



FileMaker[®] Pro 10

User's Guide

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Contents

Chapter 1

Introducing FileMaker Pro

	9
About this guide	9
Using FileMaker Pro documentation	9
Where to find PDF documentation	10
Online Help	10
Templates, examples, and more information	11
Suggested reading	12
FileMaker Pro overview	13
Creating simple or complex databases	13
Using layouts to display, enter, and print data	14
Finding, sorting, and replacing data	15
Protecting databases with accounts and privilege sets	16
Creating scripts to automate tasks	17
Sharing and exchanging data	17
Saving and sending data in other formats	18

Chapter 2

Using databases

	19
About database fields and records	19
Opening files	22
Opening multiple windows per file	25
Closing windows and files	26
Saving files	26
When FileMaker Pro saves a file	27
About modes	28
Using the status toolbar	29
Viewing records	29
Viewing records in table format	31
Selecting the active record	32
Moving through records	34
Adding and duplicating records	35
Adding and duplicating related records	36

Deleting records	37
Entering data	38
Selecting a field	38
Entering and changing data in fields	38
Finding records	40
Making a find request	41
Performing quick finds based on data in one field	42
Finding text and characters	43
Finding numbers, dates, times, and timestamps	46
Finding ranges of information	48
Finding data in related fields	49
Finding empty or non-empty fields	51
Finding duplicate values	51
Finding records that match multiple criteria	51
Finding records except those matching criteria	53
Saving find requests	55
Deleting and reverting requests	55
Viewing, repeating, or changing the last find	55
Hiding records from a found set and viewing hidden records	55
Finding and replacing data	56
Sorting records	58
Previewing and printing databases	59
Previewing data on a layout	60
Printing records	61
Printing labels and envelopes	63
Printing scripts	66
Printing table and field information	67
Printing the relationships graph	67
Automating tasks with scripts	68
Backing up database files	68
Setting preferences	69

Chapter 3

Creating databases

<i>Creating databases</i>	71
Planning a database	71
Creating a FileMaker Pro file	78
Defining database fields	80
About naming fields	81
About choosing a field type	82
Defining text, number, date, time, timestamp, or container fields	84
Defining calculation fields	85
Defining summary fields	88
Using supplemental fields	91
Setting options for fields	92
Defining automatic data entry	92
Defining field validation	94
About storage and indexing options	96
Defining database tables	97
Creating layouts and reports	98
About layout types	102
Setting up a layout to print records in columns	106
Working with objects on a layout	109
Using the Info palette with objects	110
Selecting objects	114
Working with fields on a layout	115
Placing and removing fields on a layout	116
Setting up checkbox sets and other controls on a layout	118
Deciding where to place related fields	120
About merge fields	120
Formatting field data on a layout	121
Allowing or preventing entry into fields	127
Working with parts on a layout	128
About layout part types	130

Chapter 4

<i>Working with related tables and files</i>	131
About relationships	132
Relational database terminology	135
About the relationships graph	136
About match fields for relationships	137
Types of relationships	138
Planning a relational database	145
Working with the relationships graph	145
Creating relationships	145
Changing relationships	148
Summarizing data in portals	150
About lookups	150
Creating lookups	151
Editing lookups	153

Chapter 5

<i>Sharing and exchanging data</i>	155
Sharing databases on a network	156
Enabling file sharing and hosting files	157
Opening shared files as a client	159
Opening shared databases remotely using a URL	161
Closing a hosted file	162
Importing and exporting data	163
Saving and sending data in other formats	163
Sending email messages based on record data	164
Supported import/export file formats	164
ODBC and JDBC	165
Methods of importing data into an existing file	165
About adding records	166
About updating existing records	166
About updating matching records	166
About the importing process	167
Converting a data file to a new FileMaker Pro file	168
About the exporting process	169
Working with external data sources	170
Publishing databases on the web	172

Chapter 6***Protecting databases with accounts and privilege sets*** 175

Protecting databases	175
Accounts, privilege sets, and extended privileges	176
About the predefined accounts	179
About the predefined privilege sets	180
Planning security for a file	181
Password-protecting a file	183
Creating accounts and privilege sets	184
Viewing accounts and privilege sets	185
Creating accounts	186
Creating accounts that authenticate via an external server	188
Creating privilege sets	189
About enabling record-level access	190
Viewing extended privileges	191

Chapter 7***Converting databases from FileMaker Pro 6 and earlier*** 193

Conversion overview	194
Solving basic conversion problems	195
Converting passwords	195

Chapter 8***Security measures*** 197

Enhancing physical security	197
Enhancing operating system security	198
Establishing network security	198
Backing up databases and other important files	199
Installing, running, and upgrading anti-virus software	201

Index 203

Chapter 1

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.

About this guide

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.

To send your feedback on this guide, see
www.filemaker.com/company/documentation_feedback.html.

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 and New Features Guide for FileMaker Pro and FileMaker Pro Advanced*: contains installation instructions and a list of the new features in the current version
- *FileMaker Pro Tutorial*: contains step-by-step lessons that teach you how to create and use FileMaker Pro databases
- *FileMaker Instant Web Publishing Guide*: describes how to make FileMaker Pro databases accessible to web browser users over an intranet or the internet

- *FileMaker ODBC and JDBC Guide*: describes how to share FileMaker data with other applications using ODBC and JDBC

Where to find PDF documentation

To access PDFs of FileMaker documentation:

- in FileMaker Pro, choose Help menu > Product Documentation
- click the Learn More button in the FileMaker Quick Start Screen
- see www.filemaker.com/documentation for additional 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\English Extras\Electronic Documentation
- Mac OS: Macintosh HD/Applications/FileMaker Pro/English Extras/Electronic Documentation

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 website at www.adobe.com.

All of the PDF files use the tagged Portable Document format (PDF). Tagged PDF files work with assistive technology such as the screen readers JAWS and Window-Eyes for Windows. For more information about tagged PDF files, see the Adobe website 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. Starter Solutions take advantage of the best new FileMaker Pro features, to help you create the most effective database solution for your needs. 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 website 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 2, “Using databases,” in this guide
Small business owner or educator who creates a basic database to start, then improves it over time	Chapter 3, “Creating databases,” in this guide. As features are added to the database, refer to Help
Database administrator	<ul style="list-style-type: none"> ■ All chapters in this guide ■ Help, for information on advanced topics ■ <i>FileMaker Instant Web Publishing Guide</i> ■ <i>FileMaker ODBC and JDBC Guide</i>
New FileMaker Pro user	<ul style="list-style-type: none"> ■ <i>Installation and New Features Guide for FileMaker Pro and FileMaker Pro Advanced</i> ■ <i>FileMaker Pro Tutorial</i> ■ All chapters in this guide
User upgrading from a previous version	<ul style="list-style-type: none"> ■ <i>Installation and New Features Guide for FileMaker Pro and FileMaker Pro Advanced</i> ■ Chapter 7, “Converting databases from FileMaker Pro 6 and earlier,” in this guide

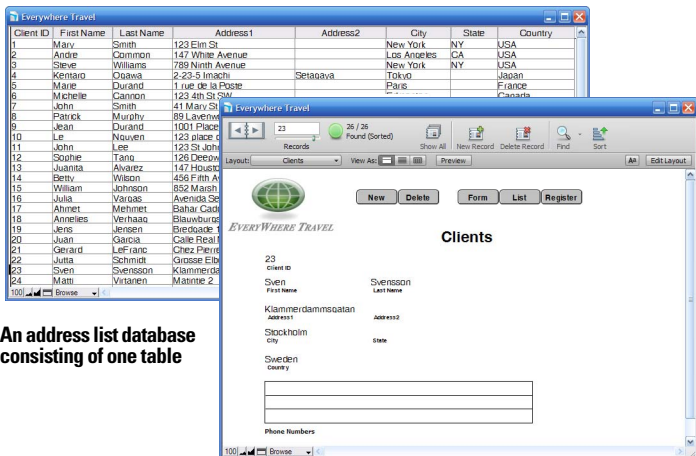
Note If your database was developed using FileMaker Pro Advanced, you may see customized menus or tooltips for layout objects. For an overview of these features, see Help.

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.



An address list database consisting of one 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 (Starter Solutions) 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 3, “Creating databases.”

Using layouts to display, enter, and print data

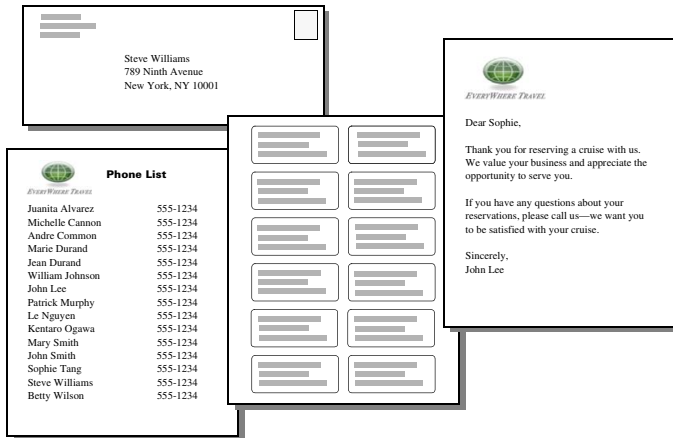
FileMaker Pro layouts determine how information is organized for viewing, printing, reporting, finding, and entering data. Layouts do not store your data—they just display it.

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 in 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.

Not all information needs to be stored in your FileMaker Pro database. For example, you can add a *web viewer* to display a web page on a layout. There are some restrictions for displaying web content in FileMaker Pro.

There are six types of layouts and one view that you can create with the New Layout/Report assistant. Use these different layout types for various purposes, like displaying a data entry screen or printing a totaled sales report or formatting data as 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 98.

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.



Client ID	First Name	Last Name	Address1	Address2	City	State	Country
1	Marv	Smith	123 Elm St		New York	NY	USA
2	Andre	Common	147 White Avenue		Los Angeles	CA	USA
3	Sieve	Williams	789 Ninth Avenue		New York	NY	USA
4	Kentaro	Onawa	2-23-5 Imachi	Setagaya	Tokyo		Japan
5	Marc	Durand	1 rue de la Poste		Paris		France
6	Michelle	Cannon	123 4th St SW		Edmonton		Canada
7	John	Smith	41 Marv St		Sydney		Australia
8	Patrick	Murphy	89 Lavenworth Place	Casteknock	Dublin		Ireland
9	Jean	Durand	1001 Place du Monde		Montreal	Quebec	Canada
10	Le	Nxoven	123 place de la mer		Paris		France
11	John	Lee	123 St John's Rd		Los Angeles	CA	USA
12	Sophie	Tano	126 Deepwater Bay		Los Angeles	CA	USA
13	Juanita	Alvarez	147 Houston Avenue		New York	NY	USA
14	Betty	Wilson	456 Fifth Avenue		New York	NY	USA
15	William	Johnson	852 Marsh Road		London		England
16	Julia	Vivroe	Avenida Sevilla 87		Madrid		Spain
17	Ahmet	Mehmet	Bahar Caddesi 50-15	Etiler	Istanbul		Turkey
18	Annelies	Verhaag	Blauwburgstraat 33		Amsterdam		The Netherlands
19	Jens	Jensen	Bredgade 127		Copenhagen		Denmark
20	Juan	Garcia	Calle Real Manzana	Colonia Aquimero	Mexico Df		Mexico
21	Gerard	LeFranc	Chez Pierre	456 Rue Eiffel	Paris		France
22	Jutta	Schmidt	Grosse Elbstrasse		Hamburg		Germany
23	Sven	Svensson	Klammerdammsgatan		Stockholm		Sweden
24	Matti	Virtanen	Matintie 2		Helsinki		Finland

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 40, “Sorting records” on page 58, and “Finding and replacing data” on page 56.

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 6, “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 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 Manage Scripts (formerly 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. FileMaker Pro makes it easy to manage and maintain scripts, even for complex databases. You can simultaneously view, edit, and manage scripts from different databases. For more information about scripts, see “Automating tasks with scripts” on page 68.

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 import or export data from another file. In addition, you can use ODBC (Open Database Connectivity) and JDBC (Java Database Connectivity) to share FileMaker Pro files with ODBC- and JDBC-compliant applications, or you can access data from external data sources.

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

Note If you need to share files with more than nine 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.

For more information about sharing and exchanging data, see chapter 5, “Sharing and exchanging data.”

Saving and sending data 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 163.

Chapter 2

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

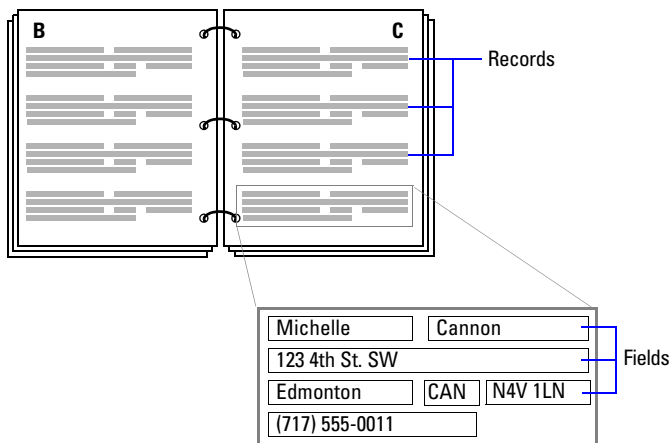
Note See Help for detailed, comprehensive information and step-by-step procedures about using FileMaker Pro.

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. Unlike an electronic *spreadsheet*, which is used to tabulate and calculate data stored in the cells of a rectangular table, a database is a collection of knowledge tied together by a schema that describes the organization of database tables, their fields, and the relationships between the fields and tables.

Certain tasks are better suited to each of these important business productivity tools. Spreadsheets are best used for tasks such as maintaining a business ledger, where data needs to be recorded and calculated, but not presented or analyzed in multiple formats. Databases are best for tasks such as inventory control, where you need to track consumption and losses and generate reports on inventory status over time. An inventory database can sort and report on inventory information in many ways, allowing you to analyze data by item type, by sales figures, by monthly consumption, and so on.

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.



Your address book is like a database

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.

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.

Clients table

Client ID	002
Name	Andre Common
Phone	818-555-1234

Products table

Prod ID	ET3
Product	Travel bag
Price	\$29.00
Stock	34

Invoices table

Client ID	002	
Client Name	Andre Common	
Phone	818-555-1234	
Invoice ID	12345	
Prod ID	Product	Price
ET3	Travel bag	\$29
ET4	Travel book	\$32

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.

FileMaker Pro also allows you to access and view data that is stored in non-FileMaker Pro files. For example, if you have access to data stored in a SQL database, you can display information from the external database and work with that data in your FileMaker Pro file.

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.
- If you see the FileMaker Quick Start Screen, click **Open File** on the left (if it is not already selected), select **Recent Files**, **Favorite Files (local)**, **Favorite Files (remote)**, or click **Browse Files** to locate and select the file you want to open, then click **Open**.
- If you see the Open New or Existing dialog box, locate and select the file you want to open, then click **Open**.

To open a file if FileMaker Pro is already running

1. Choose File menu > Open.
 - If you see the FileMaker Quick Start Screen, click **Open File** on the left (if it is not already selected), select **Recent Files**, **Favorite Files (local)**, or click **Browse Files** to locate and select the file you want to open, then click **Open**.
 - If you see the Open File dialog box, locate and select the file you want to open, then click **Open**.
2. 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.

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

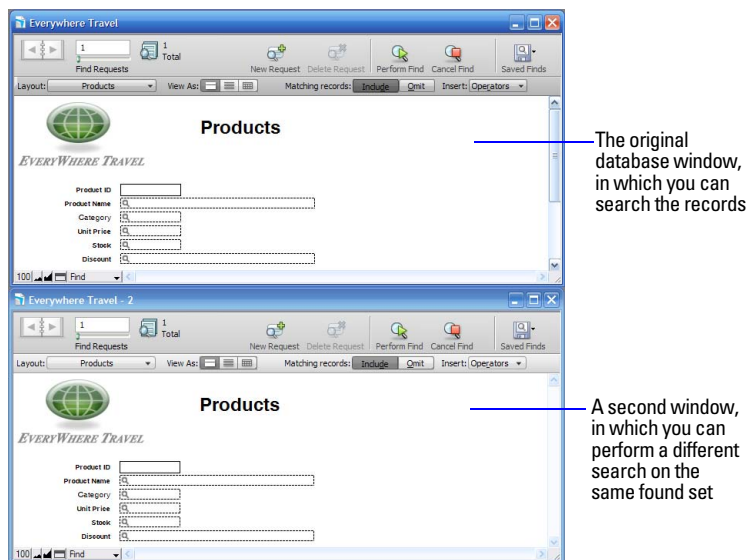
Keep these points in mind:

- If you have **Show recently opened files** selected in the **General** preferences, files you have recently accessed appear in the **File** menu's **Open Recent** list and in the **Recent Files** list in the FileMaker Quick Start Screen. See **Help** for information about adding local or remote files to the **Favorite Files (local)** or **Favorite Files (remote)** list in the FileMaker Quick Start Screen.
- To open and share a file, see “Enabling file sharing and hosting files” on page 157.
- You can open FileMaker Pro files created in Windows on a computer running 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 redefine the FileMaker data sources for related files and for files with external scripts.
- You can set a default account name and password for a file in the **Open/Close** tab of the **File Options** dialog box. When you do so, users automatically log in using a specific account and password (if specified) when they open a database. For more information, see **Help**.

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 layout bar, or choose **View menu > Go to Layout**. For information on finding records, see “Finding records” on page 40. For information on sorting records, see “Sorting records” on page 58. 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

By default, FileMaker Pro automatically saves changes to your data as you work, so there is no Save command. If you want more control over when record data is saved, you can clear the **Save record changes automatically** option individually for each layout. For more information, see FileMaker Pro Help.

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 163.

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 of a file before you make extensive changes. You can’t restore data after you delete a field from the Manage 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 to the file.
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 schemas.

6. Click **Save**.

When FileMaker Pro saves a file

FileMaker Pro saves a file whenever you perform an action such as modifying data. The following actions do not cause the file to be saved:

- Displaying a different record or layout (unless that record or layout has been modified)
- 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 toolbar

- Changing layout object default settings
- Changing ruler display settings

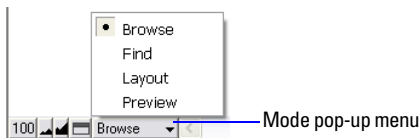
If you perform any of the above actions without also performing an action that does cause a save (such as modifying data), the change won't be saved when you close the file. FileMaker Pro considers the above actions to be minor changes, and they are not saved with the file unless the file is also modified 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 or from the mode pop-up menu at the bottom of the document window.



Use this mode To

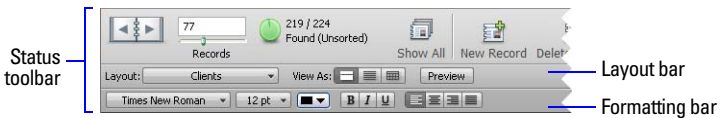
Browse mode	Work with the data in a file. You can add, view, change, sort, omit (hide), and delete records. Browse mode is where you'll do most of your work, such as data entry.
Find mode	Search for particular records that match a set of criteria. You can then work with this subset of your records, called the <i>found set</i> . After you find a group of records, FileMaker Pro returns to Browse mode so you can begin working with them.

Use this mode To

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.

Using the status toolbar

The status toolbar provides quick access to many FileMaker Pro menu commands. In all modes, it includes navigation tools, customizable buttons, and a layout bar for working with layouts. In Layout mode, it includes layout tools. Move the pointer over a button to see its description. You can also switch modes by clicking buttons in the status toolbar. The buttons in the status toolbar vary depending on which mode you're in.



For more information, see [Help](#).

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.

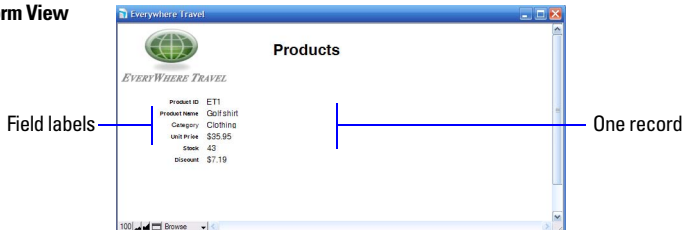
To view records

Do this in Browse mode or Find mode

Individually	Choose View menu > View as Form , or click Form View in the layout bar.
In a list	Choose View menu > View as List , or click List View in the layout bar.
In a spreadsheet-like table	Choose View menu > View as Table , or click Table View in the layout bar.

The following illustration shows the same layout in three views.

Form View



List View

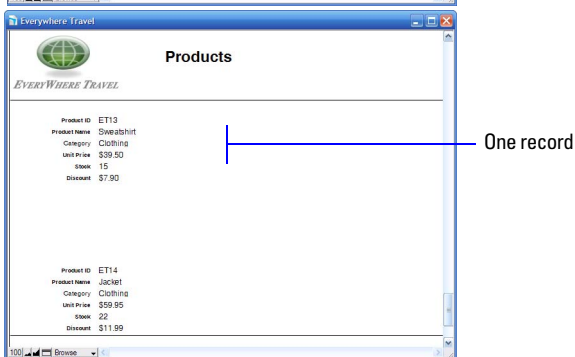
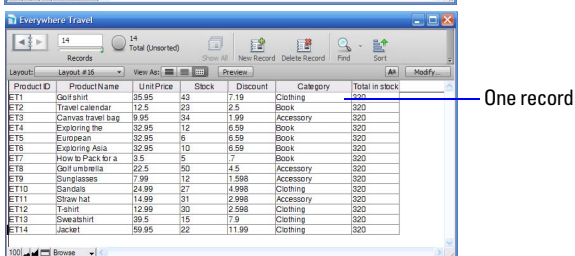



Table View

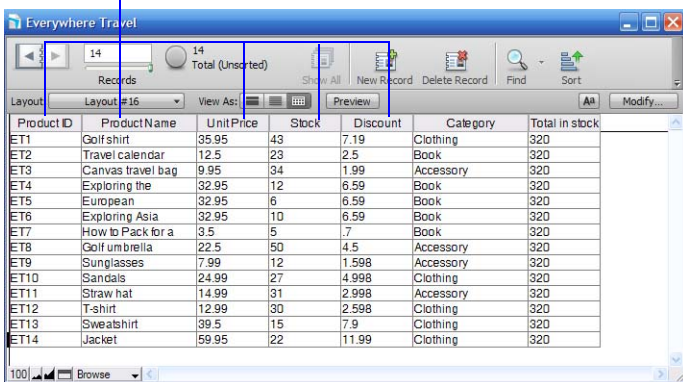


Viewing records in table format

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	<ul style="list-style-type: none"> ■ 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. <p>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.)</p>
Display more fields or hide fields	Click Modify in the layout bar.

Column headings. Each column displays one field from the current layout. If you've added a tab control, fields from all panels are displayed.



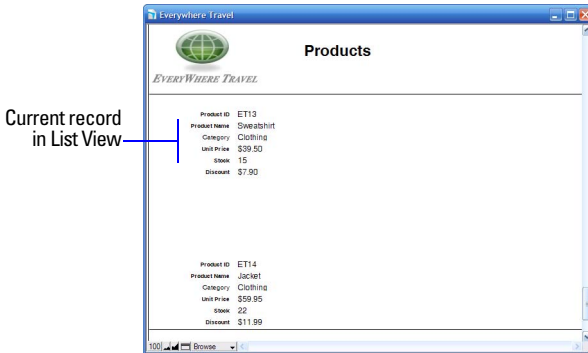
Selecting the active record

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 25.

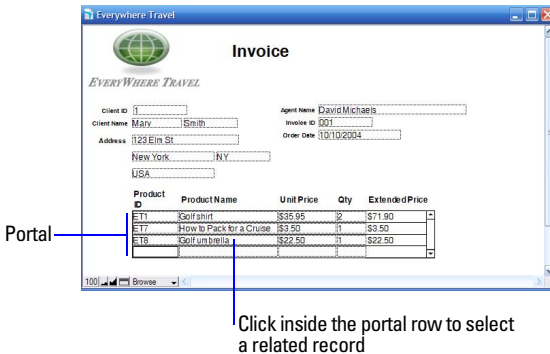
In this view The active record is

Form View The record that you're displaying.

List View or Table View 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.



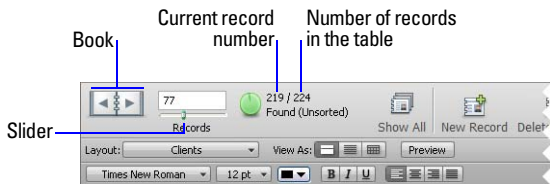
To select a related record in a portal, select the portal row (click inside the row but outside any fields in the row).



For information about related records and portals, see chapter 4, “Working with related tables and files.”

Moving through records

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



To move

Do this

To the next record in the current table

Click the right page of the book or choose **Records menu > Go to Record > Next**.

To the previous record in the current table

Click the left page of the book 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 > Go To...**, then type the number of the record.

Quickly through records

Drag the slider right or left to move forward or backward.

Through records in List View or Table View

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 40.

You can also use a mouse scroll wheel to move through records. 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 in the correct position in the sort order when you commit the 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 58.

To	Do this in Browse mode
Add a new blank record	In Browse mode, click New Record in the status toolbar. 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 32.)
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 92.

To enter or change values in the new record, see “Entering and changing data in fields” on page 38.

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. For more information, see "Creating relationships" on page 145.

To	Do this in Browse mode
Create a record in the current table	Click New Record in the status toolbar.
Add a record to a related table	<ul style="list-style-type: none"> 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 .

Portal with related records from Line Items table

Type in the last row of the portal to add a related record to the Line Items table

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. In the status toolbar, click 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. In the status toolbar, click 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 40.) Choose Records menu > Delete Found Records , then click Delete .
All records in a database	Click Show All in the status toolbar, or 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.

Note For information about how FileMaker Pro uses system formats to display and sort dates, times, and numbers, see Help.

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}).

To	Click in the field in Browse mode, then
Enter data in a date field	<p>Type one date on one line in the field. Type the day, month, and year as numbers (for example, 3/3/2010), separated by a nonnumeric character like – (minus) or / (forward slash).</p> <p>Note You cannot use a : (colon) as a date separator.</p> <p>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.</p>
Enter the current date in a date, number, or text field	<p>Choose Insert menu > Current Date.</p> <p>Select the date using the drop-down calendar, if available.</p>
Enter data in a time field	<p>Type the time of day (or time duration) as:</p> <ul style="list-style-type: none"> ■ hours ■ hours and minutes ■ hours, minutes, and seconds ■ hours, minutes, seconds, and fractional seconds <p>Separate hours, minutes, and seconds by a nonnumeric character like : (colon).</p> <p>Separate fractional seconds by a . (period).</p> <p>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.)</p>
Enter the current time in a time, number, or text field	<p>Choose Insert menu > Current Time.</p>
Enter data in a timestamp field	<p>Type the date and time (for example, 10/15/2010 3:15:05 PM). Type the day, month, and four-digit year as numbers, separated by a nonnumeric character like – (minus) or / (forward slash).</p> <p>Note You cannot use a : (colon) as a date separator.</p> <p>Then type the time of day as:</p> <ul style="list-style-type: none"> ■ 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 <p>Separate hours, minutes, and seconds by a nonnumeric character like : (colon).</p>

To	Click in the field in Browse mode, then
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 118.
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

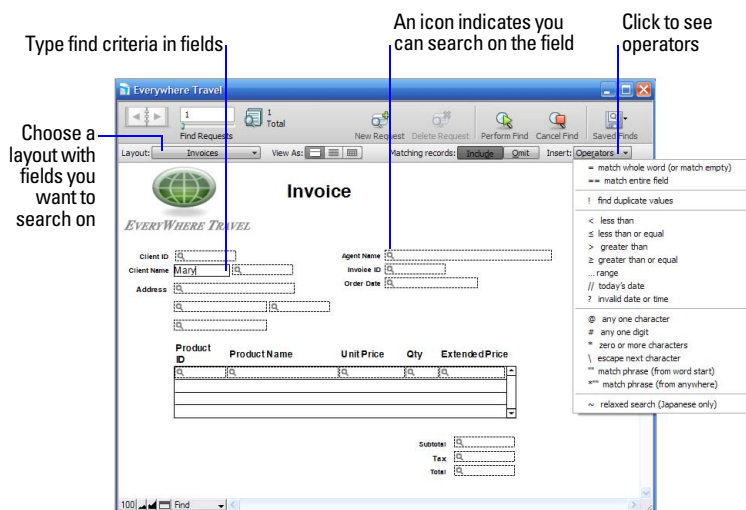
To make a find request:

1. Switch to Find mode by clicking Find in the status toolbar.
2. From the Layout pop-up menu, select a layout that includes the fields that contain the data you want to search.

If necessary, you can change layouts and enter criteria on more than one layout.

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

You can use the Insert Operators list in the layout bar to help you enter criteria. You can click Omit to exclude records matching a specific set of criteria.



4. Click Perform Find.

Your find request returns a found set of records. The light green area of the pie chart in the status toolbar indicates the portion of the total records displayed.

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 \mathbb{X} -period (Mac OS).
Change or refine criteria after performing a find request	See “Viewing, repeating, or changing the last find” on page 55.
Narrow an existing found set	See “Constraining (narrowing) a found set” on page 51.
Broaden an existing found set	See “Extending (broadening) a found set” on page 52.
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 Roman characters (works with fields that use any language except Japanese)	The characters	<code>Chris Smith</code> finds Chris Smith, Smith Chris, Chris Smithson, and Smith Christenson
Words that start with Japanese Hiragana, Katakana, or Kanji characters	The characters between <code>=</code> and <code>*</code>	<code>= 小田 *</code> finds 小田, 小田山, and 小田川
A phrase or sequence of characters that match when they are the first characters in a word (match phrase from word start)	The literal text (characters), including spaces and punctuation, between double quotation marks (")	<code>"Marten and Jones Interiors"</code> finds Marten and Jones Interiors but not Jones and Marten Interiors <code>", Ltd."</code> finds all companies with ", Ltd." in the name, but not those without the comma <code>"Spring"</code> finds Springville but not ColdSpring or HotSpring
Words with one or more unknown or variable characters (any one character)	One wildcard character (<code>@</code>) for each unknown character	<code>Gr@y</code> finds Gray and Grey <code>@on</code> finds Don and Ron but not Bron
Invalid characters in a text field	<code>?</code>	Invalid characters display as blank characters Note To find the <code>?</code> character, search for <code>"?"</code>
Digits in a text field (any one digit)	A <code>#</code> character for each digit	<code>#</code> finds 3 but not 30 <code>##</code> finds 30 but not 3 or 300 <code>#3</code> finds 53 and 43 but not 3

To find	Type this in the field	Examples
Words with zero or more unknown or variable text characters in a row (zero or more characters)	* for all unknown characters	<p>Jo*n finds Jon and John</p> <p>J*r finds Jr. and Junior</p> <p>*phan* finds Phan and Stephanie</p>
Operators or other non-alphanumeric characters, such as punctuation or spaces	The literal text (characters), including spaces and punctuation, between double quotation marks (")	<p>"@" finds @ (or an email address, for example)</p> <p>"," finds records containing a comma</p> <p>" " finds three spaces in a row</p>
A character with special meaning, such as the find operators recognized by FileMaker Pro: @, *, #, ?, !, =, <, >, " (escape next character)	\ followed by the special character	<p>\ "Joey\" finds "Joey"</p> <p>joe y\@abc.net finds the email address joe y@abc.net</p>
Words with accented characters	The literal text (characters), including spaces and punctuation, between the double quotation marks (")	<p>"òpera" finds òpera but not opera</p> <p>(òpera without quotes finds both òpera and opera)</p>
Partial phrases, a sequence of words or characters (match phrase from anywhere)	Characters, punctuation, and spaces between double quotation marks (" "); use * to find this text in the middle of a longer text string	*"son & Phillips" finds Johnson & Phillips and Paulson & Phillips
Exact matches of the text you specify (match entire field)	== (two equal signs) for a field content match	<p>==John finds John but not John Smith</p> <p>==John Smith finds John Smith but not Smith, John or John Smithers</p>

To find	Type this in the field	Examples
Exact matches of whole words you specify (match whole word)	=	=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
Words that contain Japanese Hiragana, Katakana, and Kanji characters (Japanese-indexed fields only)	The characters	京都 finds 京都, 東京都, and 京都府
Kana characters in a Japanese-indexed field without differentiating between Hiragana/Katakana, Voiced/Semi-Voiced/Unvoiced Kana, Small/Regular Kana, and Kana Voiced/Unvoiced Iteration Marks	~ (tilde) and the character, to do a relaxed search	~は finds は, ぱ, ぽ, ハ, バ, and ヲ
Ranges of information	See “Finding ranges of information” on page 48.	
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.	f red finds fred but not Fred

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 82.

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	. 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
A date in a date field or in a calculation field that produces a date result	The date as digits, separated by a valid date separator character (such as a slash or hyphen)	3/3/2010 finds 3/3/2010, March 3, 2010, and 3-3-2010
Today’s date in a date field or in a calculation field that produces a date result	//	// finds April 4, 2010 (when the current date is 4/4/2010)
A time in a time field or in a calculation field that produces a time result	The time as digits, separated by colons	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 valid date separator character, then the time as digits, separated by colons	3/3/2010 12 : 53 : 09 PM finds 3/3/2010 12:53:09 PM
Invalid dates, times, timestamps, or calculated date or time results	?	? finds: Next Tuesday or 2/33/2010 in a date field, or midnight in a time field

To find	Type this in the field	Examples
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."	

Finding ranges of information

To find values that are	Use this operator	Examples
Less than a specified value	<	<40 <9/7/2010 <M
Less than or equal to a specified value	<= or ≤ (Mac OS)	<=95129 ≤05:00:00 <=M
Greater than a specified value	>	>95129 >9/7/2010 >M
Greater than or equal to a specified value	>= or ≥ (Mac OS)	>=100 >=9/7/2010 ≥8:00 ≥M
Within the range you specify. A range is different based on the data type:	.. or ... (two or three periods)	12:30...17:30 1/1/2010...6/6/2010 A...M
<ul style="list-style-type: none"> ■ 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) 		

To find dates	Type this in the field
In June 2010	6/2010
From July 2010 through October 2011	7/2010...10/2011
That occur on a Friday	=Friday
From the 10th through the 16th of October or November 2010 (if the date format is MM/DD/YYYY)	{10...11}/{10...16}/2010

To find dates**Type this in the field**

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 2010 `5/2010 7 PM`

That occur on a Monday in 2010 `=Mon 2010`

From the 10th through the 16th of November 2010 and from 3:00 PM to less than 6:00 PM (if the date format is MM/DD/YYYY) `11/{10..16}/2010 {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 4, “Working with related tables and files.”

For information about omitting related records, see “Finding records except those matching criteria” on page 53.

Find request

Invoice ID	<input type="text"/>
Name	<input type="text"/>
Item ID	Item
<input type="text"/>	Computer
<input type="text"/>	
<input type="text"/>	
<input type="text"/>	

Records in table

Invoice ID	E154
Name	Alvarez
Item ID	Item
I100	Computer
I202	Desk
I153	Lamp
I229	Bookcase
I448	Chair

Invoice ID	E153
Name	Tang
Item ID	Item
I202	Desk
I443	Long table
I153	Lamp
I288	Round table
I100	Computer

Invoice ID	E152
Name	Durand
Item ID	Item
I384	Swivel chair
I554	Panels
I288	Round table
I100	Computer
I448	Chair

Finding empty or non-empty fields

To find fields that are	Type this in the field
Not empty (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, in Find mode, 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 Perform Find.

Constraining (narrowing) a found set

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

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. Perform a find to find all of the employees who work in Sales.
FileMaker Pro displays the found set in Browse mode.
2. Click Find 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. Click **New Request**. Enter the second (set of) criteria. Continue adding requests for each (set of) criteria, then click **Perform Find**.

You can navigate among multiple requests using **Go to Request** on the **Requests** menu or clicking the book 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.

Extending (broadening) a found set

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

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

1. Perform a find to find customers in New York.

FileMaker Pro displays the found set in Browse mode.

2. Click Find 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 54.

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. Click Omit in the layout bar.



Click Omit to exclude records that match the request

3. Click Perform 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. Click **New Request**.
3. Type criteria for the records to exclude (type `New York` in the `City` field).
4. Click **Omit**.
5. Click **Perform 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 US, the found set contains all clients in Paris, France but none in Paris, Texas or anywhere else in the US.
 - If the order of the requests is reversed (the first request omits all clients in the US 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 US.
- 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 4, “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 25.
- To omit records from a found set after performing a find, see “Hiding records from a found set and viewing hidden records” on page 55.

Saving find requests

When you have a complex find request that you want to use regularly, you can save the request and retrieve it when you need it later. You can save and retrieve find requests without having to go to Find mode. FileMaker Pro automatically saves the last five finds you have performed so you can access them again. Once a find is saved, the saved find is also available to any network clients that share the account. For more information about saving find requests, see Help.

Deleting and reverting requests

To delete a request, go to the request you want to delete, then click **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, switch to Browse mode. To repeat the find, click **Find**. Or you can modify the find criteria, then click **Perform 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 click Omit in the layout bar.
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 .

To	Do this
View the omitted set	Click Show All in the status toolbar.
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.
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.

Click	To
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. When you add a new record to a sorted found set, the new record appears in the correct position in the sort order when you commit the record.

To sort the records in the current found set:

1. In Browse mode, click **Sort** in the status toolbar.
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 information about how FileMaker Pro uses system formats to sort and display dates, times, and numbers, see Help.

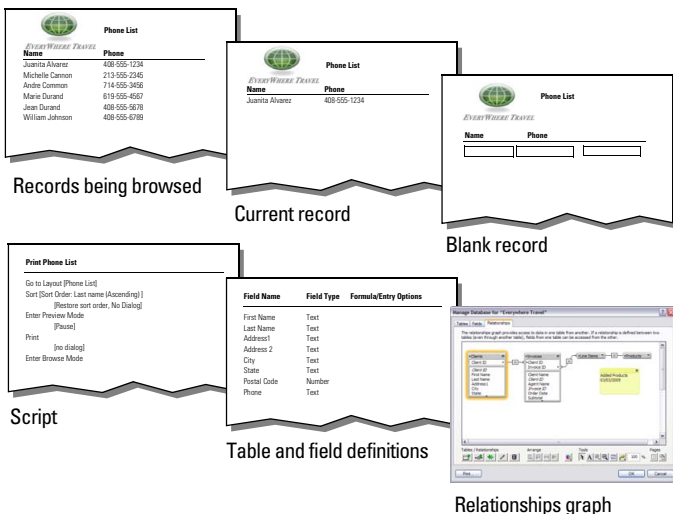
Previewing and printing databases

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 98.



You can print data based on the current layout or 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, switch to 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.

If you're in Preview mode, you can also click Print Setup (Windows) or Page Setup (Mac OS) in the status toolbar.

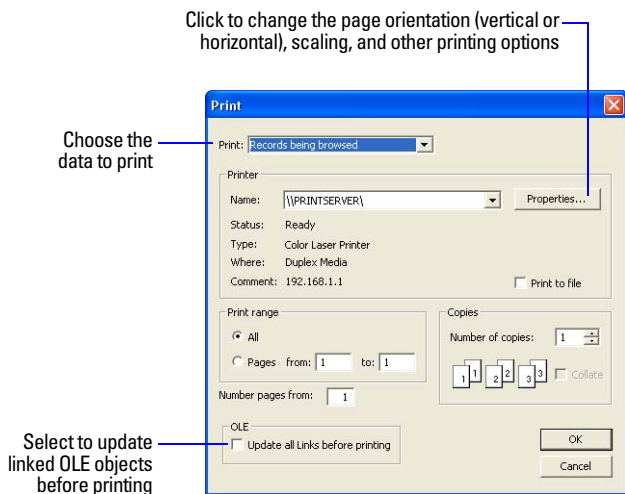
For information about printer options, refer to your printer and system documentation.

3. 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. Switch to Preview mode to see exactly how your paper copy will look.

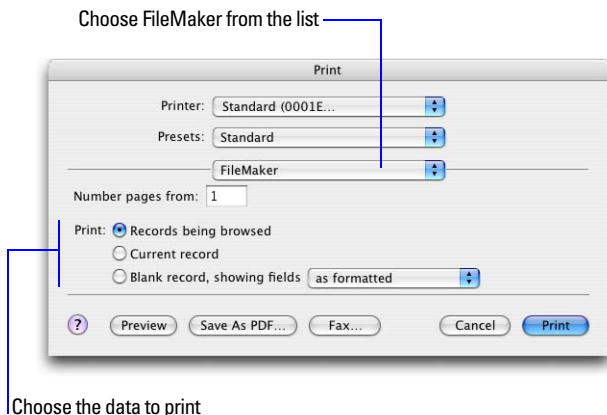
Some items, like sliding objects, records arranged in columns, and variable information like page numbers, appear correctly only in Preview mode. If a record contains tab controls, only the tab panel that is in the front is printed.

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 labels and envelopes

You can create layouts for formatting and printing data onto mailing labels and envelopes. The process for printing envelopes is similar to that for printing labels.

You use the New Layout/Report assistant to create a Labels layout that includes data from the fields you choose, arranged to print on many types of label stock (for example, Avery 4014). FileMaker Pro provides the dimensions of numerous standard label types and their codes. If the label type you want isn't available, you can specify custom label dimensions.

Labels layouts use *merge* fields, which are placeholder fields for displaying and printing only; you can't enter data into merge fields. Merge fields expand and contract to fit the data in the field as needed, closing up space if the field is empty.

There are three general steps for creating and printing labels:

1. Create a Labels layout.
2. Set up the merge fields.
3. Print the labels.

Tip If you need help as you use the New Layout/Report assistant, click the **Help** button in each panel.

Creating a Labels layout

1. Open the file that contains the data you want to print on labels.
2. Find the records containing the data you want to print on labels.
3. Switch to Layout mode.
4. Click **New Layout/Report** in the status toolbar, or choose **Layouts menu > New Layout/Report**.
5. In the New Layout/Report assistant, for **Layout Name**, type a name for the layout.

To have the layout name appear in menus used for choosing layouts, select **Include in layout menus**.

6. For **Select a layout type**, click **Labels** (for data that reads top to bottom horizontally). Or click **Vertical Labels** (for data that reads right to left vertically). Then click **Next**.

For an Envelope layout, click **Envelope**, and skip to “Choosing and formatting the merge fields.”

7. Specify the measurements of your mailing labels.

- To choose a predefined measurement based on common label types, for the **Use label measurements** for list, choose the code that matches your labels. (You see this information on the package your labels came in.) FileMaker Pro creates a Labels layout that uses the exact dimensions of label stock code you choose.
- To specify a custom measurement, choose **Use custom measurements**, and enter values for **Labels across the page**, **Width**, and **Height**. Measure the unused margins on the label stock. Then select **Fixed page margins** and enter values for **Top**, **Bottom**, **Left**, and **Right**.

8. Click Next.

Choosing and formatting the merge fields

1. In the next panel, for the **Available fields** list, double-click the first field whose data you want on the labels.

<<field name>> appears in the **Label Contents** area. Angle brackets indicate this is a merge field, and field data will display in and print on the labels.

To include fields from related tables, choose the table from **Available fields**.

2. Continue selecting the fields you want on the labels.

Include all punctuation, blank spaces, and line breaks (to place a merge field on the next line) that you want to print on the labels.

3. Click Next.

Previewing and printing labels

1. In the next panel:

- To see how the data will appear on the labels before printing them, select **View in Preview mode**, and click **Finish**.
- To edit the labels, select **View in Layout mode**, and click **Finish**.

2. To print labels from **Browse**, **Layout**, or **Preview** modes, load the labels into your printer according to the instructions that came with your labels and your printer. Then choose **File menu > Print**, choose the printer and any additional options, and click **Print**.

Keep these points in mind:

- To choose options for how you want labels printed on the page, choose **Layouts** menu > **Layout Setup**, and click the **Printing** tab. Then choose the number of columns (labels) across and the direction in which you want the labels printed, and set custom page margins, if needed.
- You may need to adjust your printer settings to print the labels correctly. Choose **File** menu > **Print Setup** (Windows) or **Page Setup** (Mac OS).
- Some labels might not have the same number of printed lines as others. This happens because if there is no data in a field, FileMaker Pro closes up the blank space.


For more information about creating a layout for labels or envelopes, choosing printing and layout setup options, and additional considerations when you create a Labels or Envelope layout, see FileMaker Pro Help.

Printing scripts

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

1. Choose **Scripts** menu > **Manage Scripts**, or choose **File** menu > **Manage** > **Scripts**.
2. In the **Manage 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  at the bottom of the dialog box.
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 > Manage > 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 > Manage > 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 Manage Scripts 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

FileMaker Pro makes it easy for you to manage scripts. You can display a default script to use as a template when writing your own scripts. You can open several scripts at once to compare them. You can copy and paste entire scripts between files. You can copy and paste script steps from one script to another script in the same file or to a script in a different file. You can assign scripts to groups to make it easy to find scripts of a specific type (for example, copy an entire group of scripts to another file or delete an entire group of scripts). And you can design scripts to run when a particular event occurs (such as when users enter a field, press a key, or add a new record to the database).

Procedures for creating and managing 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 file back-up recommendations, see “Backing up databases and other important files” on page 199. 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 3

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.

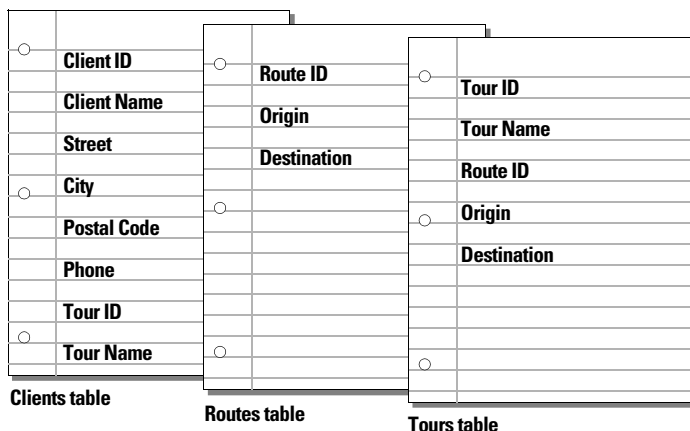
- Determine the database tables and the data they will include, and, in turn, which fields you will need.

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.

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

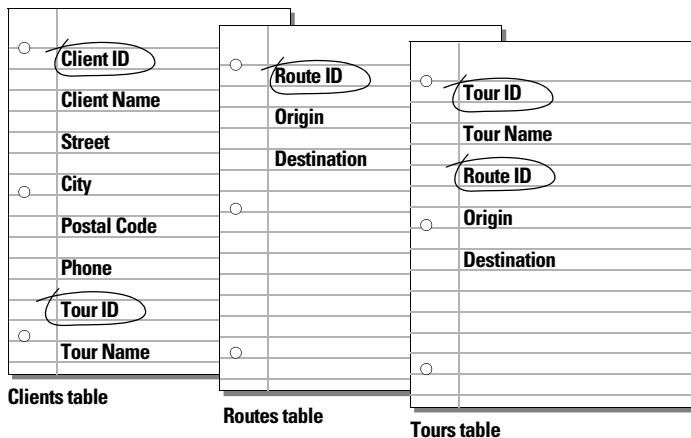
For example, a database for a travel agency might include these tables: a Clients table, which stores client information; a Routes table, which stores route information; and a Tours table, which stores the tours and their current prices.

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 137.

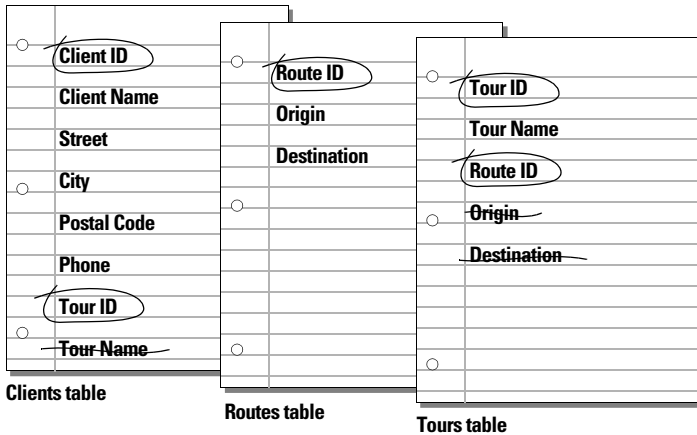


For example, in the Clients table you might want to assign each client a unique, identifying number. You wouldn't enter a client identification number into the table unless you had a new client to add, so the existence of a client number determines the existence of a record.

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.

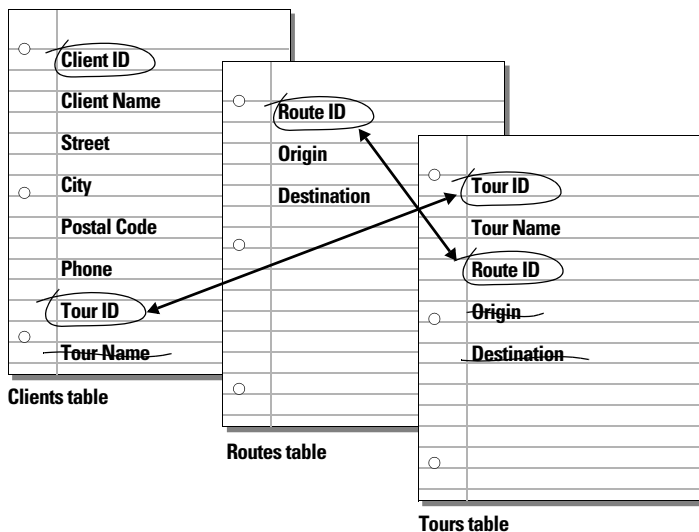
For example, the fields in one record of the Clients table together store all the information about one client.



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.

- 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 4, “Working with related tables and files.”

- 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 156.

- 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 6, “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 98.

- 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
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 14.** Create your database.

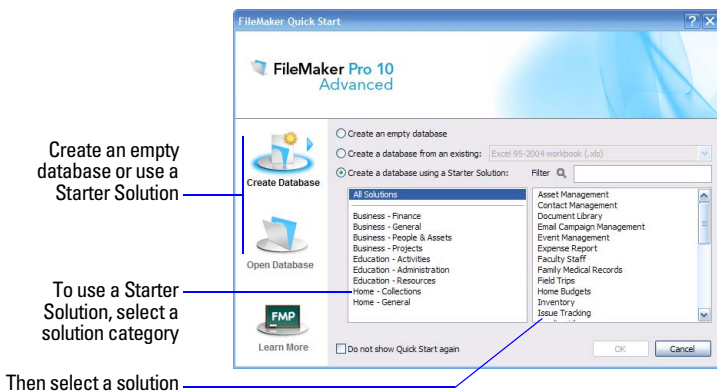
Creating a FileMaker Pro file

You can create a file from a FileMaker Pro Starter Solution, or *template*—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 26.

If you didn’t install the FileMaker Pro Starter Solutions, you can perform a custom installation to install all the Starter Solutions on your computer or download individual Starter Solutions from the FileMaker website. For more information, see Help.

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



FileMaker Pro Quick Start Screen

2. In the FileMaker Quick Start Screen, do one of the following:

To	Do this
Create a file using a Starter Solution	Click Create a database using a Starter Solution , select All Solutions or a specific solution category in the list on the left, then double-click the name of a solution on the right.
	<p>Notes</p> <ul style="list-style-type: none"> ■ If the FileMaker Quick Start Screen doesn't appear, Show FileMaker Quick Start Screen isn't selected in the General tab of the Preferences dialog box. ■ If the FileMaker Quick Start Screen appears but there are no FileMaker Pro Starter Solutions displayed in it, the Starter Solutions weren't installed.
Create a file without using a Starter Solution	Click Create empty database , then click OK .
Open an existing file	See "Opening files" on page 22.

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**.

- If you are creating a file using a Starter Solution, the file opens ready for you to enter data. You can modify fields and layouts in Starter Solutions. For more information, see the remaining sections in this chapter.
- If you are creating an empty database, the Manage 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.

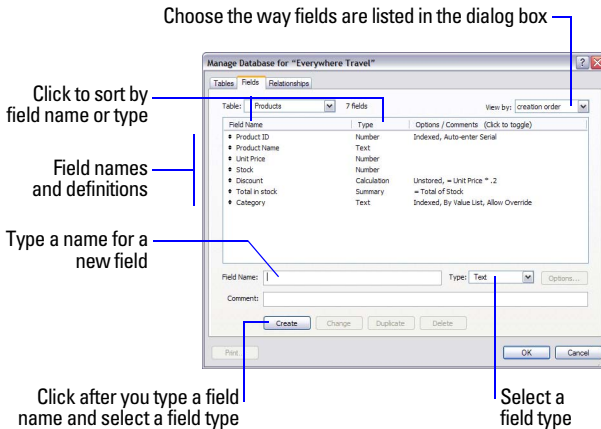
Defining database fields

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 92 for information on setting these options.

Product ID	ET14	These fields store text
Product Name	Jacket	
Category	Clothing	This field stores multiple values
Colors	Blue Black	
Unit Price	\$52.50	This field stores only numbers
Discount	\$5.25	This field calculates a value based on another value in the record (“Discount” is 10% of “Unit Price”)

See “Formatting field data on a layout” on page 121 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 Manage 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, 10/25/2010 2:39:46 AM
Container	<ul style="list-style-type: none"> ■ 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 7.5 ■ Software
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.

The diagram illustrates the relationship between individual invoice records and a summary report. Three overlapping windows titled 'Everywhere Travel' show individual invoices. The bottom-most invoice is for Client ID 1, Client Name Mary Smith, Address 123 Elm St, New York, NY, USA, Agent Name David Michaels, Invoice ID 001, and Order Date 10/10/2004. It lists three products: ET1 (Golf shirt, \$35.95, Qty 2, Extended Price \$71.90), ET7 (How to Pack for a Cruise, \$3.50, Qty 1, Extended Price \$3.50), and ET8 (Golf umbrella, \$22.50, Qty 1, Extended Price \$22.50). Summary fields at the bottom show Subtotal: \$97.90, Tax: \$7.83, and Total: \$105.73.

To the right, a 'Sales Report' window shows a summary of all invoices. It has columns for Agent, Item, Qty, and Amount. The report lists all items from all invoices, with summary rows for each agent and a grand total. Blue lines connect the 'Total' field of the bottom invoice to the 'Total' row for David Michaels in the sales report, and the 'Total' field of the bottom invoice to the 'Grand Total' row at the bottom of the sales report.

Agent	Item	Qty	Amount
David Michaels	ET3	1	\$29.95
David Michaels	ET4	1	\$32.25
David Michaels	ET1	2	\$73.90
David Michaels	ET5	3	\$98.85
	Total		\$234.95
Sophie Tang	ET6	2	\$64.50
Sophie Tang	ET7	5	\$12.50
Sophie Tang	ET2	2	\$25.00
	Total		\$102.00
	Grand Total		\$336.95

Summary fields produce results from values in multiple records

Calculation fields produce results from values in the current record or related records

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 96.
- 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 121.

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

1. With the database open, choose File menu > Manage > Database.
2. In the Manage Database dialog box, click the Fields tab.
3. If your file contains more than one table, select the appropriate table from the Table list.

You see tables from the current file and any external FileMaker Pro files or external ODBC data sources that this file references.

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

See “About naming fields” on page 81.

5. For Type, select a field type.

See “About choosing a field type” on page 82.

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 92.
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 94. 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 > Manage > Database**.
2. In the **Manage 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 81.

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 **Manage 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	<p>In the field list, double-click a field name.</p> <p>To display field names from another table, choose a table from the table list.</p>
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, or an exponent	For Operators , choose an operator from the list.

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 82.
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**.

Note If your FileMaker Pro file accesses data from external ODBC data sources, you can add supplemental fields to specify calculations using external data.

For more information about defining calculation fields, the use of context in calculations, or supplemental fields, 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 98.

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.

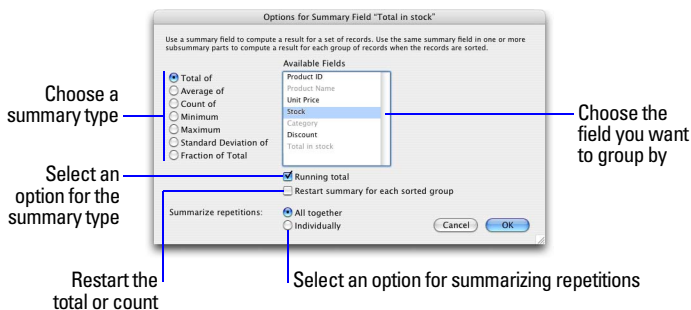
If you're modifying a layout that contains a summary field, you must know about layout parts to get the results you want (see "Working with parts on a layout" on page 128).

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

In Layout mode, click **Manage** in the status toolbar, then choose **Datatabase**.

2. In the **Manage 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 81.
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.

For this summary type	Select	To
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.

Note If your FileMaker Pro file accesses data from external ODBC data sources, you can add supplemental fields to specify summary fields for external data.

For more information about defining fields, see Help.

Using supplemental fields

If your FileMaker Pro file accesses data from external ODBC data sources, you can use *supplemental fields* to display unstored calculation and summary results using ODBC data. Because you can't use FileMaker Pro to change the schema of an external ODBC database, supplemental fields are the only fields you can add to external tables.

For information about how to access and work with SQL data interactively, see “Working with external data sources” on page 170. For information about using supplemental 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 118.

To set options for summary fields, see “Defining summary fields” on page 88.

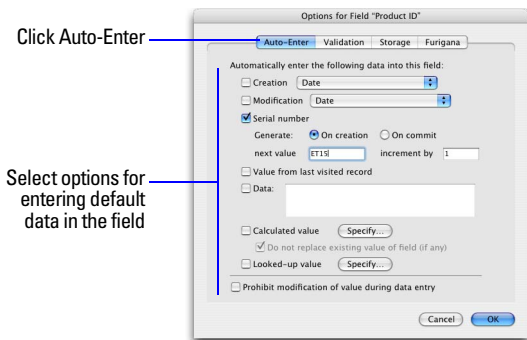
Defining automatic data entry

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

1. With the database open, choose **File menu > Manage > Database**.
2. In the **Manage 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 85. 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 151.
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.

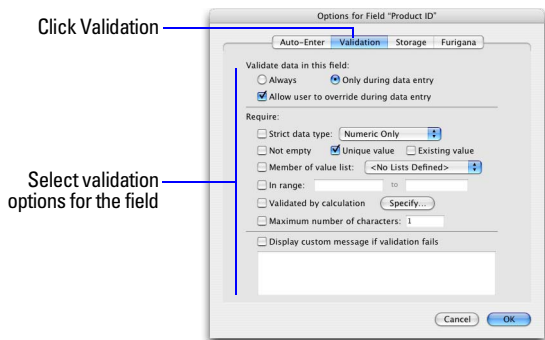
Important To avoid confusion when using dates in FileMaker Pro, set date field validation options to make sure dates are always entered with four-digit years.

1. With the database open, choose File menu > Manage > Database.
2. In the Manage 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, 5/12/2010)	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	<p>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.</p> <p>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.</p> <p>For more information about the Specify Calculation dialog box, see “Defining calculation fields” on page 85.</p>
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.

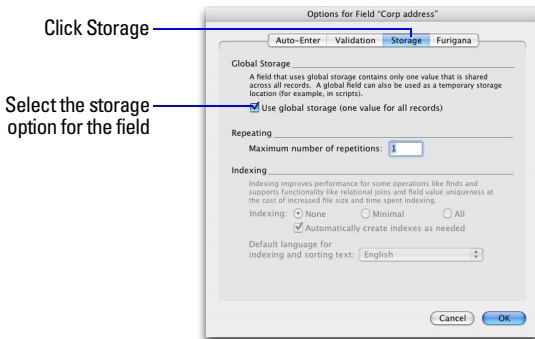
For more information, see [Help](#).

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

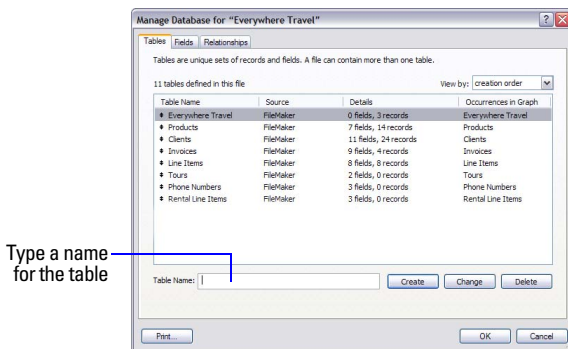
Use database tables to organize and group your data by a common characteristic or principle. Your database can contain as many tables as you need to organize your data.

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 Manage Database dialog box.

1. With the database open, choose **File menu > Manage > Database**.
2. In the Manage 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 4, “Working with related tables and files.”

Creating layouts and reports

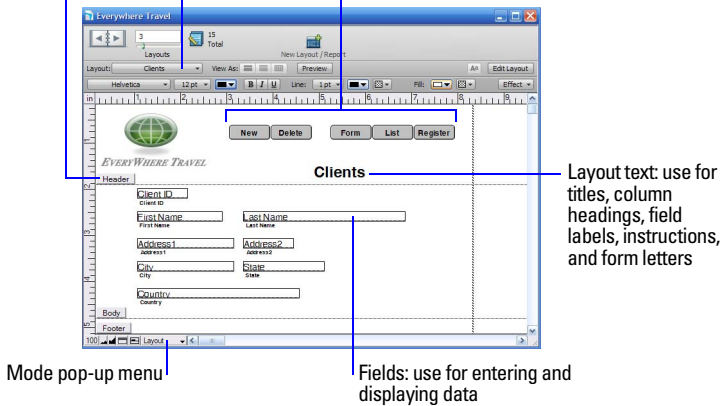
FileMaker Pro layouts determine how information is organized for viewing, printing, reporting, finding, and entering data. Layouts don’t store your data—they just display it. Layouts are sometimes called reports, especially when printed.

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.

Parts: use headers, footers, the body, and summaries to divide a layout into special purpose areas

Layout pop-up menu

Buttons: use to automate frequent tasks

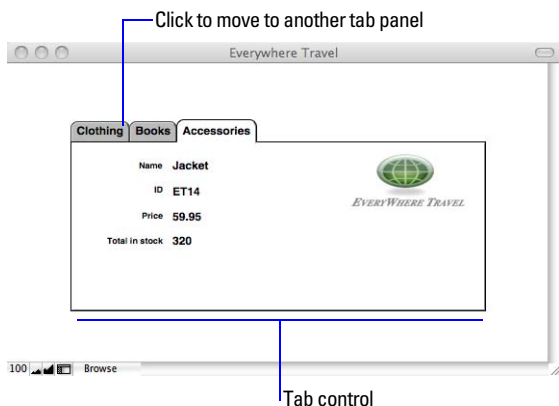


When you create a database file, FileMaker Pro automatically creates a Standard Form layout for the initial table, and for each newly added table that contains fields.

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.



Tab Control tool



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 80.

To create a layout:

1. Switch to 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.

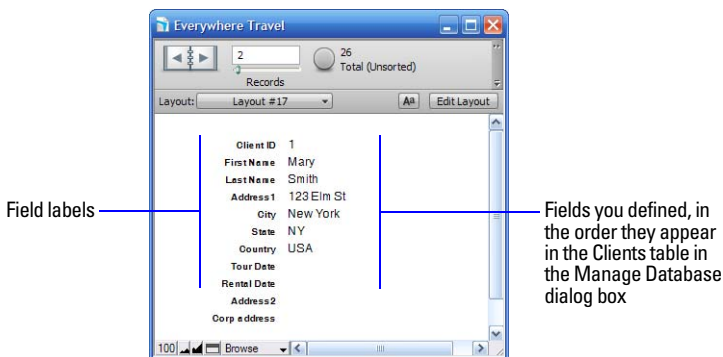
You can use the new layout right away, or further customize it using the tools and commands in Layout mode. For more information, see “Working with objects on a layout” on page 109 and “Working with fields on a layout” on page 115.

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 switched from Form View).



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

Header						
	Client ID	Agent Name	Invoice ID	Order Date	Subtotal	Country
	Total sales	Region	Tax	Total		
Body	Client ID	Agent Name	Invoice ID	Order Date	Subtotal	Country
	Total sales	Region	Tax	Total		
Sub-sum.						

Header					
	Client ID	Invoice ID	Order Date	Subtotal	Total sales
	Agent Name				
Body	Region				
		Client ID	Invoice ID	Order Date	Subtotal
Trailing					Total sales

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).

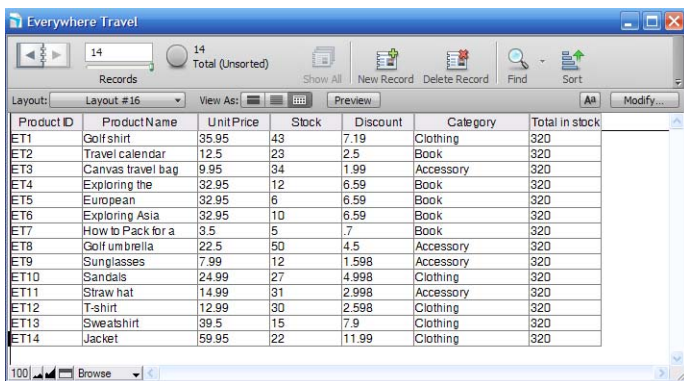
You can modify any of these options after you complete the assistant.

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 29.

As with a Columnar List/Report layout, 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.

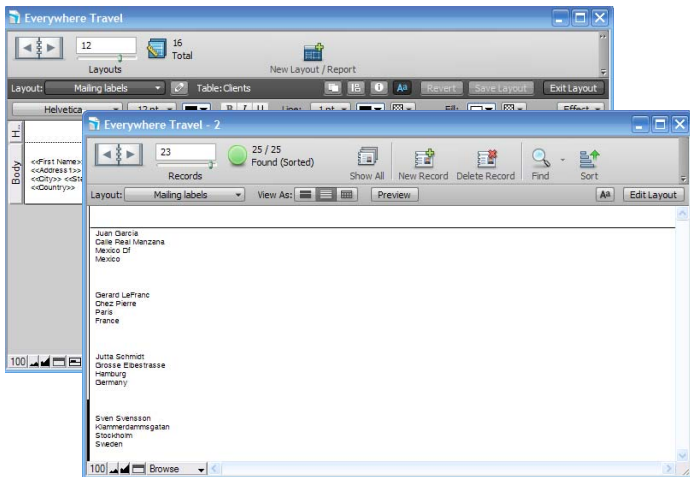


Product ID	Product Name	Unit Price	Stock	Discount	Category	Total in stock
ET1	Golf shirt	35.95	43	7.19	Clothing	320
ET2	Travel calendar	12.5	23	2.5	Book	320
ET3	Canvas travel bag	9.95	34	1.99	Accessory	320
ET4	Exploring the	32.95	12	6.59	Book	320
ET5	European	32.95	6	6.59	Book	320
ET6	Exploring Asia	32.95	10	6.59	Book	320
ET7	How to Pack for a	3.5	5	.7	Book	320
ET8	Golf umbrella	22.5	50	4.5	Accessory	320
ET9	Sunglasses	7.99	12	1.598	Accessory	320
ET10	Sandals	24.99	27	4.998	Clothing	320
ET11	Straw hat	14.99	31	2.998	Accessory	320
ET12	T-shirt	12.99	30	2.598	Clothing	320
ET13	Sweatshirt	39.5	15	7.9	Clothing	320
ET14	Jacket	59.95	22	11.99	Clothing	320

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.

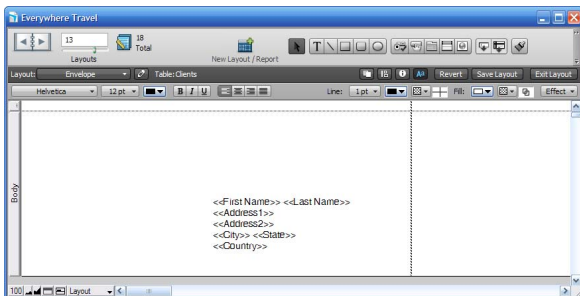
With the Vertical Labels layout, Asian and full-width characters are rotated so that labels can be used vertically. For information about vertical writing, see “Formatting fields and text for vertical writing” on page 127.



For more information about creating a Labels layout and printing labels, see “Printing labels and envelopes” on page 63.

Envelope

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



For more information about creating an Envelope layout and printing on envelopes, see “Printing labels and envelopes” on page 63.

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.

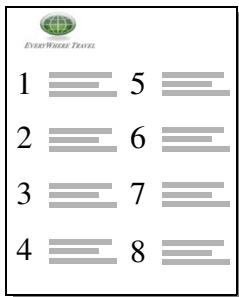
For more information about creating layouts and reports, see Help.

Setting up a layout to print records in columns

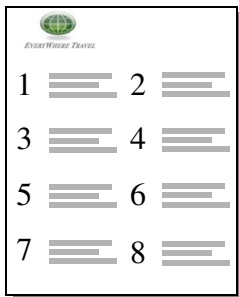
You can set up a layout to print (or preview) records in columns, for example, for a directory of names and addresses. This is in contrast to a Columnar List/Report layout, which arranges fields in columns.

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.



Down first



Across first

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.

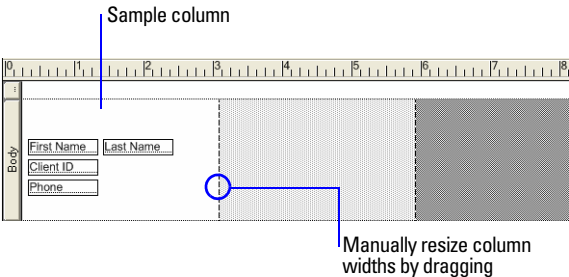
3. Choose Layouts menu > Layout Setup.

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 Info. 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 Info palette.

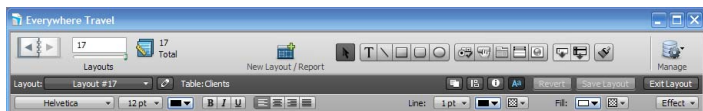
If you change the number of columns, FileMaker Pro adjusts the width of the columns to fit within the width of the paper size you have defined, not including fixed margins. You may need to readjust fields to fit within the sample column.

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

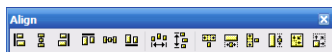
Working with objects on a layout

An *object* is a discrete element—a field, text, a graphic object (such as an oval or imported picture), a button, a portal (for displaying rows of related records), a tab control, or a web viewer—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 status toolbar.




Status toolbar in Layout mode



Align palette



Arrange palette

Note If you don't see the status toolbar at the top of the document window, the status toolbar might be hidden. Make sure you're in Layout mode, then click the status toolbar control button  at the bottom-left corner of the document window (or choose View menu > Status Toolbar).

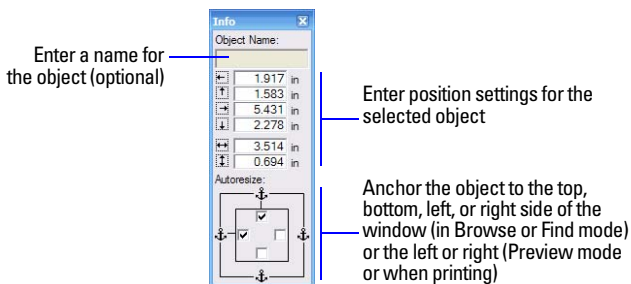
Using the Info palette with objects

You can use the Info palette to precisely position or size layout objects or you can set objects to automatically resize or move horizontally or vertically when the FileMaker Pro window is resized. Horizontal settings also apply to Preview mode and printing when the page size is wider than the size of the layout being viewed or printed.

When layout objects are set to resize, they maintain a constant distance from the object to which they are anchored. This allows objects to move, expand, or contract when the FileMaker Pro window is resized.

Anchor points are either the layout margin or the container margin in which an object resides. By default, objects are anchored on both the top and left side of the layout or page.

The Info palette floats above document windows, so you can leave it open as you work.



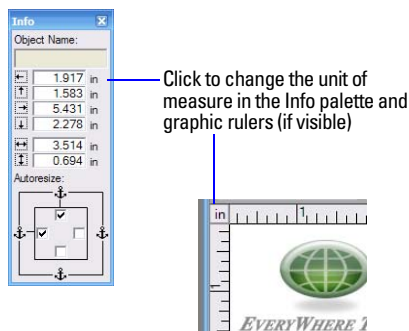
Precisely positioning or sizing objects

To precisely position and size objects with the Info palette:







1. In Layout mode, choose View menu > Object Info.
2. Select one or more objects on the layout.

The Info palette fields are updated to show the exact location of the selected objects in the layout.

Tip You can change the unit of measure used in the Info palette and graphic rulers by clicking the unit label for any field in the Info palette or by clicking the unit label in the top left corner where the graphic rulers meet.



3. In the Info palette, type a new value in one of the following fields.

Field	Indicates
Object Name	The name of the selected object (optional). You can assign names to objects and grouped objects. Some script steps and functions use these names to specify which object to act upon. For more information, see Help.
	The distance from the left edge of the selection to the left edge of the layout
	The distance from the top of the selection to the top of the layout
	The distance from the right edge of the selection to the left edge of the layout
	The distance from the bottom of the selection to the top of the layout
	The object's width
	The object's height

If you can't type a value, that field doesn't make sense for the selected object (for example, a horizontal line doesn't have a height), or the selection is locked.

4. Press Enter, Return, or Tab, or close or click outside the Info palette to apply the change.


Note To precisely position an object while dragging it, note the values in the Info palette. The values dynamically update to reflect the position as you move an object around the layout.

Allowing objects to resize or move on the layout

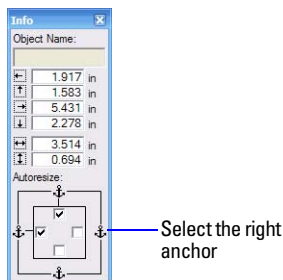
When layout objects are set to resize, they maintain a constant distance from the object to which they are anchored. This allows objects to move, expand, or contract when the FileMaker Pro window is resized.

Anchor points are either the layout margin or the container margin in which an object resides. By default, objects are anchored on both the top and left side of the layout or page.

To allow objects to resize or move when the FileMaker Pro window is resized:

1. In Layout mode, choose View menu > Object Info.
2. Select one or more objects on the layout.
3. In the Info palette, select the  that indicates the side of the object that you want anchored to the layout or container.

For example, to allow an object to maintain its horizontal position on the layout and expand the right when the window is made wider, leave the default left and top anchors selected and select the right anchor.



Auto-resize setting changes take effect as soon as you specify anchor selections.

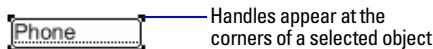
Objects located in containers on layouts (such as fields located in tab panels or portals) do not inherit resize settings from their container. For example, if you want fields on a tab panel to resize with the tab panel, you must specify resize settings for the tab panel and fields located in it. If the FileMaker Pro window is made smaller than the size of the original layout, objects set to resize are not reduced beyond their original size.


Important Multiple objects positioned side-by-side or stacked vertically *and* anchored to both left and right margins or both top and bottom margins move or resize relative to the window or container margin, not each other. Therefore, adjacent objects will not maintain a relative distance from one another and may overlap when the window is resized.

For more information about setting objects to resize, see Help.

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 status toolbar. 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	<p>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.)</p> <p>Or, press Shift as you click each object individually.</p>
All objects on the layout	Choose Edit menu > Select All.
All objects of the same type (for example, all text objects or all rectangles)	<p>Choose View menu > Arrange Palette to show the Arrange palette. Select an object, then click the Select Objects by Type button in the Arrange palette.</p> <p>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.)</p>
All fields	<p>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).</p> <p>Or, select a field, then click the Select Objects by Type button in the Arrange palette.</p>
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.

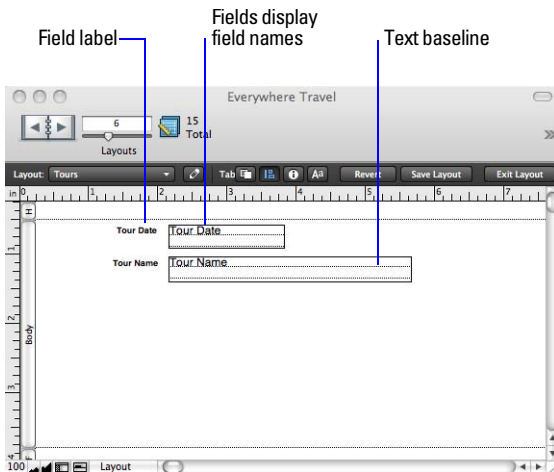
To select	In Layout mode, do this
Tab controls, tab panels, and objects in tab panels	See Help for information on creating and working with tab controls.
Deselect selected objects	Click a blank area of the layout or any tool in the status toolbar. Or, press Shift and click selected objects.

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, determine control settings for data entered in fields, 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 121, “Allowing or preventing entry into fields” on page 127, 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 80.)

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

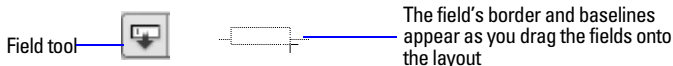
- Add the same summary field to a subsummary part to calculate totals for each group of sorted records, and to a grand summary part to get totals for all the records in a table.
- Add a field to the header or footer part to repeat data from the first record or the last record on the page as a header 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:

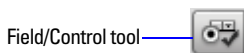
1. In Layout mode, choose the layout you want to work on from the Layout pop-up menu.

2. Click the Field tool. (Or choose **Insert menu > Field.**) Then position the cursor where you want the field on the layout.

Holding down the mouse button, draw the field on 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.

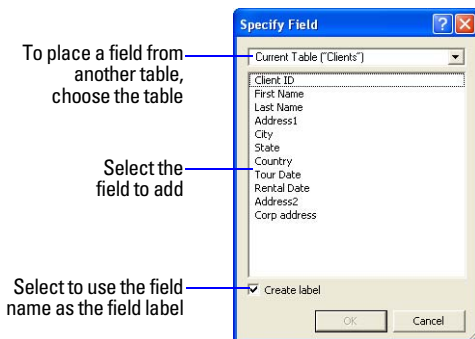


Alternatively, if you want to display field data in a drop-down list, pop-up menu, checkbox set, radio button set, or drop-down calendar, use the Field/Control tool (or choose **Insert menu > Field/Control**). See the next section, “Setting up checkbox sets and other controls on a layout,” for more information.



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 **Manage Database** in the table list to create a relationship or table (see “Creating relationships” on page 145).

4. To include the field name as text on the layout, select **Create label**.
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 (by choosing **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**.

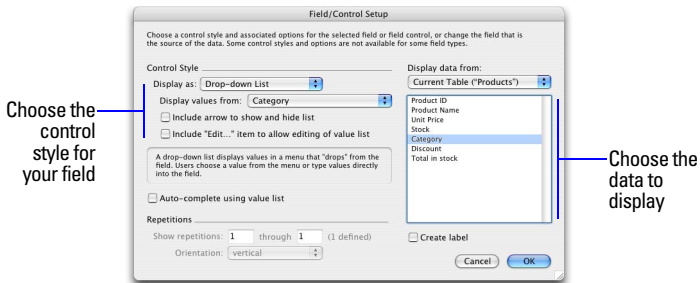
To remove a field from a layout, in Layout mode, click the field to select it, then press **Backspace** or **Delete**, or choose **Edit menu > Clear**. Removing a field from a layout does not delete the field or its data from your database.

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 **File menu > Manage 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.

Country

Choose from a list of values during data entry

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 **Manage 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 145.)
- **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. For examples of when to place related fields in portals, see **Help**.

Note Before placing related fields on a layout, you should understand the concepts presented in chapter 4, “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:

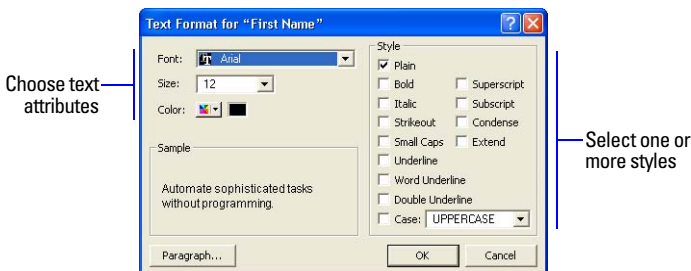
- If you don't specify formats, FileMaker Pro displays numbers, dates, and times based on the system formats set in the Regional and Language Options control panel (Windows) or the International pane in the System Preferences (Mac OS) when the file was created.
- In FileMaker Pro, you can specify display 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.

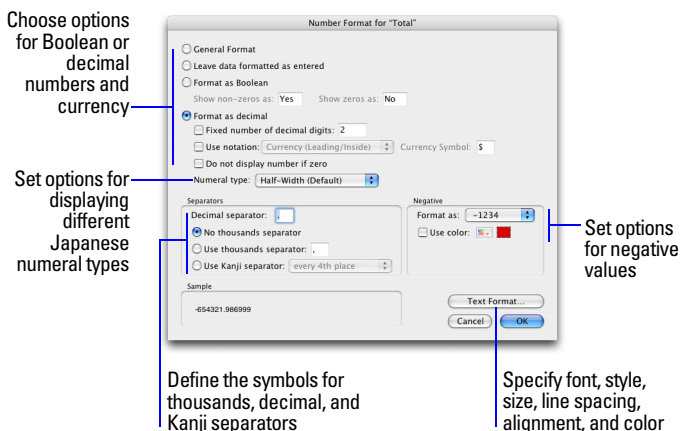
1. In Layout mode, select one or more fields, then choose **Format menu > Text**.
Or, to set text formats for fields you place later, start with no fields selected.
2. In the Text Format dialog box, select the formats you want to use.
You see examples of the options you choose in the **Sample** area.



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.

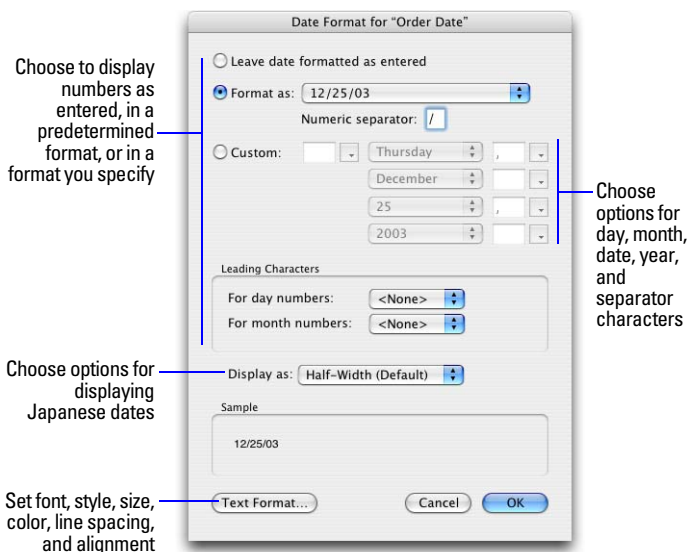
Specifying formats for date fields

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.

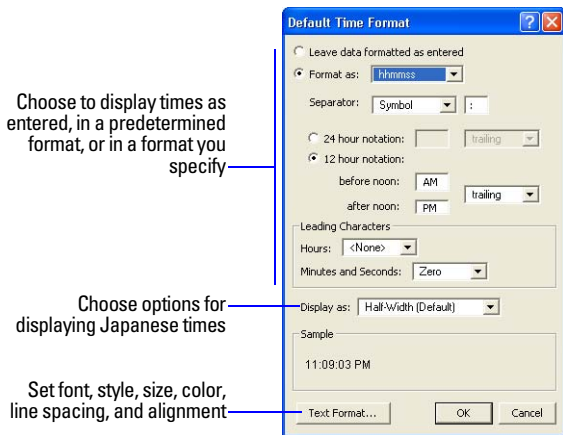
If you want to format the seconds component to display fractional seconds, continue with the next step.

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.

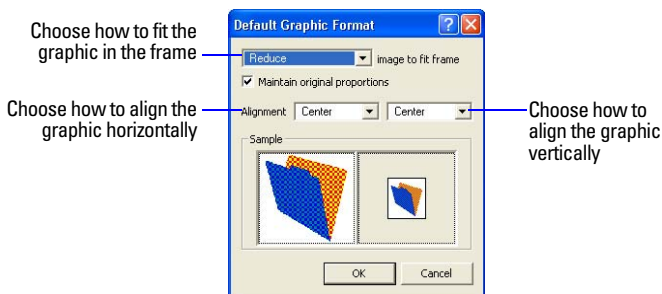
Specifying formats for container fields

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 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.	Select Set input method to , then select an input mode from the list.
Note This option is available if your operating system is configured to support Japanese text entry.	
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 98.)

Header — Header

Body — Body

Subsummary — Sub-summary by Invoices: Agent Name (Trailing)

Trailing Grand Summary — Trailing Grand Summary

Footer — Footer

A subsummary below the body summarizes data for each group of records sorted on the break field (Agent Name)

Trailing grand summary

Footer

Sales Report

Agent Name	Product ID	Qty	Amount
David Michaels	ET3	1	\$29.95
David Michaels	ET4	1	\$32.25
David Michaels	ET1	2	\$73.90
David Michaels	ET5	3	\$98.85
Total			\$234.95
Sophie Tang	ET6	2	\$64.50
Sophie Tang	ET7	5	\$12.50
Sophie Tang	ET2	2	\$25.00
Total			\$102.00
Grand Total			\$336.95

EveryWhere Travel Confidential June 2009

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 88). 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. Subsummary parts appear in Table View and List View when sorted by break fields, and update dynamically whenever data in the file is changed.

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

Chapter 4

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.

FileMaker Pro can also access data stored in other FileMaker Pro files and external ODBC data sources, which allows you to combine data stored in your FileMaker Pro file with data from these external sources. You can work with data in SQL databases that share information through ODBC. You can also use supplemental fields in FileMaker Pro to perform calculation and summary operations on data stored in ODBC data sources. For more information about using FileMaker Pro with external data sources, see “Working with external data sources” on page 170.

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.

Current table

Client ID	<input type="text" value="R20"/>
Route	<input type="text" value="NY-Paris"/> ←

Related table

Client ID	<input type="text" value="R20"/>
Route	<input type="text" value="NY-Paris"/>

In relational databases, data from the related table is only displayed in the current table, *not* copied

Current table

Client ID	<input type="text" value="R20"/>
Route	<input type="text" value="NY-Paris"/>

Related table

Client ID	<input type="text" value="R20"/>
Route	<input type="text" value="NY-Paris"/>

Lookups copy data from the related table into the current table

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.

Tours table

Tour ID	T10	
Tour Name	NY-Roma	
Route ID	Origin	Destination
R200	NY	Paris
R42	Paris	Roma

Invoices table

Invoice No	A-200-61	
Date	16-Oct-2010	
Client ID	C100	
Name	Williams	
Tour ID	Tour Name	Cost \$
T10	NY-Roma	550.00
T20	Roma-Istan	700.00
Total		1,250.00

Clients table

Client ID	C100	
Client Name	Williams	
Phone	408-555-3456	
Tour ID	Tour Name	
T10	NY-Roma	
T20	Roma-Istan	

Records from the
LineItems table
displayed in a portal

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 <i>key field</i> .) 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 137. 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.

Term	Description
Related table	<p>For relational databases, the table that contains the data you want to access and work with in the current table.</p> <p>For lookups, the table that contains the data to copy.</p> <p>A table can be related to itself. This is called a <i>self-join</i>.</p>
Relational operators	<p>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 (\neq), greater than (>), greater than or equal to (\geq), less than (<), less than or equal to (\leq), and all rows, or cartesian product (X).</p>
Relationship	<p>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 <i>link</i> or a <i>join expression</i>.)</p>
Relationships graph	<p>In the Relationships tab of the Manage 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.</p> <p>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.</p>
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 Manage Database dialog box.

About the relationships graph

When you work with tables in the relationships graph, you organize your view of your data. Tables shown in the relationships graph can be located in the current FileMaker Pro file, in an external FileMaker Pro file, or in an external ODBC data source.

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.

Because 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. A 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.

Types of relationships

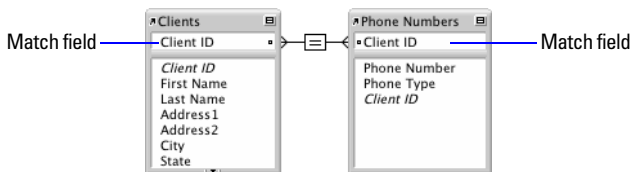
When you join two tables using a relationship, you establish criteria that FileMaker Pro uses to display or access related records.

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.

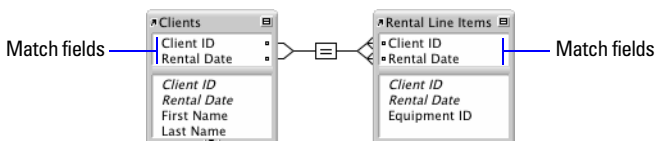
Because the relationship is defined to allow the creation of related records in the Phone Numbers table, the Client ID number from a Clients record will be automatically inserted in the Client ID field in the Phone Numbers table in each new related record. This allows many records in the Phone Numbers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



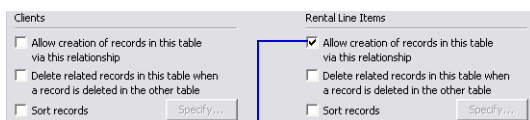
In this relationship, both Client ID and Rental Date are match fields to the Rental Line Items table. A record in the Clients table with a Client ID value of 1000 and a Rental Date value of 10/10/2010 will only match those records in the Rental Line Items table where both fields Client ID and Rental Date have values of 1000 and 10/10/2010, 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.

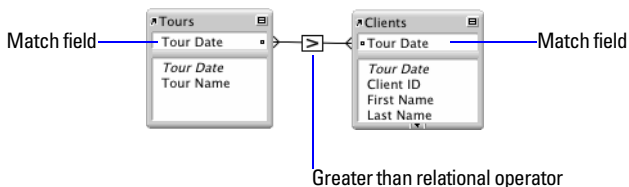


Select to allow creation of related records in Rental Line Items table

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
≥	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

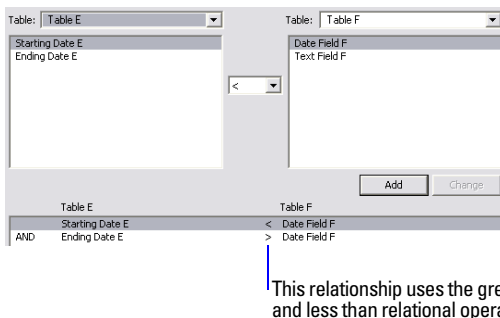
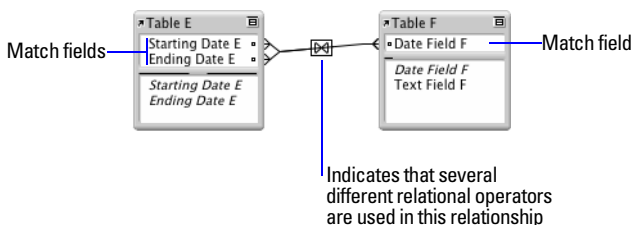


In this example, the *Tour Date* fields in the **Tours** table and the **Clients** table are match fields. If a record in the **Tours** table has a *Tour Date* value of 12/11/2010, all the records in the **Clients** table with a *Tour Date* value of 12/10/2010 or earlier are related to it. In the **Clients** table, if a record has a *Tour Date* value of 12/11/2010, all records in the **Tours** table with *Tour Date* values of 12/12/2010 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	11/01/2010	11/14/2010
Ending Date E	12/01/2010	11/27/2010

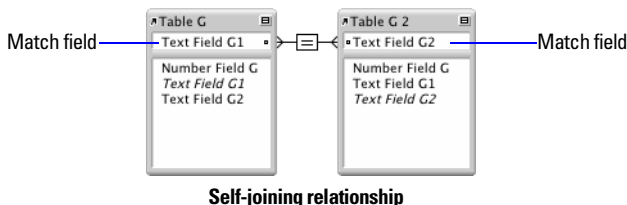
Another example:

If fields	Contain values	These related records are returned from Table F
Starting Date E	12/01/2010	12/02/2010
Ending Date E	01/01/2011	12/15/2010
		12/17/2010
		12/26/2010

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.



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 71.

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 FileMaker Pro files or external ODBC data sources, 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.

Note When the table is from an external ODBC data source, the name of the table is typeset in italics in the relationships graph. To display information about the external data source, move the pointer over the arrow to the left of the table name.

Creating relationships

To create a relationship:

1. With the database open, choose File menu > Manage > Database.
2. In the Manage 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 137.

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

The relationships graph

Manage Database for "Everywhere Travel"

The relationships graph provides access to data in one table from another. If a relationship is defined between two tables (even through another table), fields from one table can be accessed from the other.

Annotations:


- Move the pointer to the arrow icon to display the names of the source table and source file
- Match fields are shown in italics in their tables
- Delete selected objects
- Add a table
- Create a relationship
- Duplicate selected objects
- Edit a selected object
- Click once to collapse all but the match fields. Click again to collapse all but the table name. Click again to return the table to its original size
- Click to display or collapse a text note
- Change the color of selected objects
- Add a text note to the graph
- Enlarge or reduce the view of the graph
- Display the Print Setup (Windows) or Page Setup (Mac OS) dialog box
- Show page breaks
- Show 1-away tables or tables with the same source
- Change the alignment of selected objects

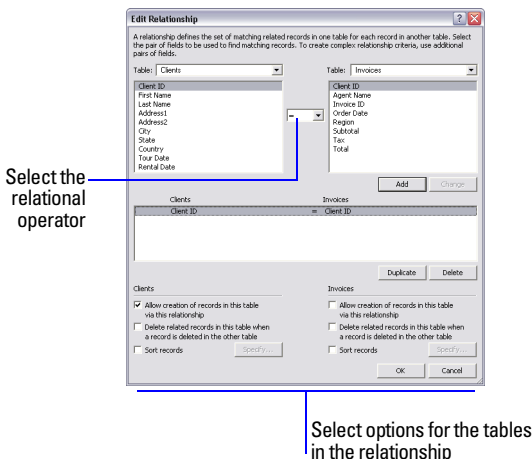
Changing relationships

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 > Manage > Database**.
2. In the Manage 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**.

To	Do this
Change the relational operator	Select a new relational operator from the list and click Change . See “Relationships using comparative operators” on page 142.
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 35.)	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 37.)	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 116.

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

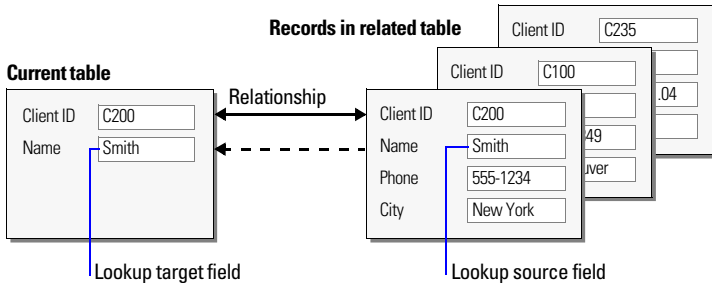
About lookups

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 145.
2. With the database open, choose **File menu > Manage > Database**.
3. In the **Manage 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**.

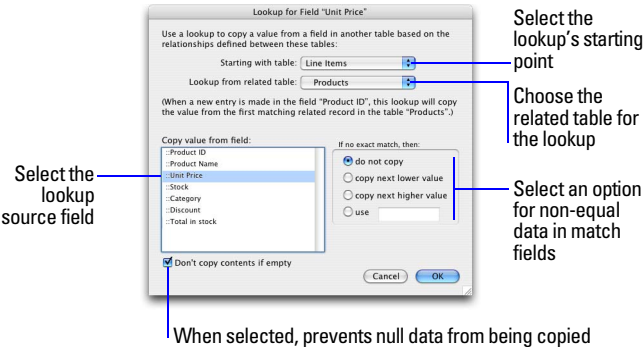
8. In the Lookup for Field dialog box, choose the table the lookup will start with, and the table from which the value will be copied.

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 > **Manage** > **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 5

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.
- **Accessing data from external data sources:** You can access information stored in other FileMaker Pro files and external SQL databases that use ODBC technology to share data. This allows you to work with information stored in external databases and combine external data with information stored in your file. When you access data from an ODBC database, you can use supplemental fields in your FileMaker Pro file to perform calculations and summary operations on the data without changing the schema of the external file.
- **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.

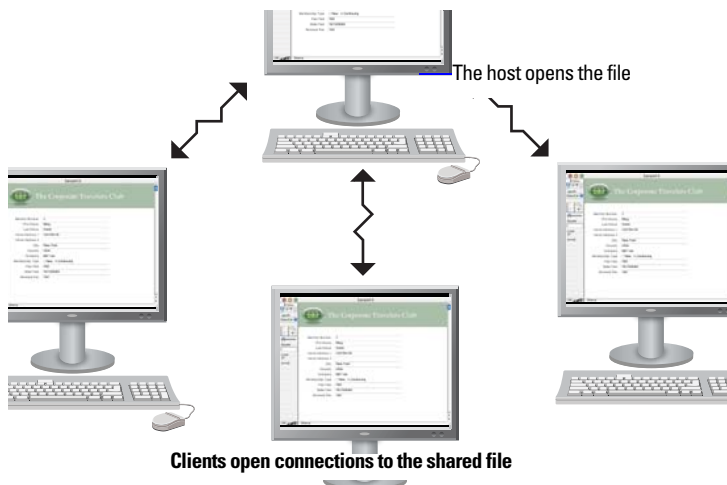
Sharing databases on a network

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 9 concurrent users (not including the host and Instant Web Publishing connections). If you need to share files with more than 9 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:

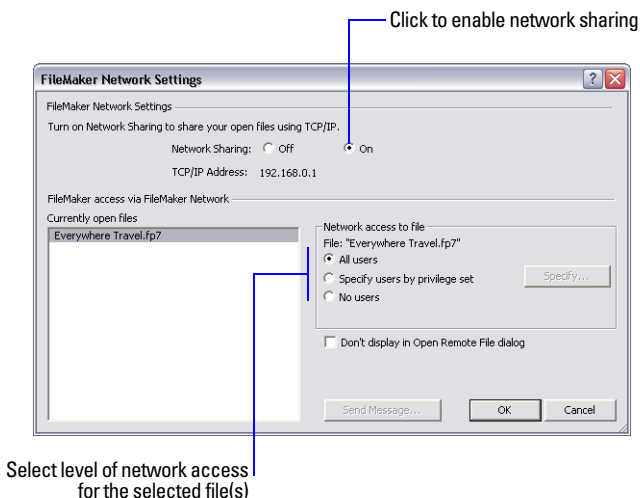
1. Open the FileMaker Pro file(s) you want to share.

Note To enable or change a file's sharing status, you must open it with an account that has the appropriate access privilege set. For more information, see “Accounts, privilege sets, and extended privileges” on page 176.

2. Choose File menu > Sharing > FileMaker Network.

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

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).

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.

Tip To narrow the list of available files, type a few characters in the **Filter** text box. Only filenames containing the characters you type are displayed in the list. Or, for **Network File Path**, type the network path; for example:

For IPv4: fmnet: / <host IP address> / <filename>

For IPv6: fmnet: / [<host IPv6 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.

For information about marking remote files as favorites and accessing favorite files, see Help.

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.
Data in records from external ODBC data sources	Two people can edit the same record at the same time. If two users edit the same record simultaneously, FileMaker Pro posts an alert when either user attempts to commit changes. The alert provides a user with a choice, allowing changes to be committed (overwriting any changes the other user might have made), returning to the record without committing changes, or reverting the record to the state it was when the editing session began.
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. 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. One person can edit a script while another person is using it.

Database change	Limitation
Data in layouts and records	Two people can't edit the same record at the same time.
Data in records from external ODBC data sources	Two people can edit the same record at the same time. If two users edit the same record simultaneously, FileMaker Pro posts an alert when either user attempts to commit changes. The alert provides a user with a choice, allowing changes to be committed (overwriting any changes the other user might have made), returning to the record without committing changes, or reverting the record to the state it was when the editing session began.
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. 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. One person can edit a script while another person is using it.

Database change	Limitation
Tables, fields, relationships (database schema)	Two people can't modify any of these elements at one time.
Data sources	Two people can't modify or define the same data source at the same time. One person can edit a data source reference while another person is using the external file.
Accounts and privileges	Two people can't modify or define accounts and privileges at the same time. 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.

Clients can use a browser to access shared databases by entering the URL of the shared file on the host machine in a browser's address area.

To identify the URL for the shared database on the host machine and send it to a client user:

1. In the shared file on the host machine, choose File menu > Send Link.
FileMaker Pro opens an email message in your default email application that contains the URL for the current database, plus client connection requirements.
2. Address the email message to the client user, then send the message.

To open a shared database on a client machine using a URL, do one of the following:

- If you received an email message containing the URL of the host machine, click the link indicating the location of the hosted database. If your email application does not support active links, launch a web browser on the intended client machine, copy the URL from the email message into your browser's address area, then press Enter (Windows) or Return (Mac OS).
- If you received the URL of the shared database by some other means, launch a web browser on the intended client machine, enter the URL of the host machine into the browser's address area using the following format, then press Enter (Windows) or Return (Mac OS).

[<][URL:]FMP7://[[account:password@]netaddress]/databasename[>]

Optional parameters are indicated by square brackets ("[]"). Because URLs can't 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

FMP7://User1:Password1@12.345.678.900/Filename.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 client's 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 or Excel 2007/2008 worksheet or a 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, you need the Allow Exporting Access privilege. To save files as PDF, you need the Allow Printing Access privilege.

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. Generated email is sent using your default email application or directly through SMTP (Simple Mail Transfer Protocol, a set of criteria for sending and receiving email). You can enter values, or use values from fields or calculations. You can also create scripts to send email.

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, followed by their filename extensions: Microsoft Excel (.xls, .xlsx), tab-separated text (.tab, .txt), comma-separated values (.csv, .txt), FileMaker Pro 7 (.fp7), Merge (.mer), HTML table (.htm), and XML (.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, or about importing from sources such as XML, a digital camera (Mac OS), or Bento (Mac OS), see Help.

ODBC and JDBC

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

What do you want to do?	How do you do it?	See
Use FileMaker Pro as a data source/share FileMaker Pro data	<ul style="list-style-type: none"> ■ SQL queries ■ JDBC 	<i>FileMaker ODBC and JDBC Guide</i>
Use FileMaker Pro as an ODBC client/access ODBC data	Interactively via the relationships graph <ul style="list-style-type: none"> ■ One-time, static via ODBC import (or File menu > Open) ■ Import Records script step ■ Execute SQL script step 	“Working with external data sources” on page 170 and FileMaker Pro Help FileMaker Pro 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.

Before updating matching records

Source file		Target file
123-456-7890	=	123-456-7890
John	-	John
Q	->	
Smith	-	Smith
456 New Rd.	->	123 Main St.
Newtown	->	Anytown
USA	->	USA
	-	3/3/1960
	->	408-555-6789

= indicates a match field
-> indicates to import the field
- indicates to not import the field

After updating

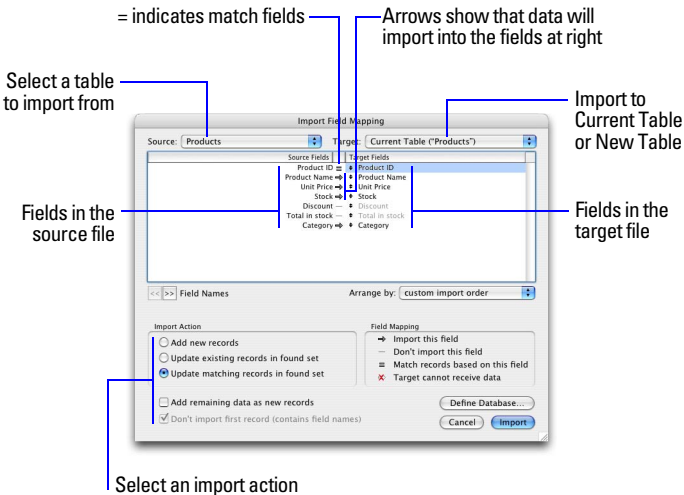
Target file
123-456-7890
John
Q
Smith
456 New Rd.
Newtown
USA
3/3/1960

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 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 165.
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 164.
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 40 and “Sorting records” on page 58.
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

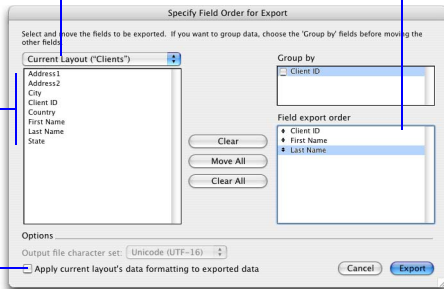
6. If necessary, choose the character set you want the exported file to use.
7. Select whether or not to apply the current layout's formatting to the exported data.

To export related fields,
select the related table
from the list

FileMaker Pro exports these fields

Select fields
from this list

Select whether
or not to apply
formatting



For more information about exporting data, see Help.

Working with external data sources

You can define data sources in a FileMaker Pro file to access data from:

- other FileMaker Pro files
- SQL databases that use ODBC technology for sharing information

When you define data sources in FileMaker Pro files, current data from external databases is displayed in your files. You can use FileMaker Pro to add, edit, delete, search, and sort data in the external files.

The following procedures provide an overview of how to access data in external FileMaker Pro files or external ODBC data sources. For detailed information on accessing external data sources, see [Help](#).

Working with external FileMaker Pro files

To set up a file to access data from another FileMaker Pro file:

- Add tables from other FileMaker Pro data sources to the relationships graph in the current FileMaker Pro file.
- Add fields to layouts to display data from the other FileMaker Pro file.

Working with ODBC data sources

To set up a file to access data in supported ODBC data sources:

- Install and configure an ODBC driver for the external data sources you want to access.
- On the computer that hosts the current FileMaker Pro file, define a system Data Source Name (DSN) for each ODBC data source you want to access.
- Set options for the ODBC data sources you want to access (for example, whether users are prompted for a user name and password).
- Add one or more tables from the ODBC data source to the relationships graph in the current FileMaker Pro file.
- Add fields to layouts in the FileMaker Pro file to display external data.
- Optionally, add supplemental fields to external tables and layouts to display calculation and summary results based on data stored in external ODBC data sources.

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 in the database.

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

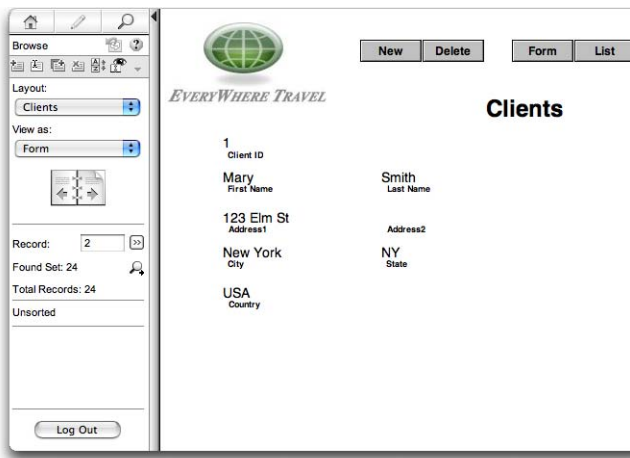
Note FileMaker Pro Instant Web Publishing supports the sharing of files with up to 5 concurrent users. Use FileMaker Server Advanced if you need to share files with more than 5 concurrent web users.

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.

Note Web viewers, which calculate a URL based on field data and display a web page directly in a FileMaker Pro layout, work in files shared via Instant Web Publishing. However, there are some design issues you should consider before including web viewers in published files. For more information, see the *FileMaker Instant Web Publishing Guide*. Choose Help menu > Product Documentation > FileMaker Instant Web Publishing Guide.



Shared FileMaker Pro database in web browser

Chapter 6

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

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

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.

For information about how security settings in older databases convert to the current version of FileMaker Pro, see “Converting databases from FileMaker Pro 6 and earlier” on page 193 and see FileMaker Pro Help.

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 and 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. 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 179.

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 188.

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 180.

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 (FileMaker Server only)
Access via XSLT Web Publishing	Accessing a database file from a web browser or other application via XSLT web publishing (FileMaker Server only)
Access via PHP Web Publishing	Accessing a database file from a web browser or other application via PHP web publishing (FileMaker Server 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 5, “Sharing and exchanging data.” For more information on extended privileges, see “Viewing extended privileges” on page 191.

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	Privilege Sets		
	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
Disconnect user from FileMaker Server when idle	off	on	on
Allow password modification	on	on	on
Password change number of days	off	off	off

Privilege Sets			
Privilege	Full Access	Data Entry Only	Read-Only Access
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 or Excel 2007/2008 worksheet. For more information about saving records as PDF or Excel files, see “Saving and sending data in other formats” on page 163.

Note The Full Access privilege set is the only one that permits access to the Manage Database and Manage External Data Sources dialog boxes in order to modify fields, tables, relationships, and data sources. 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 183.

- 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. Consider listing the types of users and their privileges:

	Managers	Marketing	Sales	HR	Legal	Guests
View records	Yes	Yes	Yes	Yes	Yes	Yes
Create records	Yes	Yes	Yes	Yes	No	No
Edit records	Yes	Yes	Yes	Yes	No	No
Delete records	Yes	Limited*	Limited*	Yes	No	No
Modify scripts	Yes	Limited*	No	Yes	No	No
Execute scripts	Yes	Yes	Yes	Yes	Yes	No
Modify value lists	Yes	No	No	No	No	No
Menus	All	Editing only	Editing only	All	Minimum	Minimum

* You can provide limited access to some features, for example deleting records, by using record-by-record privileges. For more information on record-by-record privileges, see FileMaker Pro Help.

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.

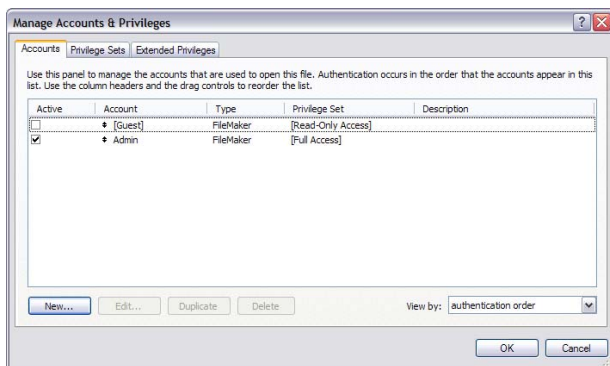
Viewing accounts and privilege sets

The Manage 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:

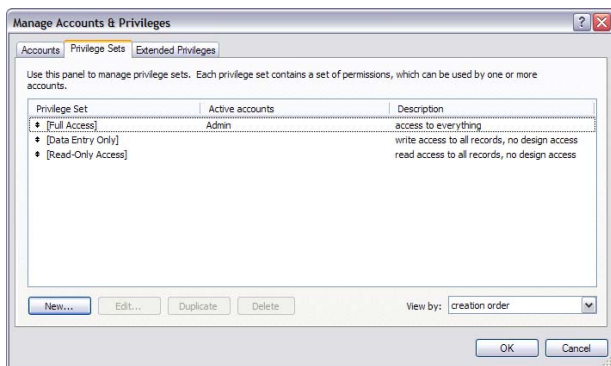
1. Open the database file.
2. Choose File menu > Manage > Accounts & Privileges.

You see the accounts defined for this file.



3. In the Manage 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 > Manage > 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 188.

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 189.

8. For **Description**, enter a description of the account (optional).
9. Click **OK**.
10. In the **Manage 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 > Manage > 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 **Manage 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**.

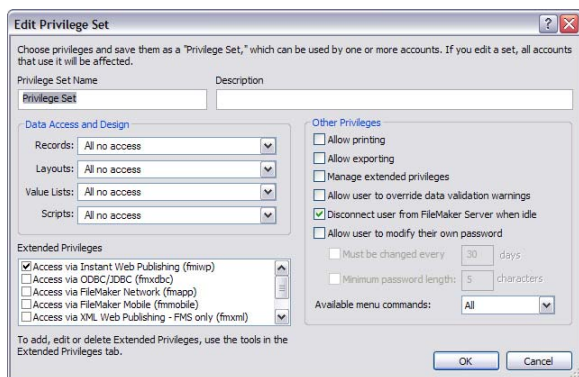
Creating privilege sets

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.
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 186.

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.

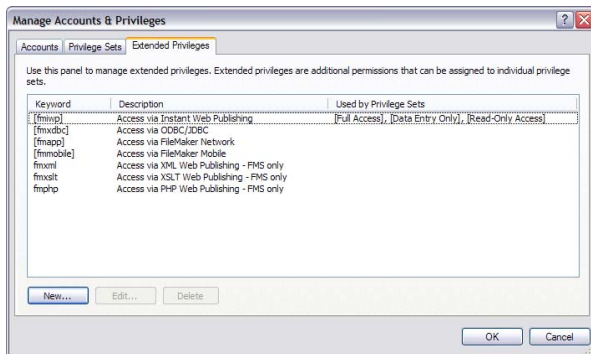
There are six default extended privileges. For more information about them, see “Accounts, privilege sets, and extended privileges” on page 176.

You can view extended privileges in the Manage 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 > Manage > Accounts & Privileges.
3. In the Manage Accounts & Privileges dialog box, click the Extended Privileges tab.



For more information about extended privileges, see Help.

Chapter 7

Converting databases from FileMaker Pro 6 and earlier

Because FileMaker Pro 7, FileMaker Pro 8.x, FileMaker Pro 9, and FileMaker Pro 10 share the same file format, FileMaker Pro 10 can open FileMaker Pro 7, FileMaker Pro 8.x, and FileMaker Pro 9 files without converting them. You can even use FileMaker Pro 10 files with FileMaker Pro 7, FileMaker Pro 8.x, or FileMaker Pro 9. However, new features might not work as expected when you open the file in a previous version.

For example:

- **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.
- **Web viewers:** If a file containing a web viewer is opened in a version of FileMaker Pro prior to version 8.5, the web viewer is not displayed in Layout mode. In FileMaker Pro 8, web viewers appear as empty images. In versions of FileMaker Pro prior to version 8, no image appears in place of the web viewer.
- **External data sources:** If you open a file connected to an ODBC data source in a version of FileMaker Pro prior to version 9, the ODBC table in the relationships graph is labeled <File Missing>. The data source feature also causes some menu items to appear differently. For example, in custom menus (FileMaker Pro Advanced only), changes occur with regard to how menu items are organized and how new and changed menu items are represented.

FileMaker recommends that, once you have created or opened a file in FileMaker Pro 10, 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 10.

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

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 10 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 10. For more information, see “Converting FileMaker Pro 1.x and 2.x databases” in Help.

When you convert files, FileMaker Pro 10 preserves the contents of your original files and creates new, converted files in FileMaker Pro 10 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 10, FileMaker Pro 9, FileMaker Pro 8.x, 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 Help.
- Use the multiple-file conversion method to convert all the files in a relational database. For more information, see Help.

Solving basic conversion problems

Here are some suggestions for correcting problems that could occur during conversion.

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 Help.
- 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 10.

Converting passwords

During conversion, passwords are converted into accounts in FileMaker Pro 10. 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 are case-sensitive in FileMaker Pro 7, 8.x, 9, and 10. 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.

Chapter 8

Security measures

Be sure that your database files, host computers, workstations, and the networks that access them are safe from theft and corruption. This chapter covers the following five important security measures that you can implement to protect your data and equipment. You should:

- Enhance physical security
- Enhance operating system security
- Establish network security
- Back up databases and other important files
- Install, run, and upgrade anti-virus software

For more information about securing FileMaker Pro files, see www.filemaker.com/support/security.

Enhancing physical security

Evaluate your computers to make sure they are physically secure:

- The host computer should be a dedicated machine, anchored to a desk or immovable object with a lock. Secure the computer so that its hard drive cannot be removed. Restrict access to the computer by storing it in a locked room.
- Secure the client workstations that access a database. Lock the computers down and restrict access by using a screensaver that requires a password.
- Ensure the physical security of backup copies of files stored on portable media, such as tapes and CDs.

Enhancing operating system security

Use the security features of your operating system to restrict access to important data. The network administrator should provide access only to individuals authorized to administer and maintain the system or the FileMaker databases. In addition, they should:

- Track system user IDs and passwords.
- Restrict access to the FileMaker Pro application and file directories, servers, and web pages.
- Review remote access settings for file sharing and FTP.
- Restrict file upload or download access.
- Make sure all users have the latest, most secure versions of operating system software.
- To streamline processes, you can enable external authentication, which uses accounts that have been configured in the Windows Domain Authentication or in Apple Open Directory. For more information, see FileMaker Pro Help.
- Do not put FileMaker Pro files on file servers to share them. Use the built-in networking feature in FileMaker Pro and FileMaker Server. This prevents the files from being inappropriately copied or from introducing record locking and potential corruption issues when files are shared with inappropriate methods.

Establishing network security

Databases shared on an intranet or the internet use the TCP/IP protocol. You may also use the TCP/IP protocol when you share databases peer-to-peer, or with FileMaker Server. Though TCP/IP is good for moving data and allowing clients to connect to your data, it was not designed with security as a primary objective. Unless you take precautions, it can provide uninvited access to your host computer, server software, databases, and perhaps to other client machines on your internal network. TCP/IP doesn't provide very much protection for data, so it is important to place barricades such as firewalls and SSL data encryption in the path of uninvited visitors.

- The most common barricade method used is the firewall, which separates your network into two distinct environments: a public environment that is “outside the firewall,” and a private environment that is “behind the firewall.” Users outside of the firewall will only have access to those TCP/IP or hardware addresses that you expose. You can concentrate your security on those server machines that are exposed, while allowing machines behind the firewall to operate with fewer safeguards.
- Using wireless networking devices, like the Apple AirPort and other 802.11b networking cards and base stations, can pose security challenges. These devices can broadcast your network traffic beyond the walls of your building, so it is extremely important to encrypt your wireless networking signals. Always use the maximum level of signal encryption available.

Backing up databases and other important files

Develop plans for restoring data, including alternate sites and systems to run business-critical information services. A current backup can help you recover from a situation where someone loses the administrator account information for a file, or from a situation where user error (and sometimes bad database design) causes data to be deleted or modified inappropriately.

Keep these points in mind:

- Host databases with FileMaker Server and create regularly-scheduled, automated backups.

Don’t use third-party backup software on hosted FileMaker Pro databases. First, use FileMaker Server to make a backup copy of your database, then run your third-party backup software on the copy. Backup software can damage open, hosted databases.

For example, make local backups of files at 6:00 am, 9:00 am, 12:00 noon, 3:00 pm, 6:00 pm, and 11:30 pm weekdays. At midnight, make an incremental backup of the entire system to the enterprise backup system. Finally, Friday night at midnight, perform a full system backup. Copy and store the backup tapes at a remote location. This way, if the server goes down for some reason other than catastrophic failure of multiple drives, the more recent backup of the data files can be used, meaning a maximum of 3 hours of lost data. If there is a catastrophic drive failure, then the previous evening's tape can be used, minimizing the loss to one day's data. Of course, these procedures can be tailored to your situation and data value.

- Make sure backup copies aren't damaged or inaccessible. Verify that they are functioning properly *before* you need them. Run diagnostic tools on your hard drive and your backup files regularly.
- Ensure that you can restore an entire set of files from backup copies.
- Regularly export the data to protect against file corruption.
- Protect the backup media itself. Store backups in a separate and fire-proof location.
- Assign backup administrators who can retrieve files, in case the network administrator is unavailable.
- Plan for redundancy. If the power goes off, a universal power supply (UPS) should sustain power for at least 15 minutes, enabling you to safely close all files. If the power can't be restored in a timely fashion, consider using a generator to supply power to servers. Also consider power sources for routers and firewalls. Will communication be a problem if your internet access is interrupted for 48 hours or longer?
- Consider how you will continue to provide services if an intruder takes down your database server and that server can't be restored to its previous condition.
- Evaluate additional scenarios that could occur, and create a plan to respond to each one.

Also, network administrators should assess risks to data systems and business-critical functions. For example, consider:

- Theft of data or theft of proprietary intellectual property.

- Disruption, theft, or damage to network infrastructure such as servers, networks, data storage, or data backup storage. Damage can be caused by password crackers or by other types of malicious sabotage and destruction. Most incidents originate from within the organization.
- Disruption or damage to the organization infrastructure such as building fires, environmental or biological hazards, floods, and so on.
- Disruption or damage to the public infrastructure, including electrical power, telecommunications (voice and data), transportation grids (roadways, buses, trains) caused by environmental conditions, or severe weather such as tornadoes or floods.

FileMaker Pro provides two mechanisms for handling databases that might be damaged: consistency checks and file recovery. Consistency checks occur automatically, if needed, when the file is opened. You can also choose to verify the consistency of a file that you suspect is damaged. You can also have FileMaker Pro attempt to recover a damaged file. For more information about checking consistency and recovering files, see Help.

Important In the event of a server failure, such as an unexpected loss of power, hard drive failure, or software failure, use the backup files. Any system failure causing FileMaker Server to shut down inappropriately can result in corrupted files if cached data was not written to disk and the files were not closed properly. Even if the files re-open and go through a consistency check or recovery (initiated by either FileMaker Pro or you), corruption might be buried in the file. File recovery cannot guarantee that problems have been fixed.

Installing, running, and upgrading anti-virus software

Because most computers have internet access, they are vulnerable to viruses being transmitted through email attachments. Make sure all employees run anti-virus checking software regularly, and that they are aware of typical virus warning signs. Employees should scan all files before copying or downloading them to their computer, and they should never open unsolicited attachments, even if they're from someone they know.

While anti-virus software is essential in protecting your systems and data, some caution should be observed in how they are used on computers that host FileMaker Pro databases.

Antivirus programs sometimes lock bytes within a file when they scan for viruses. These locks can cause the operating system to return an error when FileMaker Pro or FileMaker Server try to write data to the file, which sometimes causes the file to be flagged as damaged and closed.

This situation also applies to files that FileMaker Server uses as back-up targets. If the backup file is being scanned by anti-virus software when a scheduled backup occurs, the destination file might be locked. This causes the back-up process to fail, which may result in data loss. This same data loss issue applies when an open, non-shared FileMaker Pro database file is scanned by anti-virus software.

When running anti-virus software on computers that host FileMaker Pro databases, follow these recommendations:

- Do not run virus protection software on open or hosted databases. First, close the databases, then run the virus protection software.
- When you scan your computer for viruses, do not scan the Databases folder and subfolders or any folder that contains files that actively hosts files through FileMaker Server or FileMaker Pro. Instead, set your anti-virus software to scan your database back-up destination folder and make sure your anti-virus scan schedule does not coincide with your FileMaker Server back-up schedule. Wait until databases are completely backed up before scanning them.

Index

Symbols

! 51
– 81
" 81, 86
" " 43, 44
43
\$ 81
& 81
(86
) 81, 86
* 44, 51, 81
+ 81, 162
, 81
... 48
/ 81
// 46
: 81
:: 81
; 81
< 48, 81
<= 48
= 45, 51, 81
== 44, 45
> 48, 81
>= 48
? 46
@ 43
[81
] 81
^ 81
_ 81
} 81
~ 45
≤ 48, 81
≥ 48, 81
≠ 81

A

Access privileges. *See* Accounts; Privilege sets
Access via FileMaker Network 157, 191
Accounts
 Admin account 179
 defining 186
 described 176
 External Server account 177, 188
 Guest account 179
 passwords 183
 predefined 179
 viewing 185
Active record 32
Adding
 See also Defining; Placing
 fields 80
 new find requests 52
 records 35
 related records 36, 149
 tables 97
Admin account 179, 181
Adobe PDFs
 saving data as 163
AND searches 51
Anti-virus software, and database management 201
Apple OpenDirectory 188
Application preferences 69
Asian text
 entry 85, 127, 128
 printing 127
 rotating 127
Attributes, text 122
Authentication 176
 Apple OpenDirectory 188
 via external server 188
 Windows Domain 188

Authorized users. *See* Accounts; Privilege sets

Auto Enter 92

Auto-complete 118

Automating tasks. *See* Scripts

Average for summary fields 89

B

Backups

and antivirus software 201

guidelines for 199

scripts for files 68

Blank layout

See also Layouts

described 106

Blank records, printing 62

Body, described 130

Boolean values

described 46, 82, 95

finding 46

formatting 123

Break fields 130

Browse mode

described 28

finding data in 42

Browser, web

opening URL 172

Browsing records 29

Buttons, including in tab order 38

C

Calculation fields

defining 85

described 82

formulas 85

stored and unstored results 96

Calculations

See also Calculation fields

formatting 122

related fields

field references to 86

summarizing data 150

Calendars

displaying in fields 118

Case-sensitive text, finding 45

Changing

data in fields 38

find requests 55

lookups 153

preferences 69

relationships 148

Characters

maximum in fields 38

not allowed in field names 81

Checkboxes, displaying fields as 119

Clients

described 156

limits, on the web 172

performing tasks 160

saving files 157

Clones 27

Closing windows and files 26

Columnar list/report layout

See also Layouts

described 102

Columns

changing width 109

in tables 31

printing records in 106

Combo boxes, displaying fields as 119

Comma-separated text format 164

Compacted copies of files 27

Comparison operators 86

Container fields

See also Fields

described 82

formatting 126

Control styles for fields 119

Copying

field definitions 27

files 26

records 35

related records 36

scripts 27

Count for summary fields 89

Creating *See* Adding; Defining
 Cross-platform, file sharing 24
 Currency, formatting 122
 Current
 date, formatting 123
 time, formatting 124
 Custom menus, FileMaker Pro
 Advanced 12

D

Data
 described 19
 entering automatically 35, 92
 exporting 163
 importing 163
 privileges for sharing 177
 view as form, list, table 29
 Data entry 38, 92–96
 Data Entry Only privilege set,
 described 180
 Data sources
 described 170
 fixing FileMaker references 24
 Data types
 See also Field types
 and calculation results 88
 Database locks. *See* Accounts; Privilege sets
 Databases
 creating 78
 described 19
 naming 79
 planning 71
 printing 61
 publishing on web 172
 Databases, relational. *See* Relational
 databases
 Date fields
 described 82
 entering and editing values in 39
 four-digit years 39, 95

Dates
 See also Date fields
 displaying calendars 118
 entering data 39
 finding 46
 finding today's 46
 formatting 123
 four-digit years, verifying 95
 invalid 46
 typing in 39
 validating 95
 Decimal numbers 122
 Defining
 See also Adding; Placing
 accounts 186
 calculation fields 85
 databases 80
 fields 80
 lookups 151
 passwords 184
 privilege sets 189
 summary fields 88
 tables 97
 value lists 119
 Deleting
 data 40
 fields from a layout 118
 find requests 55
 related records 37, 149
 Document preferences 69
 Drag and drop, fields onto layout 116
 Drop-down calendar 118
 Drop-down lists, displaying fields as 119
 Duplicate records, finding 51
 Duplicating
 files 27
 records 35
 related records 36

E

Electronic documentation 10
 Elements. *See* Objects

Email

- sending from FileMaker Pro 164
- sending through SMTP 164

Empty or non-empty fields 51

Encryption. *See* Accounts; Privilege sets

Entering data

- automatically 92
- Furigana 85
- typing in fields 38

Envelope layout

- See also* Layouts
- described 106

Envelopes, printing 63

Excel format

- importing and exporting to 164
- saving data as 163

Exchanging files

- exporting 163, 169
- importing 163
- relational databases 131
- with other applications 164

Exporting

- See also* Exchanging files
- described 163
- file formats 164
- formatting 170

Extended columnar layout. *See* Columnar list/report layout

Extended privileges

- described 176
- viewing 191

External data sources 170

External Server account 177, 188

F

False result 46, 82, 95, 123

Favorite files 24

Field behavior 38, 127

Field content match 44

Field definitions

- copying 27
- creating 80

Field labels 118

Field names 81

Field rights. *See* Accounts; Privilege sets

Field tool 117

Field types

- and calculation results 88
- described 82

Field values

- deleting 40
- described 22
- entering and editing 38
- entering automatically 92
- finding and replacing 56
- prohibiting change 93

Field/Control tool 117

Fields

- adding to a layout 116
- defining 80
- deleting from a layout 118
- described 21
- displaying 14, 98
- empty or non-empty, finding 51
- entry options 92, 118
- formatting 121
- formatting data 121
- Furigana in 85
- global 97
- indexing 96
- maximum characters in 38
- merge 120
- naming 80, 84
- options 85
- placing on a layout 116
- removing from a layout 118
- restricting data entry 127
- selecting 38, 114
- stored and unstored results 96
- types 82
- typing in 39
- validation options 94

File formats, import/export 164

File options 69

File paths 159

File references. *See* data sources

File sharing, enabling 157

FileMaker Mobile

privileges for 178, 189

FileMaker Pro

documentation information 9

file format 164

product overview 13

versions 193

FileMaker Pro Advanced 12

FileMaker Pro format 164

FileMaker Server 156, 172, 188

privileges for 178, 191

Filename extension, fp7 24

Files

accounts 176

backing up 68

cloning 27

closing 26

converting 193

copying 26

creating 78

described 21

duplicating 27

exporting to 169

opening 23

opening across platforms 24

planning 71

privilege sets 176

protecting 175

remote 23

saving 26

shared 182

on web 172

templates, described 78

Find mode, described 28

Find requests

See also Finding records

adding new 52

broadening criteria 52

deleting 55

described 40

editing 55

mixing find and omit 54

multiple 52, 53

narrowing criteria 51

operators in 41, 48

order of 54

repeating 55

reverting 55

Finding and replacing field values 56

Finding records

See also Find requests, Quick finds

adding new request 52

all records 42

Boolean numbers 46

described 40

duplicate records 51

empty or non-empty fields 51

exact values 45

excluding records 53

invalid values 46

logical AND searches 51

logical OR searches 52

multiple criteria 51

omitting records 54

order of requests 54

partial or variable text 43

quick finds in Browse mode 42

ranges of information 48

related fields and records 49

showing all records 42

symbols 44

today's date 46

Footers, described 130

Form letters 120

Formatting

- calculations 122
- dates 123
- export data 170
- graphics 126
- import data 164
- numbers 122
- text 122
- times 124
- timestamps 125

Forms

- See also* Layouts
- Standard form layout 102
- viewing records as 29

Formulas, calculation fields 85**Found set**

- described 28, 40
- switching with omitted set 56

fp7 filename extension 24**Fraction of Total for summary fields 89****Full Access privilege set, described 180****Functions 87****Furigana field option 85****G****Global storage options 97****Grand summaries, described 130****Graphics, formatting fields for 126****Groups. *See* Accounts; Privilege sets****Guest account 179****H****Headers, described 130****Hiding records 55****Host**

- database on web 172
- described 156
- FileMaker Server 156
- performing tasks 160
- saving files 157

HTML table format 164**I****Importing 163–170**

- adding new records 165, 166
- described 163
- file formats supported 164
- into existing files 165
- into new tables 165
- source file or table 165, 168
- target file 165
- updating existing records 165
- updating matching records 166

Indexing

- fields 96
- text field limitations 46

Info palette 110**Instant Web Publishing**

- described 155, 172
- privileges for 189
- sharing files 172

Intranet 172

See also Web

Invalid values, finding 46**IP addresses, limiting 172****J****JDBC**

- field name considerations 81
- privileges for 178, 189

Join expressions. *See* Relationships**Join fields. *See* Match fields****K****Key fields. *See* Match fields****L****Labels**

- field 117, 118
- vertical 105

Labels (mailing), printing 63**Labels layout, creating 63**

- Layout bar 25, 29
- Layout mode, described 28
- Layout objects. *See* Objects
- Layout parts
 - body 130
 - described 130
 - field labels 117
 - footer 130
 - grand summary 130
 - header 130
 - subsummary 130
 - title header and footer 130
- Layout pop-up menu 25, 99
- Layouts
 - adding fields 116
 - Blank 106
 - Columnar list/report 102
 - columns
 - changing width 109
 - setup 107
 - creating 99
 - described 14, 98
 - envelope 106
 - fields
 - displaying 14, 98
 - dragging onto layout 116
 - merge 108
 - placing 116
 - placing related 120
 - removing 118
 - selecting 114
 - form layout 102
 - form view 29
 - labels 105
 - Mode pop-up menu 28
 - printing 61
 - Standard form 102
 - tabbed panels on 99
 - Table view 100
 - tools 110
 - types 102
 - vertical labels 105

- Limits
 - characters in fields 38
 - field names 81
- Lists, viewing records as 29
- Literal text searches 44
- Locked objects 114
- Locking, shared records 160
- Logical
 - AND searches 51, 52
 - OR searches 51, 52
- Lookups
 - changing 153
 - defining 151
 - described 132
 - lookup source field 135
 - lookup target field 135
 - stopping or suspending 153

M

- Macros. *See* Scripts
- Mail merge, using merge fields 120
- Mailing labels 105
- Manage Scripts 68
- Margins, displaying in Preview mode 60
- Match fields
 - See also* Fields
 - described 135, 137
 - in import update 166
- Matching records, updating 166
- Mathematical operators 86
- Maximum characters in fields 38
- Maximum for summary fields 89
- Merge fields 63, 120
- Merge format 164
- Microsoft Excel format 164
 - saving data as 163
- Minimum for summary fields 89
- Mode pop-up menu 28, 99
- Moving
 - field to field 38
 - record to record 34
- Multimedia files 82

N

Naming

- databases 79
- fields 84
- tables 98

Network guidelines 198

Networks

- cross-platform 17, 156
- FileMaker Server 156

New Layout/Report assistant,
described 100

Non-shared files 183

Number fields

- See also* Fields
- described 82
- entering and editing values in 38
- finding 46
- formatting 122

Numbers, invalid 46

O

Objects, layout

- described 109
- locked 114
- selecting 114
- setting auto resize options 112

ODBC

- overview 165
- using FileMaker as client
 - described 170
 - supplemental fields 91
- using FileMaker as data source
 - field name considerations 81
 - privileges for 178, 189

Omitting

- fields during printing 121
- records 53
- related 49, 54

Opening

- files 23
- multiple windows 25

Operators

- comparison 86
- in find requests 41, 48
- mathematical 86
- relational 136, 142, 149

Operators list 41

Options, file 69

OR searches 52

P

Page breaks, viewing in Preview mode 60

Page margins, viewing in Preview mode 60

Page numbers 103

- viewing in Preview mode 60

Page orientation for printing 62

Panels, tab panels on layouts 99

Parts. *See* Layout parts

Passwords

- defining 184
- protecting files with 183
- related files, planning 77
- troubleshooting 195

PDF documentation 10

PDFs

- saving data as 163

Photos 82

Picture fields. *See* Container fields

Pie chart 41

Placing

- fields on a layout 116
- merge fields 120
- related records 120

Planning

- databases 71
- file security 181
- relational databases 71

Pointer tool. *See* Selection toolPointers to files. *See* Relationships

Pop-up menus, displaying fields as 119

Portals

See also Relational databases

- adding records 36
- deleting records 37
- described 135
- omitting related records 54
- placing related records 120
- selecting 114
- selecting records 33
- summarizing data in 150

Preferences

- application 69
- described 69
- file 69

Preview mode, described 28, 60

Previewing printing. *See* Printing

Previewing columns 106

Primary keys. *See* Match fields

Print area, viewing 60

Printing

- Asian text 127
- blank records 62
- described 59
- envelopes 63
- information about database 67
- labels 63
- previewing 60
- records 61
- records in columns 106
- scripts 66
- setting up 62

Privilege sets

- Data Entry Only 180
- defining 189
- described 176
- Full Access 180
- predefined 180
- Read-Only Access 180
- viewing 185

Protecting files. *See* Accounts; Privilege sets

Publishing, databases on the web 172

Q

Quick finds 42

Quick Start Screen 23, 78

Quotation marks in searches 43, 44

R

Radio buttons, displaying fields as 119

Ranges of information, finding 48

Read-Only Access privilege set,
described 180

Recent files 24

Record locking 160

Records

- active 32
- adding 35, 165
- browsing
 - in a list 29
 - individual 29
- copying 35
- deleting related 37
- described 22
- displaying sorted related 149
- duplicating 35
- exporting 169
- finding 40
- hiding 55
- locked 160
- matching 166
- moving to 34
- omitting 53
- printing in columns 106
- selecting 32
- sorting 45, 58
 - in table format 31
 - related records 149
- viewing as forms, lists, or tables 29

Related fields

See also Fields; Relational databases
 calculations 86
 described 135
 on layouts 118
 planning 75
 summarizing data 150

Related files, restricting access 77

Related records

See also Records; Relational databases
 adding 36, 149
 copying 36
 deleting 37, 149
 described 135
 displaying in portals 120
 duplicating 36
 finding and omitting 49
 sorting 149
 summarizing data 150

Related tables

described 136
 planning 71

Relational databases

described 21, 131
 match fields 135
 planning 137
 planning 71, 145
 portals 135
 related tables
 described 136
 planning 71
 terminology 135

Relational operators 136, 142, 149

Relationships

See also Relational databases
 changing 148
 comparative 142
 creating 145
 described 136
 multi-criteria 140
 planning 76
 returning range of records 143
 self-joining 144
 single-criteria 138
 types 138

Relationships graph 136, 147

described 146

Repeating find requests 55

Reports

See also Columnar list/report layout;
 Layouts; Subsummaries
 creating 99
 previewing 60
 records in columns 106
 with grouped data
 creating 102
 printing 61

Restricting access. *See* Accounts; Privilege setsRetrieving data from other files. *See* Exchanging files

Reverting find requests 55

Rights. *See* Accounts; Privilege sets**S**

Saving

data automatically 26
 files 26
 shared files 157
 to Excel and PDF formats 163

Scripts

copying 27
 described 17, 68
 performing 68
 printing 66

- Searching. *See* Finding records
- Secondary files. *See* Relational databases
- Security, file 198
 - operating system guidelines 198
 - planning 181, 197
- Selecting
 - fields 38, 114
 - objects 114
 - records 32
- Selection tool 114
- Self-joins 144
 - for summarizing data in portals 150
- Server. *See* Host; FileMaker Server
- Settings. *See* Preferences
- Shared files
 - See also* Networks
 - accounts 182
 - clients 156
 - host 156
 - in workgroups 172
 - limitations 156
 - on web 172
 - opening 23
 - privilege sets 182
 - saving 157
 - setting up privileges for 177
- Simple Mail Transfer Protocol (SMTP),
 - sending email through 164
- Single-page form layout. *See* Standard form layout
- Slider 34
- Sorting
 - records 45, 58
 - records in table format 31
 - related records 149
- Sound files 82
- Standard Deviation for summary fields 89
- Standard form layout
 - See also* Layouts
 - described 102
- Starter Solutions. *See* Templates
- Status toolbar 29, 110
- Stopping lookups 153
- Stored results 96
- Strict data type 95
- Strings, text. *See* Text, literal
- Subforms. *See* Portals
- Subsummaries
 - See also* Reports; Summary fields
 - creating reports 102
 - parts, described 130
 - printing 60, 61
- Subtotals. *See* Subsummaries; Summary fields
- Summarizing data in related fields 150
- Summary fields
 - Average for 89
 - Count for 89
 - defining 88
 - described 82, 88
 - Fraction of Total for 89
 - Maximum for 89
 - Minimum for 89
 - on layouts 130
 - options for 90
 - Standard Deviation for 89
 - Total for 89
- Summary parts. *See* Subsummaries
- Supplemental fields 91
- Symbols
 - and field names 81
 - finding 44

T

- Tab controls
 - described 99
 - including in tab order 38
- Tab order 38
- Table view, described 104
- Tables
 - defining 97
 - described 21
 - importing data into new 165
 - naming 98
 - table occurrences 137
 - viewing records as 29, 31
- Tabs, inserting in fields 40
- Tab-separated text format 164
- Templates
 - creating files 78
 - described 78
- Text
 - See also* Fields
 - attributes 122
 - fields 82
 - finding 45
 - formatting 122
 - rotating Asian text 127
 - selecting 114
- Text fields
 - described 82
 - entering and editing values in 38
- Text notes, in relationships graph 147
- Time fields
 - described 82
 - entering and editing values in 39
- Times
 - finding 46
 - formatting 124
 - invalid 46
- Timestamp fields
 - described 82
 - entering and editing values in 39
 - four-digit years 39
- Timestamps, formatting 125

Title headers and footers, described 130

Today's date, finding 46

Tools

- Field tool 117
- selection tool 114
- status toolbar 29
- Total for summary fields 89
- True result 46, 82, 95, 123
- Type-ahead feature 118

U

- Unauthorized users. *See* Accounts; Privilege sets
- Unstored results 96
- Updating existing data during import 166
- Upgrading files 193
- URLs, opening 172

V

- Validating field values 94
- Value lists 92, 160
 - described 119
- Values
 - See also* Field values
 - finding duplicates 51
 - finding exact 45
- Variables
 - symbols for 81
- Vertical writing 127
- View as Form, described 29
- View as List, described 29
- View as Table, described 31
- Viewing
 - accounts 185
 - extended privileges 191
 - page breaks and page numbers in
 - Preview mode 60
 - print area 60
 - privilege sets 185
 - records as forms, lists, or tables 29
- Virtual results 97

W

Web

- field name considerations 81

- hosting databases on 172

Web viewer 14, 172

Wildcards in searches 43, 44

Windows

- closing 26

- opening multiple 25

Windows Domain 188

Workgroups, sharing files 172

World Wide Web. *See* Web

X

XML

- importing and exporting to 164

- privileges for 178, 189

XML format 164

XSLT

- privileges for 178, 189

Y

Y2K, year validation 94, 95

Years

- four-digit in Date fields 39, 95

- four-digit in Timestamp fields 39

