

FileMaker® Server 11

Custom Web Publishing
with PHP



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Preface

About this guide

This guide assumes you are experienced with PHP, developing websites, and using FileMaker® Pro to create databases. You should understand the basics of FileMaker Pro database design, and should understand the concepts of fields, relationships, layouts, portals, and containers. For information about FileMaker Pro, see FileMaker Pro Help.

This guide provides the following information about Custom Web Publishing with PHP on FileMaker Server:

- what is required to develop a Custom Web Publishing solution using PHP
- how to publish your databases using PHP
- what web users need in order to access a Custom Web Publishing solution
- how to use the FileMaker API for PHP to obtain data from databases hosted by FileMaker Server

Important You can download PDFs of FileMaker documentation from www.filemaker.com/documentation. Any updates to this document are also available from the website.

The documentation for FileMaker Server includes the following information:

For information about	See
Installing and configuring FileMaker Server	<i>FileMaker Server Getting Started Guide</i> FileMaker Server Help
Instant Web Publishing	<i>FileMaker Instant Web Publishing Guide</i>
Custom Web Publishing with PHP	<i>FileMaker Server Custom Web Publishing with PHP</i> (this book)
Using PHP Site Assistant	PHP Site Assistant Help
Custom Web Publishing with XML and XSLT	<i>FileMaker Server Custom Web Publishing with XML and XSLT</i>
Using XSLT Site Assistant	XSLT Site Assistant Help
Installing and configuring ODBC and JDBC drivers, and using ODBJ and JDBC	<i>FileMaker ODBC and JDBC Guide</i>
How FileMaker Server Auto Update can download the most current plug-in to FileMaker Pro database client computers	<i>FileMaker Guide to Updating Plug-ins</i>

Chapter 1

Introducing Custom Web Publishing

With FileMaker Server, you can publish your FileMaker database on the Internet or an intranet in these ways.

Instant Web Publishing: With Instant Web Publishing, you can quickly and easily publish your database on the web. You don't need to modify your database files or install additional software—with compatible web browser software and access to the internet or an intranet, web users can connect to your database to view, edit, sort, or search records, if you give them access privileges.

With Instant Web Publishing, the host computer must be running FileMaker Pro or FileMaker Server. The user interface resembles the desktop FileMaker Pro application. The web pages and forms that the web user interacts with are dependent on the layouts and views defined in the FileMaker Pro database. For more information, see *FileMaker Instant Web Publishing Guide*.

Static publishing: If your data rarely changes, or if you don't want users to have a live connection to your database, you can use static publishing. With static publishing, you export data from a FileMaker Pro database to create a web page that you can further customize with HTML. The web page doesn't change when information in your database changes, and users don't connect to your database. (With Instant Web Publishing, data is updated in a web browser window each time the browser sends a request to FileMaker Server.) For more information, see *FileMaker Instant Web Publishing Guide*.

Custom Web Publishing: For more control over the appearance and functionality of your published database, use the Custom Web Publishing technologies available with FileMaker Server. FileMaker Server, which hosts the published databases, does not require FileMaker Pro to be installed or running for Custom Web Publishing to be available.

With Custom Web Publishing, you can:

- Integrate your database with another website
- Determine how users interact with data
- Control how data displays in web browsers

FileMaker Server provides two Custom Web Publishing technologies:

- **Custom Web Publishing with PHP:** Use the FileMaker API for PHP, which provides an object-oriented PHP interface to FileMaker Pro databases, to integrate your FileMaker data into a PHP web application. You can use PHP Site Assistant to generate a complete PHP website, or code PHP web pages yourself.
- **Custom Web Publishing with XML and XSLT:**
 - Use XML data publishing to exchange FileMaker data with other websites and applications.
 - Use server-processed XSLT stylesheets to integrate any subset of FileMaker data into other websites, with other middleware, and with custom applications. You can use XSLT Site Assistant to generate XSLT stylesheets, or code the stylesheets yourself.

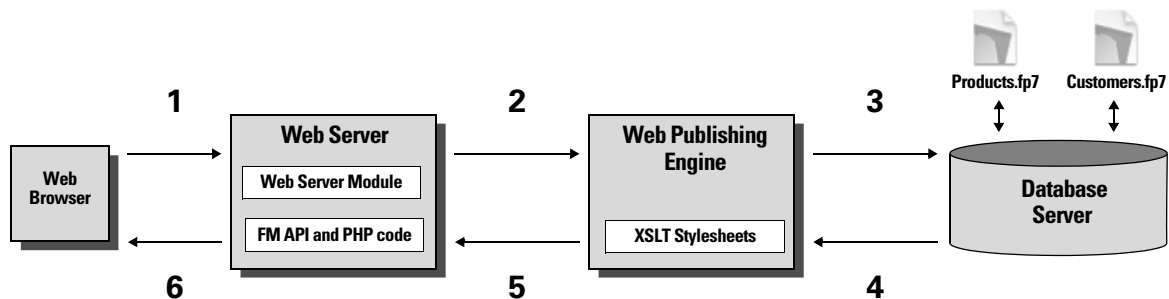
About the Web Publishing Engine

To support Instant Web Publishing and Custom Web Publishing, FileMaker Server uses a set of software components called the *FileMaker Server Web Publishing Engine*. The Web Publishing Engine handles interactions between a web user's browser, your web server, and FileMaker Server.

Custom Web Publishing with XML and XSLT: The Web Publishing Engine functions as an XSLT processor, provides output as HTML, XML, or text (such as vCards) to the web server, which provides the output to the web browser. Web users access your Custom Web Publishing solution by clicking an HREF link or by entering a Uniform Resource Locator (URL) that specifies the web server address and a FileMaker query string request. The URL can access XML data or reference an XSLT stylesheet. The Web Publishing Engine returns the XML data specified in the query string request, or the results of the referenced XSLT stylesheet.

Custom Web Publishing with PHP: When a web user accesses your Custom Web Publishing solution, PHP on FileMaker Server connects with the Web Publishing Engine and responds through the FileMaker API for PHP.

Using the FileMaker Server Web Publishing Engine for Custom Web Publishing



How a Web Publishing Engine request is processed

1. A request is sent from a web browser or application to the web server.
2. The web server routes the request through FileMaker's Web Server Module to the Web Publishing Engine.
3. The Web Publishing Engine requests data from the database hosted by the Database Server.
4. The FileMaker Server sends the requested FileMaker data to the Web Publishing Engine.
5. The Web Publishing Engine converts the FileMaker data to respond to the request.
 - For PHP requests, the Web Publishing Engine responds to the API request.
 - For XML requests, the Web Publishing Engine sends XML data directly to the web server.
 - For XSLT requests, the Web Publishing Engine uses an XSLT stylesheet to format or transform the XML data, and generates output as HTML pages, an XML document, or text to web server.
6. The web server sends the output to the requesting web browser or program.

Important Security is important when you publish data on the web. Review the security guidelines in *FileMaker Pro User's Guide*, available as a PDF file from www.filemaker.com/documentation.

Custom Web Publishing with PHP

The FileMaker API for PHP provides an object-oriented PHP interface to FileMaker databases. The FileMaker API for PHP enables both data and logic stored in a FileMaker Pro database to be accessed and published on the web, or exported to other applications. The API also supports complex and compound find commands for extracting and filtering data stored in FileMaker Pro databases.

Originally designed as a procedural programming language, PHP has been enhanced as an object-oriented web development language. PHP provides programming language functionality for constructing virtually any type of logic within a site page. For example, you can use conditional logic constructs to control page generation, data routing, or workflow. PHP also provides for site administration and security.

In addition, you can use FileMaker PHP Site Assistant to create PHP code that contains all of the necessary prerequisites and functions for properly accessing data in a FileMaker Pro database. PHP Site Assistant generates a multiple-page website that enables web users to search a database, view a list of records, browse records, sort records, add records, edit records, duplicate records, delete records, and view a summary report. FileMaker developers who have little PHP experience can use PHP Site Assistant to generate a complete PHP website. PHP developers who have little experience with FileMaker can use PHP Site Assistant to understand the FileMaker API for PHP objects and methods.

Custom Web Publishing with XML and XSLT

FileMaker Custom Web Publishing with XML enables you to send query requests to a FileMaker Pro database hosted by FileMaker Server, and display, modify, or manipulate the resulting data. Using an HTTP request with the appropriate query commands and parameters, you can retrieve FileMaker data as an XML document. You can then export the XML data to other applications, or apply an XSLT stylesheet to the XML data.

FileMaker Custom Web Publishing with XSLT lets you transform, filter, or format XML data for web browsers or other applications. You can:

- use an XSLT stylesheet to transform the data between a FileMaker XML grammar and another XML grammar in other applications or databases.
- filter the data by controlling which database fields are published by the stylesheet.
- format how the data is presented in a web page, and control how the web user interacts with the data.

The Web Publishing Engine uses your stylesheets to obtain data from a FileMaker database whenever a web user sends an HTTP request and a URL that references one of your XSLT stylesheets. The Web Publishing Engine uses a stylesheet to transform and format the XML data, and generates the resulting HTML page that the web user can work with.

In addition, you can use FileMaker XSLT Site Assistant to create basic XSLT stylesheets as a starting point for Custom Web Publishing with XSLT. XSLT Site Assistant generates stylesheets for pages that search the database, browse one record at a time, list the records in the database, sort records, add records, edit records, duplicate records, delete records, and display a summary report.

Comparing PHP to XML and XSLT

The following sections provide some guidelines for determining the best solution for your site.

Reasons to choose PHP

- PHP is a more powerful, object-oriented procedural scripting language, but is relatively easy to learn. There are many resources available for training, development, and support.
- The FileMaker API for PHP enables data and logic stored in a FileMaker Pro database to be accessed and published on the web, or exported to other applications.
- PHP lets you use conditional logic to control page construction or flow.
- PHP provides programming language functionality for constructing many types of logic on a site page.
- PHP is one of the most popular web scripting languages.
- PHP is an open source language, available at <http://php.net>.
- PHP enables access to a wide variety of third-party components that you can integrate into your solutions.

Reasons to choose XML and XSLT

- FileMaker XML request parameter syntax is designed for database interaction, simplifying solution development.
- XML and XSLT are W3C standards.
- XML is a machine and human readable format that supports Unicode, enabling data to be communicated in any written language.
- XML is well-suited for presenting records, lists and tree-structured data.
- XSLT lets you transform XML output into structured text documents such as RSS, RTF, vCard.
- You can use XSLT to transform XML output from one grammar to another.
- Templates make it easy to apply conditional formatting to variable data.
- You can use FMPXMLRESULT based stylesheets for Custom Web Publishing and for XML export from FileMaker Pro databases.
- FileMaker Server handles FileMaker XSLT stylesheet processing, preventing unauthorized access to data that might be unprotected using client-side XSLT stylesheets.

Note For more information about Custom Web Publishing with XSLT, see *FileMaker Server Custom Web Publishing with XSLT*.

Chapter 2

About Custom Web Publishing with PHP

Custom Web Publishing with PHP lets you use the PHP scripting language to integrate data from FileMaker databases with your customized web page layouts. Custom Web Publishing with PHP provides the FileMaker API for PHP, which is a PHP class created by FileMaker that accesses databases hosted by FileMaker Server. This PHP class connects to the FileMaker Server Web Publishing Engine and makes data available to your web server's PHP engine.

Key Features in Custom Web Publishing with PHP

- Create web applications that use the Open Source PHP scripting language. Use the FileMaker Server supported version of PHP 5, or use your own version of PHP 5. (If you select to use your own version of PHP, see “Manually installing the FileMaker API for PHP” on page 15.)
- Host databases on FileMaker Server. FileMaker Pro is not required for Custom Web Publishing because FileMaker Server hosts the databases.
- Use PHP Site Assistant to create the PHP code for a website that accesses data in a hosted FileMaker database. See “Using FileMaker PHP Site Assistant to generate PHP websites” on page 24..
- Write PHP code that can create, delete, edit, and duplicate records in a hosted FileMaker database. Your code can perform field and record validation before committing changes back to the hosted database.
- Write PHP code that accesses layouts, portals, value lists, and related fields. Like FileMaker Pro, access to data, layouts, and fields is based on the user account settings defined in the database's access privileges. The Web Publishing Engine also supports several other security enhancements. See “Protecting your published databases” on page 18.
- Write PHP code that executes complex, multi-step scripts. FileMaker supports over 75 script steps in Custom Web Publishing. See “FileMaker scripts and Custom Web Publishing” on page 20.
- Write PHP code that performs complex find requests.

Web Publishing Requirements

This section explains what is required to develop a Custom Web Publishing solution using PHP, what web users need in order to access a Custom Web Publishing solution, and what impact hosting a web publishing solution may have on your server.

What is required to publish a database using Custom Web Publishing

To publish databases using Custom Web Publishing with PHP, you need:

- a FileMaker Server deployment, which includes three components.
 - a web server, either Microsoft IIS (Windows) or Apache (Mac OS). The FileMaker Web Server Module is installed on the web server.
 - the FileMaker Web Publishing Engine
 - the FileMaker Database Server

- PHP installed on the web server. FileMaker Server can install the supported version of PHP 5, or you can use your own version. The minimum required version of PHP on Windows and on Mac OS X v10.5 is PHP 5.2.11. The minimum required version of PHP on Mac OS X v10.6 is PHP 5.3.0. For information about PHP, see <http://php.net>. The version of PHP installed on the web server must support cURL (client URL library) functions. For information about cURL, see <http://php.net/curl>.

Important When you install the FileMaker Server supported version of PHP 5, it does not show up in the Mac OS X Server Admin tool; it is not supposed to be listed. If you use the Mac OS X Server Admin tool to turn on PHP, you disable the FileMaker Server supported version of PHP 5, and enable your own version of PHP.

- one or more FileMaker Pro databases hosted by FileMaker Server.
- the IP address or domain name of the host running the web server
- a web browser and access to the web server to develop and test your Custom Web Publishing solution

For more information, see *FileMaker Server Getting Started Guide*.

What web users need to access a Custom Web Publishing solution

To access a Custom Web Publishing solution that uses PHP, web users need:

- a web browser
- access to the Internet or an intranet and the web server
- the IP address or domain name of the host running the web server

If the database is password-protected, web users must also enter a user name and password for a database account.

Connecting to the Internet or an intranet

When you publish databases on the Internet or an intranet, the host computer must be running FileMaker Server, and the databases you want to share must be hosted and available. In addition:

- Publish your database on a computer with a full-time Internet or intranet connection. You can publish databases without a full-time connection, but they are only available to web users when your computer is connected to the Internet or an intranet.
- The host computer for the web server that is part of the FileMaker Server deployment must have a dedicated static (permanent) IP address or a domain name. If you connect to the Internet with an Internet service provider (ISP), your IP address might be dynamically allocated (it is different each time you connect). A dynamic IP address makes it more difficult for web users to locate your databases. If you are not sure of the type of access available to you, consult your ISP or network administrator.

Manually installing the FileMaker API for PHP

When you install FileMaker Server, you are given the option to install the FileMaker supported version of PHP (PHP 5). If you already have a PHP engine installed and configured and you want to add only the FileMaker API for PHP, then manually install the FileMaker API for PHP class to make it available to your PHP scripts.

If you did not install the FileMaker supported version of PHP, be sure to do the following configuration tasks on your version of the PHP engine:

- Enable the cURL module in `php.ini`.
- Specify the location of the FileMaker API for PHP in the `include_path` variable in `php.ini`.
- If you are accessing databases that contain dates and times, install the pear date package. For more information, see: <http://pear.php.net/package/date/>

Note FileMaker Server has been tested with PHP version 5.2.11, for Windows and for Mac OS X v10.5, and with PHP version 5.3.0, for Mac OS X v10.6. For best results, use the appropriate version of PHP.

To make the FileMaker API for PHP accessible to your PHP scripts

When you installed FileMaker Server, the FileMaker API for PHP package was included as a .zip file in the following location:

- For IIS (Windows):
`<drive>\Program Files\FileMaker\FileMaker Server\Web Publishing\FM_API_for_PHP_Standalone.zip`
 where `<drive>` is the drive on which the web server component of your FileMaker server deployment resides.
- For Apache (Mac OS): `/Library/FileMaker Server/Web Publishing/FM_API_for_PHP_Standalone.zip`

The `FM_API_for_PHP_Standalone.zip` file contains a file called `FileMaker.php` and a folder called `FileMaker`. Unzip the file and copy the `FileMaker.php` file and the `FileMaker` folder to either of these locations:

- the web server root folder where your PHP scripts reside.
 - For IIS (Windows): `<drive>\inetpub\wwwroot` where `<drive>` is the drive on which the Web Publishing Engine component of your FileMaker server deployment resides.
 - For Apache (Mac OS): `/Library/WebServer/Documents`
- one of the `include_path` directories in your PHP installation. The default location for Mac OS X is `/usr/lib/php`.

Where to go from here

Here are some suggestions to get started developing Custom Web Publishing solutions:

- Use FileMaker Server Admin Console to enable Custom Web Publishing. See FileMaker Server Help and *FileMaker Server Getting Started Guide*.
- In FileMaker Pro, open each FileMaker database that you want to publish and make sure the database has the appropriate extended privilege(s) enabled for Custom Web Publishing. See “Enabling Custom Web Publishing with PHP for databases” on page 17.
- To learn how to access data in FileMaker databases using the FileMaker API for PHP, see chapter 5, “Using the FileMaker API for PHP.”

Chapter 3

Preparing databases for Custom Web Publishing

Before you can use Custom Web Publishing with a database, you must prepare the database and protect it from unauthorized access.

Enabling Custom Web Publishing with PHP for databases

You must enable Custom Web Publishing with PHP in each database you want to publish. Otherwise, web users cannot use Custom Web Publishing to access the database, even if it is hosted by a FileMaker Server that is configured to support a Web Publishing Engine.

To enable Custom Web Publishing for a database:

1. In FileMaker Pro, open the database you want to publish using an account with a Full Access or Manage Extended Privileges privilege set.
2. Assign the fmphp extended privilege to one or more privilege sets to allow Custom Web Publishing with PHP.
3. Assign the privilege set(s) with the Custom Web Publishing extended privilege to the appropriate accounts (for example, the Admin and Guest accounts).

Important When defining account names and passwords for Custom Web Publishing solutions, use printable ASCII characters; for example, a-z, A-Z, and 0-9. For more secure account names and passwords, include certain non-alphanumeric characters such as an exclamation point (!) or percent sign (%). Colons (:) are not allowed. For details on setting up accounts, see FileMaker Pro Help.

4. Using the FileMaker Server Admin Console, verify that hosting is properly configured for the database, and that it is accessible to the FileMaker Server. See FileMaker Server Help for instructions.

Note Because Custom Web Publishing with PHP does not use persistent database sessions, references to an external ODBC data source in the FileMaker Pro relationships graph may limit the functionality available to your PHP solution. If your database accesses data from an external SQL data source, you may not be able to update the external table's record data.

Creating layouts for Custom Web Publishing with PHP

Custom Web Publishing with PHP does not provide direct table access to data in a FileMaker Pro database, but uses the layouts defined in the databases. While there is no requirement to create a unique layout for Custom Web Publishing with PHP, creating a layout specifically for a PHP solution may be beneficial for several reasons:

- Improve performance by creating a layout that is limited to the fields, labels, and portals that you need to include in the PHP solution.
- Simplify your PHP code by doing less data processing because the records have fewer fields.
- Separate the interface design work from the data so that you can tailor the interface for the web user.

Protecting your published databases

Custom Web Publishing with PHP enables you to restrict access to your published databases. You can use these methods:

- Require passwords for database accounts used for Custom Web Publishing with PHP.
- Enable the Custom Web Publishing with PHP extended privilege only in those privilege sets for which you want to allow access.
- Disable Custom Web Publishing with PHP for a specific database by deselecting the `fmphp` extended privilege for all privilege sets in that database. See FileMaker Pro Help.
- Enable or disable Custom Web Publishing for all Custom Web Publishing solutions in the Web Publishing Engine using FileMaker Server Admin Console. See *FileMaker Server Getting Started Guide* and FileMaker Server Help.
- Configure your web server to restrict the IP addresses that can access your databases via the Web Publishing Engine. For example, specify that only web users from the IP address 192.168.100.101 can access your databases. For information on restricting IP addresses, see the documentation for your web server.
- Use Secure Sockets Layer (SSL) encryption for communications between your web server and web browsers. SSL encryption converts information exchanged between servers and clients into unintelligible information using mathematical formulas known as *ciphers*. These ciphers are used to transform the information back into understandable data through encryption keys. For information on enabling and configuring SSL, see the documentation for your web server.

For more information on securing your database, see the *FileMaker Pro User's Guide*, available as a PDF file from www.filemaker.com/documentation.

Accessing a protected database

When a web user accesses a database using a PHP solution, the PHP code must provide the credentials to the database using the FileMaker API for PHP. If the Guest account for the database is disabled, or does not have the `fmphp` extended privilege enabled, the FileMaker API for PHP returns an error and your PHP code must provide login information for the user.

The FileMaker API for PHP tutorial includes an example showing how to use the `setProperty()` method to set the username and password for a protected database. See “FileMaker API for PHP Tutorial” on page 27.

PHP Site Assistant supports two options for accessing protected databases:

- the PHP code can prompt the web user for authentication when accessing site
- the PHP code can store the database account name and password in site PHP files

For more information, see PHP Site Assistant Help.

The following list summarizes the process that occurs when using Custom Web Publishing to access a database:

- If no password has been assigned for a Custom Web Publishing-enabled account, the PHP solution needs to provide the account name only.
- If the Guest account is disabled, then the PHP solution needs to provide an account name and password. The PHP solution can either prompt the web user for the account name and password, or it can store the account name and password in the PHP code. The account must have the extended privilege `fmphp` enabled.

- If the Guest account is enabled and has the fmpHP extended privilege enabled:
 - The PHP solution does not need to prompt web users for an account name and password when opening a file. All web users are automatically logged in with the Guest account and assume the Guest account privileges.
 - The default privilege set for Guest accounts provides “read-only” access. You can change the default privileges, including Extended Privileges, for this account. See FileMaker Pro Help.
- The PHP solution can use the Re-Login script step to allow users to log in using a different account (for example, to switch from the Guest account to an account with more privileges). See FileMaker Pro Help. However, because PHP connections do not use persistent database sessions, the PHP solution must store the account name and password to use them for each subsequent request.

Note By default, web users cannot change their account passwords from a web browser. You can enable this feature for a database using the Change Password script step, which allows web users to change their passwords from browser. See FileMaker Pro Help.

Publishing the contents of container fields on the web

The contents of a container field, such as an image file, can either be stored inside a FileMaker database, or stored as a file reference using a relative path.

To use container field contents in a PHP solution:

- Use the correct HTML tags to indicate the type of web-compatible object that is contained in the container field, and create a URL string that represents the file path for the HTML tag’s source attribute
`<IMG src="img.php?-url=<?php echo urlencode($record->getField('Cover Image')); ?>">`
- Use FileMaker API for PHP to define the database object with the appropriate credentials (account name and password), and then use the `getContainerData()` method to retrieve the container field data.

```
$fm = & new FileMaker();
$fm->setProperty('database', $databaseName);
$fm->setProperty('username', $userName);
$fm->setProperty('password', $passWord);
echo $fm->getContainerData($_GET['-url']);
```

The FileMaker API for PHP tutorial includes additional examples showing how to use container fields. See “FileMaker API for PHP Tutorial” on page 27.

In addition, if a container field stores a file reference, then you must follow these steps to publish the referenced files using the Web Publishing Engine:

1. Store the container object files in the Web folder inside the FileMaker Pro folder.
2. In FileMaker Pro, insert the objects into the container field and select the Store only a reference to the file option.

3. Copy or move the referenced object files in the Web folder to the same relative path location in the root folder of the web server software.
 - For IIS (Windows): <drive>\inetpub\wwwroot where <drive> is the drive on which the Web Publishing Engine component of your FileMaker server deployment resides.
 - For Apache (Mac OS): /Library/WebServer/Documents

Notes

- For container objects stored as file references, your web server must be configured to support the MIME (Multipurpose Internet Mail Extensions) types for the kinds of files you want to serve, such as movies. Your web server determines the support for the current MIME types registered for the Internet. The Web Publishing Engine does not change a web server's support for MIME. For more information, see the documentation for your web server.
- All QuickTime movies stored in a container field are stored by reference.

How web users view container field data

When you publish a database using the Web Publishing Engine, the following limitations apply to container field data:

- Web users cannot play sounds or display OLE objects in a container field—a graphic is displayed instead.
- Web users cannot modify or add to the contents of container fields. Web users cannot use container fields to upload data to the database.
- If your database contains graphics in formats other than GIF or JPEG, the Web Publishing Engine creates a temporary JPEG image when a web browser requests the graphic data.
- The Web Publishing Engine does not support movie file streaming. Web users must download the entire movie file in order to view the movie.

FileMaker scripts and Custom Web Publishing

The Manage Scripts feature in FileMaker Pro can automate frequently performed tasks, or combine several tasks. When used with Custom Web Publishing, FileMaker scripts allow web users to perform a series of tasks. FileMaker scripts also allow tasks that are not supported in any other way, such as using the Change Password script step to allow web users to change passwords from a browser.

FileMaker supports over 75 script steps in Custom Web Publishing. To see script steps that are not supported, select **Web Publishing** from the **Show Compatibility** list in the **Edit Script** window in FileMaker Pro. Dimmed script steps are not supported on the web. For information on creating scripts, see FileMaker Pro Help.

Script tips and considerations

Although many script steps work identically on the web, there are several that work differently. See “Script behavior in Custom Web Publishing solutions” on page 22. Before sharing your database, evaluate all scripts that will be executed from a web browser. Be sure to log in with different user accounts to make sure they work as expected for all clients.

Keep these tips and considerations in mind:

- Use accounts and privileges to restrict the set of scripts that a web user can execute. Verify that the scripts contain only web-compatible script steps, and only provide access to scripts that should be used from a web browser.
- Consider the side effects of scripts that execute a combination of steps that are controlled by access privileges. For example, if a script includes a step to delete records, and a web user does not log in with an account that allows record deletion, the script will not execute the Delete Records script step. However, the script might continue to run, which could lead to unexpected results.
- In the Edit Script window, select **Run script with full access privileges** to allow scripts to perform tasks for which you would not grant access by an individual. For example, you can prevent users from deleting records by restricting their accounts and privileges, but still allow users to run a script that would delete certain types of records under conditions predefined within the script.
- If your scripts contain steps that are unsupported—for example, steps that are not web-compatible—use the **Allow User Abort** script step to determine how subsequent steps are handled:
 - If the **Allow User Abort** script step option is enabled (on), unsupported script steps stop the script from continuing.
 - If **Allow User Abort** is off, unsupported script steps are skipped and the script continues to execute.
 - If this script step is not included, scripts are executed as if the feature is enabled, so unsupported script steps stop scripts.
- Some scripts that work with one step from a FileMaker Pro client may require an additional **Commit Record/Request** step to save the data to the host. Because web users don’t have a direct connection to the host, they aren’t notified when data changes. For example, features like conditional value lists aren’t as responsive for web users because the data must be saved to the host before the effects are seen in the value list field.
- Any script that modifies data should include the **Commit Record/Request** step, because data changes won’t be visible in the browser until the data is saved or “submitted” to the server. This includes several script steps like **Cut**, **Copy**, **Paste**, and so on. Many single-step actions should be converted into scripts to include the **Commit Record/Request** step. When designing scripts that will be executed from a web browser, include the **Commit Record/Request** step at the end of a script to make sure all changes are saved.
- To create conditional scripts based on the type of client, use the **Get(ApplicationVersion)** function. If the value returned includes “Web Publishing Engine” you know that the current user is accessing your database with Custom Web Publishing. For more information on functions, see FileMaker Pro Help.
- After converting your files, you should open each script that web users might run and select **Web Publishing** from the **Show Compatibility** list in the Edit Script window to verify that the script will execute properly with Instant Web Publishing.

Script behavior in Custom Web Publishing solutions

The following script steps function differently on the web than in FileMaker Pro. For information on all script steps, see FileMaker Pro Help.

Script step	Behavior in Custom Web Publishing solutions
Perform Script	Scripts cannot perform in other files, unless the files are hosted on FileMaker Server and Custom Web Publishing is enabled in the other files.
Exit Application	Logs off web users, closes all windows, but does not exit the web browser application.
Allow User Abort	Determines how unsupported script steps are handled. Enable to stop scripts from continuing, and disable to skip unsupported steps. See “Script tips and considerations” on page 21 for more details. Note Web users cannot abort Custom Web Publishing scripts, but this option allows unsupported script steps to stop the script from continuing.
Set Error Capture	This is always enabled with Custom Web Publishing. Web users cannot abort Custom Web Publishing scripts.
Pause/Resume script	Although these script steps are supported in Custom Web Publishing, you should avoid using them. When a Pause step is executed, the script pauses. Only a script containing the Resume script step can make it resume execution. If the script remains in a paused state until the session times out, then the script will not be completed.
Sort Records	You must save a sort order with the Sort Records script step to execute in Custom Web Publishing.
Open URL	This script step has no effect in a Custom Web Publishing solution.
Go to Field	You cannot use Go to Field to make a particular field active in the web browser, but you can use this script step in conjunction with other script steps to perform tasks. For example, you can go to a field, copy the contents, go to another field and paste the value. To see the effect in the browser, be sure to save the record with the Commit Record script step.
Commit Record/Request	Submits the record to the database.

Script triggers and Custom Web Publishing solutions

In FileMaker Pro, both scripts and user actions (such as the user clicking a field) can activate script triggers. But in Custom Web Publishing, only scripts can activate script triggers. For example, if a Custom Web Publishing user clicks a field that has an OnObjectEnter script trigger, the trigger is not activated. However, if a script causes the focus to move to the field, then the OnObjectEnter script trigger is activated. For more information on script triggers, see FileMaker Pro Help.

Chapter 4

Overview of Custom Web Publishing with PHP

The FileMaker API for PHP helps you integrate data from FileMaker Pro databases into PHP solutions. This chapter describes how PHP works with the FileMaker Server Custom Web Publishing Engine, and introduces a tool to help you get started creating PHP solutions—FileMaker PHP Site Assistant. For more detailed information about the FileMaker API for PHP, see chapter 5, “Using the FileMaker API for PHP.”

How the Web Publishing Engine works with PHP solutions

FileMaker Server is composed of three components: a web server, the Web Publishing Engine, and the Database Server. (These components may be deployed on one machine, two machines, or three machines. See *FileMaker Server Getting Started Guide* for information.) FileMaker Server hosts the PHP solution when you place the PHP files on the web server where the PHP engine is installed.

- When a web user opens a PHP solution, the web server routes the request to the PHP engine, which processes the PHP code.
- If the PHP code contains calls to the FileMaker API for PHP, those calls are interpreted and sent as requests to the Web Publishing Engine.
- The Web Publishing Engine requests data from databases that are hosted on the Database Server.
- The Database Server sends the requested data to the Web Publishing Engine.
- The Web Publishing Engine sends the data to the PHP engine on the web server in response to the API call.
- The PHP solution processes the data, and displays it for the web user.

General steps for Custom Web Publishing with PHP

Here is a summary of the steps for using Custom Web Publishing with PHP:

1. In the Admin Console, make sure PHP Publishing is enabled. See *FileMaker Server Getting Started Guide*.
2. In the Admin Console, choose the **Databases** pane and make sure each FileMaker database that you’re publishing has the `fmpHP` extended privilege enabled for Custom Web Publishing with PHP.

If necessary, use FileMaker Pro to enable Custom Web Publishing for a database. See chapter 3, “Preparing databases for Custom Web Publishing.”

Note Make sure that you use equivalent FileMaker database privilege sets when developing PHP solutions that will be given to the end user. Otherwise, you may have access to layouts and features in the FileMaker database that will not be available to the end user, causing inconsistent behavior.

3. Use PHP authoring tools to create your PHP solution.

You can use FileMaker PHP Site Assistant to create the basic PHP code for your site. Use this generated code without modifying it, or use it as a framework for developing a more sophisticated site. The PHP code generated by PHP Site Assistant contains all of the necessary prerequisites and functions for properly accessing data in a FileMaker Pro database. See “Using FileMaker PHP Site Assistant to generate PHP websites” on page 24.

4. Copy or move your site directory structure and files to the web server root folder.
 - For IIS (Windows): <drive>\inetpub\wwwroot where <drive> is the drive on which the Web Publishing Engine component of your FileMaker server deployment resides.
 - For Apache (Mac OS): /Library/WebServer/Documents
5. If a database container field stores a file reference instead of an actual file, the referenced container object must be stored in the FileMaker Pro Web folder when the record is created or edited. You must copy or move the object to a folder with the same relative location in the root folder of the web server software. See “Publishing the contents of container fields on the web” on page 19.
6. Make sure that security mechanisms for your site or program are in place.
7. Test your site using the same accounts and privileges defined for web users.
8. Make the site available and known to users. The URL that the web user enters follows this format:
 - http://<server>/<site_path>
 - <server> is the machine on which the FileMaker Server resides
 - <site_path> is the relative path to the home page for your site, determined by the directory structure you used in step 4 above.

For example, if your web server is 192.168.123.101 and your site home page is on the web server at c:\inetpub\wwwroot\customers\index.php, then the web user would enter this URL:

http://192.168.123.101/customers/index.php

Note PHP 4 and PHP 5 use Latin-1 (ISO-8859-1) encoding. FileMaker Server returns Unicode (UTF-8) data. Use the FileMaker Server Admin Console to specify the default character encoding for your site. For PHP sites, you can specify either UTF-8 or ISO-8859-1. Specify the same setting for the charset attribute in the <HEAD> section of your site PHP files.

Using FileMaker PHP Site Assistant to generate PHP websites

PHP Site Assistant can help you create a basic PHP-based website for accessing, manipulating, and displaying data in a FileMaker Pro database that is hosted on FileMaker Server. PHP Site Assistant guides you through designing and configuring your site, and generates PHP code based on your input. PHP Site Assistant includes pre-configured themes for styling your site.

Once your site’s PHP code is generated, you can customize it using any plain text or PHP authoring tool. You can also use PHP Site Assistant to familiarize yourself with the basic elements of the FileMaker API for PHP, and the fundamentals of Custom Web Publishing with PHP.

Depending on the options you specify, you can generate pages that enable web users to do the following:

- browse one record at a time
- view a list of all the records in the database
- search the database and view the results in a list
- sort records
- add records
- edit and duplicate records

- delete records
- view a summary report

You also generate a home page that is linked with the other generated website pages. For detailed information, see PHP Site Assistant Help.

Before using PHP Site Assistant

Before using PHP Site Assistant to create your site, complete these tasks:

1. Complete all of the steps outlined in chapter 3, “Preparing databases for Custom Web Publishing.”
2. Using the FileMaker Server Admin Console, verify that the web server and the Web Publishing Engine are running. See FileMaker Server Help for instructions.
3. Enable Custom Web Publishing with PHP in the Web Publishing Engine that you will be using to run and test the PHP code. See FileMaker Server Help for instructions.
4. When connecting to a database from PHP Site Assistant, use an account with a privilege set equivalent to the set you would assign for web users. See FileMaker Pro Help for information on accounts and privilege sets. See PHP Site Assistant Help for information on connecting to the database.

Starting PHP Site Assistant

PHP Site Assistant is installed on the master machine in your FileMaker Server deployment. You can use PHP Site Assistant from any computer that has network access to the master machine. When you start PHP Site Assistant, FileMaker Server uses Java Web Start technology to download PHP Site Assistant to your client computer. PHP Site Assistant runs on your client computer and connects with FileMaker Server only when it needs to access a database.

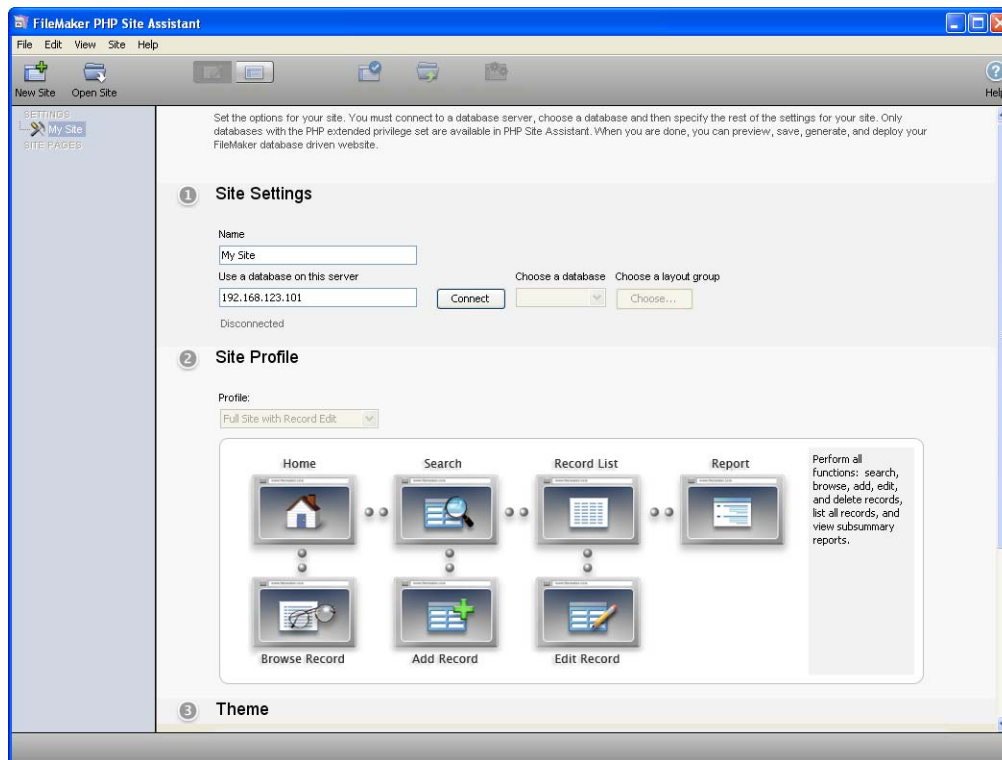
To start PHP Site Assistant

1. Start PHP Site Assistant in one of these ways:
 - Start a web browser and go to the FileMaker Server Web Publishing Tools page:
<http://<host>:16000/tools>
 where <host> is the master machine in your FileMaker Server deployment. On the Tools page, click Start PHP Site Assistant.
 - In FileMaker Pro Advanced, choose File menu > Open Remote to open a database hosted on FileMaker Server that has the fmpHP extended privilege enabled. Choose Tools menu > Launch PHP Assistant.
 - In FileMaker Server Admin Console, choose Server menu > Launch PHP Site Assistant. You can also click the PHP Site Assistant icon in the FileMaker Server Admin Console toolbar to start PHP Site Assistant.

FileMaker Server downloads the required files to your computer.

2. (Mac OS) Click Trust to continue.

3. In the create shortcuts dialog box, click **Yes** to create a shortcut to PHP Site Assistant on your computer.
 Windows: The shortcut is saved to the Desktop.
 Mac OS: Specify a name and a location for the shortcut and click **Save**.
4. You can now use PHP Site Assistant. See PHP Site Assistant Help for complete instructions on creating and generating your site.



PHP Site Assistant window

Notes

- To start PHP Site Assistant from FileMaker Pro Advanced, you must host the active database file on FileMaker Server, and enable the `fmpHP` extended privilege in a privilege set for at least one account.
- If the IP address of the master machine in your FileMaker Server deployment changes, the shortcuts no longer work. Follow the procedure above to create new shortcuts.
- You can start PHP Site Assistant if web publishing is turned off. However, if you attempt to connect to a server that has web publishing turned off, you get a connection failure error message.

Using PHP Site Assistant generated sites

You can use the PHP code generated by PHP Site Assistant without modification, or you can use your own PHP authoring or text editing tools to add more features and additional content to the generated site. You can also develop your site without using PHP Site Assistant, incorporating the FileMaker API functions into your PHP code to access your FileMaker data. See chapter 5, “Using the FileMaker API for PHP.”

For information on deploying and using PHP Site Assistant’s generated site, see chapter 6, “Staging, testing, and monitoring a site.”

Chapter 5

Using the FileMaker API for PHP

The FileMaker API for PHP implements a PHP class—the FileMaker class—that provides an object-oriented interface to FileMaker databases. The FileMaker API for PHP enables both data and logic stored in FileMaker Pro databases to be accessed and published on the web, or exported to other applications.

The FileMaker API for PHP allows PHP code to perform the same kind of functions you already have available in FileMaker Pro databases:

- create, delete, edit, and duplicate records
- perform find requests
- perform field and record validation
- use layouts
- run FileMaker scripts
- display portals and related records
- use value lists

This chapter describes how to use the FileMaker class objects and methods to add these common functions to a PHP solution. This chapter does not cover the entire the FileMaker API for PHP, but introduces key objects and methods.

Where to get additional information

To learn more about the FileMaker API for PHP, see the following resources.

If you already have a PHP engine installed and configured and you want to add only the FileMaker API for PHP, see “Manually installing the FileMaker API for PHP” on page 15.

FileMaker API for PHP Reference

If you installed the FileMaker API for PHP, you can find reference information on the web server component of your FileMaker Server deployment.

- For IIS (Windows):
`<drive>\Program Files\FileMaker\FileMaker Server\Documentation\PHP API Documentation\index.html`
where `<drive>` is the drive on which the web server component of your FileMaker server deployment resides.
- For Apache (Mac OS): `/Library/FileMaker Server/Documentation/PHP API Documentation/index.html`

FileMaker API for PHP Tutorial

If you installed the FileMaker API for PHP, you can find a tutorial on the web server component of your FileMaker Server deployment.

- For IIS (Windows): `<drive>\Program Files\FileMaker\FileMaker Server\Examples\PHP\Tutorial`
where `<drive>` is the drive on which the web server component of your FileMaker server deployment resides.
- For Apache (Mac OS): `/Library/FileMaker Server/Examples/PHP/Tutorial`

To host these PHP tutorial files, copy them to the web server root folder.

FileMaker API for PHP Examples

If you installed the FileMaker API for PHP, you can find additional examples on the web server component of your FileMaker Server deployment.

- For IIS (Windows): <drive>:\Program Files\FileMaker\FileMaker Server\Examples\PHP\API Examples where <drive> is the drive on which the web server component of your FileMaker server deployment resides.
- For Apache (Mac OS): /Library/FileMaker Server/Examples/PHP/API Examples

To host these API example files, copy them to the web server root folder.

Using the FileMaker class

To use the FileMaker class in your PHP solution, add the following statement to your PHP code:

```
require_once ('FileMaker.php');
```

FileMaker class objects

The FileMaker class defines class objects that you can use to retrieve data from FileMaker Pro databases.

Class Object	Use the object to
FileMaker database	Define the database properties Connect to a FileMaker Pro database Get information about the FileMaker API for PHP
Command	Create commands that add records, delete records, duplicate records, edit records, perform find requests, and perform scripts.
Layout	Work with database layouts
Record	Work with record data
Field	Work with field data
Related set	Work with portal records
Result	Process the records returned from a Find request
Error	Check whether an error has occurred Process any errors

FileMaker command objects

The FileMaker class defines a base command object that you use to instantiate a specific command and to specify the command's parameters. To execute the command, you must call the `execute()` method.

The FileMaker class defines the following specific commands:

- Add command
- Compound Find Set command
- Delete command
- Duplicate command
- Edit command
- Find command, Find All command, Find Any command

- Find Request command, which gets added to a compound find set
- Perform Script command

These commands are described in more detail in the following sections:

- “Working with records” on page 29
- “Running FileMaker scripts” on page 31
- “Performing find requests” on page 36

Connecting to a FileMaker database

The FileMaker class defines a database object that you instantiate in order to connect to a server or to a database. Define the object properties with the class constructor, or by calling the `setProperty()` method.

Example: Connecting to a server to get a list of databases

```
$fm = new FileMaker();
$databases = $fm->listDatabases();
```

Example: Connecting to a specific database on a server

The username and password properties determine the privilege set for this connection.

```
$fm = new FileMaker();
$fm->setProperty('database', 'questionnaire');
$fm->setProperty('hostspec', 'http://192.168.100.110');
$fm->setProperty('username', 'web');
$fm->setProperty('password', 'web');
```

Note The `hostspec` property defaults to the value `http://localhost`. If the PHP engine is running on the same machine as the web server component of the FileMaker Server deployment, there is no need to specify the `hostspec` property. If the PHP engine is on a different machine, use the `hostspec` property to specify the location of the web server component of the FileMaker Server deployment.

Working with records

The FileMaker class defines a record object that you instantiate to work with records. An instance of a record object represents one record from a FileMaker Pro database. Use a record object with Add, Delete, Duplicate, and Edit commands to change the data in the record. The Find commands—Find, Find All, Find Any, and Compound Find—return an array of record objects.

Creating a record

There are two ways to create a record:

- Use the `createRecord()` method, specifying a layout name, and optionally specifying an array of field values. You can also set values individually in the new record object.

The `createRecord()` method does not save the new record to the database. To save the record to the database, call the `commit()` method.

For example:

```
$rec =& $fm->createRecord('Form View', $values);
$result = $rec->commit();
```

- Use the Add command. Use the `newAddCommand()` method to create a `FileMaker_Command_Add` object, specifying the layout name and an array with the record data. To save the record to the database, call the `execute()` method.

For example:

```
$newAdd =& $fm->newAddCommand('Respondent', $respondent_data);
$result = $newAdd->execute();
```

Duplicating a record

Duplicate an existing record using the Duplicate command. Use the `newDuplicateCommand()` method to create a `FileMaker_Command_Duplicate` object, specifying the layout name and the record ID of the record that you want to duplicate. Then, duplicate the record by calling the `execute()` method.

Example

```
$newDuplicate =& $fm->newDuplicateCommand('Respondent', $rec_ID);
$result = $newDuplicate->execute();
```

Editing a record

There are two ways to edit a record:

- Using the Edit command. Use the `newEditCommand()` method to create a `FileMaker_Command_Edit` object, specifying the layout name, the record ID of the record you want to edit, and an array of values that you want to update. Then, edit the record by calling the `execute()` method.

For example:

```
$newEdit =& $fm->newEditCommand('Respondent', $rec_ID, $respondent_data);
$result = $newEdit->execute();
```

- Using a record object. Retrieve a record from the database, change field values, and then edit the record by calling the `commit()` method.

For example:

```
$rec = $fm->getRecordById('Form View', $rec_ID);
$rec->setField('Name', $nameEntered);
$result = $rec->commit();
```

Deleting a record

There are two ways to delete a record:

- Retrieve a record from the database, and then call the `delete()` method.

For example:

```
$rec = $fm->getRecordById('Form View', $rec_ID);
$rec->delete();
```

- Delete an existing record using the Delete command. Use the `newDeleteCommand()` method to create a `FileMaker_Command_Delete` object, specifying the layout name and the record ID of the record you want to delete. Then, delete the record by calling the `execute()` method.

For example:

```
$newDelete =& $fm->newDeleteCommand('Respondent', $rec_ID);
$result = $newDelete->execute();
```

Running FileMaker scripts

A FileMaker script is a named set of script steps. The FileMaker class defines several methods that allow you to work with FileMaker scripts defined in a FileMaker Pro database. For information on web-compatible script steps (the script steps that can be performed in a web solution), see “FileMaker scripts and Custom Web Publishing” on page 20.

Obtaining the list of available scripts

Use the `listScripts()` method to get a list of available scripts from the currently connected database. The `listScripts()` method returns an array of scripts that can be executed by the username and password specified when the database connection was defined. (See “Connecting to a FileMaker database” on page 29.)

Example

```
$scripts = $fm->listScripts();
```

Running a FileMaker script

Use the `newPerformScriptCommand()` method to create a `FileMaker_Command_PerformScript` object, specifying the layout, script name, and any script parameters. Then, perform the script by calling the `execute()` method.

Example

```
$newPerformScript =& $fm->newPerformScriptCommand('Order Summary', 'ComputeTotal');
$result = $newPerformScript->execute();
```

Running a script before executing a command

Use the `setPreCommandScript()` method to specify a script that runs before a command is run. The following example uses a Find command, but you can use the `setPreCommandScript()` method with any command.

Example

```
$findCommand =& $fm->newFindCommand('Students');
$findCommand->addFindCriterion('GPA', $searchValue);
$findCommand->setPreCommandScript('UpdateGPA');
$result = $findCommand->execute();
```

Running a script before sorting a result set

Use the `setPreSortScript()` method to specify a script that is run after a Find result set is generated, but before the result set is sorted. For more information, see “Using the Find command” on page 37.

Example

```
$findCommand =& $fm->newFindCommand('Students');
$findCommand->setPreSortScript('RemoveExpelled');
```

Running a script after the result set is generated

Use the `setScript()` method to specify a script that is run after a Find result set is generated. For more information, see “Using the Find command” on page 37.

Example

```
$findCommand =& $fm->newFindCommand('Students');
$findCommand->setScript('myScript','param1|param2|param3');
```

Script execution order

You can specify the `setPreCommandScript()`, `setPreSortScript()`, and `setScript()` methods in conjunction with the `setResultLayout()` and `addSortRule()` methods for a single command. Here is the order in which FileMaker Server and the Web Publishing Engine process these methods:

1. Run the script specified on the `setPreCommandScript()` method, if specified.
2. Process the command itself, such as a Find or Delete Record command.
3. Run the script specified on the `setPreSortScript()` method, if specified.
4. Sort the Find result set, if the `addSortRule()` method was specified.
5. Process the `setResultLayout()` method to switch to a different layout, if this is specified.
6. Run the script specified on the `setScript()` method, if specified.
7. Return the final Find result set.

If one of the above steps generates an error code, the command execution stops; any steps that follow are not executed. However, any prior steps in the request are still executed.

For example, consider a command that deletes the current record, sorts the records, and then executes a script. If the `addSortRule()` method specifies a non-existent field, the request deletes the current record and returns error code 102 (“Field is missing”), but does not execute the script.

Working with FileMaker layouts

A layout is the arrangement of fields, objects, pictures, and layout parts that represents the way information is organized and presented when the user browses, previews, or prints records. The FileMaker class defines several methods that allow you to work with the layouts defined in a FileMaker Pro database. You can get information about layouts from several of the FileMaker class objects.

With this class object	Use these methods
Database	<ul style="list-style-type: none"> listLayouts() obtains a list of available layout names. getLayout() obtains a layout object by specifying a layout name.
Layout	<ul style="list-style-type: none"> getName() retrieves the layout name of a specific layout object. listFields() retrieves an array of all field names used in a layout. getFields() retrieves an associative array with the names of all fields as keys, and the associated FileMaker_Field objects as array values. listValueLists() retrieves an array of value list names. listRelatedSets() retrieves an array of related sets names. getDatabase() returns the name of the database.
Record	<ul style="list-style-type: none"> getLayout() returns the layout object associated with a specific record.
Field	<ul style="list-style-type: none"> getLayout() returns the layout object containing specific field.
Command	<ul style="list-style-type: none"> setResultLayout() returns the command's results in a layout different from the current layout.

Using portals

A portal is table that displays rows of data from one or more related records. The FileMaker class defines a related set object and several methods that allow you to work with portals defined in a FileMaker Pro database.

A related set object is an array of record objects from the related portal; each record object represents one row of data in the portal.

Listing the portals defined on a specific layout

For a specific layout object, use the listRelatedSets() method to retrieve a list of table names for all portals defined in this layout.

Example

```
$tableNames = $currentLayout->listRelatedSets();
```

Obtaining portal names for a specific result object

For a specific FileMaker_Result object, use the getRelatedSets() method to retrieve the names of all portals in this record.

Example

```
$relatedSetsNames = $result->getRelatedSets();
```

Obtaining information about portals for a specific layout

For a specific layout object, use the `getRelatedSets()` method to retrieve an array of `FileMaker_RelatedSet` objects that describe the portals in the layout. The returned array is an associative array with the table names as the array keys, and the associated `FileMaker_RelatedSet` objects as the array values.

Example

```
$relatedSetsArray = $currentLayout->getRelatedSets();
```

Obtaining information for a specific portal

For a specific layout object, use the `getRelatedSet()` method to retrieve the `FileMaker_RelatedSet` object that describes a specific portal.

Example

```
$relatedSet = $currentLayout->getRelatedSet('customers');
```

Obtaining the table name for a portal

For a related set object, use the `getName()` method to get the table name for the portal.

Example

```
$tableName = $relatedSet->getName();
```

Obtaining the portal records for a specific record

For a specific record object, use the `getRelatedSet()` method to retrieve an array of related records for a specific portal on that record.

Example

```
$relatedRecordsArray = $currentRecord->getRelatedSet('customers');
```

Creating a new record in a portal

Use the `newRelatedRecord()` method to create a new record in the specified related set, and commit the change to the database by calling the `commit()` method.

Example

```
//create a new portal row in the 'customer' portal
$new_row = $currentRecord->newRelatedRecord('customer');

//set the field values in the new portal row
$new_row->setField('customer::name', $newName);
$new_row->setField('customer::company', $newCompany);

$result = $new_row->commit();
```

Deleting a record from a portal

Use the `delete()` method to delete a record in a portal.

Example

```
$relatedSet = $currentRecord->getRelatedSet('customers');
/* Runs through each of the portal rows */
foreach ($relatedSet as $nextRow) {

    $nameField = $nextRow->getField('customer::name')
    if ($nameField == $badName ) {
        $result = $newRow->delete();
    }

}
```

Using value lists

A value list is set of predefined choices. The FileMaker class defines several methods that allow you to work with value lists defined in a FileMaker Pro database.

Obtaining the names of all value lists for a specific layout

For a specific layout object, use the `listValueLists()` method to retrieve an array that contains value list names.

Example

```
$valueListNames = $currentLayout->listValueLists();
```

Obtaining an array of all value lists for a specific layout

For a specific layout object, use the `getValueListsTwoFields()` method to retrieve an array containing the values from all value lists. The returned array is an associative array. The array keys are the value list names, and the array values are associative arrays that list the display names and their corresponding choices from each value list.

Example

```
$valueListsArray = $currentLayout->getValueListsTwoFields();
```

Note Although the `getValueLists()` method is still supported in the FileMaker API for PHP, it will be deprecated. Instead, use the `getValueListsTwoFields()` method. The PHP Site Assistant does not support the `getValueLists()` method.

Obtaining the values for a named value list

For a specific layout object, use the `getValueListTwoFields()` method to get an array of choices defined for the named value list. The returned array is an associative array that contains the displayed values from the second field of the value list as the keys, and the associated stored values from the first field as the array values.

Depending on the options selected in the Specify Fields for Value List dialog box in the FileMaker database, the `getValueListTwoFields()` method returns the value in the first field only, the value in the second field only, or the values in both fields of a value list as the stored and displayed values.

- If Also display values from second field is not selected, the `getValueListTwoFields()` method returns the value from the first field of the value list as both the stored value and the displayed value.
- If Also display values from second field and Show values only from second field are both selected, the `getValueListTwoFields()` method returns the value from the first field as the stored value, and the value from the second field as the displayed value.
- If Also display values from second field is selected and Show values only from second field is not selected, the `getValueListTwoFields()` method returns the value from the first field as the stored value, and both values from the first and second fields as the displayed value.

Use an iterator with the `getValueListTwoFields()` method to find the displayed value and stored value.

Example

```
$layout = $fm->getLayout('customers');
$valuearray = $layout->getValueListTwoFields("region", 4);
foreach ($valuearray as $displayValue => $value) {

    ....
}
```

Notes

- Although the `getValueList()` method is still supported in the FileMaker API for PHP, it will be deprecated. Instead, use the `getValueListTwoFields()` method. The PHP Site Assistant does not support the `getValueList()` method.
- When using the `getValueListTwoFields()` method, be sure to use a `foreach` loop to loop through the associative array. Do not use a `for` loop because it can return unexpected results.

Performing find requests

The FileMaker class defines four kinds of Find command objects:

- Find All command. See “Using the Find All command” on page 37.
- Find Any command. See “Using the Find Any command” on page 37.
- Find command. See “Using the Find command” on page 37.
- Compound Find command. See “Using a Compound Find command” on page 38.

The FileMaker class also defines several methods that can be used for all four types of Find commands:

- Use the `addSortRule()` method to add a rule defining how the result set is sorted. Use the `clearSortRules()` method to clear all sort rules that have been defined.
- Use the `setLogicalOperator()` method to change between logical AND searches and logical OR searches.

- Use the `setRange()` method to request only part of the result set. Use the `getRange()` method to retrieve the current range definition.
Using the `setRange()` method can improve the performance of your solution by reducing the number of records that are returned by the Find request. For example, if a Find request returns 100 records, you can split the result set into five groups of 20 records each rather than processing all 100 records at once.
- You can execute FileMaker scripts in conjunction with Find commands.
 - To run a script before executing the Find command, use the `setPreCommandScript()` method.
 - To run a script before sorting the result set, use the `setPreSortScript()` method.
 - To run a script after a result set is generated, but before the result set is sorted, use the `setScript()` method.

Using the Find All command

Use the Find All command to retrieve all records from a specified layout. Use the `newFindAllCommand()` method, specifying a specific layout, to create a `FileMaker_Command_FindAll` object. Then, perform the find request by calling the `execute()` method.

Example

```
$findCommand =& $fm->newFindAllCommand('Form View');
$result = $findCommand->execute;
```

Note When using the Find All command, avoid computer memory overload problems by specifying a default maximum number of records to return per page.

Using the Find Any command

Use the Find Any command to retrieve one random record from a specified layout. Use the `newFindAnyCommand()` method, specifying a specific layout, to create a `FileMaker_Command_FindAny` object. Then, perform the find request by calling the `execute()` method.

Example

```
$findCommand =& $fm->newFindAnyCommand('Form View');
$result = $findCommand->execute;
```

Using the Find command

Use the `newFindCommand()` method, specifying a specific layout, to create a `FileMaker_Command_Find` object. Then, perform the find request by calling the `execute()` method.

Use the `addFindCriterion()` method to add criteria to the find request. Use the `clearFindCriteria()` method to clear all find criteria that have been defined.

Example - Finding a record by field name

```
$findCommand =& $fm->newFindCommand('Form View');
$findCommand->addFindCriterion('Questionnaire ID', $active_questionnaire_id);
$result = $findCommand->execute();
```

Example - Adding a sort order

```
$findCommand =& $fm->newFindCommand('Customer List');  
$findCommand->addSortRule('Title', 1, FILEMAKER_SORT_ASCEND);  
$result = $findCommand->execute();
```

Using a Compound Find command

The Compound Find command lets you combine multiple Find Request objects into one command.

To create a Compound Find command:

- Create a FileMaker_Command_CompoundFind object by calling the `newCompoundFindCommand()` method.
- Create one or more FileMaker_Command_FindRequest objects by calling the `newFindRequest()` method.
- Use the `setOmit()` method to indicate records in the result set of a specific Find Request that are to be omitted from the final result set.
- Use the `add()` method to add the Find Request objects to the Compound Find command object.
- Perform the Compound Find command by calling the `execute()` method.

Example - Compound Find command

```

// Create the Compound Find command object
$compoundFind =& $fm->newCompoundFindCommand('Form View');

// Create first find request
$findreq1 =& $fm->newFindRequest('Form View');

// Create second find request
$findreq2 =& $fm->newFindRequest('Form View');

// Create third find request
$findreq3 =& $fm->newFindRequest('Form View');

// Specify search criterion for first find request
$findreq1->addFindCriterion('Quantity in Stock', '<100');

// Specify search criterion for second find request
$findreq2->addFindCriterion('Quantity in Stock', '0');
$findreq2->setOmit(true);

// Specify search criterion for third find request
$findreq3->addFindCriterion('Cover Photo Credit', 'The London Morning News');
$findreq3->setOmit(true);

// Add find requests to compound find command
$compoundFind->add(1,$findreq1);
$compoundFind->add(2,$findreq2);
$compoundFind->add(3,$findreq3);

// Set sort order
$compoundFind->addSortRule('Title', 1, FILEMAKER_SORT_DESCEND);

// Execute compound find command
$result = $compoundFind->execute();

// Get records from found set
$records = $result->getRecords();

// Print number of records found
echo 'Found ' . count($records) . " results.<br><br>";

```

Processing the records in a result set

- Retrieve an array containing each record in the result set by calling the `getRecords()` method. Each member of the array is a `FileMaker_Record` object, or an instance of the class name set in the API for instantiating records. The array may be empty if the result set contains no records.
- Get a list of field names for all fields in the result set by calling the `getFields()` method. The method returns only the field names. If you need additional information about the fields, use the associated layout object.
- Get the number of records in the entire found set by calling the `getFoundSetCount()` method.
- Get the number of records in the filtered found set by calling the `getFetchCount()` method. If no range parameters were specified on the Find command, then this value is equal to the result of the `getFoundSetCount()` method. It is always equal to the value of `count($response->getRecords())`.
- For a specific record, use the `getField()` method to return the contents of a field as a string. Use the `getFieldAsTimestamp()` method to return the contents of a field as a Unix timestamp (the PHP internal representation of a date).
 - If the field is a date field, the timestamp is for the field date at midnight.
 - If the field is a time field, the timestamp is for that time on January 1, 1970.
 - If the field is a timestamp field, the FileMaker timestamp value maps directly to the Unix timestamp.
 - If the specified field is not a date or time field, or if the timestamp generated would be out of range, the `getFieldAsTimestamp()` method return a `FileMaker_Error` object.

Filtering portal rows returned by find requests

In a solution that has many related records, querying and sorting portal records can be time consuming. To restrict the number of records to display in a related set, use the `setRelatedSetsFilters()` method with find requests. The `setRelatedSetsFilters()` method takes two arguments:

- a related sets filter value: `layout` or `none`.
 - If you specify the value `none`, the Web Publishing Engine returns all rows in the portal, and portal records are not presorted.
 - If you specify the value `layout`, then the settings specified in the FileMaker Pro Portal Setup dialog are respected. The records are sorted based on the sort defined in the Portal Setup dialog, with the record set filtered to start with the initial row specified.
- the maximum number of portal records returned: an integer value or `all`.
 - This value is used only if the Show Vertical Scroll Bar setting is enabled in the Portal Setup dialog. If you specify an integer value, that number of rows after the initial row are returned. If you specify `all`, the Web Publishing Engine returns all of the related records.
 - If the Show Vertical Scroll Bar setting is disabled, the Portal Setup dialog's Number of rows setting determines the maximum number of related records that are returned.

Pre-validating commands, records, and fields

The FileMaker class lets you *pre-validate* field data in a PHP solution on the web server before committing the data to the database.

When deciding whether to use pre-validation, consider the number of data values that the web user is entering. If the user is updating a small number of fields, then you could improve performance by not using pre-validation. But if the user is entering data for many fields, then pre-validation can keep the user from being frustrated by having a record rejected by the database for validation errors.

With the FileMaker class, the PHP engine pre-validates the following field constraints:

- not empty
 - Valid data is a non-empty character string. The data must contain at least one character.
- numeric only
 - Valid data contains numeric characters only.
- maximum number of characters
 - Valid data contains at most the maximum number of characters specified.
- four-digit year
 - Valid data is a character string representing a date with a four-digit year in the format M/D/YYYY, where M is a number between 1 and 12 inclusive, D is a number between 1 and 31 inclusive, and YYYY is a four-digit number between 0001 and 4000 inclusive. For example, 1/30/3030 is a valid four-digit year value. However, 4/31/2010 is an invalid four-digit year value because April does not have 31 days. Date validation supports forward slash (/), back slash (\), and hyphen (-) as delimiters. However, the string cannot contain a mix of delimiters. For example, 1\30-2010 is invalid.
- time of day
 - Valid data is a character string representing a 12-hour time value in the one of these formats:
 - H
 - H:M
 - H:M:S
 - H:M:S AM/PM
 - H:M AM/PM
 - where H is a number between 1 and 12 inclusive; M and S are numbers between 1 and 60 inclusive.

The PHP engine pre-validation supports implicit checking of field data based on the type of the field:

- date
 - A field defined as a date field is validated according to the rules of “four-digit year” validation, except the year value can contain 0-4 digits (the year value can be empty). For example, 1/30 is a valid date even though it has no year specified.
- time
 - A field defined as a time field is validated according to the rules of “time of day” validation, except the hour component (H) can be a number between 1 and 24 inclusive to support 24-hour time values.

- timestamp

A field defined as a timestamp field is validated according to the rules of “time” validation for the time component and according to the rules of “date” validation for the date component.

The FileMaker class cannot pre-validate all of the field validation options that are available in FileMaker Pro. The following validation options cannot be pre-validated because they are dependent on the state of all the data in the database at the time that the data is committed:

- unique value
- existing value
- in range
- member of value list
- validate by calculation

Pre-validating records in a command

For a command object, use the `validate()` method to validate one field or the entire command against the pre-validation rules enforceable by the PHP engine. If you pass the optional field name argument, only that field is pre-validated.

If the pre-validation passes, then the `validate()` method returns `TRUE`. If the pre-validation fails, then the `validate()` method returns a `FileMaker_Error_Validation` object containing details about what failed to validate.

Pre-validating records

For a record object, use the `validate()` method to validate one field or all the fields in the record against the pre-validation rules enforceable by the PHP engine. If you pass the optional field name argument, only that field is pre-validated.

If the pre-validation passes, then the `validate()` method returns `TRUE`. If the pre-validation fails, then the `validate()` method returns a `FileMaker_Error_Validation` object containing details about what failed to validate.

Pre-validating fields

For a field object, use the `validate()` method to determine whether a given value is valid for a field.

If the pre-validation passes, then the `validate()` method returns `TRUE`. If the pre-validation fails, then the `validate()` method returns a `FileMaker_Error_Validation` object containing details about what failed to validate.

Processing the validation errors

When pre-validation fails, the `FileMaker_Error_Validation` object returned contains a three-element array for each validation failure:

1. The field object that failed pre-validation
2. A validation constant value that indicates the validation rule that failed:
 - 1 - `FILEMAKER_RULE_NOTEMPTY`
 - 2 - `FILEMAKER_RULE_NUMERICONLY`
 - 3 - `FILEMAKER_RULE_MAXCHARACTERS`
 - 4 - `FILEMAKER_RULE_FOURDIGITYEAR`
 - 5 - `FILEMAKER_RULE_TIMEOFDAY`
 - 6 - `FILEMAKER_RULE_TIMESTAMP_FIELD`
 - 7 - `FILEMAKER_RULE_DATE_FIELD`
 - 8 - `FILEMAKER_RULE_TIME_FIELD`
3. The actual value entered for the field that failed pre-validation

You can also use the following methods with a `FileMaker_Error_Validation` object:

- Use the `isValidationError()` method to test whether the error is a validation error.
- Use the `numErrors()` method to get the number of validation rules that failed.

Example

```
//Create an Add request
$addrequest =& $fm->newAddCommand('test', array('join' => 'added', 'maxchars' => 'abcx', 'field' => 'something',
'numericonly' => 'abc'));

//Validate all fields
$result = $addrequest->validate();

//If the validate() method returned any errors, print the name of the field, the error number, and the value that failed.
if(FileMaker::isError($result)){
    echo 'Validation failed:'. "\n";
    $validationErrors= $result->getErrors();
    foreach ($validationErrors as $error) {
        $field = $error[0];
        echo 'Field Name: ' . $field->getName(). "\n";
        echo 'Error Code: ' . $error[1]. "\n";
        echo 'Value: ' . $error[2]. "\n";
    }
}
```

Output

Validation failed:

Field Name: numericonly

Error Code: 2

Value: abc

Field Name: maxchars

Error Code: 3

Value: abcx

Handling errors

The FileMaker class defines the FileMaker_Error object to help you handle errors that occur in a PHP solution.

An error can occur when a command runs. If an error does occur, the command returns a FileMaker_Error object. It is a good practice to check the error that is returned when a command runs.

Use the following methods to learn more about the error indicated in the FileMaker_Error object.

- Test for whether a variable is a FileMaker Error object by calling the `isError()` method.
- Get the number of errors that occurred by calling the `numErrors()` method.
- Retrieve an array of arrays describing the errors that occurred by calling the `getErrors()` method.
- Display an error message by calling the `getMessage()` method.

Example

```
$result = $findCommand->execute();
if (FileMaker::isError($result)) {
    echo "<p>Error: " . $result->getMessage() . "</p>";
    exit;
}
```

For information about the error codes returned with the FileMaker Error object, see appendix A, “Error codes for Custom Web Publishing with PHP.”

Chapter 6

Staging, testing, and monitoring a site

This chapter provides instructions for staging and testing a Custom Web Publishing site before deploying it in a production environment. Instructions are also provided for using log files to monitor the site during testing or after deployment.

Staging a Custom Web Publishing site

Before you can properly test your site, copy or move the required files to the correct locations on the staging server(s).

To stage your site and prepare it for testing:

1. Complete all of the steps in chapter 3, “Preparing databases for Custom Web Publishing.”
2. Verify that the web server and the Web Publishing Engine are running.
3. Copy or move your site files to the web server component of your FileMaker Server deployment.

Copy or move your site files to the following directory on the web server machine:

- IIS (Windows): <drive>:\inetpub\wwwroot where <drive> is the drive on which the Web Publishing Engine component of your FileMaker server deployment resides.
 - Apache (Mac OS): /Library/WebServer/Documents
4. If you have not already done so, copy or move any referenced container objects to the appropriate directory on the web server machine.

If a database container field stores a file reference instead of an actual file, then the referenced container object will be stored in the FileMaker Pro Web folder when the record is created or edited. To stage your site, copy or move the referenced containers to a folder with the same relative location in the root folder of the web server software.

See “Publishing the contents of container fields on the web” on page 19.

5. Begin testing your site.

Testing a Custom Web Publishing site

Before notifying users that your Custom Web Publishing site is available, verify that it displays and functions as expected.

- Test features like finding, adding, deleting, and sorting records with different accounts and privilege sets.
- Verify that privilege sets are performing as expected by logging in with different accounts. Make sure unauthorized users can’t access or modify your data.
- Check all scripts to verify that the outcome is expected. See “FileMaker scripts and Custom Web Publishing” on page 20 for information on designing web-friendly scripts.
- Test your site with different operating systems and web browsers.

Note If you have installed the web server, Web Publishing Engine, and the Database Server in a single-machine deployment, you can view and test your site without using a network connection. Move your site files to the appropriate directory on that machine, and enter one of the following URLs in your browser:

- `http://localhost/<site_path>`
- `http://127.0.0.1/<site_path>`

Where `<site_path>` is the relative path to the home page for your site.

Monitoring your site

Use the following types of log files to monitor your Custom Web Publishing site and gather information about web users who visit your site:

- Web server access and error logs
- Web Publishing Engine application log
- Web Server Module error log
- Web Publishing Core internal access logs

Using the web server access and error logs

- IIS (Windows): The Microsoft IIS web server generates an access log file and displays errors in the Windows Event Viewer instead of writing them to a log file. The access log file, which is in the W3C Extended Log File Format by default, is a record of all incoming HTTP requests to the web server. You can also use the W3C Common Logfile Format for the access log. For more information, see the documentation for the Microsoft IIS web server.
- Apache (Mac OS only): The Apache web server generates an access log file and an error log file. The Apache access log file, which is in the W3C Common Logfile Format by default, is a record of all incoming HTTP requests to the web server. The Apache error log is a record of problems involving processing HTTP requests. For more information on these log files, see the documentation for the Apache web server.

Note For information on the W3C Common Logfile Format and the W3C Extended Log File Format, see the World Wide Web Consortium website at www.w3.org.

Using the Web Publishing Engine application log

By default, the Web Publishing Engine generates an application log file that contains a record of Web Publishing Engine error, script, and user log information. The log file is named `pe_application_log.txt`, and is located on the Web Publishing Engine component of the FileMaker Server deployment:

- IIS (Windows):
`<drive>\Program Files\FileMaker\FileMaker Server\Logs\pe_application_log.txt`
where `<drive>` is the primary drive from which the system is started.
- Apache (Mac OS): `/Library/FileMaker Server/Logs/pe_application_log.txt`

The `pe_application_log.txt` file is generated if any of the following Logging options are enabled in the Web Publishing Engine.

Logging option enabled	Information recorded in <code>pe_application_log.txt</code>
Error Logging	Any unusual Web Publishing Engine errors that have occurred. Common errors reported to the web user, such as “Database not open,” are not recorded.
Script Logging	Any errors generated when web users execute scripts. For example, it lists script steps that are skipped if they’re not web-compatible.

Both of these Logging options are enabled by default. For information on setting these options using the Admin Console, see *FileMaker Server Getting Started Guide*.

Note The entries in the application log are not automatically deleted, and over time the file may become very large. To save hard disk space on your host computer, archive the application log file on a regular basis.

Using the Web Server Module error log

If the web server is unable to connect to the Web Publishing Engine, the Web Server Module generates a log file that records any errors with its operation. This log file is named `web_server_module_log.txt`, and is located on the web server component of the FileMaker Server deployment:

- IIS (Windows): `<drive>\Program Files\FileMaker\FileMaker Server\Logs\web_server_module_log.txt` where `<drive>` is the primary drive from which the system is started.
- Apache (Mac OS): `/Library/FileMaker Server/Logs/web_server_module_log.txt`

Using the Web Publishing Core internal access log

By default, the Web Publishing Core component of the Web Publishing Engine generates a log file for recording access to the Web Publishing Core. The log file is called `wpc_access_log.txt`. It contains a record of all end-user requests to generate web publishing output and to use FileMaker Server Instant Web Publishing. These requests are routed from the web server directly to the Web Publishing Core.

Because the FileMaker API for PHP uses HTTP POST to access the Web Publishing Core, the log file does not record details about the PHP requests. You can use the log file to see when users made requests.

This file is located in the following directory on the Web Publishing Engine component of the FileMaker Server deployment:

- IIS (Windows): `<drive>\Program Files\FileMaker\FileMaker Server\Logs\wpc_access_log.txt` where `<drive>` is the primary drive from which the system is started.
- Apache (Mac OS): `/Library/FileMaker Server/Logs/wpc_access_log.txt`

Troubleshooting your site

If you have trouble viewing or using your site, verify the following:

- The extended privileges in the database are set for Custom Web Publishing with PHP and assigned to a user account. See “Enabling Custom Web Publishing with PHP for databases” on page 17.
- The database is hosted and opened by FileMaker Server. See FileMaker Server Help.
- The database account name and password you are using, if any, are correct.
- The web server and the Web Publishing Engine are running.
- PHP Publishing is enabled in the Web Publishing Engine.
 - Open the FileMaker Server Technology Tests page in a browser:
http://<server>:16000/test
where <server> is the machine on which the FileMaker Server resides.
 - Click the link Test PHP Custom Web Publishing to open a PHP page that accesses the FMServer_Sample test database.

For more information, see the *FileMaker Server Getting Started Guide* and FileMaker Server Help.

Appendix A

Error codes for Custom Web Publishing with PHP

The Web Publishing Engine supports two types of error codes that can occur for Custom Web Publishing:

- Database and data request errors. The Web Publishing Engine generates an error code whenever data is requested from published database. The FileMaker API for PHP returns this error code as a FileMaker_Error object. See the next section, “Error code numbers for FileMaker databases.”
- PHP errors. These errors are generated and returned by PHP components, including the cURL module. See “Error code numbers for PHP components” on page 55.

Error code numbers for FileMaker databases

It is up to you, as the developer of the Custom Web Publishing solution, to check the value of the returned error code and handle it appropriately. The Web Publishing Engine does not handle database errors.

Error Number	Description
-1	Unknown error
0	No error
1	User canceled action
2	Memory error
3	Command is unavailable (for example, wrong operating system, wrong mode, etc.)
4	Command is unknown
5	Command is invalid (for example, a Set Field script step does not have a calculation specified)
6	File is read-only
7	Running out of memory
8	Empty result
9	Insufficient privileges
10	Requested data is missing
11	Name is not valid
12	Name already exists
13	File or object is in use
14	Out of range
15	Can't divide by zero
16	Operation failed, request retry (for example, a user query)
17	Attempt to convert foreign character set to UTF-16 failed
18	Client must provide account information to proceed
19	String contains characters other than A-Z, a-z, 0-9 (ASCII)
20	Command or operation cancelled by triggered script
100	File is missing
101	Record is missing

Error Number	Description
102	Field is missing
103	Relationship is missing
104	Script is missing
105	Layout is missing
106	Table is missing
107	Index is missing
108	Value list is missing
109	Privilege set is missing
110	Related tables are missing
111	Field repetition is invalid
112	Window is missing
113	Function is missing
114	File reference is missing
115	The menu set is missing
116	The layout object is missing
117	The data source is missing
130	Files are damaged or missing and must be reinstalled
131	Language pack files are missing (such as template files)
200	Record access is denied
201	Field cannot be modified
202	Field access is denied
203	No records in file to print, or password doesn't allow print access
204	No access to field(s) in sort order
205	User does not have access privileges to create new records; import will overwrite existing data
206	User does not have password change privileges, or file is not modifiable
207	User does not have sufficient privileges to change database schema, or file is not modifiable
208	Password does not contain enough characters
209	New password must be different from existing one
210	User account is inactive
211	Password has expired
212	Invalid user account and/or password. Please try again
213	User account and/or password does not exist
214	Too many login attempts
215	Administrator privileges cannot be duplicated
216	Guest account cannot be duplicated
217	User does not have sufficient privileges to modify administrator account
300	File is locked or in use

Error Number	Description
301	Record is in use by another user
302	Table is in use by another user
303	Database schema is in use by another user
304	Layout is in use by another user
306	Record modification ID does not match
400	Find criteria are empty
401	No records match the request
402	Selected field is not a match field for a lookup
403	Exceeding maximum record limit for trial version of FileMaker Pro
404	Sort order is invalid
405	Number of records specified exceeds number of records that can be omitted
406	Replace/Reserialize criteria are invalid
407	One or both match fields are missing (invalid relationship)
408	Specified field has inappropriate data type for this operation
409	Import order is invalid
410	Export order is invalid
412	Wrong version of FileMaker Pro used to recover file
413	Specified field has inappropriate field type
414	Layout cannot display the result
415	One or more required related records are not available
416	A primary key is required from the data source table
417	The database is not a supported data source
500	Date value does not meet validation entry options
501	Time value does not meet validation entry options
502	Number value does not meet validation entry options
503	Value in field is not within the range specified in validation entry options
504	Value in field is not unique as required in validation entry options
505	Value in field is not an existing value in the database file as required in validation entry options
506	Value in field is not listed on the value list specified in validation entry option
507	Value in field failed calculation test of validation entry option
508	Invalid value entered in Find mode
509	Field requires a valid value
510	Related value is empty or unavailable
511	Value in field exceeds maximum number of allowed characters
512	The record was already modified by another user
600	Print error has occurred
601	Combined header and footer exceed one page

Error Number	Description
602	Body doesn't fit on a page for current column setup
603	Print connection lost
700	File is of the wrong file type for import
706	EPSF file has no preview image
707	Graphic translator cannot be found
708	Can't import the file or need color monitor support to import file
709	QuickTime movie import failed
710	Unable to update QuickTime file reference because the database file is read-only
711	Import translator cannot be found
714	Password privileges do not allow the operation
715	Specified Excel worksheet or named range is missing
716	A SQL query using DELETE, INSERT, or UPDATE is not allowed for ODBC import
717	There is not enough XML/XSL information to proceed with the import or export
718	Error in parsing XML file (from Xerces)
719	Error in transforming XML using XSL (from Xalan)
720	Error when exporting; intended format does not support repeating fields
721	Unknown error occurred in the parser or the transformer
722	Cannot import data into a file that has no fields
723	You do not have permission to add records to or modify records in the target table
724	You do not have permission to add records to the target table
725	You do not have permission to modify records in the target table
726	There are more records in the import file than in the target table. Not all records were imported
727	There are more records in the target table than in the import file. Not all records were updated
729	Errors occurred during import. Records could not be imported
730	Unsupported Excel version. Convert file to Excel 7.0 (Excel 95), 97, 2000, XP, or 2007 format and try again.
731	The file you are importing from contains no data
732	This file cannot be inserted because it contains other files
733	A table cannot be imported into itself
734	This file type cannot be displayed as a picture
735	This file type cannot be displayed as a picture. It will be inserted and displayed as a file
736	There is too much data to be exported to this format. It will be truncated.
737	The Bento table you are importing is missing.
800	Unable to create file on disk
801	Unable to create temporary file on System disk

Error Number	Description
802	Unable to open file. This error can be caused by one or more of the following: <ul style="list-style-type: none"> ■ Invalid database name ■ File is closed in FileMaker Server ■ Invalid permission
803	File is single user or host cannot be found
804	File cannot be opened as read-only in its current state
805	File is damaged; use Recover command
806	File cannot be opened with this version of FileMaker Pro
807	File is not a FileMaker Pro file or is severely damaged
808	Cannot open file because access privileges are damaged
809	Disk/volume is full
810	Disk/volume is locked
811	Temporary file cannot be opened as FileMaker Pro file
813	Record Synchronization error on network
814	File(s) cannot be opened because maximum number is open
815	Couldn't open lookup file
816	Unable to convert file
817	Unable to open file because it does not belong to this solution
819	Cannot save a local copy of a remote file
820	File is in the process of being closed
821	Host forced a disconnect
822	FMI files not found; reinstall missing files
823	Cannot set file to single-user, guests are connected
824	File is damaged or not a FileMaker file
825	File is not authorized to reference the protected file
900	General spelling engine error
901	Main spelling dictionary not installed
902	Could not launch the Help system
903	Command cannot be used in a shared file
904	Command can only be used in a file hosted under FileMaker Server
905	No active field selected; command can only be used if there is an active field
906	The current file is not shared; command can be used only if the file is shared
920	Can't initialize the spelling engine
921	User dictionary cannot be loaded for editing
922	User dictionary cannot be found
923	User dictionary is read-only
951	An unexpected error occurred

Error Number	Description
954	Unsupported XML grammar
955	No database name
956	Maximum number of database sessions exceeded
957	Conflicting commands
958	Parameter missing in query
959	Custom Web Publishing technology is disabled
1200	Generic calculation error
1201	Too few parameters in the function
1202	Too many parameters in the function
1203	Unexpected end of calculation
1204	Number, text constant, field name or "(" expected
1205	Comment is not terminated with "*/"
1206	Text constant must end with a quotation mark
1207	Unbalanced parenthesis
1208	Operator missing, function not found or "(" not expected
1209	Name (such as field name or layout name) is missing
1210	Plug-in function has already been registered
1211	List usage is not allowed in this function
1212	An operator (for example, +, -, *) is expected here
1213	This variable has already been defined in the Let function
1214	AVERAGE, COUNT, EXTEND, GETREPETITION, MAX, MIN, NPV, STDEV, SUM and GETSUMMARY: expression found where a field alone is needed
1215	This parameter is an invalid Get function parameter
1216	Only Summary fields allowed as first argument in GETSUMMARY
1217	Break field is invalid
1218	Cannot evaluate the number
1219	A field cannot be used in its own formula
1220	Field type must be normal or calculated
1221	Data type must be number, date, time, or timestamp
1222	Calculation cannot be stored
1223	The function referred to is not yet implemented
1224	The function referred to does not exist
1225	The function referred to is not supported in this context
1400	ODBC client driver initialization failed; make sure the ODBC client drivers are properly installed.
1401	Failed to allocate environment (ODBC)
1402	Failed to free environment (ODBC)
1403	Failed to disconnect (ODBC)
1404	Failed to allocate connection (ODBC)

Error Number	Description
1405	Failed to free connection (ODBC)
1406	Failed check for SQL API (ODBC)
1407	Failed to allocate statement (ODBC)
1408	Extended error (ODBC)
1409	Extended error (ODBC)
1410	Extended error (ODBC)
1411	Extended error (ODBC)
1412	Extended error (ODBC)
1413	Extended error (ODBC)
1450	Action requires PHP privilege extension
1451	Action requires that current file be remote
1501	SMTP authentication failed
1502	Connection refused by SMTP server
1503	Error with SSL
1504	SMTP server requires the connection to be encrypted
1505	Specified authentication is not supported by SMTP server
1506	Email message(s) could not be sent successfully
1507	Unable to log in to the SMTP server

Error code numbers for PHP components

The FileMaker API for PHP makes use of several PHP components. These PHP components may return additional error codes that are not listed above.

For example, if the Web Publishing Core or FileMaker Server services are not running, you may receive the cURL module error CURLE_GOT_NOTHING (52).

For information on PHP related error codes, see the PHP website at <http://php.net>.

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