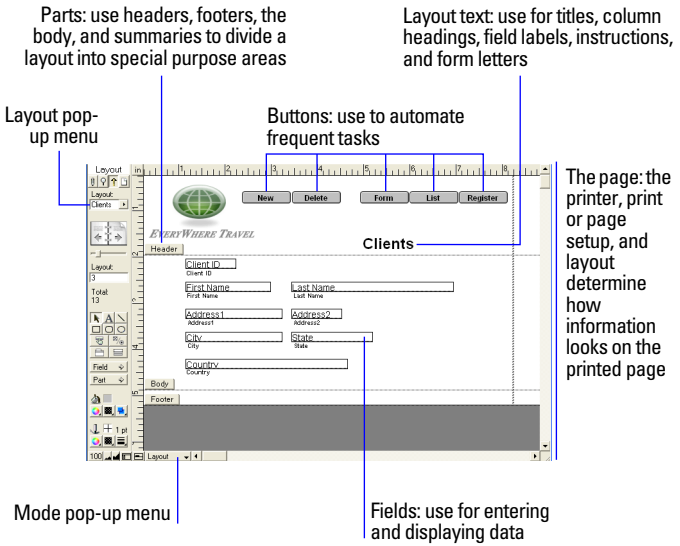
4. Continue to define tables, or click the Fields tab to define fields.

For information about relationships, tables, and the relationships graph, see chapter 3, "Working with related tables and files."

Creating layouts and reports

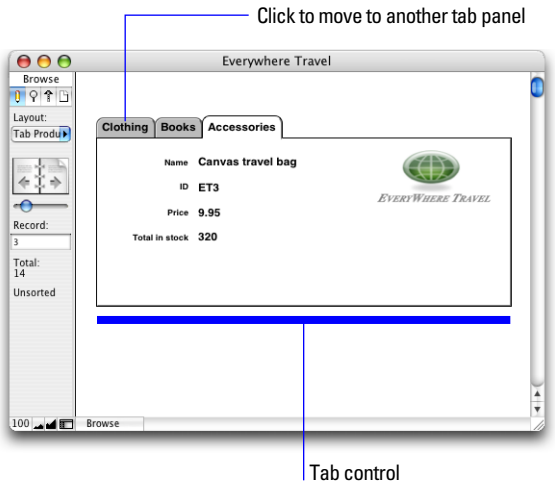
FileMaker Pro layouts determine how information is organized for viewing, printing, reporting, finding, and entering data. Layouts don't store your data—they just display it. Layouts are sometimes called reports, especially when printed.

You can create as many layouts as you need for a file (for example, layouts for entering data, reporting summaries, or printing mailing labels). You can change a layout's design without affecting the data or other layouts for the file. Layouts can include certain fields and exclude others.When you change the data in a field (in Browse mode), the changes are reflected in the same field for the same record on all the layouts in the file.



When you create a database file, FileMaker Pro automatically creates a Standard form layout for the initial table, and for each newly added table that contains fields.

Tab controls are a useful way of organizing data. For example, in a personnel database, you could create tab panels for the employee's photo, job description, and financial information. To create a tab control, in Layout mode, choose Insert menu > Tab Control or click the Tab Control tool. For more information, see Help.



You create additional layouts by switching to Layout mode and using the New Layout/Report assistant, a wizard that guides you through creating the layout according to options you choose. In addition to Standard form, there are four other types of layouts and one view (Table View). Use these different types for various purposes, like displaying a data entry screen or printing a totaled sales report or mailing labels. You can customize each layout by using the design tools that are available in Layout mode.

Important FileMaker Pro considers the selected printer, and print or page setup information when it calculates margins and other measurements on the layout. Printer and print settings depend on the printer and system software you're using. Refer to your printer and system documentation for more information.

Note You must create the fields to include on a layout before you begin the New Layout/Report assistant. See "Defining database fields" on page 43.

To create a layout:

1. Choose View menu > Layout Mode.
2. If you intend to print the new layout in landscape orientation or on a special paper size, choose File menu > Print Setup (Windows) or File menu > Page Setup (Mac OS), confirm the orientation and paper settings, then click OK.

Modified Print Setup and Page Setup settings affect all other layouts in the current file, so you may need to change these settings later to print other layouts properly.

3. Choose Layouts menu > New Layout/Report.

You see the New Layout/Report assistant, a series of panels, that assist you with creating the type of layout you choose in the first panel.

4. If the file has multiple tables, select the table from which you want records displayed in this layout and give the layout a name.
5. Follow the onscreen instructions to create the type of layout you chose in the first panel.

For a description of each of the layout types you can create with the assistant, see the next section, "About layout types."

6. When you have completed the series of panels, click Finish.

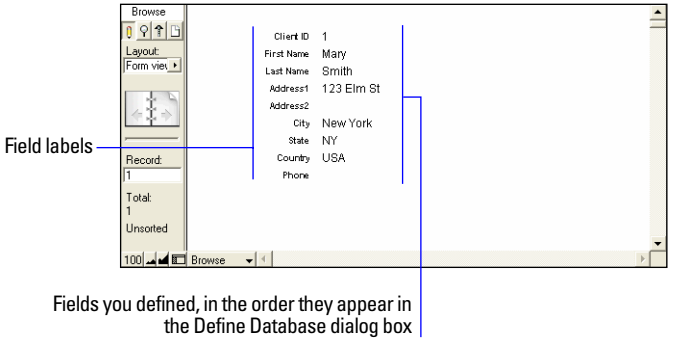
You can use the new layout right away, or further customize it using the tools and commands in Layout mode. For more information, see "Working with objects on a layout" on page 58 and "Working with fields on a layout" on page 60.

About layout types

The following sections describe each of the layouts that you can create with the New Layout/Report assistant.

Standard form

A Standard form layout is a good choice for data entry or onscreen browsing. It contains the fields you select, each on a separate line, in the order you specify, with field labels to the left of the fields. In Browse mode, you see one record, or form, at a time (unless you have switched from View as Form).

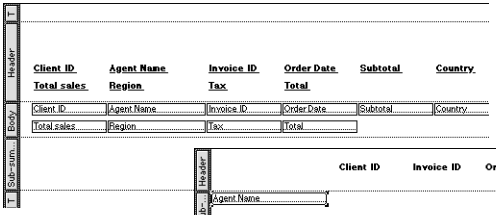


Columnar list/report

Use a Columnar list/report layout when you want to view or print multiple records in rows (a list of records). You can define many variations of a Columnar list/report with the New Layout/Report assistant. You can create a layout with simple rows and columns of data or a complex report with data grouped by specified values with subtotals and grand totals.

A Columnar list/report layout contains the fields you select, in the order you specify from left to right across the page, with field names as column headings.

Simple columnar report layout



Columnar report with grouped data

In the New Layout/Report assistant, you can choose to:

- Limit the number of fields across the layout to the width of the page (defined by the page margins, page orientation, and printer). Fields wrap to multiple lines.
- Group records by sorting. You can then subtotal, or subsummarize, data in the groups (for example, group sales data by region, then group subtotal sales for each region).
- Add header and footer parts with static text (like your company's name), dynamic text (like the page number or current date), or a graphic (like your company logo).
- Save information in a script to re-run the report (for example, switch to the report layout, sort the data, and pause to let you preview the report).

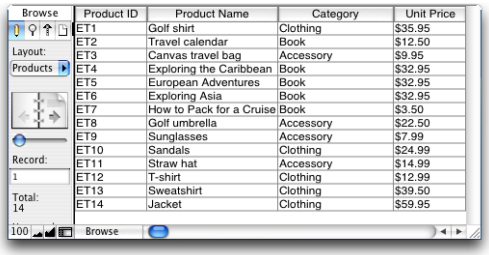
You can modify any of these options after you complete the assistant.

Table view

Table view is not a type of layout; it's a view of your data in a spreadsheet-like grid format where you can quickly rearrange fields in Browse mode. For example, you can quickly reorder, resize, or sort columns (fields) with just a mouse click (if those options are set). Table view is one of three views available for any layout in FileMaker Pro. For more information, see "Viewing records" on page 18.

As with a Columnar list/report layout, a Table view contains the fields you select, in the order you specify from left to right, with field names as column headings.

Note Table view is similar to a simple Columnar list/report layout, but there are differences. Table view is a more flexible arrangement of the data because it can be enabled or disabled in Browse mode. It's useful when you want to let users make simple changes to how data is displayed in Browse mode, or when you want to provide a familiar, spreadsheet-like appearance to your data.

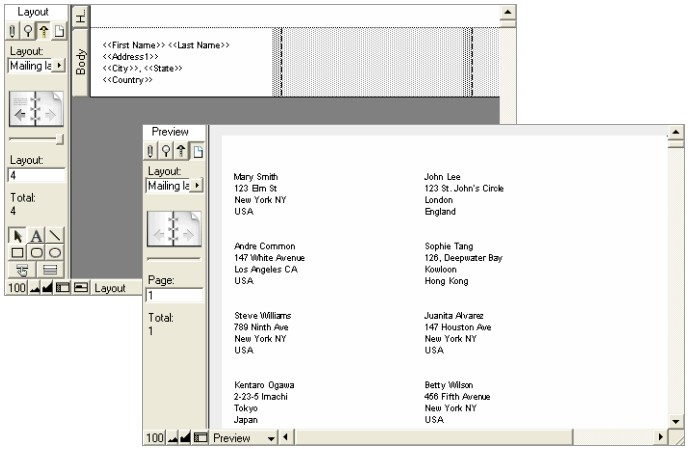


Product ID	Product Name	Category	Unit Price
ET1	Golf shirt	Clothing	$35.95
ET2	Travel calendar	Book	$12.50
ET3	Canvas travel bag	Accessory	$9.95
ET4	Exploring the Caribbean	Book	$32.95
ET5	European Adventures	Book	$32.95
ET6	Exploring Asia	Book	$32.95
ET7	How to Pack for a Cruise	Book	$3.50
ET8	Golf umbrella	Accessory	$22.50
ET9	Sunglasses	Accessory	$7.99
ET10	Sandals	Clothing	$24.99
ET11	Straw hat	Accessory	$14.99
ET12	T-shirt	Clothing	$12.99
ET13	Sweatshirt	Clothing	$39.50
ET14	Jacket	Clothing	$59.95

Labels

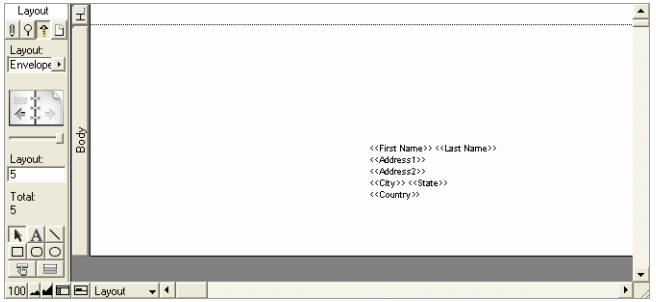
Use a Labels layout to arrange fields you select to print on one of the predefined standard label sizes. (FileMaker Pro includes the dimensions of a large number of standard label types.) If the label type you want isn't available, you can specify custom label dimensions.

With the Vertical labels layout, Asian and full-width characters are rotated so that labels may be used vertically. For information about vertical writing, see "Formatting fields and text for vertical writing" on page 66.



Envelope

Use an Envelope layout to print the fields you select, arranged to print on a standard “Number 10” business envelope.



Blank layout

Use a Blank layout as the starting point for a layout that you create entirely from scratch, for example, a complex data entry screen. You add the fields and other objects you want on the layout in Layout mode.

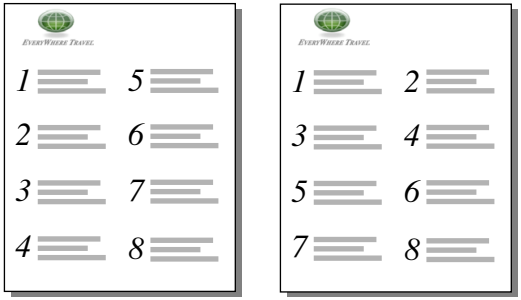
For more information about creating layouts and reports, see Help.

Setting up a layout to print records in columns

You can set up a layout to print (or preview) records in columns, for example, for a directory of names and addresses. This is in contrast to a Columnar list/report layout, which arranges fields in columns.

When you set up records to print in columns, all the field values (and labels, if specified) for one record are printed together in a block (much like on a label), then all the values for the next record are printed together, and so on. You only see multiple columns in Layout and Preview modes and when you print (not in Browse mode or Find mode).

You can choose to arrange columns across the page or down the page.



To set up columns in a layout:

1. Choose a printer and print or page setup options.

FileMaker Pro considers the selected printer, and print or page setup information when it calculates margins and other measurements on the layout.

2. In Layout mode, create a layout or choose a layout from the Layout pop-up menu.

It’s easiest to start with a Blank layout or a layout with no objects in the body part.

3. Choose Layouts menu > Layout Setup.

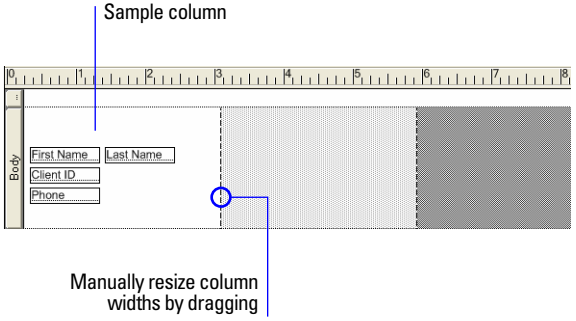
4. In the Layout Setup dialog box, click the Printing tab, select Print in <value> columns, select options for the columns, then click OK.

To	Do this
Specify the number of columns	For Print in *<value>* columns, type a number between 1 and 99.
Arrange records to flow across the page first (left to right a row at a time)	Select Across first.  Use this option for reports like labels, to use the fewest number of rows and preserve label stock.
Arrange records to flow down the page first (top to bottom a column at a time)	Select Down first.  Use this option for reports like directories, where you read from top to bottom, column by column.

5. On the layout, you see vertical lines indicating columns.

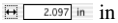
6. Place or arrange fields and other layout objects so they are contained within the sample column on the left.

Use merge fields or fields or objects with sliding enabled to fit more data into the width of a column. With either of these two features, fields can extend into the gray area of the second column, and blank space in fields is eliminated when you view or print data.



To change the width of columns:

The initial width of each column is calculated based on the paper size, orientation, and any margins you have set. To change the width of columns, do one of the following:

To	Do this
Interactively adjust the width of the columns	Drag the right column boundary (the vertical dashed line at the right edge of the sample column). If you widen the column, you see a medium-gray area that indicates a "gutter" area that won't print.
Precisely measure and adjust the width of the columns	Choose View menu > Object Size. Position the pointer over the right column boundary and hold down the mouse button (be careful not to drag the column width). The column width is the second-to-last field  in the Size palette.

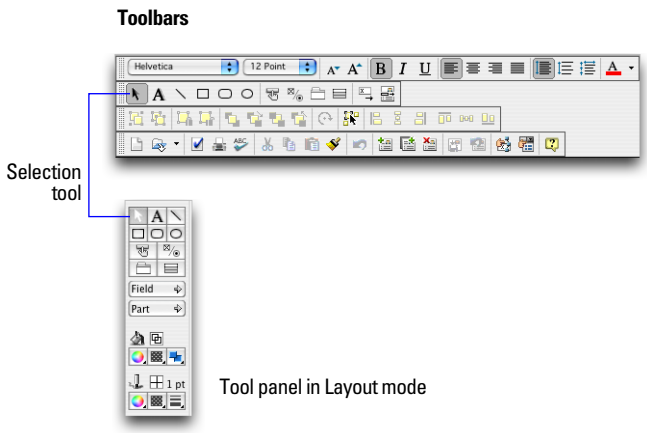
If you change the number of columns, FileMaker Pro adjusts the width of the columns to fit within the width of the paper size you have defined, not including fixed margins. You may need to readjust fields to fit within the sample column.

For more information about setting up a layout to print records, see Help.

Working with objects on a layout

An *object* is a discrete element—a field, text, a graphic object (such as an oval or imported picture), a button, or a portal (for displaying rows of related records)—that you can select, move, resize, delete, copy, format, and otherwise change. Place objects on a layout to enhance its design.

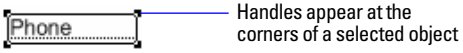
For each type of object you work with, you use specific tools from the tool panel or one of the toolbars (choose View menu > Toolbars).



Note If you don't see the tool panel at the left side of the document window, the status area might be hidden. Make sure you're in Layout mode (choose View menu > Layout Mode), then click the status area control at the bottom-left corner of the document window.

Selecting objects

To work with an object on a layout, select it in Layout mode. You see small black squares, or *handles,* at the corners of the selected object.



To select an object, click the selection tool in the tool panel. The pointer becomes an arrow pointer. Then do one of the following:

Note If an object's selection handles are gray instead of black, the object is locked.

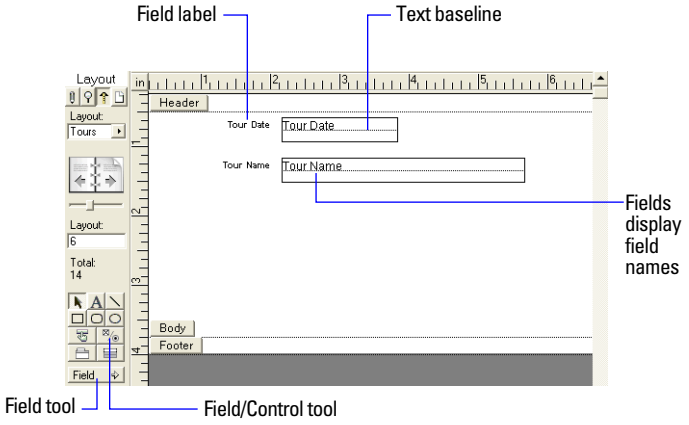
To select	In Layout mode, do this
One object	With the arrow pointer, click the object. (If the object is transparent, click its border.)
Several objects at once	Drag the arrow pointer to make a selection box that completely surrounds the objects. (If you press Ctrl (Windows) or ⌘ (Mac OS) while dragging, the selection box does not have to completely surround the objects.) Or, press Shift as you click each object individually.
All objects on the layout	Choose Edit menu > Select All.
All objects of the same type (for example, all text objects or all rectangles)	Choose View menu > Toolbars > Arrange to show the Arrange toolbar. Select an object, then click the Select Objects by Type button in the Arrange toolbar. Or, click the tool for the type of object to select, then choose Edit menu > Select All. (This method does not work for buttons, fields, and portals.)
All fields	With the arrow pointer, click a field, press Shift (Windows) or Option (Mac OS), and choose Edit menu > Select All (Windows) or Select Same (Mac OS). Or, select a field, then click the Select Objects by Type button in the Arrange toolbar.
A portal	With the arrow pointer, click the border of the portal, or any other area within the portal that doesn't contain a field or object.
Tab controls, tab panels, and objects in tab panels	See Help for information on creating and working with tab controls.
Deselect selected objects	Click a blank area of the layout or any tool in the tool panel. Or, press Shift and click selected objects.

For more information about working with objects on a layout, see Help.

Working with fields on a layout

After you create a layout, you can place fields on it, remove fields you don't want displayed, and determine the format in which you want data displayed.

Fields on a layout are objects, which you can select, move, resize, and reshape. In Layout mode, each field displays its field name, formatted with its attributes for font, size, style, alignment, line spacing, and color. All fields except container fields display text baselines to indicate where the data appears in Browse mode and to help you align fields with each other.



Keep these points in mind:

- A field that doesn't appear on a layout still exists in the database, and its data can be used in calculations and summaries.
- To set the default formatting, appearance, and behavior of a field, choose options with no fields selected. FileMaker Pro applies these defaults to all fields added later. See "Formatting field data on a layout" on page 63, "Allowing or preventing entry into fields" on page 67, and Help. You can also specify options individually for each field.

Note Options that are set in the Field/Control Setup dialog box cannot be defined as defaults.

Placing and removing fields on a layout

You can place a field anywhere on any layout, as many times as you want. (You can place only fields that you've defined. See "Defining database fields" on page 43).

You get different results by placing the same field in different locations on the layout. For example:

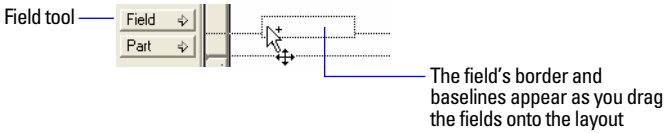
- Add the same summary field to a subsummary part to calculate totals for each group of sorted records, and to a grand summary part to get totals for all the records in a table.
- Add a field to the header or footer part to repeat data from the first record or the last record on the page as a header or footer. (For example, add a Last Name field to the header in a directory.)
- Add the same related field directly on a layout to see the field's value in the first related record, or inside a *portal* to see values from more than one related record. (A portal is a layout object that displays records from related tables.)

To place a field on a layout:

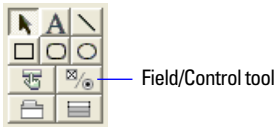
1. In Layout mode, choose the layout you want to work on from the Layout pop-up menu.

2. Drag a field from the Field tool to the position you want on the layout. (Or choose Insert menu > Field.)

As you drag the field onto the layout, you see a border and text baselines to help you align the field with other objects on the layout. Release the mouse button when the field is where you want it.

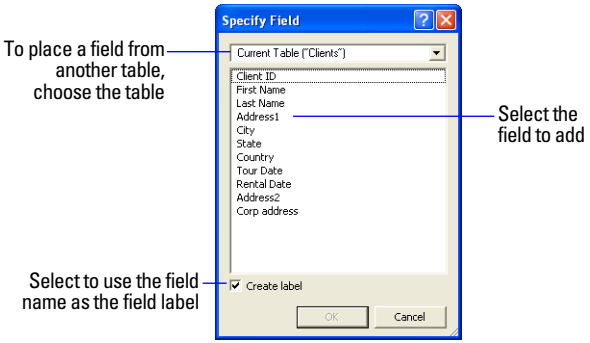


Alternatively, if you want to display field data in a drop-down list, pop-up menu, checkbox set, radio button set, or drop-down calendar, use the Field/Control tool (or choose Insert menu > Field/Control). See the next section "Setting up checkbox sets and other controls on a layout" for more information.



Note If you're placing a related field in a portal, position it in the first row of the portal. Make sure each field in the portal is from the same related table from which the portal is set up to display records.

3. In the Specify Field dialog box, select the field to place.



To choose a field in another table, choose the table from the table list above the list of fields. Then select a field from the fields list. Or choose Define Database in the table list to create a relationship or table (see "Creating relationships" on page 76).

4. Select Create label to include the field name as text on the layout.

5. Click OK.

You see the field name in the field on the layout unless you have chosen to display sample data from the current record (View menu > Show > Sample Data). Fields from related tables appear as ::Field Name (preceded by two colons).

To replace a field with another, in Layout mode, double-click the field, then select another field name in the Specify Field dialog box and click OK.

To remove a field from a layout, in Layout mode, click the field to select it, then press Backspace or Delete, or choose Edit menu > Clear. Removing a field from a layout does not delete the field or its data from your database.

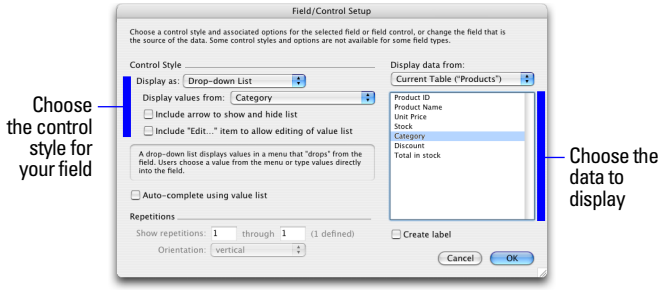
Setting up checkbox sets and other controls on a layout

You can format fields to display as drop-down lists, pop-up menus, checkboxes, radio buttons, and drop-down calendars. You can also format fields to auto-complete by suggesting possible matches as the user types data in the field. All of these options aid in data entry.

To set up a field to display a pop-up menu, checkbox set, or other control:

1. In Layout mode, double-click the field (or select the field and choose Format menu > Field/Control > Setup).

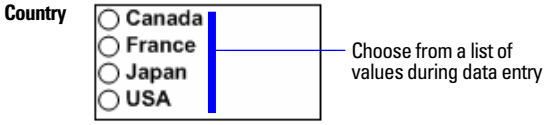
- If the field isn't already on the layout, click the Field/Control tool and drag the crosshair pointer to add a field object to the layout. Then, in the Field/Control Setup dialog box, specify the field you want in the Display data from area.
- If the field hasn't been defined yet, choose Define Database to define a new field.



2. In the Control Style area of the Field/Control Setup dialog box, for Display as, choose:

- Edit Box
- Drop-down List
- Pop-up Menu
- Checkbox Set
- Radio Button Set
- Drop-down Calendar

For example, use a radio button set to display a *value list* of frequently used text, number, date, or time values. During data entry, users can choose from the defined values rather than type the values.



Value list attached to Country field

When you choose different control styles, the dialog box changes to display different options.

3. Choose options for the control style.

For example, for Display values from, choose an existing value list or choose Define Value Lists.

4. To set up fields to suggest possible matches as the user types data in the field, select Auto-complete using value list. or Auto-complete using previously entered values.

Note Auto-complete only works with text fields.

5. Click OK.

For more information on defining value lists and using auto-complete, see Help.

Deciding where to place related fields

You can place related fields directly on layouts or in portals.

- **Directly on layouts:** Place related fields directly on a layout to display data from the first related record, even when there are more than one related records that matches the criteria of the relationship. (The first related record that's displayed is determined by whether the relationship specifies a sort order. For more information, see "Creating relationships" on page 76.)
- **In portals:** Place related fields within a portal on a layout to display data from all related records that match the criteria of the relationship.

Note Before placing related fields on a layout, you should understand the concepts presented in chapter 3, "Working with related tables and files."

About merge fields

Use merge fields to combine field data and text in documents like form letters, labels, envelopes, or contracts. You create merge fields in text blocks, which allows you to use static text and field data together.

Merge fields shrink or expand to fit the amount of text in the field for each record. For example:

- When the merge field <<First Name>> is between the text Dear and a colon, (as in Dear <<First Name>>:), FileMaker Pro displays Dear Charles: in Browse mode or Preview mode if the First Name field contains `Charles`.
- When a merge field is on a line by itself (such as an empty Address Line 2 field in a mailing label), FileMaker Pro removes the blank line from the text block.

FileMaker Pro uses merge fields to create Labels and Envelope layouts.

Formatting field data on a layout

Use FileMaker Pro field formats to control how data appears on a layout. The formats you specify don't change the data as it's stored in the database, and you can specify different formats each time you place a field on a layout (whether it's on the same layout or a different layout). For example, if you enter `–5123` into a number field, you can format it in one place to display as –$5,123.00 and in another place as <5123>.

FileMaker Pro applies field formatting in the following precedence:

- If you don't specify formats, FileMaker Pro displays numbers, dates, and times based on the system formats set in Regional Options control panel (Windows) or the International pane in the System Preferences application (Mac OS) when the file was created.
- In FileMaker Pro, you can specify display formats for text, number, date, time, timestamp, or container fields with no objects selected. FileMaker Pro applies these default formats to fields you place on layouts later. For number, date, time, and timestamp fields, these display formats override the system formats.

Specifying text formats for fields

In Layout mode, you can specify a set of text character attributes for each field. All the characters in that instance of the field (including all repetitions of repeating fields) share the same font, size, style, color, line spacing, tab, and paragraph settings.

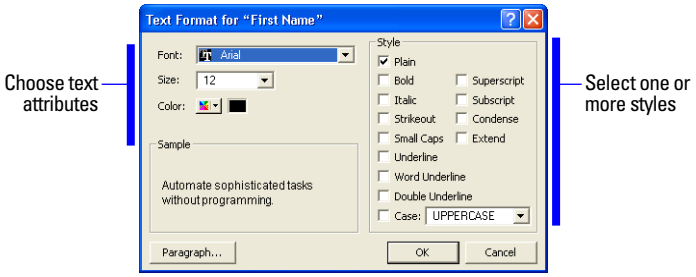
Note You can also format characters in text fields in Browse mode (for example, italicize or underline a word for emphasis). Unlike text formatting specified in Layout mode, this formatting is stored with the data, and you see it in any layout that displays that field.

1. In Layout mode, select one or more fields, then choose Format menu > Text.

Or, to set text formats for fields you place later, start with no fields selected.

2. In the Text Format dialog box, select the formats you want to use.

You see examples of the options you choose in the Sample area.



Specifying formats for fields containing numbers

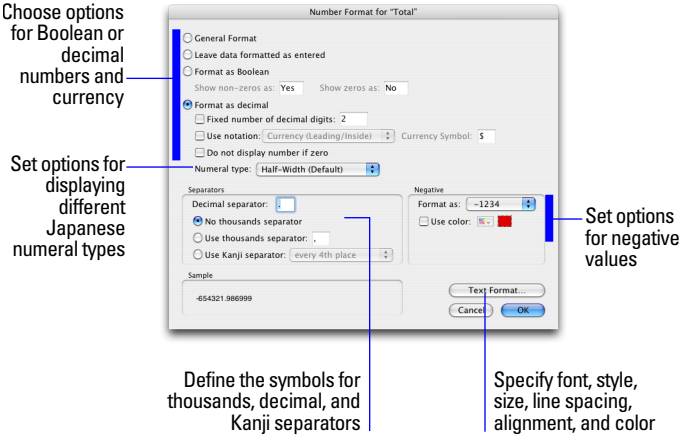
You can control how FileMaker Pro displays the values in number fields, calculation fields with numeric results, and summary fields.

1. In Layout mode, select one or more fields that display numeric values.

2. Choose Format menu > Number.

3. In the Number Format dialog box, select the formats you want to use.

You see examples of the options you choose in the Sample area.



4. Click OK.

Specifying formats for date fields

You can control how FileMaker Pro displays the values in date fields, and calculation fields with date results.

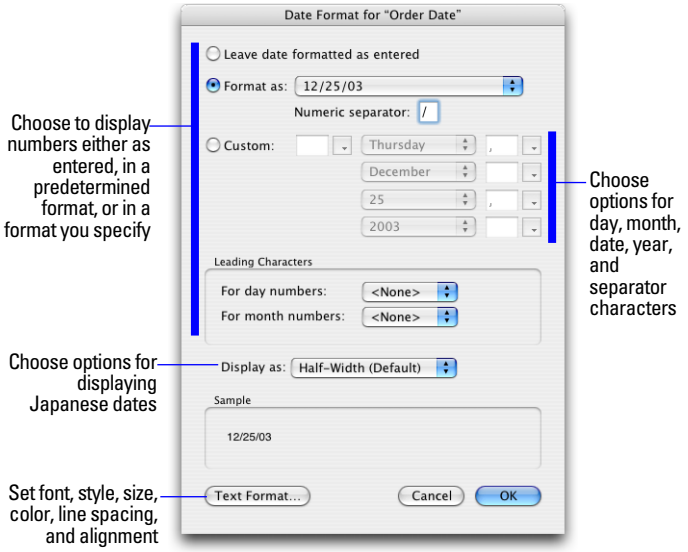
Note To avoid confusion when using dates in fields, FileMaker recommends that you always format date fields to display four-digit years.

1. In Layout mode, select one or more date fields or calculation fields with a date result.

2. Choose Format menu > Date.

3. In the Date Format dialog box, select the formats you want to use.

You see examples of the options you choose in the Sample area.



4. Click OK.

Specifying formats for time fields

You can control how FileMaker Pro displays time values in fields.

1. In Layout mode, select one or more time fields, or calculation fields with a time result.

2. Choose Format menu > Time.

3. In the Time Format dialog box, select the formats you want to use.

You see examples of the options you choose in the Sample area.

4. Click OK.

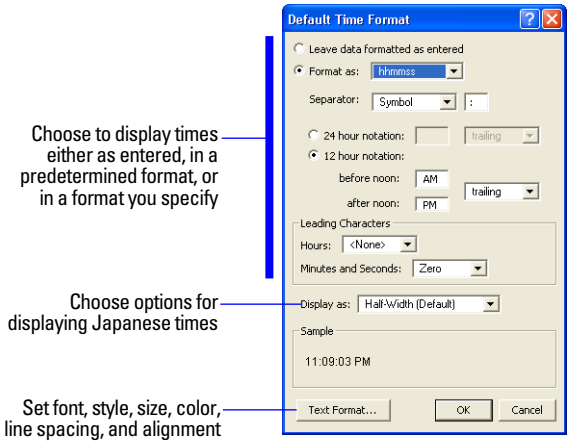
If you want to format the seconds component to display fractional seconds, continue with the next step.

5. Choose Format menu > Number.

6. In the Number Format dialog box, select the formats you want to use.

Only two options affect the display of the seconds component: Fixed number of decimal digits and Decimal separator. The remaining options have no effect.

7. Click OK.



8. Click OK.

Specifying formats for timestamp fields

You can control how FileMaker Pro displays timestamp values in fields. You format a timestamp field by separately formatting its three components: date, time (excluding the seconds portion), and seconds (including fractional seconds).

1. In Layout mode, select one or more timestamp fields, or calculation fields with a timestamp result.

2. To format the date component, choose Format menu > Date.

3. In the Date Format dialog box, select the formats you want to use and click OK.

4. To format the time component (except the seconds portion), choose Format menu > Time.

5. In the Time Format dialog box, select the formats you want to use and click OK.

6. To format the seconds and fractional seconds component, choose Format menu > Number.

7. In the Number Format dialog box, select the formats you want to use and click OK.

Only two options affect the display of the seconds component: Fixed number of decimal digits and Decimal separator. The remaining options have no effect.

You see examples of the options you choose in the Sample area.

Specifying formats for container fields

You can control how FileMaker Pro displays images and file icons in container fields.

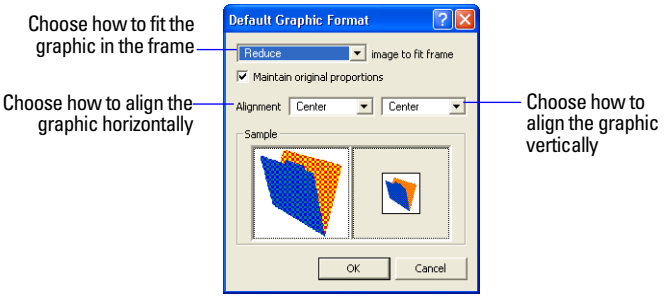
Note The following instructions also apply to formatting graphic objects that you insert onto a layout.

1. In Layout mode, select one or more container fields or inserted graphics.

2. Choose Format menu > Graphic.

3. In the Graphic Format dialog box, select the formats you want to use.

You see examples of the options you choose in the Sample area. File icons do not scale.



4. Click OK.

Formatting fields and text for vertical writing

If your operating system is configured to support Japanese text entry, you can format field objects and text objects that display Japanese text in vertical writing format. In vertical writing, characters are displayed and read from top-to-bottom, with successive columns displayed vertically from right-to-left. This is useful when printing addresses on labels.

When you select one or more fields, then choose Format menu > Orientation > Sideways (Asian text only), the characters are rotated 90 degrees counter-clockwise within the field. The field itself is not rotated. To rotate the selected fields, choose Arrange menu > Rotate.

Depending on how you want the text to print, you may want to change the page orientation of the layout. To do so, choose File menu > Print Setup (Windows) or Page Setup (Mac OS), and change the page orientation to Landscape or Portrait.

Allowing or preventing entry into fields

You can allow or prevent entry into a field. For example, you can restrict entry into a field containing a *serialized number*, so the field can't be modified. You can set separate Browse mode and Find mode data entry options, which would allow you to permit finding serialized numbers even though they can't be entered.

If you allow entry into a field, you can also control whether the entire contents of the field is selected when you click or tab into the field in Browse mode or Find mode. Otherwise, FileMaker Pro places the insertion point after the last character in the field.

1. In Layout mode, select one or more fields.

2. Choose Format menu > Field/Control > Behavior.

3. In the Field Behavior dialog box, select the options you want to use.

To	Do this
Prevent entry into a field in Browse mode, in Find mode, or in both modes	For Allow field to be entered, clear In Browse mode, In Find mode, or both options.
Select the entire field's contents when the field is entered	Select Select entire contents of field on entry. (Allow field to be entered must also be selected.)
Specify a text input mode for a field that uses a Japanese input method. **Note** This option is available if your operating system is configured to support Japanese text entry.	Select Set input method to, then select an input mode from the list.
Control how you move to the next field using the keyboard	Select Tab key, Return key, Enter key, or any combination of the options.

4. Click OK.

For more information about working with fields on a layout, see Help.

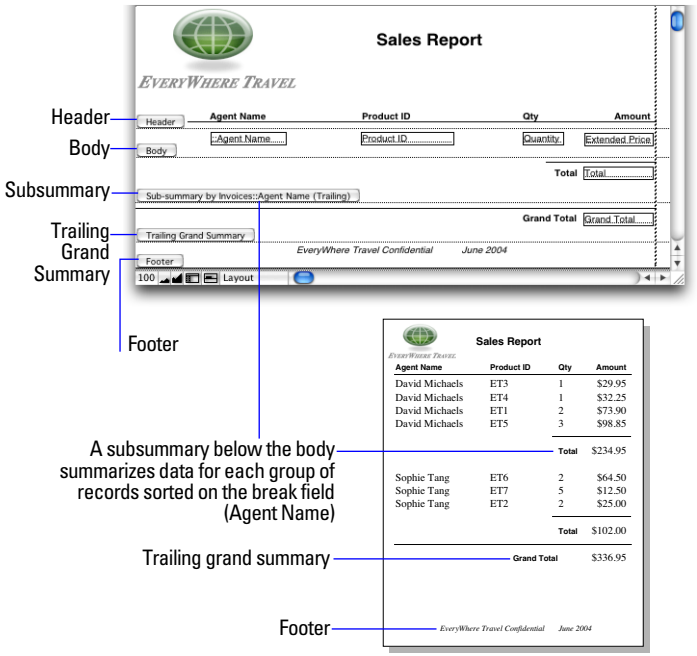
Working with parts on a layout

FileMaker Pro layouts are divided into *layout parts*, sections of the layout that determine how data in a field is treated and displayed. By using parts, you can control how FileMaker Pro prints data, for example:

- once for each record
- only at the top of each page
- only before or after groups of sorted records (for example, to include a subtotal for each group of records)

Each layout must have at least one part. Layout parts can contain fields, portals, buttons, text, and other objects. In Layout mode, dotted horizontal lines mark the division between layout parts, and the part label appears at the left end of the bottom dividing line.

The New Layout/Report assistant automatically creates the appropriate layout parts depending on the choices you make. You can add, change, or delete layout parts after you finish the assistant as needed. (See "Creating layouts and reports" on page 53.)



About layout part types

The following table describes layout part types.

Layout part	Description
Title header	Appears only once at the top of the first screen or page and replaces the normal header (if one is specified). In reports, can be used to print a separate title page. You can have only one title header in a layout.
Header	Appears at the top of every screen or page (unless you add a title header, which supersedes the header on the first page). Use for titles or column headings (in columnar reports). You can have only one header in a layout.
Body	Each object you put in the body, including fields, text objects, and graphics, appears once for each record in the found set. You can have only one body in a layout.
Footer	Appears at the bottom of every screen or page (unless you add a title footer). You can have only one footer in a layout.
Title footer	Appears only once at the bottom of the first screen or page and replaces the normal footer (if one is specified). You can have only one title footer in a layout.

To include summary data on a layout (for example, subtotals, grand totals, averages, counts, and so on), you place summary fields in summary layout parts (see "Defining summary fields" on page 48). Summary parts include grand summary and subsummary parts.

- A *grand summary part* usually contains one or more summary fields that display summary information (like totals) about all records being browsed.
- A *subsummary part* usually contains one or more summary fields that display "subsummary" information (like subtotals) for a subset of records. The records are grouped (sorted) by values in another field, the *break field*. Whenever the value of the break field changes, the report "breaks" and FileMaker Pro inserts the subsummary part.

For more information about working with layout parts, see Help.

Chapter 3
Working with related tables and files

This chapter explains the basics of how to:

- plan a relational database
- create and edit relationships
- create and edit lookups

FileMaker Pro uses related tables as the basis for *relational databases* and *lookups*. Relational databases allow you to work with data from other tables dynamically, so that you can change data in one place and your changes are reflected in all places where the related data appears. Lookups let you copy and paste data from one table to another; once looked-up data has been inserted, it does not change unless you edit it or tell FileMaker Pro to look it up again.

Use relational databases to:

- See and work with data from another (or the current) table in its most up-to-date state. For example, display data in related fields when you need current data from a related table, such as the current price of an item. As data changes in the related records, you see those changes in the current table.
- Set up and manage data efficiently and with flexibility. Instead of creating many database tables or files with duplicate values, you store single occurrences of values and use relationships to make those values available. You can then make changes to data in only one place, which eliminates data duplication and promotes data accuracy.
- Save disk space, because data is stored in only one place.

Use lookups to:

- Copy data from a related table and keep it as copied, even when the related data changes. For example, use a lookup to copy the price of an item at the time of purchase into an Invoices table. Even if the price in the related table changes, the price in the Invoices table stays the same.

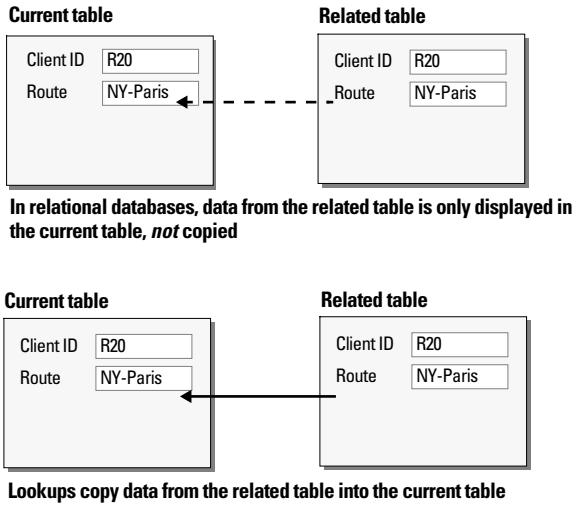
Note See Help for detailed, comprehensive information and step-by-step procedures about using FileMaker Pro.

About relationships

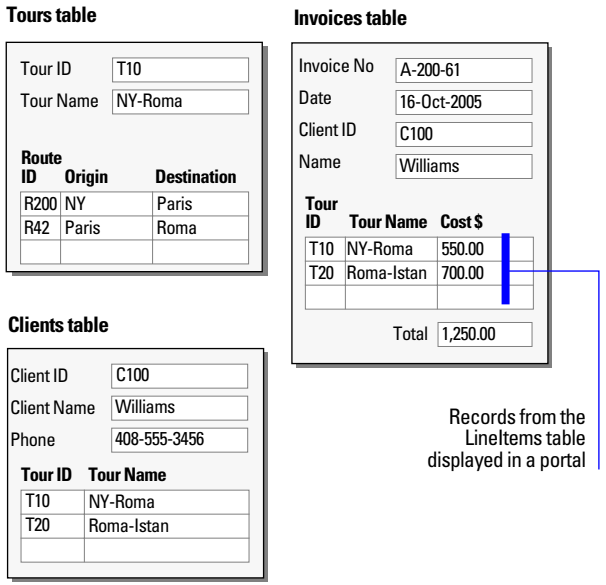
A relationship is a powerful method for organizing your data. Using a relationship, you can join data in one or more tables based on common field values, different field values, or a comparison of values in two or more fields.

After you create a relationship, you can do either of the following to display the data from the related table:

- Design a relational database, which is one or more tables that, when used together, contain all the data you need for your work. Each occurrence of data is stored in only one table at a time, but can be accessed and displayed from any related table. You can change any occurrence of your related data, and the changes appear in all places where that related data is used.
- Define a lookup to copy data from a related table into a field in the target table. The copied data is now stored in two places, just as if it were copied and pasted into a target field. Looked up data is current at the time it is copied, but once copied it remains static unless it is re-looked up or the lookup is triggered again.



For example, a database for a travel agency might have these tables: a Tours table, which stores the products (tours) and their current prices; a Clients table, which stores client information; an Invoices table, which keeps a record of each invoice; and a LineItems tables, which stores sales data for each line of the invoice, including the tour being sold and the price at which it is sold. Because invoices are a mix of dynamic and static data, you use both relational databases and lookups to display your data. Records from the LineItems table are displayed dynamically, in a portal on the Invoices layout, but the actual sales price of each line item is entered using a lookup, so the invoice totals remain historically accurate, even if prices change at some future date.



You create a relational database by defining a relationship between two fields, called match fields. These fields can be in different tables or they can be in the same table (a self-join). You are able to access related data when the value in the match field(s) on one side of the relationship compares successfully with a value in the match field(s) on the other side of the relationship, according to the criteria you establish in the relationship.

After you have created a relationship, you can use fields from the related table just as you would use any fields in the current table: to display data on a layout, as part of a calculation formula, in a script, as a match field for another relationship, and so on. You can work with the data in the related fields in all modes (if you have access privileges) when you work with records in the current table.

When you display related data in a portal, values from all related records are displayed. When the related field isn't in a portal, the value from the first related record is displayed.

For more information about relationships, see Help.

Relational database terminology

Before you begin working with relational databases and lookups, you should understand the following terms. These terms are explained in the sections that follow.

Term	Description
Current table	For relational databases, the table that you are currently working in. For lookups, the table that the data is copied to.
External table	A table outside of the current file, in another file.
Lookup target field (for lookups only)	The field in a table that you want data copied to during a lookup.
Lookup source field (for lookups only)	The field in the related table that contains the data you want copied during a lookup.
Match field	A field in the current table and a field in a related table that each contains values used to access matching records. (A match field is sometimes called a *key field*.) For each relationship, you select one or more match fields in each table. For relational databases, values in match fields must match each other in some way for a relationship to be established between the files. See "About match fields for relationships" on page 72. For lookups, values in match fields do not have to be equal to match.
Portal	A layout object that displays records from related tables. Portals display data from related fields in rows, one record in each row.
Related field	A field in one table that is related to a field in another table (or to a different field within the same table). If a relationship has been created between two tables (even through another table), data in fields in one table can be accessed from the other table.
Related record	A record in the related table whose match field (according to the relationship used) contains a value that matches the value in the match field of another table.
Related table	For relational databases, the table that contains the data you want to access and work with in the current table. For lookups, the table that contains the data to copy. A table can be related to itself. This is called a *self-join*.
Relational operators	In the relationships graph, the symbols that define the match criteria between one or more pairs of fields in two tables. These include: equal (=), not equal (≠), greater than (>), greater than or equal to (≥), less than (<), less than or equal to (≤), and all rows, or cartesian product (X).
Relationship	Relationships provide access to data from one table to another. Relationships can join one record in one table to one record in another table, one record to many other records, or all records in one table to all records in another table, depending on the criteria you specify when you create the relationship in the relationships graph. (A relationship is sometimes called a *link* or a *join expression*.)
Relationships graph	In the Relationships tab of the Define Database dialog box, you can see the occurrences of tables both in the current file and from any external, related database files. In this relationships graph, you join tables and change relationships between fields in different tables. When you create a new table, a visual representation, or occurrence, of the table appears in the relationships graph. You can specify multiple occurrences (with unique names) of the same table in order to work with complex relationships in the graph.
Source file	The file from which you add a table to the relationships graph.
Source table	The table upon which one or more tables in the relationships graph are based. The source table is the table defined in the Tables tab of the Define Database dialog box.

About the relationships graph

When you work with tables in the relationships graph, you are using them to organize your view into your data. Each table occurrence in the relationships graph represents a separate view into your data. When you join two tables, you are leveraging the two existing views to create a third view. As you add tables to your relationships, each successive table represents an additional set of criteria that must be met before related data can be accessed in that relationship.

You can create a relationship between any two tables in the relationships graph, but the relationship must not create a cycle, or closed loop between tables. That is, each series of relationships must have a starting table and an ending table, and those tables must be different tables.

Because each relationship represents an additional set of criteria, you must be aware of your *context* within the relationships graph. Context is the point in the graph from which a relationship is evaluated. Because the graph is never a cycle, each point along the graph offers a different perspective into your data.

Since FileMaker Pro does not permit you to create cycles within the relationships graph, any attempt to create a cycle causes FileMaker Pro to generate a new, uniquely named table occurrence. This new occurrence functions like any other occurrence in the graph and allows you to continue with your new relationship.

For more information about the relationships graph, see Help.

About match fields for relationships

When you create a relationship between tables, you choose one or more fields in each table as *match fields*. Match fields usually have common values. In a typical relationship, a record in one table will be related to records in another table that share a common match field value.

For example, a Customers table and an Invoices table can each use the field Client ID to uniquely identify each customer and purchase. If the two tables are related using Client ID as the match field, a record in the Customers table can display a portal showing each invoice with a matching Client ID, and in the Invoices table, each invoice with the same Client ID can display consistent customer data.

The match fields used in a relationship can have different names. Match fields can be any field type except container or summary.

For more information about match fields, see Help.

Types of relationships

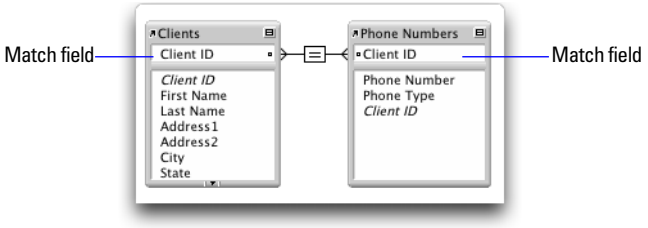
When you join two tables using a relationship, you establish criteria that FileMaker Pro uses to display or access related records.

Your criteria can be simple, such as matching a field in Table A with a field in Table B, or more complex. A more complex relationship definition will usually return a narrower set of related records. Examples of complex relationships include using multiple match fields on one or both sides of the relationship, comparing match fields using non-equal relational operators, or using calculated match fields.

Single-criteria relationships

In a single-criteria relationship, data in one field is matched to data in another field.

For example, a record in either table is related to any record in the other table when the values in the Client ID field in the Clients table and the Client ID field in the Phone Numbers table are the same.



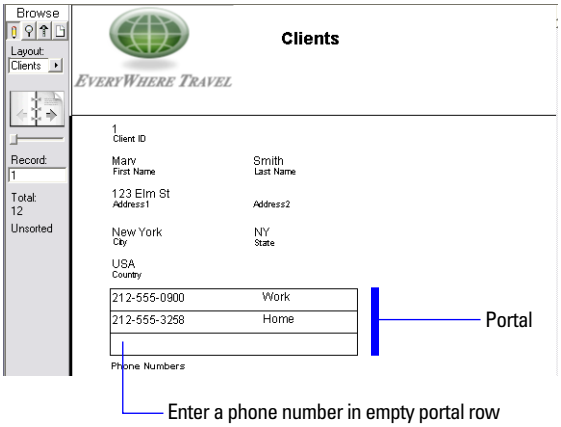
Use a single-criteria relationship when you want to relate two tables based on a single common value, such as a serial number or an ID number. For example, a clients database has two tables: Clients, which stores names and addresses, and Phone Numbers, which stores phone numbers and types of phone numbers, such as work, home, fax, and so on. The data is split between two tables because a single client can have multiple phone numbers.

The tables have the following fields:

Table	Field name	Comment
Clients	Client ID	Number field, auto-enter serial number. Match field for the Clients table
	First Name	Text field
	Last Name	Text field
	Address1	Text field
	Address2	Text field
	City	Text field
	State	Text field
Phone Numbers	Phone Number	Text field
	Phone Number Type	Text field
	Client ID	Number field. Match field for the Phone Numbers table

The Client ID field is the match field in the relationship between the two tables. In the Clients table, the Client ID field is set to automatically enter a serial number, giving each record in the Clients table a unique ID number. In the Phone Numbers table, the Client ID is just a simple number field.

Because the relationship is defined to allow the creation of related records in the Phone Numbers table, the Client ID number from a Clients record will be automatically inserted in the Client ID field in the Phone Numbers table in each new related record. This allows many records in the Phone Numbers table to be related to a single record in the Clients table.

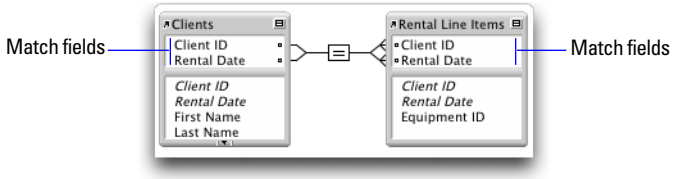


Users will be able to enter a phone number in an empty portal row, and FileMaker Pro will automatically create a related record for that phone number.

Multi-criteria relationships

In a multi-criteria relationship, you increase the number of match fields, which increases the criteria that FileMaker Pro evaluates before successfully joining related records. In a multi-criteria relationship, FileMaker Pro compares the values from each match field on each side of the relationship in the order in which the fields appear. This is known as an AND comparison; to match successfully, every match field must find a corresponding value in the other table.

Use a multi-criteria relationship when you want to relate two tables based on more than one common value, such as a client ID and a date.



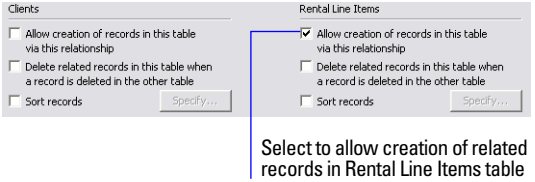
In this relationship, both Client ID and Rental Date are match fields to the Rental Line Items table. A record in the Clients table with a Client ID value of 1000 and a Rental Date value of 10/10/2004 will only match those records in the Rental Line Items table where both fields Client ID and Rental Date have values of 1000 and 10/10/2004, respectively. If Client ID fields in both tables have matching values, but Rental Date fields in both tables do not, no related records are returned by the relationship.

For example, a travel equipment rental database has three tables: Equipment, a static table that stores equipment rental inventory; Clients, which stores client names and addresses; and Rental Line Items, which stores a record of each equipment rental, including the equipment ID, the client ID, and the rental date. The purpose of this database is to track equipment rentals and display all rentals by a selected client on a selected date.

Although the database uses three tables, the multi-criteria relationship is between the Clients and Rental Line Items tables. These tables have the following fields:

Table	Field name	Comment
Clients	Client ID	Number field, auto-enter serial number. One of the match fields to the Rental Line Items table
	Rental Date	Date field. The other match field to the Rental Line Items table
Rental Line Items	Client ID	Number field. One of the match fields to the Clients table
	Rental Date	Date field. The other match field to the Clients table
	Equipment ID	Number field

Because the relationship is defined to allow the creation of related records in the Rental Line Items table, users will be able to enter rental information in an empty portal row, and FileMaker Pro will automatically create a related record for that rental.

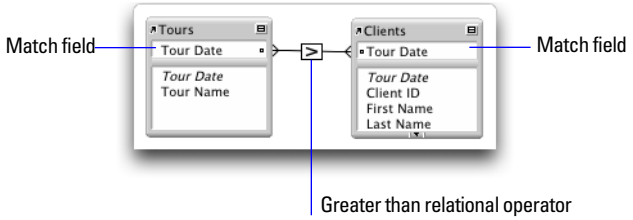


Relationships using comparative operators

In a comparative relationship, you use one or more of the following operators to compare match field values in the two related tables. The relationship returns related records when the comparison evaluates successfully, according to the criteria you establish.

Relational operator	Matches these records
=	Values in match fields are equal
≠	Values in match fields are unequal
<	Values in the left match field are less than values in the right match field
≤	Values in the left match field are less than or equal to values in the right match field
>	Values in the left match field are greater than values in the right match field

Relational operator	Matches these records
≥	Values in the left match field are greater than or equal to values in the right match field
x	All records in the left table are matched to all records in the right table, regardless of the values in the match fields

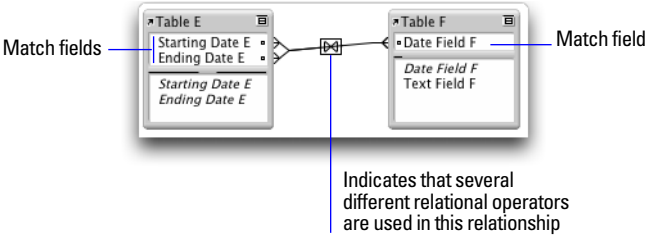


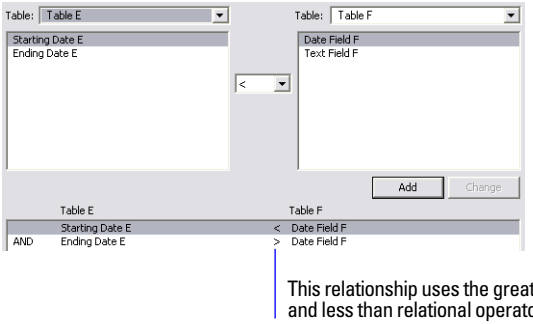
In this example, the Tour Date fields in the Tours table and the Clients table are match fields. If a record in the Tours table has a Tour Date value of 12/11/2004, all the records in the Clients table with a Tour Date value of 12/10/2004 or earlier are related to it. In the Clients table, if a record has a Tour Date value of 12/11/2004, all records in the Tours table with Tour Date values of 12/12/2004 or later are related to it.

Relationships that return a range of records

A relationship that returns a range of records is similar to a multi-criteria relationship, except that you use comparative operators to find records that are greater than one of your criteria and less than your other criteria. This type of relationship is commonly used to return records that fall between a range of dates or serial numbers.

For example, from within Table E you want to view all the records in Table F that have Date Field F values that are greater than Starting Date E values and less than Ending Date E.





This relationship returns those records from Table F that have a Date Field F value that is later than Starting Date E and earlier than Ending Date E.

For example:

If fields	Contain values	These related records are returned from Table F
Starting Date E	11/01/2005	11/14/2005 11/27/2005
Ending Date E	12/01/2005	

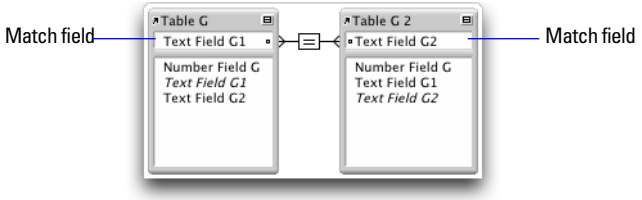
Another example:

If fields	Contain values	These related records are returned from Table F
Starting Date E	12/01/2005	12/02/2005 12/15/2005 12/17/2005 12/26/2005
Ending Date E	01/01/2006	

Self-joining relationships

A self-join is a relationship in which both match fields are defined in the same table. Define a self-join to create relationships between records in the same table. Use a self-join in a portal on a layout of the current table to display a subset of data that is in the current table, such as all the employees of each manager.

When you define a self-joining relationship in the relationships graph, FileMaker Pro generates a second occurrence of the table upon which you are basing the self-join. FileMaker Pro does this to prevent the relationships graph from forming a cycle, which would make it impossible to evaluate the relationship.



Self-joining relationship

This relationship returns related records in Table G when the value in Text Field G1 is the same as the value in Text Field G2.

For more information about the types of relationships, see Help.

Planning a relational database

For information about planning a relational database, see "Planning a database" on page 39.

Working with the relationships graph

Use the relationships graph to create, change, and view the relationships in your database file. The relationships graph lets you duplicate tables and relationships, resize and align tables, and add text notes. You can highlight tables that are connected to the selected table via a 1-away relationship, and you can highlight tables that have the same source table as the currently selected table. For more information, see Help.

By default, the relationships graph displays all of the tables in your current database file. You can add tables from other files, add more than one occurrence of the same table to the graph, or remove tables from the graph using the buttons at the bottom of the graph.

Creating relationships

To create a relationship:

1. With the database open, choose File menu > Define > Database.
2. In the Define Database dialog box, click the Relationships tab.
3. In the relationships graph, locate the two tables you will be using for this relationship.

They can appear anywhere on the graph but they must be present on the graph in order to create the relationship. For self-joining relationships, locate the single table; FileMaker Pro will create the second table occurrence for you.

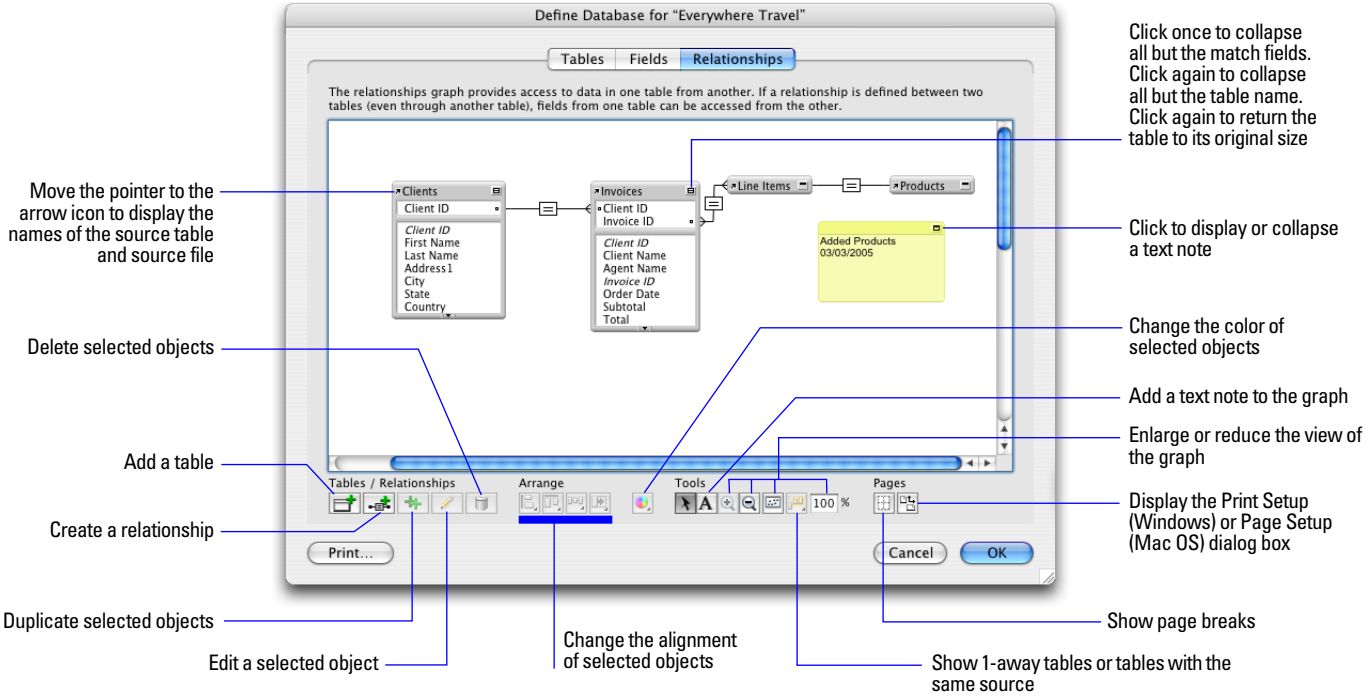
4. Click a field in one of the tables and drag to the corresponding match field in the other table.

Or, you can click  to open the Edit Relationship dialog box and create a relationship.

5. Repeat step 4 for each match field you intend to use in this relationship.

For more information about match fields, see "About match fields for relationships" on page 72.

6. Click OK to save your changes and close the relationships graph.



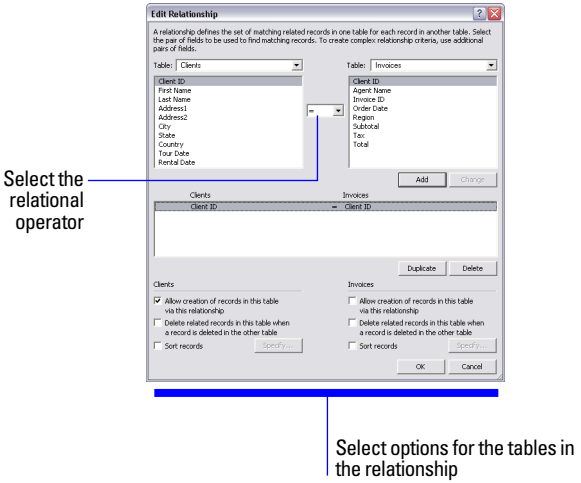
Changing relationships

After you have created a relationship, you can add or change match fields, change relational operators, and set options for creating, deleting, and sorting related records.

To change a relationship:

1. With the database open, choose File menu > Define > Database.
2. In the Define Database dialog box, click the Relationships tab.
3. In the relationships graph, locate the relationship to edit, and double-click the indicator line between the related tables to open the Edit Relationship dialog box.

Or, you can select the relationship in the graph and click  to open the Edit Relationship dialog box.



4. Edit tables and match fields for the relationship.

To	Do this
Change a match field	Select the new match field and click Change.
Add a match field	Select the new match field and click Add.
Change the relational operator	Select a new relational operator from the list and click Change. See "Relationships using comparative operators" on page 74.
Duplicate a pair of relationship criteria	Select the paired criteria from the list in the lower part of the dialog box and click Duplicate.
Delete a pair of relationship criteria	Select the paired criteria from the list in the lower part of the dialog box and click Delete.

5. Select options for the relationship.

To	Select
Add a related record (to the related table) whenever you enter data into a related field in a record of the current table. (See "Adding and duplicating records" on page 20.)	Allow creation of related records in this table via this relationship. When this option is selected, entering data in a related field that has no corresponding related record creates a related record based on the match field in the current table.
Delete matching records (in the related table) whenever you delete a matching record in the current table. (See "Deleting records" on page 21.)	Delete related records in this table when a record is deleted in the other table. This option deletes related records even when you're browsing a layout that doesn't display the related records.
Sort related records.	Sort records. Then, in the left list in the Sort Records dialog box, double-click the fields to sort. To change the order in which fields are sorted, drag fields in the right list into the order you want. Select other options, then click OK. Selecting this option does not affect the sort order in the related file.

6. Click OK.

For more information about creating and editing relationships, see Help.

Summarizing data in portals

You can summarize data that's in a related field displayed in a portal. The portal can contain records from a related table or from the same table (a self-join).

To summarize data in portals:

1. Create a calculation field in the table in which you want the total to be displayed.

2. For the calculation field, define a formula that includes an aggregate function for the type of summary calculation you want to perform.

For example, if you are in the Invoices table and want to define a calculation to total the related values in the Price field of the LineItems table, use the formula

```
Sum(Line Items::Price)
```

3. Place the calculation field on a layout of the table in which it is defined.

See "Placing and removing fields on a layout" on page 60.

For more information about summarizing data in portals, see Help.

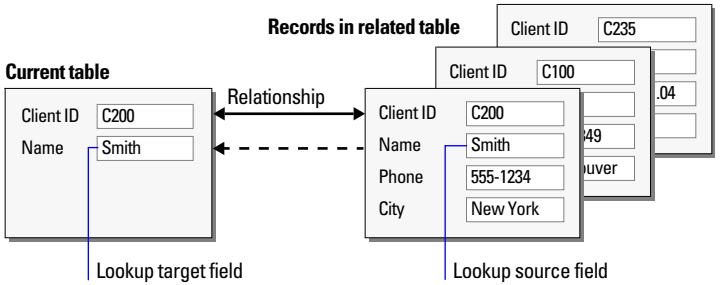
About lookups

A lookup copies data from another table into a field in the current table. After data is copied, it becomes part of the current table (and remains in the table from which it was copied). Data copied to the current table does not change automatically when the data in the other table changes, unless the data in the match field of the current table changes.

To establish a connection between tables for a lookup, you create a relationship. Then you define a lookup to copy data from a field in the related table into a field in the current table.

When you type a value in the match field of the current table, FileMaker Pro uses the relationship to access the first record in the related table whose match field contains a matching value. Next, it copies the value from the lookup source field into the lookup target field, where the value is stored.

After a value is copied into the lookup target field, you can edit, replace, or delete it like any other value (because the lookup value belongs to the current table). You can also update data in the current table to match data that changes in the related table.



Creating lookups

To create a lookup:

1. Create a relationship for the lookup between the match field of the current table and the match field of the related table. See "Creating relationships" on page 76.

2. With the database open, choose File menu > Define > Database.

3. In the Define Database dialog box, click the Fields tab.

4. If your database contains more than one table, select the appropriate table from the Table list.

5. Select a text, number, date, time, timestamp, or container field from the list of existing fields, or define a new one.

6. Click Options (or double-click the field name).

7. In the Options for Field dialog box, click the Auto-Enter tab, then select Looked-up value.

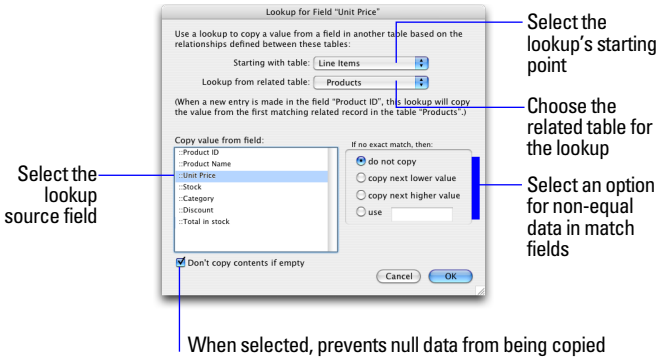
8. In the Lookup for Field dialog box, choose the table the lookup will start with, and the table from which the value will be copied.

Select	To specify
Starting with table	The table the lookup will use as its starting point in the relationships graph
Lookup from related table	The related table from which the related data will be looked up

9. Select the field from which the lookup value will be copied.

10. Select options for the lookup.

To	Do this
Specify an action when values in the match fields do not match exactly	For If no exact match, then, select an option to copy no value, copy the next lower or next higher value that's in the lookup source field, or enter a fixed value to be used instead
Prevent null (empty) data in the lookup source field from being copied to the lookup target field	Select Don't copy contents if empty. (Clear this option to allow empty data to be copied.)



11. Click OK.

12. Repeat steps 5-11 for each additional field for which you want to define a lookup.

Editing lookups

To edit a lookup:

1. With the database open, choose File menu > Define > Database.

2. Click the Fields tab.

3. If your database contains more than one table, select the appropriate table from the Table list.

4. Double-click the lookup target field.

5. In the Options for Field dialog box, click the Auto-Enter tab.

6. Be sure Looked-up value is selected and click Specify.

To stop or suspend using a lookup, clear Looked-up value.

7. Make your changes.

8. Click OK.

For more information about creating and editing lookups, see Help.

Chapter 4
Sharing and exchanging data

This chapter explains the basics of how you can share FileMaker Pro databases:

- **FileMaker Network Sharing**: You can share FileMaker Pro databases on your network, which allows multiple FileMaker Pro users to access and use the same database file simultaneously.
- **Importing and exporting data**: You can exchange information between FileMaker Pro and other applications by importing and exporting data. For example, you can import data that is in another database or spreadsheet program, or export address data in order to create personalized form letters with a word processing program.
- **Instant Web Publishing**: You can quickly and easily publish FileMaker Pro layouts as web pages, which allows anyone with a web browser on your intranet (or the Internet) to access your FileMaker Pro databases.

Note See Help for detailed, comprehensive information and step-by-step procedures about using FileMaker Pro. See the *FileMaker Instant Web Publishing Guide* for information about publishing databases on the web.

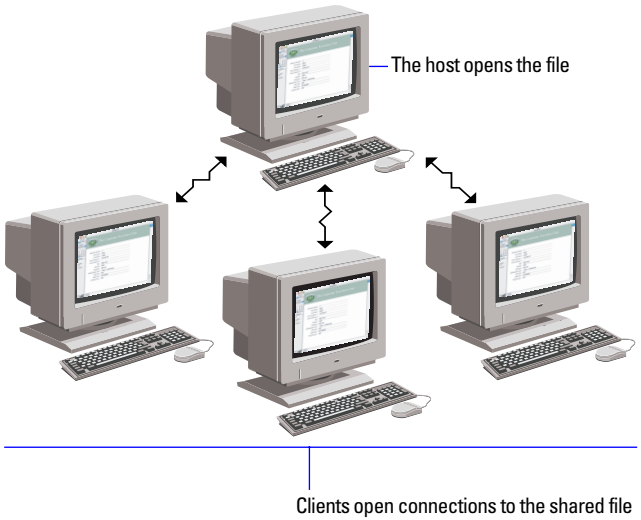
Sharing databases on a network

If your computer is connected to a network, you and other Windows and Mac OS FileMaker Pro users can use the same database file simultaneously.

FileMaker Pro Network Sharing supports the sharing of files with up to 5 concurrent users. If you need to share files with more than 5 concurrent users on a network, FileMaker recommends the use of FileMaker Server, which provides greater networking performance in addition to its increased capacity.

Important Your FileMaker Pro licensing agreement requires that you pay for a license for each separate computer on which the FileMaker Pro application is installed or run. The software license may not be shared or used concurrently on different computers. Please read the software license for complete terms and conditions.

The first person to open a shared file is the *host*. Any user who opens a shared file after the host is a *client*.



Once a shared file is open, the host and clients have access to the same information, and all changes to the file appear in each user's window.

Modifications to the data made by any user are saved in the shared file. The shared file is saved on the disk where the file resides.

Sort orders, find requests, import and export field orders, and print setups are specific to each user.

Enabling file sharing and hosting files

Because many FileMaker Pro commands are processed on the host machine, you will see better performance if you host your shared files from the fastest available computer. The file you're hosting must be on the hard disk of your computer. Remotely hosting a file stored on another computer or server is not supported, as it might compromise data integrity and will result in poor performance.

To turn on network file sharing for all open files:

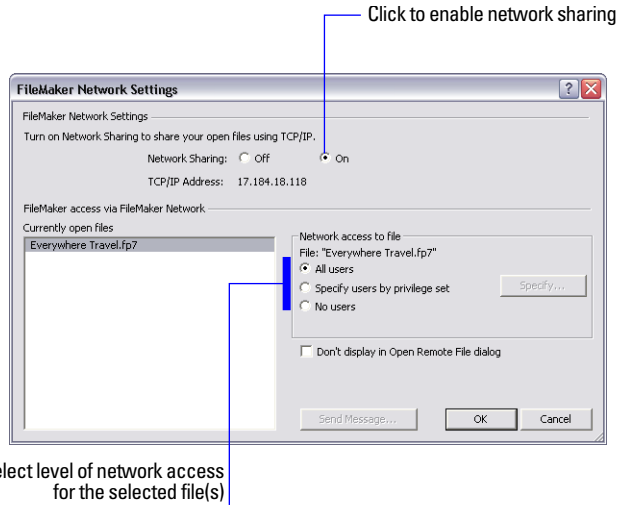
1. Open the FileMaker Pro file(s) you want to share.

Note To enable or change a file's sharing status, you must open it with an account that has Manage extended privilege set access privileges. For more information, see "Accounts, privilege sets, and extended privileges" on page 92.

2. Choose Edit menu > Sharing > FileMaker Network (Windows) or FileMaker Pro menu > Sharing > FileMaker Network (Mac OS).

3. In the FileMaker Network Settings dialog box, for Network Sharing, click On.

In the TCP/IP Address box, you see the TCP/IP address of your system.



4. Select the file(s) to be hosted from the list of Currently open files.

5. Set the level of network access for the file(s).

To	Select
Provide access to all FileMaker Pro users on your network	All users.
Limit network access to users based on their privilege set	Specify users by privilege set, then click Specify. In the Specify users by privilege set dialog box, select the privilege sets you want to have network access.
Prevent any access via FileMaker networking	No users.

6. Click OK.

The open files are now hosted.

Important You must keep your shared file(s) open to make them available to clients.

Note In order for files to be shared on read-only CDs, you must enable sharing before copying the file to the CD.

Opening shared files as a client

After the host opens a shared file, clients can connect to the file.

To open a shared file as a client:

1. Choose File menu > Open Remote.

2. In the Open Remote File dialog box, select View for a list of hosts.

Choose	To display
Favorite Hosts	Hosts you previously added as favorites
Local Hosts	FileMaker Pro hosts on your TCP/IP subnet
Hosts Listed by LDAP	FileMaker Pro hosts available through the specified LDAP server

3. To see the available files from a host, select the host. In the Available Files list, select the file you want to open.

Or, for Network File Path, type the network path (for example, `fmnet:/<host IP address>/<filename>`).

4. Click Open.

You might be required to enter an account name, password, and domain name (Windows only), depending on how file sharing is configured on the host.

If the network is very busy, the file might not be listed. To check the network for a longer period of time, hold down the Ctrl key (Windows) or Option key (Mac OS) as you click an item.

Limitations on changes to shared files

Although it is possible for multiple users to make changes in the same shared file at the same time, there are limits to the types of simultaneous changes that are permitted. The following table describes the types of changes you can and cannot make to shared files.

Database change	Limitation
Data in layouts and records	Two people can't edit the same record at the same time.
Layouts and layout elements	Two people can't modify the same layout at the same time.
Value lists	Two people can't modify or define the same value list at the same time. **Note** One person can edit a value list while another person is using it in Browse mode or Find mode.
Scripts	Two people can't modify or define the same script at the same time. **Note** One person can edit a script while another person is using it.
Tables, fields, relationships (database schema)	Two people can't modify any of these elements at one time.
File references	Two people can't modify or define file references at the same time. **Note** One person can edit a file reference while another person is using it.
Accounts and privileges	Two people can't modify or define accounts and privileges at the same time. **Note** One person can create or modify an account and privileges while another person is using it.

Opening shared databases remotely using a URL

The FileMaker Pro installer registers FMP7 as an Internet protocol. This enables you to open a shared database using a URL.

FileMaker Pro databases shared via TCP/IP can be opened remotely using the list of local hosts, the IP address of the host machine, or the DNS name of the host machine if one has been defined. For example, a database hosted from a computer with an IP address of 192.168.10.0, and a DNS name of host.domain.com can be opened by entering either the IP address or the DNS name in the File menu > Open Remote > Network File Path field.

To open a shared database using a URL:

1. Launch a web browser on the intended client machine.
2. Enter the URL of the host machine into the browser's address area using the format: [<][URL:]FMP7://[[account:password@]netaddress]/databasename[>]

Optional parameters are indicated by square brackets ("[ ]"). Because URLs cannot contain spaces, any spaces in database names are encoded as plus signs ("+").

Examples

FMP7://My+Addresses.fp7

FMP7://192.168.10.0/My+Addresses.fp7

Closing a hosted file

Before a shared file can be closed by a host, all clients must close the file. FileMaker Pro allows you to prompt networked clients to close the shared file when you do one of the following: close the file, change the sharing conditions for the file, exit FileMaker Pro, or perform a task that requires all clients to close the file. If a client does not respond to your request to close a shared file within 30 seconds, FileMaker Pro will attempt to close the shared file on the clients' machine.

To close a hosted file:

1. On the computer hosting the file, choose File menu > Close.
2. If any clients have the shared file open, you see a dialog box listing those clients. Click Ask to send a message to these clients requesting that they close the file.
3. Clients see a dialog box requesting that they close the file.

If	FileMaker Pro
Clients click Cancel	Waits for those clients to close the file
Clients click Close Now	Closes the shared file on the client's computer
Clients do nothing	Attempts to close the file after 30 seconds, if it can be closed safely

For more information about sharing files over a network, see Help.

Importing and exporting data

You can exchange information between FileMaker Pro and other applications by importing and exporting data. You can:

- import data into an existing FileMaker Pro file, either into a new table or into an existing table
- convert data from other applications to new FileMaker Pro files
- export data for use in other applications

Saving and sending data in other formats

You can save FileMaker Pro data as a Microsoft Excel worksheet or an Adobe PDF file, allowing you to give your record data to users who don't have FileMaker Pro.

FileMaker Pro lets you email the Excel worksheet or PDF file when you save it. You can also create scripts to save records as Excel or PDF.

In order to save files as Excel or PDF, you need the following access privileges:

- Allow exporting to save Excel files.
- Allow printing to save PDF files.

Note The saved file will only include fields that are on the layout when you perform the save. If you want to include other fields (for example, fields on tab panels that are not in front), use the Export Records command instead of Save/Send Records As.

Sending email messages based on record data

You can use FileMaker Pro to send one, or multiple, messages to one or more recipients. You can enter values, or use values from fields or calculations.You can also create scripts to send emails.

For more information, see Help.

Supported import/export file formats

Every application stores its data files in its own file type or file format. Most applications can also exchange information in certain other formats.

FileMaker Pro can import and/or export files in these formats: Microsoft Excel, DBF, DIF, tab-separated text, comma-separated values, BASIC, FileMaker Pro 7, Merge, SYLK, WK1/WKS (Lotus 1-2-3), HTML Table, and XML. If you're exchanging data with another program, check the documentation that came with that program to determine a common intermediary file format that both FileMaker Pro and the other program support.

Most file formats support data conversion only and do not import or export formatting such as font, size, style, and color.

For information about file formats and the versions FileMaker Pro can import and/or export, and importing from sources such as XML or a digital camera (Mac OS), see Help.

ODBC and JDBC

You can exchange FileMaker Pro data with ODBC-compliant applications. For example, you can chart FileMaker Pro data in Microsoft Excel. For information about using FileMaker Pro with ODBC and JDBC, see Help.

Methods of importing data into an existing file

When you import data into an existing file, you can:

- add new records to an existing table
- create a new table from imported data
- update existing records in an existing table
- update matching records in an existing table

Important The import options that update existing records and update matching records both overwrite existing data during the import process and cannot be undone. To safeguard your data, choose File menu > Save a Copy As to make a backup of the file before you perform an import that updates records.

The file you import records from is the *source*. The file you import records to is the *target*.

About adding records

When you add records, you import all records from the source file to the target file or table. A new record is created in the target file for each importable record in the source file.

About updating existing records

With this option, you replace data in your file with data from the source file. For each field you import into, data from the first importable record (or row of data) in the source file overwrites fields in the first record in the target file. Data from the second importable record (or row of data) in the source file overwrites fields in the second record in the target file, and so on. When you replace data, FileMaker Pro doesn't examine or compare the data in the files.

You can choose whether to replace or not replace data on a field-by-field basis.

Records in the target file are replaced with the same number of records from the source file. If there are more importable records in the source file, data from the extra records in the source file will not be imported unless you also choose Add remaining data as new records. If there are more records in the target file, data in the extra records in the target file will not be replaced.

About updating matching records

You can update matching records and fields in your target file with data from another file. For example, you might have a copy of a database on your desktop computer and another copy on your laptop computer. You can update the file in your office with the changes you make on the road.

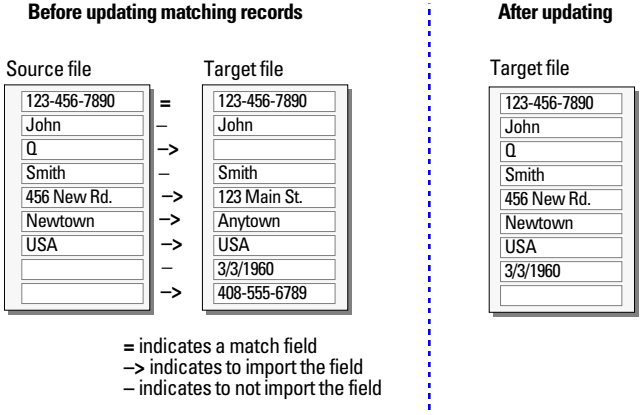
You determine which records in the source file update which records in the target file by choosing one or more match fields in each file. If data in the match field(s) of a record in the target file matches data in the match field(s) of a record in the source file, the record in the target file will be updated with data from the source file.

Match fields must uniquely identify each entity in your database. For example, in a database of people, you could use one match field such as Employee Number, or multiple match fields such as Last Name, First Name, and Phone Number. Using Last Name alone might identify more than one person, so it isn't a good match field to use by itself.

You also specify the fields you want to import. The contents of all fields you select to import, in all matching records, will overwrite data in the target file, even if the field in the source file is blank.

When the target file contains a found set, only the found records are updated. (If the source file is another FileMaker Pro file, you can also import only from a found set.)

The following example shows how a record in a target file appears before and after being updated by a matching record in a source file.



About the importing process

The basic steps for importing records are:

1. Make a backup copy of the target file you're importing into.

2. If the source file is a FileMaker Pro file, perform a find so that the found set in the current window contains only the records you want to import.

3. Open the target file, and if it has multiple tables, select a layout that shows records from the table you want to import data into.

4. If you're updating existing or matching records, make sure the found set in the target file contains only the records you want to change or update.

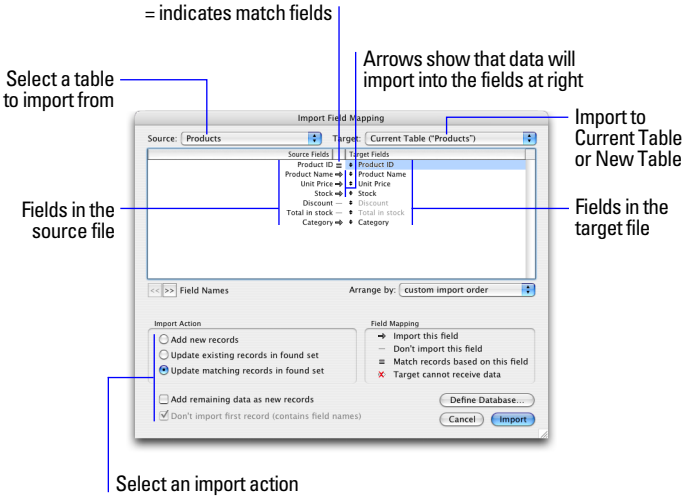
5. Choose File menu > Import Records > File, and choose the name of the file that contains the data you want to import (the source file).

6. In the Import Field Mapping dialog box, if necessary, select a table from the Source drop-down list.

7. Accept the table shown in the Target drop-down list, or select New Table to create a table with the same schema as the source table.

8. Select the type of import to perform. See "Methods of importing data into an existing file" on page 85.

9. Map the fields in the source file to the fields in the target file.



Converting a data file to a new FileMaker Pro file

You can convert a data file from another application into a new FileMaker Pro file. The converted file will contain:

- The data from the file or source you convert
- Two layouts for displaying the data
- Converted field names if they are available in the file or source you convert. Otherwise, field names are generic: f1, f2, f3, and so on.
- Converted field types if they are available in the file or source you convert. Otherwise, all fields are text fields.

To import data into a new file:

1. In the source application, save the data you want to import in a file type that FileMaker Pro supports. See "Supported import/export file formats" on page 85.

2. Choose File menu > Open.

3. In the Open File dialog box, for Files of type (Windows) or Show (Mac OS), specify the type of file, choose the file to convert, then click Open.

4. If you see the First Row Option dialog box, choose whether the first row of data contains field names or the first record of data, then click OK.

5. If you're converting a Microsoft Excel spreadsheet and the Specify Excel Data dialog box appears, choose a worksheet or named range from the workbook file, then click OK.

6. In the Create a New File Named dialog box, type a name for the new file, choose a location, then click Save.

FileMaker Pro converts the data to a FileMaker Pro file and displays the file.

For more information about importing data, see Help.

About the exporting process

You can export FileMaker Pro data to a new file, then open it in another application.

The basic steps for exporting records are:

1. Open the FileMaker Pro file and display a layout that shows the records you want to export.

2. Find and sort the records to export. See "Finding records" on page 23 and "Sorting records" on page 33.

3. Choose File menu > Export Records.

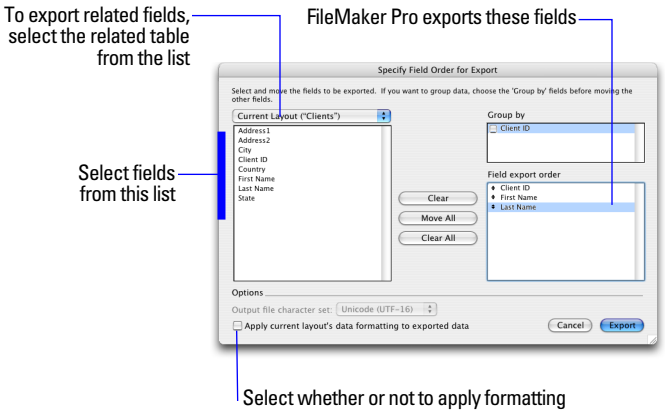
4. In the Export Records to File dialog box, type a name and choose a location for the exported file, and choose a file type.

5. In the Specify Field Order for Export dialog box, select how you want FileMaker Pro to export the data.

To export	Choose
A field on the current layout	Current Layout (LayoutName) from the table list, then double-click a field in the list
A field in the current layout's table	Current Table (TableName) from the table list, then double-click a field in the list

6. If necessary, choose the character set you want the exported file to use.

7. Select whether or not to apply the current layout's formatting to the exported data.



For more information about exporting data, see Help.

Publishing databases on the web

With FileMaker Pro, you can use *Instant Web Publishing* to publish your databases in a web browser, allowing users to find, browse, and modify data.

Using Instant Web Publishing with FileMaker Pro accounts and privilege sets, you can make your web databases secure.

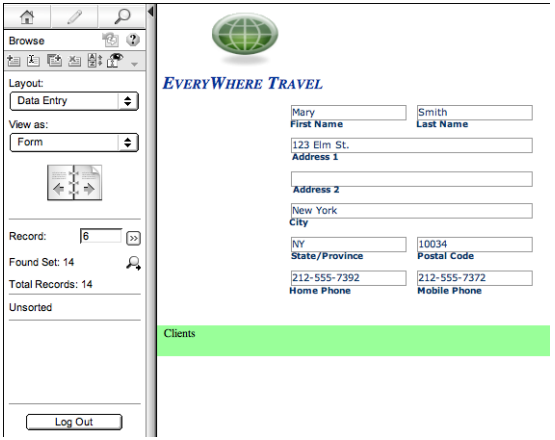
Note FileMaker Pro Instant Web Publishing supports the sharing of files with up to 5 concurrent users. Use FileMaker Server Advanced if you need to share files with more than five concurrent web users.

To work with a published FileMaker Pro database, users need:

- web browser software
- access to the Internet or an intranet. Access to the Internet requires an Internet service provider (ISP); FileMaker does not provide an account for you
- a host computer with continuous access to the Internet or intranet via TCP/IP
- the Internet Protocol (IP) address of the computer that hosts your database files

You can publish your databases as web pages within a local network or intranet, or to users on the web. You don't have to change your database or use additional software.

For more information, see the *FileMaker Instant Web Publishing Guide* in the Electronic Documentation folder inside the English Extras folder.



Shared FileMaker Pro database in web browser

Chapter 5
Protecting databases with accounts and privilege sets

This chapter describes the basics of how to use accounts and privilege sets to restrict what users can see and do in a FileMaker Pro file. You'll learn about:

- planning security for a file
- viewing and creating user accounts and passwords
- viewing and creating privilege sets
- viewing extended privileges

Although your operating system includes file security features, you should use FileMaker Pro access privileges as the fundamental way to control access to and protect the security of your database files.

The security features have been substantially revised since FileMaker Pro 6. For information about how security settings in older databases convert to the current version of FileMaker Pro, see "Converting FileMaker databases from previous versions" on page 101.

Note See Help for detailed, comprehensive information and step-by-step procedures about using FileMaker Pro.

Protecting databases

You can limit what users can see and do in a database file. You can restrict:

- **Data access.** Make particular records or fields from individual tables view-only, or hide them completely.
- **Layout access.** Prevent users from modifying layouts in Layout mode.
- **Access to value lists and scripts.** Prevent users from accessing and modifying value lists and scripts, and from running scripts.
- **Access to file sharing.** Individually enable file sharing via the FileMaker Network, Web Publishing, and ODBC and JDBC.
- **Outputting data.** Prevent users from printing or exporting data.
- **Menu access.** Make only a limited set of menu commands available.

You restrict what users do in a file by requiring them to enter an account name and password when they attempt to open a file. The account name and password they enter determines which privilege set will be used. The privilege set limits what they can do in a file. For more information about accounts and privilege sets, see the following section.

You can define privileges in a shared file while clients are using it. (In FileMaker Pro 6 and earlier, all clients had to close the shared file before you could make changes to privileges.) Any privilege changes that affect a current client do not take effect until the client closes and reopens the file.

The privileges that you set up apply to a single file only and all database tables within that file. If your database solution consists of multiple files that you want to protect, you may want to combine all of these files into one multi-table file. Then you can define privileges in only a single file to manage access to the entire database solution. If you don't want to combine the files into one file, then you should define privileges in each file that contains items you want to protect.

Important If you create a relationship in one file that references a table in another file, you cannot manage access privileges for the related table in the first file. The privileges defined in the other file control access to that table.

Accounts, privilege sets, and extended privileges

Accounts authenticate users who are attempting to open a protected file. Each account specifies an account name and usually a password. Any user that cannot specify valid account information won't be able to open a protected file.

Each database file contains two predefined accounts: Admin and Guest. For more information, see "About the predefined accounts" on page 93.

You may want to create an account for every individual who accesses a file, or you may want to create a small number of accounts that are shared among many individuals, such as a "Marketing" account and a "Sales" account.

- Create accounts for individuals when it is necessary to verify the identities of particular users and you want to manage access at an individual level.
- Create shared accounts when you want fewer accounts to maintain and you are less concerned about managing individual access to the database file.

If you host files on FileMaker Server, you can create External Server accounts that obtain authentication information from an authentication server such as an Apple OpenDirectory or Windows Domain. For more information, see "Creating accounts that authenticate via an external server" on page 97.

A *privilege set* specifies a level of access to a database file. Each database file contains three predefined privilege sets for common types of access levels: Full Access, Data Entry Only, and Read-Only Access. When you create a privilege set, there are many options available that you can use to limit database access, such as which layouts are viewable, which menus are available, and whether printing is permitted. Privilege sets can also restrict access to records or fields from particular tables within a file. Each account is assigned a privilege set, which determines the level of access when someone opens a file using that account.

You can create as many privilege sets as you need to define the types of access you want to permit to a file. For more information about privilege sets, see "About the predefined privilege sets" on page 93.

Extended privileges determine the data sharing options that are permitted by a privilege set, such as whether a privilege set permits users to open a shared file or view a database in a web browser.

The following table lists the default extended privileges that are available. (FileMaker as well as third-party developers may define additional extended privileges to manage access for other software products designed to work with FileMaker Pro or FileMaker Server.)

Extended privilege	Determines if a privilege permits
Access via FileMaker Network	Opening a networked shared file (either a file hosted by FileMaker Pro or FileMaker Server)
Access via ODBC/JDBC	Accessing a database file from another application via ODBC or JDBC.
Access via Instant Web Publishing	Accessing a database file from a web browser via Instant Web Publishing.
Access via FileMaker Mobile	Accessing a database file with FileMaker Mobile software.
Access via XML Web Publishing	Accessing a database file from a web browser or other application via XML web publishing–available for FileMaker Server Advanced only
Access via XSLT Web Publishing	Accessing a database file from a web browser or other application via XSLT web publishing–available for FileMaker Server Advanced only

When a user attempts to open or access a protected file using one of the above methods, the user will be prompted to provide account information. If the privilege set for the account does not permit the type of extended privilege access the user is requesting, the user will get an error indicating that they cannot access the file.

All extended privileges for a file are disabled by default, even in the Full Access privilege set.

Enabling extended privileges only makes it allowable for certain privilege sets to access shared data. To actually access the shared data, you must also set up sharing for the type of access that you want. For more information on sharing data, see chapter 4, "Sharing and exchanging data." For more information on extended privileges, see "Viewing extended privileges" on page 99.

About the predefined accounts

Each database file contains two predefined accounts: Admin and Guest.

Admin account

The Admin account is assigned the Full Access privilege set, which permits access to everything in a file. The Admin account is not assigned a password. In files for which privileges are not set up, the file options are set up to automatically log in to the file using the Admin account.

The Admin account is fully editable. You can rename it, assign it a password, or make the account inactive. You can even delete the Admin account; however, you must assign the Full Access privilege set to at least one other active account.

Important Don't forget the account name and password that is assigned to the Full Access privilege set. If necessary, write it down and store it in a secure place. If you lose or forget this account name and password, you may not be able to access the file.

Guest account

The Guest account permits users to open a file without specifying any account information. The Guest account is not assigned a password. By default, the Guest account is assigned the Read-Only Access privilege set, but you can assign any privilege set you want to the Guest account.

Initially, the Guest account is inactive, which disables the guest option in the password dialog box and prohibits users from opening files as a guest. You can enable the Guest account to permit guest access.

The Guest account is not fully editable. You cannot delete the Guest account, change the Guest account name, or assign it a password.

About the predefined privilege sets

Every new database file contains three predefined privilege sets.

- Full Access: permits accessing and changing everything in the file
- Data Entry Only: permits viewing and entering of data only
- Read-Only Access: permits viewing but not changing data

You cannot change or delete these predefined privilege sets, except to enable or disable extended privileges for them. You can either use them as is, or duplicate them and then modify the duplicate copies.

The following table summarizes the properties of these privilege sets.

	Privilege Sets		
Privilege	**Full Access**	**Data Entry Only**	**Read-Only Access**
Records (in all tables)	create, edit, delete	create, edit, delete	view only
Layouts	all modifiable	view only	view only
Value lists	all modifiable	view only	view only
Scripts	all modifiable and executable	all executable only	all executable only
Extended Privileges	all off	all off	all off
Allow printing	on	on	on
Allow exporting	on	on	on
Manage extended privileges	on	off	off
Override data validation warnings	on	off	off

	Privilege Sets		
Privilege	**Full Access**	**Data Entry Only**	**Read-Only Access**
Disconnect user from FileMaker Server when idle	off	on	on
Allow password modification	on	on	on
Password change number of days	off	off	off
Minimum password length	off	off	off
Available menu commands	all	all	all

You must have Allow printing privileges to save records as a PDF file. You must have Allow exporting privileges to export records as a Microsoft Excel worksheet. For more information about saving records as PDF or Excel files, see "Saving and sending data in other formats" on page 84.

Note The Full Access privilege set is the only one that permits access to the Define Database and Define File References dialog boxes in order to modify fields, tables, relationships, and file references. It is also the only privilege set that permits changing accounts and privileges. Because you cannot enable these privileges in any other privilege set, any user that wants to make database definition changes or privileges changes must open the file with an account that is assigned the Full Access privilege set.

At least one active, FileMaker authenticated account in each file must be assigned the Full Access privilege set. An error message will appear if you edit accounts so that no active account is assigned the Full Access privilege set.

Planning security for a file

A new FileMaker Pro file is initially unprotected. Whenever the file opens, it automatically logs in the user with the Admin account, which is assigned the Full Access privilege set.

- If you simply want to keep someone else from opening a database file on your computer, you can password-protect the file. For more information, see "Password-protecting a file" on page 95.
- If you need to share a database file with others and provide varying levels of file access to different users, you need to plan the security for the file.

To plan the security for a shared file:

1. Determine the privilege sets that you need for the file.

Make a list of the areas of the file that you want to protect, such as particular tables, fields, records, layouts, value lists, and scripts. Plan the number of privilege sets you need to enforce the varying levels of file access that you require.

2. Determine whether you need individual accounts for each user, or group accounts that multiple users can share.

3. Decide if you want to enable the Guest account, which permits users to open the file without specifying account information.

4. Create the privilege sets that you need in the file.

5. Determine if you need to enable any extended privileges for certain privilege sets.

Don't enable extended privileges unless they're needed.

6. Create the accounts you need in the file, and assign the appropriate privilege set to each account.

For more information, see the next section. If you're using the Guest account, assign a privilege set to it as well. Otherwise, disable the Guest account.

7. Open the file using different accounts and test each privilege set that you created. Make sure the restrictions work the way you want, and make any needed corrections to your privilege sets.

Password-protecting a file

If you have a non-shared database file on your computer and you want to prevent others from opening it, you can password-protect the file.

After password-protecting a file, you will be prompted to enter an account name and password every time you open the file. Anyone who does not know this account information will not be able to open the file.

To password-protect a file:

1. Make the following changes to the accounts in the file:

- Edit the Admin account so that it has a different account name, a password, and uses the Full Access privilege set.
- Make sure the Guest account is inactive.
- Delete any other accounts in the file or make them inactive.

2. If necessary, edit the Full Access privilege set to allow yourself any extended privileges you may want for yourself.

Don't enable extended privileges unless they're needed.

Suggestions for creating secure passwords

- Secure passwords are typically eight or more characters in length, and include at least one numeric character.
- If the file is shared via web publishing, account names and passwords can only use characters included in the ISO Latin-1 character set (except colons). To avoid characters that may be interpreted incorrectly over the web, you may want to limit account names and passwords to alphabetic and numeric characters only.

For more information about protecting FileMaker Pro databases, see Help.

Creating accounts and privilege sets

Accounts specify account names and (usually) passwords for a file. When a user opens a file that contains accounts, a dialog box prompts the user to enter account information. When a user opens a file with a correct account name and password, the privilege set assigned to that account determines what the user can do in that file.

Privilege sets specify levels of access to a database, such as which layouts are viewable, which menus are available, and whether printing is permitted.

To create and manage accounts and privilege sets for a file, you need to open the file with an account that is assigned the Full Access privilege set.

You can create and modify accounts and privilege sets in a shared file while clients are using it. (In FileMaker Pro 6 and earlier, all clients had to close the shared file before you could change passwords and groups.) The account changes you make take effect immediately. However, the changes do not disrupt any current clients. For example, if you change the password for an account that is in use by one or more clients, their FileMaker Pro usage is not interrupted. However, they will need to enter the new password the next time they open the file.

You can create as many accounts as you need. You can create individual accounts for each user, or a smaller number of accounts that users can share.

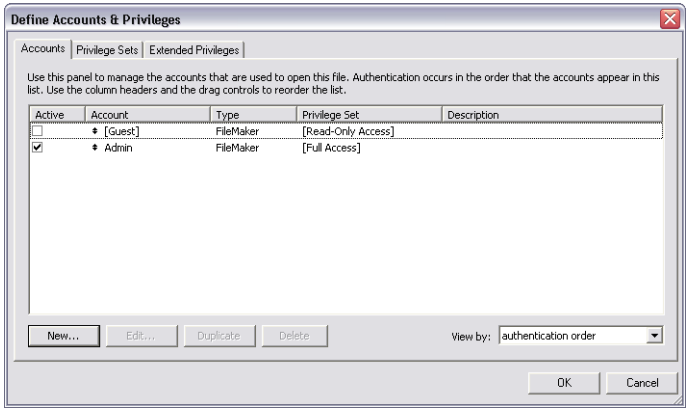
Viewing accounts and privilege sets

The Define Accounts & Privileges dialog box displays a list of all the accounts and privilege sets for a file.

To view the accounts and privilege sets for a file:

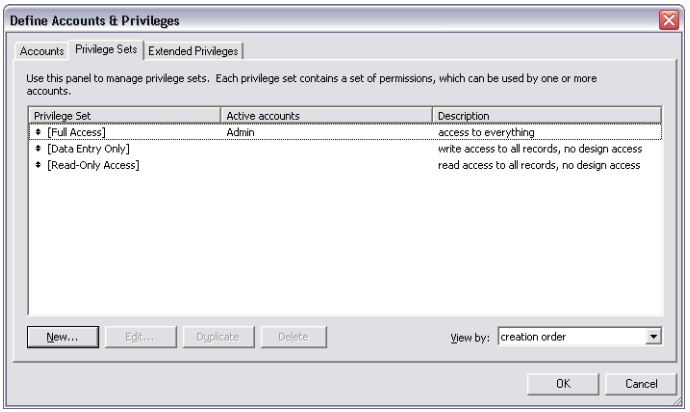
1. Open the database file.
2. Choose File menu > Define > Accounts & Privileges.

You see the accounts defined for this file.



3. In the Define Accounts & Privileges dialog box, click the Privilege Sets tab.

You see the privilege sets defined for this file.



Creating accounts

You can create accounts for every individual who accesses a file, or create fewer accounts that are shared among many individuals, such as a "Marketing" account and a "Sales" account. You must assign a privilege set to each new account.

To create an account:

1. Choose File menu > Define > Accounts & Privileges.
2. In the Accounts tab, click New.

3. In the Edit Account dialog box, for Account is authenticated via, choose FileMaker.

For information about accounts managed by an external server, see "Creating accounts that authenticate via an external server" on page 97.

4. Enter an account name and password for the account.

Tip If you plan to create accounts for individual users, you may want to base each account name on the User Name defined in the Preferences dialog box. This User Name is the default account name that appears in the dialog box that prompts a user for an account name and password. The user won't have to re-type the account name if it matches the User Name.

5. To force the account users to choose a new password the first time they log in, choose User must change password on next login.

In most cases, an account that is shared by multiple users should not force a password change upon first login. Instead, you should specify a password and provide it to the users that need it. Also, the privilege set for a shared account should not permit password changes because one user could change the password and lock out all other users who share the account.

6. For Account Status, choose whether you want the account to be active or inactive.

For example, you may want to keep the account inactive until you finish setting up its privilege set. Users cannot open a database using an inactive account name and password.

7. For Privilege Set, choose the privilege set you want to use with this account.

You can choose an existing privilege set, or choose New Privilege Set and create a new one. For more information, see "Creating privilege sets" on page 98.

8. For Description, enter a description of the account (optional).

9. Click OK.

10. In the Define Accounts & Privileges dialog box, click OK.

11. In the dialog box that appears, enter an account name and password that is assigned the Full Access privilege set, and click OK.

Creating accounts that authenticate via an external server

If you're hosting FileMaker Pro database files with FileMaker Server and your organization uses centrally managed authentication for users and groups such as Apple OpenDirectory or a Windows Domain, you can set up accounts that authenticate users based on your authentication server. This allows you to use your existing authentication server to control access to databases without having to manage an independent list of accounts in each FileMaker Pro database file.

Note Only database files hosted by FileMaker Server can authenticate users against an authentication server. Database files shared by FileMaker Pro won't authenticate against an authentication server.

Important When a database file contains one or more External Server accounts, make sure you use operating system security settings to limit direct access to the file. Otherwise, it might be possible for an unauthorized user to move the file to another system that replicates your authentication server environment and gain access to the file. For more information, see the FileMaker Server documentation.

To create an account that authenticates via an external server:

1. Choose File menu > Define > Accounts & Privileges.
2. In the Accounts tab, click New.
3. In the Edit Account dialog box, for Account is authenticated via, choose External Server.
4. For Group Name, enter the name of a group that is defined on an external authentication server.
5. For Account Status, choose whether you want the account to be active or inactive.
6. For Privilege Set, choose the privilege set you want to use with this account.

The privilege set assigned to the account determines what the externally authenticated group members can do in the database file. You can choose an existing privilege set, or choose New Privilege Set and create a new one. For more information, see the next section.

7. For Description, enter a description of the account (optional).
8. Click OK.
9. In the Define Accounts & Privileges dialog box, click OK.
10. In the dialog box that appears, enter an account name and password that is assigned the Full Access privilege set, and click OK.

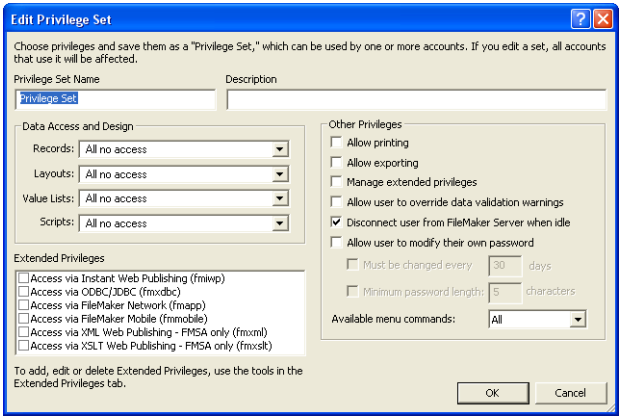
Creating privilege sets

You can assign each privilege set to one or more accounts.

To create a privilege set:

1. Follow the steps above to display the privilege sets for a file.
2. Click New.

The Edit Privilege Set dialog box appears. By default, each privilege set option is set to its most restrictive setting.



3. Enter a name and optional description for the privilege set.
4. Define the privileges for the privilege set.

For details about privilege set options, see Help.

5. Click OK.

After you create the privilege sets that you want, you need to create or edit accounts so that they use the appropriate privilege sets. For more information, see "Creating accounts" on page 96.

For more information about creating accounts and privilege sets, see Help.

About enabling record-level access

You can set individual record access for each table. For example, the privilege set can limit the ability to:

- View, edit, create, or delete all or certain records within each table.
- Access or modify certain fields within each table.

You can only set record access privileges for tables defined in the current file. If the file contains relationships to tables in other files that you want to protect, you need to create accounts and privilege sets in the other files to protect those tables.

For more information about using the Edit Privilege Set dialog box, see Help.

Viewing extended privileges

Extended privileges determine the data sharing options that are permitted by a privilege set for a file. For example, if the file is shared, the Access via FileMaker Network extended privilege determines if the privilege set allows opening the shared file as a client. The Access via Instant Web Publishing extended privilege determines whether the privilege set allows accessing the database from a web browser.

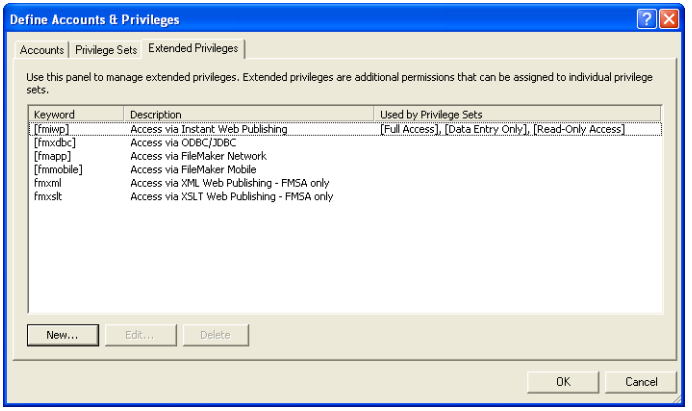
There are six default extended privileges. For more information about them, see “Accounts, privilege sets, and extended privileges” on page 92.

You can view extended privileges in the Define Accounts & Privileges dialog box, as well as enable each extended privilege for selected privilege sets. All of the extended privileges are disabled by default, even in the Full Access privilege set.

It may be necessary to delete an extended privilege that is no longer required.

To view the extended privileges:

1. Open the database file.
2. Choose File menu > Define > Accounts & Privileges.
3. In the Define Accounts & Privileges dialog box, click the Extended Privileges tab.



For more information about extended privileges, see Help.

Chapter 6
Converting FileMaker databases from previous versions

Because FileMaker Pro 7 and FileMaker Pro 8 share the same file format, FileMaker Pro 8 can open FileMaker Pro 7 files without converting them. You can even use FileMaker Pro 8 files with FileMaker Pro 7. However, new features might not work as expected when you open the file in a previous version.

For example:

- **Auto-complete:** If you open the Field Format dialog box (now the Field/Control Setup dialog box) for a field that is set to auto-complete, the auto-complete feature is cleared when you click OK.
- **Drop-down calendar:** In the Mac OS, if you open the Field Format dialog box (now the Field/Control Setup dialog box) for a field that is set up as a drop-down calendar, the field style switches to radio button set when you click OK, even if you haven't made any changes.
- **Tab control:** A layout containing tab panels will open, but the objects that were on the tab panels will appear on top of each other.
- **Importing data:** FileMaker Pro files from pre-7.0 versions of FileMaker Pro need to be converted to the .fp7 format before importing.

FileMaker recommends that, once you have created or opened a file in FileMaker Pro 8, you do not make database design or layout changes using an earlier version of FileMaker Pro, particularly to features that have changed in FileMaker Pro 8.

Converting FileMaker Pro 6 and earlier files

You must convert files created in FileMaker Pro 6 and earlier to the .fp7 file format.

The conversion process makes it possible for you to use files created with pre-7.0 versions of FileMaker Pro with FileMaker Pro 8, but it's important to note that:

- **Manual corrections may be necessary.** You might need to correct items in the converted file that did not convert properly. In some cases, you may need to correct items in the original file and then convert the file again. After you convert any file, you should review the Conversion.log file for items that may need to be corrected.
- **You should test the converted file.** The Conversion.log file may not indicate every item in the file that needs to be corrected. Before you begin using a converted database solution, you should test it thoroughly to make sure every aspect has converted successfully. For example, make sure every script works as you expect, and that accounts and privilege sets provide the required file security.
- **You may want to *migrate* files to FileMaker Pro 8.** When you convert a multi-file relational database, the converted files aren't optimized for use with FileMaker Pro 8. The files are still related, but they are not combined into a single file with multiple, related tables, which may be desirable if you want to make better use of the new features in FileMaker Pro 8. You may want to go a step beyond conversion and *migrate* your files to FileMaker Pro 8, which you can do by either manually combining your files after conversion, or re-creating your database in FileMaker Pro 8 and then importing the data from the original files. After converting, you can import data from separate files into new tables in one file.

This chapter describes the basics of file conversion. It includes:

- an overview of the conversion process
- instructions on how to convert single files or multiple files at once
- information on how to view the Conversion.log file after converting one or more files
- a summary of the top conversion issues you may encounter

If you're converting complex or business-critical databases, refer to the more detailed manual, *Converting FileMaker Databases from Previous Versions*, at www.filemaker.com/downloads.

Conversion overview

If your database solution is fairly simple, you should be able to convert the files, review the Conversion.log file, test your converted files, and use them. For example, simple files that were built from the templates provided with your previous version of FileMaker Pro should convert accurately without a lot of manual corrections afterwards.

If you're converting a multi-file relational database created with custom features such as custom scripts, or a database that's business-critical, you should plan your conversion more carefully.

FileMaker Pro 8 can convert files created with versions 3.x, 4.x, 5.x, and 6.x. If you have files created using FileMaker Pro version 2.x or earlier, you must first convert them to one of the supported formats listed above. Then you can convert the files to FileMaker Pro 8. For more information, see "Converting FileMaker Pro 1.x and 2.x databases" on page 106.

When you convert files, FileMaker Pro 8 preserves the contents of your original files and creates new, converted files in FileMaker Pro 8 format. The content of the original files are not modified, and you can open them in the previous version of FileMaker Pro that created them. The converted files can be opened only in FileMaker Pro 8 and FileMaker Pro 7.

You can convert a single file or convert multiple files at once:

- Use the single-file conversion method for stand-alone database files that don't display related data from other files. For more information, see the next section.
- Use the multiple-file conversion method to convert all the files in a relational database. For more information, see "Converting multiple files at once" on page 103.

Converting a single file

To convert and open a single file:

1. If the file you want to convert is currently open in the previous version of FileMaker Pro, close the file.

If you attempt to convert a file that is currently open, an alert message will appear indicating that the file is already in use, and the file won't convert.

2. Start FileMaker Pro 8.
3. Do one of the following:
   - If you see the Open New or Existing File dialog box, continue with step 4.
   - If you see the New Database dialog box, select Open an existing file, and then click OK.
   - If you don't see any dialog box, choose File menu > Open.

4. In the Open dialog box, select the file to convert, and then click Open.

Note You can also begin conversion by dragging the file onto the FileMaker Pro 8 application icon.

The Conversion dialog box appears, where you can choose to rename the existing file prior to conversion. By default, FileMaker Pro renames the file by adding "Old" to the filename.

5. Do one of the following:

- Skip renaming the old file by clearing the checkbox named Rename old file and clicking OK. It's not necessary to rename the old file if it has an .fp5, .fp3, or .fmj extension because your converted file will have an .fp7 extension. On Windows, the filename extension .fp7 is added to all converted files.
- Rename the old file by entering the name you want and clicking OK. Do this if you're using Mac OS, the file does not have an extension, and you want to continue using the existing filename for the converted file.

The Name Converted File dialog box appears.

6. Enter the filename that you want for the new file.

If you renamed the old file in step 5, the default filename for the converted file is the original filename (with a .fp7 extension, if the original file had an extension). If you did not rename the old file, the default filename is *filename* Converted.

7. Click Save to start the conversion.

During a prolonged conversion, the File Format Conversion dialog box will appear and show the conversion progress. If a file being converted contains indexed fields, you can save time by clicking Skip when the index is being re-created, which postpones indexing until later.

In most cases, FileMaker Pro converts the file and opens it. If conversion doesn't work or error messages appear, see "Solving basic conversion problems" on page 106.

8. Using a text editor such as Notepad (Windows) or TextEdit (Mac OS), open the Conversion.log file located in the folder that contains your converted database.

The Conversion.log file contains a journal of the conversion process that you just completed. Much of it contains status messages that indicate the different file components that were converted. But it also may contain error messages that indicate areas where you may need to make manual corrections to the converted file before testing it further. For more information about the Conversion.log file, see "Reading the Conversion.log file" on page 105.

Converting multiple files at once

FileMaker Pro 8 can convert multiple files at the same time. You should use the multi-file conversion method when you need to convert a database composed of multiple related files, or you simply have many FileMaker Pro files that you want to quickly convert without being prompted to individually rename each file.

When you convert multiple files at the same time, FileMaker Pro prompts you to specify a folder where you want the converted files to be saved, leaving your original files unchanged. FileMaker Pro automatically names each converted file without prompting you. FileMaker Pro won't overwrite any existing files in the folder. Instead, it adds a number to the end of the filename, and increments that number if necessary until a unique name is found.

There are several ways that you can select the files that you want to convert; you can drag and drop the files (or a folder containing the files) onto the FileMaker Pro 8 application icon, or you can select multiple files in the FileMaker Pro Open dialog box.

To convert multiple files at once:

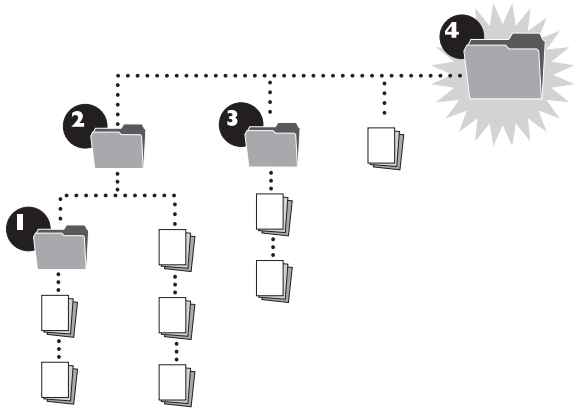
1. If the files you want to convert are currently open in the previous version of FileMaker Pro, close the files.

If you attempt to convert files that are currently open, an alert message will appear indicating that the files are already in use, and they won't convert.

2. In Windows Explorer or in a Finder window (Mac OS) create a new, empty folder for the converted files.

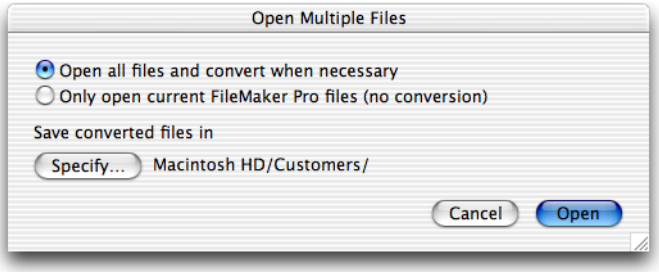
3. Do one of the following to select and open the files you want to convert:

- **Files method:** In Windows Explorer or in a Finder window (Mac OS) select the files you want to convert, and then drag them onto the FileMaker Pro 8 application icon.
- **Folder method:** If a folder contains all of the files you want to convert, drag the folder onto the FileMaker Pro 8 application icon. If you are converting a multi-file relational database in which files are organized in subfolders, you need to convert each folder separately. First create new folders in the same structure for the converted files. Then convert files in subfolders at the lowest level first by dragging the subfolder onto the FileMaker Pro 8 application icon, indicating the correct new destination folder when prompted. When all related files in subfolders have been converted, use the "Files method" described above to convert files located in the original parent folder.



- **Open dialog box method:** In FileMaker Pro 8, choose File menu > Open, and select the files you want to convert in the Open dialog box by holding down Ctrl (Windows) or ⌘ (Mac OS), and clicking each file. (You can also select a range of adjacent files by clicking the first file and then Shift-clicking the last file in the range.) Then click Open.

The Open Multiple Files dialog box appears.



4. Choose Open all files and convert when necessary.

5. Click Specify, choose the folder you created in step 2 where you want to save the converted files, and click OK (Windows) or Choose (Mac OS).

Important Do not choose a folder that contains any of your original files. If you do, then converted files may be renamed (by appending a number to the filename) to prevent the converted files from replacing the original files. This renaming of files could cause file references to convert improperly, which affects relationships and other features that rely on file references.

6. Click Open in the Open Multiple files dialog box to start the conversion.

During a prolonged conversion, the File Format Conversion dialog box will appear and show the conversion progress. If a file being converted contains indexed fields, you can save time by clicking Skip when the index is being re-created, which postpones indexing until later.

FileMaker Pro 8 creates converted files in the folder you specified and opens them, leaving your original files unchanged. On Windows, the filename extension .fp7 is added to all converted files. On Mac OS, the .fp7 extension is added to all converted files that previously had an .fp3, .fp5, or .fmj extension.

If conversion doesn't work or error messages appear, see "Solving basic conversion problems" on page 106.

7. Using a text editor such as Notepad (Windows) or TextEdit (Mac OS) open the Conversion.log file located in the folder that contains your converted database files.

The Conversion.log file contains a journal of the conversion process that you just completed. Much of it contains status messages that indicate the different file components that were converted. But it also may contain error messages that indicate areas where you may need to make manual corrections to the converted files before testing them further. For more information about the Conversion.log file, see "Reading the Conversion.log file" on page 105.

Note If you later need to convert the same files again, make sure you convert the files into an empty folder; move or delete any files from the previous conversion attempt, or create a new folder for the next conversion. This prevents converted files from being renamed during the next conversion which could cause file references to convert improperly.

Reading the Conversion.log file

You should open and read the Conversion.log file after converting one or multiple files. It lists the conversion status and possible problems found during conversion, such as fields with invalid names.

The log file is created in the same folder as your converted files. If you used the multi-file conversion method to convert more than one file at a time, the Conversion.log file contains information for all the converted files.

In most cases, you can correct problems in converted files. If the log file indicates that there is a problem that would be complicated and time-consuming to fix after conversion, you may want to try correcting the problem in the original file using a previous version of FileMaker Pro, and then convert the file again.

Important The Conversion.log file may not indicate every item in the file that needs to be corrected. Before you begin using a converted database solution, you should test it thoroughly to make sure every aspect has converted successfully. For example, make sure every script works as you expect, and that accounts and privilege sets provide the required file security.

Solving basic conversion problems

Here are some suggestions for correcting problems that could occur during conversion.

FileMaker Pro 8 can't open my file

FileMaker Pro 8 can't convert databases that were created with FileMaker Pro 1.x or 2.x. For more information, see the next section, "Converting FileMaker Pro 1.x and 2.x databases."

My file didn't convert properly

- If you are converting a copy of a file, make sure that the original file was closed before you copied it. Otherwise, the copy will not convert correctly.
- Check the Conversion.log file located in the folder with the database you are attempting to convert. For more information, see the previous section, "Reading the Conversion.log file."
- Try recovering the file first using a previous version of FileMaker Pro and then convert the file again.

I received a consistency check or auto-repair message when I opened my original file using my previous version of FileMaker Pro

Try recovering the original file using your previous version of FileMaker Pro. Then open the recovered file using the same version of FileMaker Pro, close the file, and then try converting it with FileMaker Pro 8.

The converted file won't accept my password

Passwords are case-sensitive in FileMaker Pro 8. Make sure you enter your password exactly as it was created in a previous version of FileMaker Pro. If you are the owner of the original file or the database administrator, open the original file using a previous version of FileMaker Pro, and look at the password in the Define Passwords dialog box. If you are not the owner of the file or the database administrator, consult your database administrator for password information. For more information, see "Passwords" in the next section.

Converting FileMaker Pro 1.x and 2.x databases

FileMaker Pro 8 cannot convert databases created with FileMaker Pro 1.x or 2.x. To use these files with FileMaker Pro 8, you must convert them using FileMaker Pro 3.x, 4.x, 5.x, or 6.x, and then convert them again using FileMaker Pro 8.

Note Pre-7.0 versions of FileMaker Pro for Windows can convert only 2.x files. If you need to convert a 1.x file, convert the file on a Mac OS computer using FileMaker Pro 3.x, 4.x, 5.x or 6.x.

If you don't have a pre-7.0 version of FileMaker Pro with which to do the conversion, you can download a trial version of FileMaker Pro 6 from www.filemaker.com and use it to convert files.

Top conversion issues

The following sections briefly describe the top issues that you may encounter when converting FileMaker Pro databases earlier than 7.0 to FileMaker Pro 8. For complete details, see *Converting FileMaker Databases from Previous Versions* on www.filemaker.com/downloads.

Passwords

During conversion, passwords are converted into accounts in FileMaker Pro 8. There are two common password conversion issues:

- For each converted account, both the account name and the password in the converted file are initially set to the password from the original file, which makes all passwords visible to anyone who has Full Access privileges. For security reasons, you should either change each account name so that it no longer matches its password, or change each password so that it no longer matches its account name. (You could also set an option for each account to require a password change by the user upon the next login.)
- Passwords in FileMaker Pro 8 are case-sensitive. Make sure you enter your password exactly as it was created in a previous version of FileMaker Pro. For more information, see "The converted file won't accept my password" in the previous section.

Preserving user dictionary information

During conversion, the reference to a user dictionary is handled differently depending on whether you are using the default user dictionary or a custom user dictionary.

- **Default user dictionary:** When you convert a database file that uses the default user dictionary (user.upr), the converted file points to the user.upr file in the new FileMaker Pro 8 folder. Therefore, you should copy the user.upr file from the previous FileMaker Pro application folder to the FileMaker Pro 8 folder, or export information from the user.upr file to the FileMaker Pro 8 user.upr file before using the converted database.
- **Custom user dictionary:** When you convert a database file that references a custom dictionary file, the converted file continues to look for the dictionary in its previous location. If you move or delete the dictionary from that location, the converted file will no longer have access to information in the custom dictionary. This could happen accidentally if the original custom dictionary file is located in the previous FileMaker Pro folder and you later uninstall the previous version of FileMaker Pro.

To preserve a custom user dictionary, move the dictionary file to your My Documents folder (Windows) or you home folder (Mac OS). Then, after converting a database file, specify that it use the dictionary file in the new location. For more information, see the information on selecting spelling dictionaries in Help.

Print Setup script step stored setup options (Windows)

The Print Setup script step is able to store and use custom paper options that can be recalled when you run a script. This allows you to use a script to print a particular layout with different paper options — for example, to print labels or print on a pre-printed form.

The FileMaker Pro format to create and store options in the Print Setup script step is not compatible with the format used in pre-7.0 versions of FileMaker Pro, and FileMaker Pro 8 cannot completely convert stored setup options in previous files to the new format.

After conversion, if you want to edit stored setup options for the Print Setup script step, you may need to remember what the settings were so that you can enter them again properly. You may want to view the options in the previous, unconverted file so that you can enter them correctly.

Switching windows in scripts

When necessary, pre-7.0 versions of FileMaker Pro would automatically change the active window after running a script. This automatic windowing behavior is no longer supported because script writers can use the Select Window script step to set the active window.

To emulate the behavior of pre-7.0 versions, during file conversion FileMaker Pro 8 automatically inserts Select Window script steps after certain Perform Script and Go to Related Record script steps. To achieve the windowing behavior you want, you may need to insert or delete Select Window script steps.

Boolean functions and find requests

Because FileMaker Pro 7 and 8 do not recognize previously supported alphabetic characters in a number field as numbers, some logical functions that return Boolean true/false results may return the wrong results. Also, some find requests for Boolean content may return different results than in pre-7.0 versions of FileMaker Pro.

The following table shows how Boolean results can differ.

Number field content	In FileMaker Pro 8 and FileMaker Pro 7, evaluates to	In FileMaker Pro 6 and earlier, evaluates to
blank field	False	False
0	False	False
1	True	True
True, Yes, Y, y, T, or t	**False**	**True**
False, No, N, n, F, or f	False	False

If you have used "Yes" or "T" or other text to mean `true` in number fields, Boolean calculations relying on these characters will not return results consistent with pre-7.0 versions of FileMaker Pro.

Find requests for Boolean information are also more restrictive. For example, in a pre-7.0 release of FileMaker Pro, a find request in a number field for `True` would find the values 1, True, Yes, Y, y, T, or t. In FileMaker Pro 7 and 8, this find request would only find the value True. You can modify your find request to make the found set match what was returned in previous releases. You can also use the Find/Replace command to make your data consistent.

File references

A file reference stores the paths that FileMaker Pro searches to access an external FileMaker file. File references are present but not visible in pre-7.0 versions of FileMaker Pro, but in FileMaker Pro 7 and 8 you can view and edit them in the Define File References dialog box.

The following are two file reference conversion issues that may occur:

- **After conversion of a multi-file solution, the files open very slowly.** It's possible that file references are pointing to external locations. You can increase the speed with which files open by resetting file references to local paths, if possible. Also look for file references that contain asterisks in the path, which indicates that the file reference is searching your network for the file. Replace the asterisk with an IP Address or domain name of the computer on which the remote file resides.

- **After conversion, the Define File References dialog box contains multiple versions of the same file reference.** You can manually consolidate the file references if you want. The most efficient way to do this is to create a new file reference and then edit relationships, scripts, value lists, and any other items that may refer to that file to use the new file reference. Then delete all of the old file references that are identical to it.

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