

ProSync™ User's Guide

Version 1.01

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ProSync History

ProSync was developed in response to the needs of the folks who created it, us that is. We are a computer consulting firm in New York City, and our consultants frequently work with PowerBooks at off-site locations. We use a FileMaker Pro™ database to manage our clients, contacts, and leads information, and distribute copies of our database to our consultants.

What happens when a new record is added to the copy of our database in the main office? How about when one of our consultants in the field updates a fax number in their copy of the database? What about when records are added in an off-site copy of the database and deleted in the main office, and visa-versa? Our databases are then “out-of-sync.” How do we get our FileMaker Pro databases back in-sync?

First we tried manually to do a weekly record by record comparison to see what had changed between our “master” and “remote” databases. We tried this method only once. Then, as we are FileMaker Pro experts, we put our heads together and tried to devise schemes using various calculations and scripts to get FileMaker Pro itself to synchronize our database files for us. No luck; FileMaker Pro just isn't up to the task to figuring out all the possible ways in which database files can get out-of-sync.

Desperately needing to synchronize our files, we went out and built our own synchronization utility using Apple's System 7 scripting extension called AppleScript™. When we had finished developing our application we realized that 1) there were probably plenty of people with the same needs as ourselves, 2) AppleScript was the best way to do it, 3) we could maybe even sell our solution!

There you have it, and here is the result, ProSync.

THANKS

First off, we would like to thank Claris for FileMaker Pro and its Apple Events support, and for the great support we've received through the Claris Solutions Alliance. Thanks to Apple for AppleScript. Thanks to BMUG for having gotten AppleScript "out there" first with its Hayden Books, "The Tao of AppleScript." Thanks to Danny Goodman for his great book "The Complete AppleScript Handbook," Random House. Thanks to Steve Michel for his kind and generous help. And thanks to all those helpful hints and suggestions from surfers on AppleLink's AppleScript Talk board.

CAVEAT EMPTOR

ProSync is slow! Why? Because it is doing a heck of a lot of work, and because AppleScript itself is slow. However, we are sure that ProSync is a whole lot faster than reconciling your database files manually. We recommend firing off ProSync at the end of a work day with FileMaker Pro as the only open application, and when you can be sure ProSync will not be interrupted by intruding processes. **BE SURE TO MAKE BACKUP COPIES OF YOUR FILES BEFORE SYNCHRONIZING THEM WITH PROSYNC!**

Installing ProSync into existing databases requires a bit of work on the part of the user. We've made the installation as simple as we know how.

ProSync requires System 7.x, FileMaker Pro 2.1.x, and at least 4 megabytes of RAM.

INSTALLING PROSYNC

Inside the ProSync™ Folder are the following items:

- AppleScript™
- Apple® Events Manager
- Master
- ProSync
- ProSync Questionables
- ProSync Settings
- ProSync User's Guide
- Questionables
- QuickTime™
- Remote
- Scripting Additions

Drag AppleScript™ and Apple® Events Manager to your System folder; they will automatically be installed in your Extensions folder. If you are using System 7.0 or System 7.0.1, you will also need to install QuickTime™ by dragging it to your System folder for installation inside your Extensions folder.

The Scripting Additions folder must be manually placed in your Extensions folder by opening your System folder, and dropping the Scripting Additions folder into the Extensions folder.

You must now restart your computer to begin using ProSync.

• For those with AppleScript™ already installed, if you are using earlier versions of Apple's software, follow the above installation instructions. If you are using more recent versions of Apple's software than provided by ProSync, please be sure to drag into your Scripting Additions folder any

scripting additions provided by ProSync not found in your Scripting Additions folder.

I. SAMPLE FILES

Inside the ProSync Folder are the *Master*, *Remote* and *Questionables* FileMaker Pro databases. They are provided for demonstration purposes, and may even be used as templates. To be sure that ProSync is properly installed, begin by opening the *Master* file. This file is already synchronized with the *Remote* FileMaker Pro database, that is, all their records are identical.

In the *Master* file, change the information in a few fields here and there, not more however than you'll be able to remember, or make as many changes as you'd like and write them down. Click the *ProSync*[™] button to run ProSync. After a few seconds an open dialog box will appear asking you to select the file you'd like to synchronize with the *Master* file; select the *Remote* file. After a few moments ProSync will also ask you to locate the *Questionables* file.

Give ProSync a few minutes to do its thing. A dialog box will let you know when ProSync has finished synchronizing the *Master* and *Remote* databases. Now look in the *Remote* file to find the changes you made in the *Master*. You could alternately have opened the *Remote* file and made changes there, or opened both files and made changes to either.

The *Questionables* file is where ProSync places records that it can't synchronize without your help. More about the *Questionables* file later.

II. WHAT NEXT?

There are two directions to go now to put ProSync to work for you.

- **Starting with the *Master* and *Remote* Templates, section III.**
- **Installing ProSync Into An Existing FileMaker Pro database, section IX.**

Please note that once files have been distributed for later synchronization with ProSync, no changes can be made to either file's fields or layouts. That is, no layouts or fields can be added, modified, or deleted until the files have been re-synchronized and the ProSync installation process is repeated as described in section IX.

III. STARTING WITH THE *MASTER* AND *REMOTE* TEMPLATES

Granted, the *Master* and *Remote* databases are pretty wimpy contact templates, but they do have ProSync pre-installed. If you decide to use ProSync by building off of these templates, you will need to follow these guidelines.

Please take a moment now to review sections **IV. Required Fields**, and **V. Required Layouts**. Now that you're back, all you really have to keep in mind while customizing either the *Master* or *Remote* databases to fit your needs, is that you can't delete any of the required fields or change any of their calculations, that the "Run ProSync" layout must contain every field in your database, and that the *Duplicate Check* layout must contain every field in your database except for the required fields and any user specific fields.

When you have finished customizing either the *Master* or *Remote* files, you will need to create an exact copy of this file. Do so by selecting "Save a copy as..." from the FileMaker Pro File menu. Be sure that "copy of current file" is selected in the Save As dialog, and type any name you'd like except for "Questionables." You have now created "master" and "remote" copies of your database.

Repeat the above steps, except this time name your file "Questionables." Open the *Questionables* file, and select "ScriptMaker™..." from the scripts menu. Follow the instructions in section **VII. Adding ProSync Scripts**.

When you have finished adding the "ProSync" script to your *Questionables* file, follow the

instructions in section **VIII. Questionables File.**

Now open either your “remote” or “master” file and click the “ProSync” button in the “Run ProSync” layout, (or select the ProSync script from the Scripts menu). Though these two files are currently identical, ProSync needs to be run to prepare them for future synchronization. When ProSync has finished, the files are ready to be distributed.

IV. REQUIRED FIELDS

In order to work with any FileMaker Pro databases, including the *Master* and *Remote* files, the following fields are required:

Field Name	Field Type	Formula / Entry Option
Unique Id	Number	Serial Number with Current Value: "x" Increment: "1"
Creation Date	Date	Auto-enter the: "Creation Date"
Modification Date	Date	Auto-enter the: "Modification Date"
Modification Time	Time	Auto-enter the: "Modification Time"
Date Last Synced	Date	
Time Last Synced	Time	
Added Flag	Calculation(Number)	=if(Creation Date > Date Last Synced, 1, 0)
Modified Flag	Calculation(Number)	=if(Added Flag = 0, if(Modification Date > Date Last Synced or Date Last Synced = Modification Date and TextToTime(Hour(Time Last Synced) & ":" & Minute(Time Last Synced)) + 120 < TextToTime(Hour(Modification Time) & ":" & Minute(Modification Time)),1,0),0)
Unique Key	Calculation(Text)	=First Name & Last Name & Company & Phone (User definable - see section V. Unique Key Field)
Optional, but recommended: Date Time Last Synced	Calculation(Text)	=DateToText(Date Last Synced) & " • " & TimeToText(Time Last Synced)

ProSync expects these fields to be defined exactly as shown above, i.e., with identical names, field types, and field calculations and options. ProSync does not care about whether the field names or calculations are typed in upper or lower case, or whether the spacing is identical between field names, functions and operators in the field's calculation formula.

Please note that the *Unique Key* field's calculation formula is user definable, and must be customized according to the design of the database being used with ProSync. Please see section **V. *Unique Key* Field** for more about the *Unique Key* field.

The *Date Time Last Synced* field is not required, but is recommended. It displays the last date and time that your files were synchronized.

If any of the required fields are missing from the files to be synchronized, or if their calculations are incorrect, ProSync will display a message explaining what the problem is, and will not run until the problem is corrected.

V. *UNIQUE KEY* FIELD

The *Unique Key* field is a text calculation which concatenates (combines) other fields in your database into a single text string. In the example provided by the *Master* file, the *Unique Key* field's calculation is defined as “=First Name & Last Name & Company & Phone.” The *Unique Key* calculation for Bill Gates' record results in the following: “BillGatesMicrosoft555-0000.” ProSync uses the *Unique Key* field to help identify and delete exact duplicate records.

Let's imagine that your database is designed so that if you wanted to enter John Sculley's business and home addresses you would need to create a separate record for each address. A *Unique Key* calculation which included an address field would “see” that the records were not identical, even though all other information in the records could be identical.

It is certainly possible that your database could contain records for two different people working at the same company, with the same address and phone number. In this example you would want to include the person's name field in the *Unique Key* field's calculation to differentiate between the two records.

As the purpose of the *Unique Key* is to uniquely identify a record, you will need to change it's calculation depending upon the design of your database.

VI. REQUIRED LAYOUTS

“Run ProSync” Layout. ProSync must be run from a layout which contains every field in your database. The simplest way to create a “Run ProSync” layout is to go into Layout mode (select Layout from the Select menu), select New Layout from the Edit menu, and in the New Layout dialog box leave the default layout type set at Standard, type the layout name of your choice, and click the OK button. This new layout will contain every field in the database. As this is the layout from which ProSync will be run by pressing the “ProSync” button (or by selecting ProSync from the Scripts menu), it makes sense to name the layout according to its purpose.

If you'd like to attach your ProSync script to a button, please see Chapter 5-17 of the FileMaker Pro User's Guide for directions.

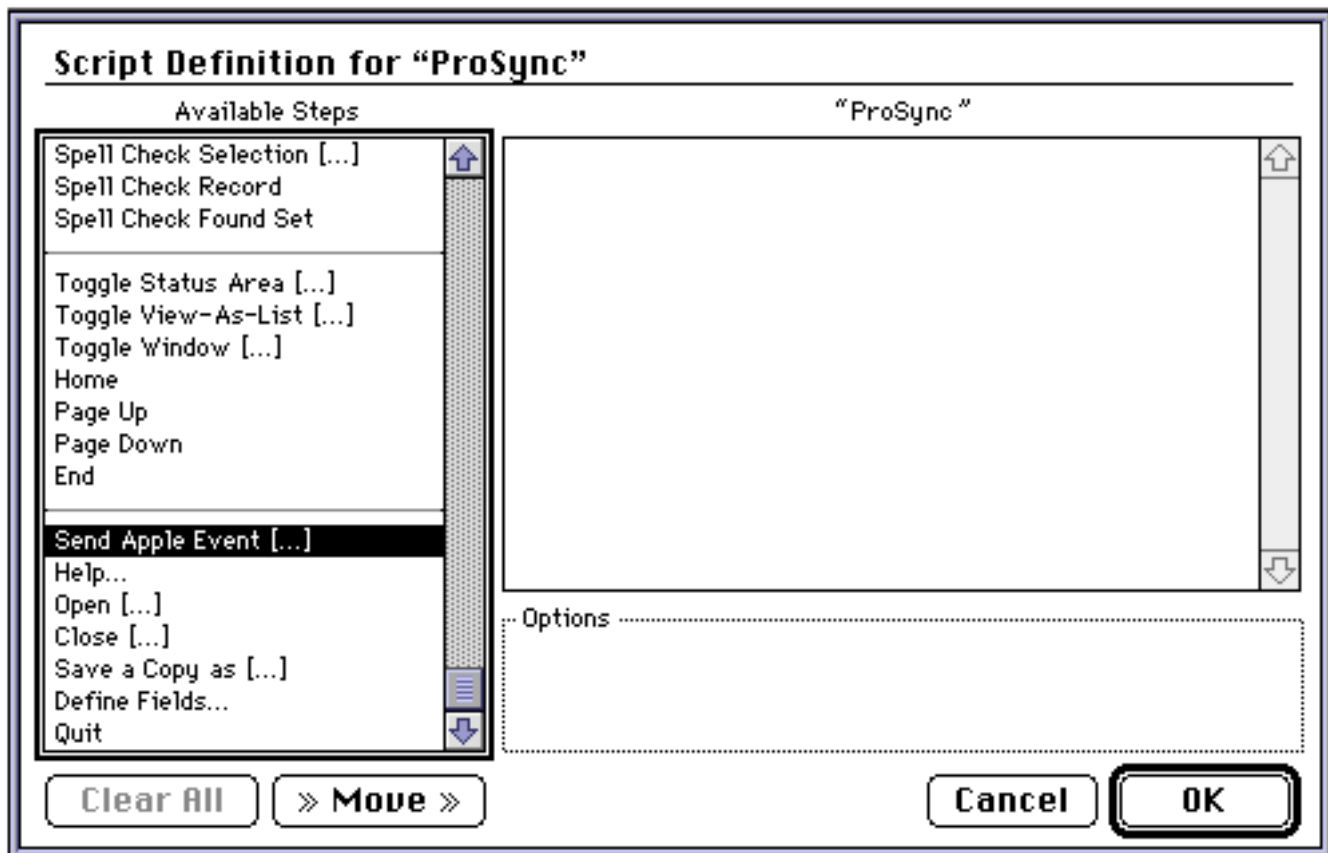
Duplicate Check Layout.

Duplicate Check is a required layout, and its required name. This layout must contain every field in your database except for ProSync's required fields. To create the *Duplicate Check* layout, follow the same steps used in creating the “Run ProSync” layout, and be sure to delete ProSync's required fields from the layout. See section **IV. Required Fields** for a review. ProSync will not run without the *Duplicate Check* layout.

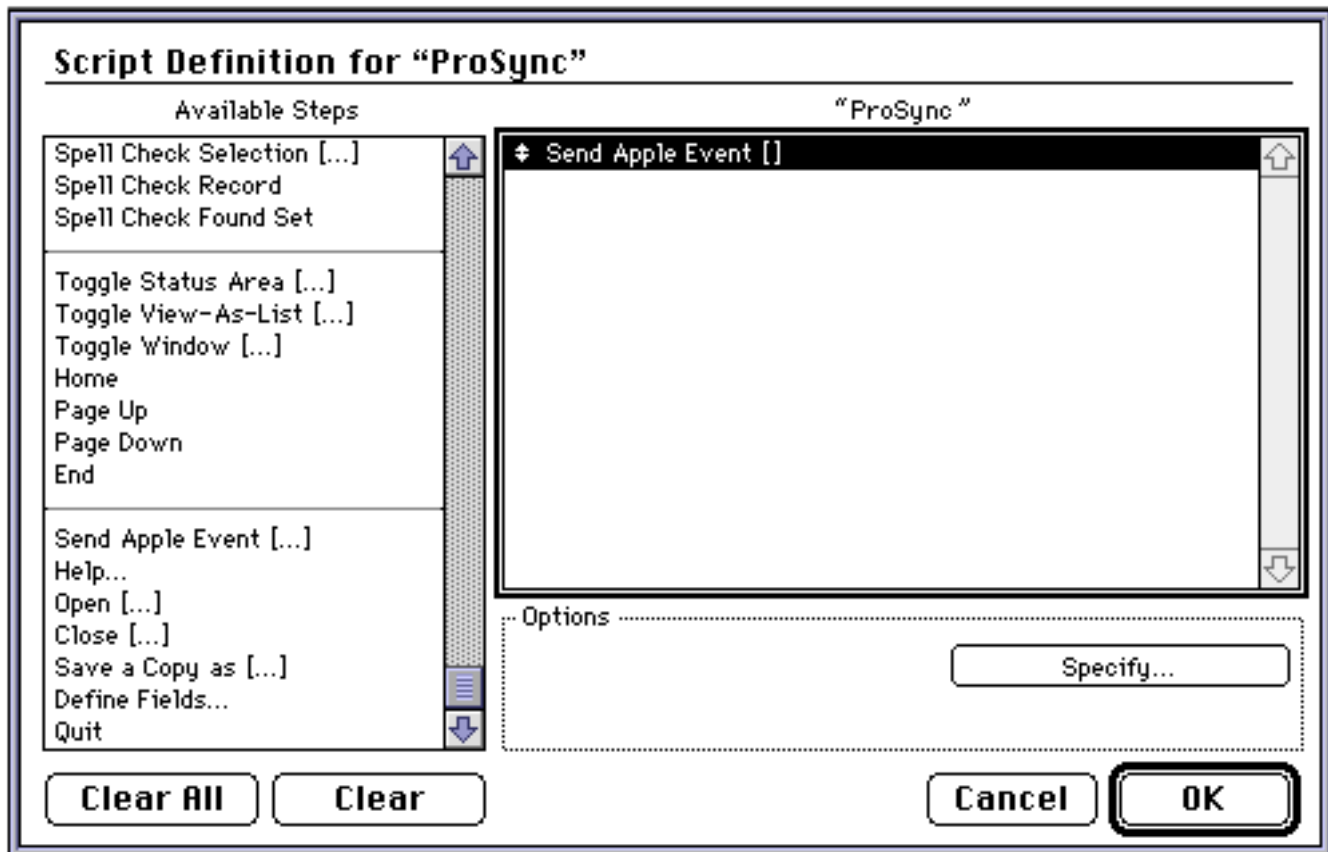
Please note that any fields which are user or machine specific must also be omitted from the *Duplicate Check* layout. Examples of such fields are fields into which the user editing the record would enter their name, or any field which automatically enters the user's name or the creation or modification date.

VII. ADDING PROSYNC SCRIPTS

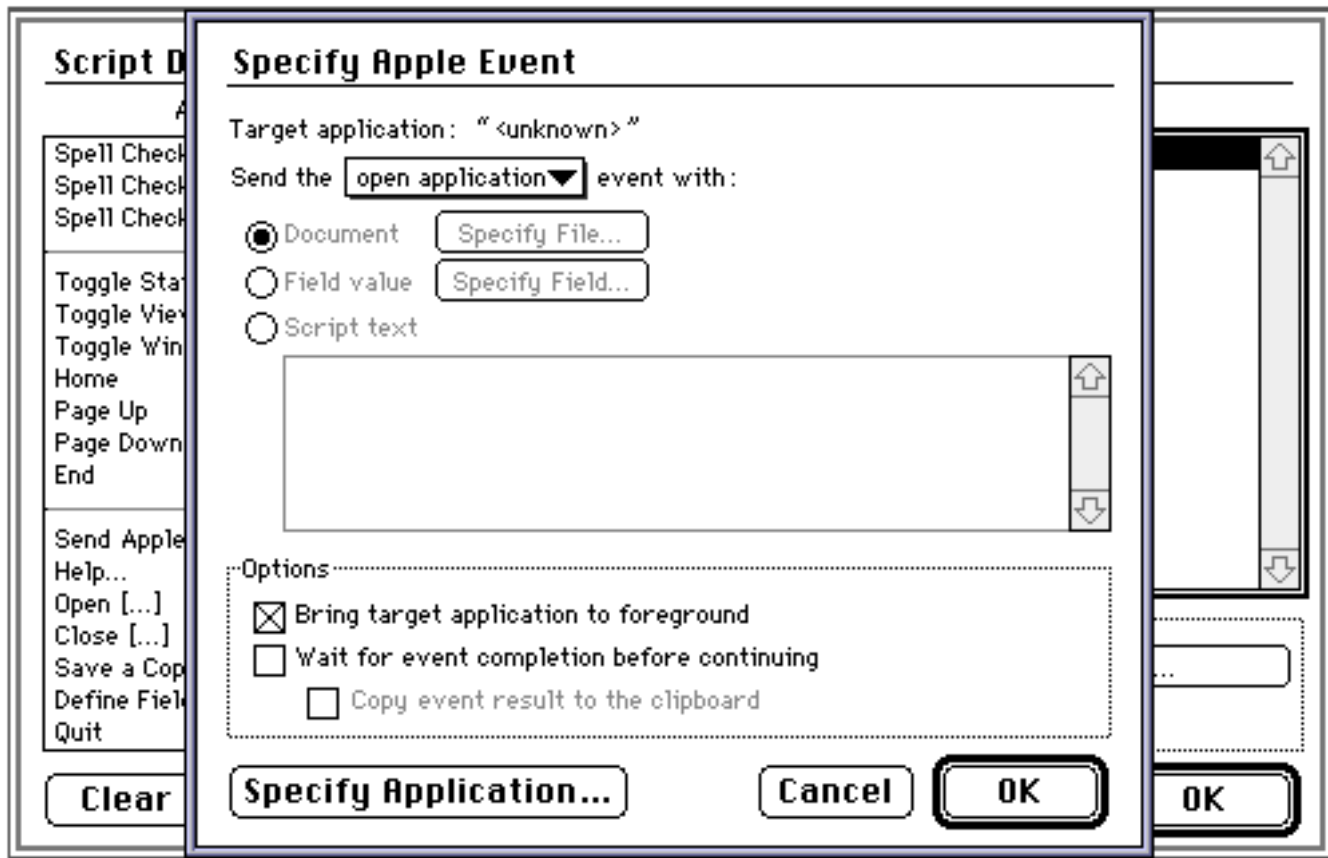
Select “ScriptMaker™...” from the Scripts menu in FileMaker Pro. In the Define Script dialog box enter “ProSync” in the Script Name field and click the “Create” button. In the resulting Script Definition dialog box click the “Clear All” button. Scroll down the Available Steps list box and select “Send Apple Event [...]” as shown below. Double-click the selection or click the “Move” button.



The Script Definition dialog should now appear as shown below. In the right-hand box, double-click on "Send Apple Event []", or select "Send Apple Event[]" and click the "Specify" button.



In the resulting Specify Apple Event dialog box, select “Send the open application event with” from the pop-up list. If you are creating a script for the *Questionables* file, select the application program “ProSync Questionables” in the open file dialog, otherwise select the application program “ProSync.” Check the “Bring target application to foreground” box and uncheck the “Wait for event completion before continuing” box.



The Specify Apple Event dialog should now appear as follows, (substitute “ProSync” for “ProSync Questionables” if you are adding scripts to your working database file):

Specify Apple Event

Target application: "ProSync Questionables"

Send the **open application** event with:

Document

Field value

Script text

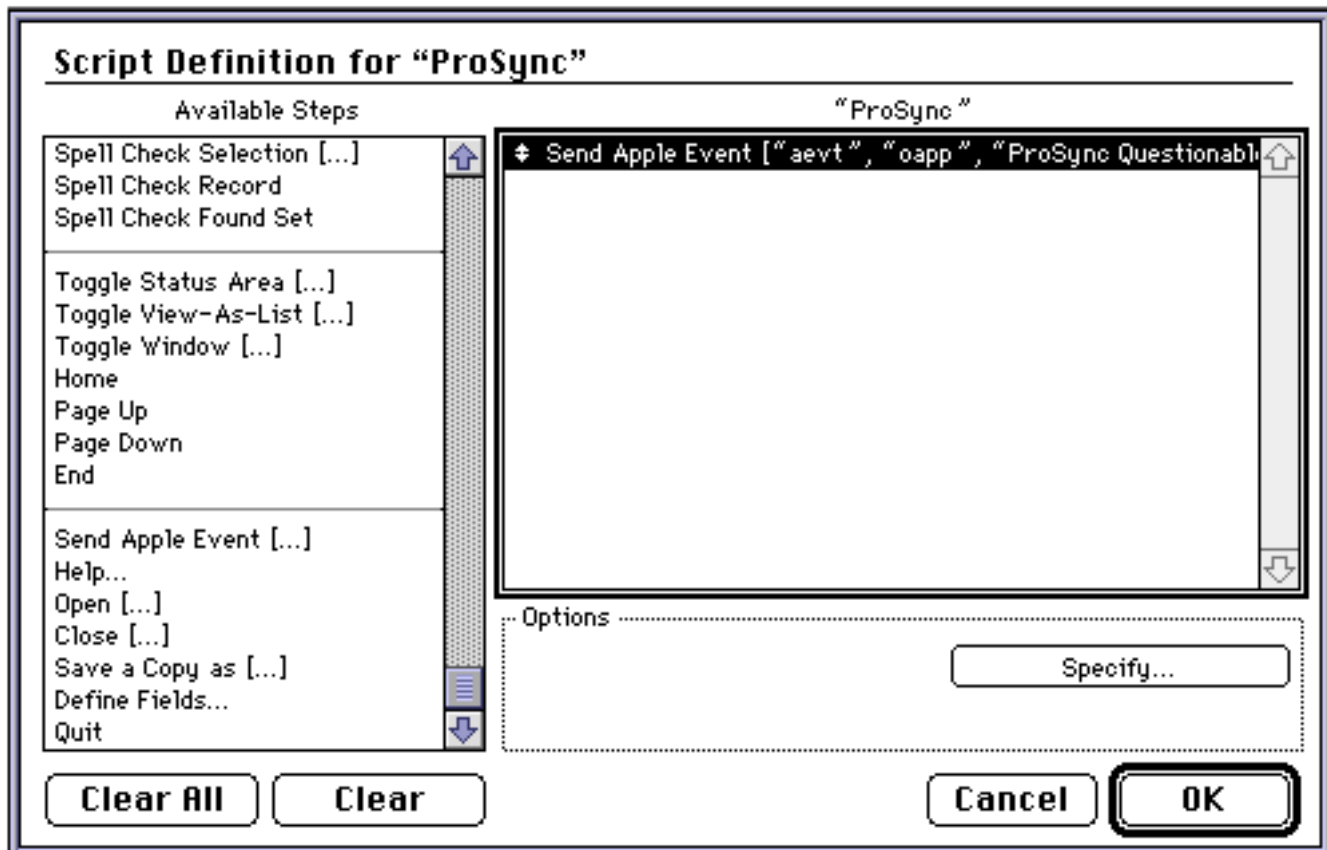
Options:

Bring target application to foreground

Wait for event completion before continuing

Copy event result to the clipboard

Click the "OK" button. The Script Definition dialog should appear as follows, (substitute "ProSync" for "ProSync Questionables" for adding scripts to your working database file):



Click the “OK” button, and then “Done.” You have finished adding the required script to your file.

VIII. QUESTIONABLES FILE

Please note that the “Run ProSync” layout is the only required layout in the *Questionables* file and that all other layouts must be deleted from the *Questionables* file.

The *Questionables* file has three required text fields which must be added to your *Questionables* file’s “Run ProSync” layout. They are “Source File”, “Explanation”, and “When Modified.” These fields provide useful information regarding “un-resolvable” records. ProSync will not run without these fields.

To add the “Source File”, “Explanation”, and “When Modified” fields, select “Define Fields...” from the Select menu. In the resulting Define Fields dialog box add these three fields as text fields, with their names spelled exactly as shown above. Next, enter layout mode and add these three fields to the “Run ProSync” layout.

We recommend adding two buttons to the “Run ProSync” layout, after deleting any other buttons which may appear on the layout, one for deleting the current record, and the other to run the ProSync script you’ve just created. See section Chapter 5-17 of the FileMaker Pro User’s Guide for instructions on how to attach scripts to buttons.

The *Questionables* file is used to temporarily store records which ProSync is unable to synchronize or “resolve” without your help. Please note that all records which are added to the *Questionables* file have been deleted from their originating file.

Records are added to the *Questionables* file if:

- Previously synchronized records are modified in both the “master” and “remote” copies of your database.
- A previously synchronized record remains in one file and was deleted from the other.
- A previously synchronized record was deleted from and re-added to a file and is not identical to the previously synchronized record in the other file (rare but what the hey).

When ProSync is finished running, if it has encountered any “un-resolvable” records during synchronization, it will present you with a dialog asking that you please check the *Questionables* file for these records.

We highly recommend that you immediately check *Questionables* and either add each “un-resolved” record to both copies of your file by pressing the “ProSync” button (or selecting ProSync from the Scripts menu), or permanently delete it. The *Questionables* file will have no remaining records when you are finished.

IX. ADDING PROSYNC TO AN EXISTING FILEMAKER PRO DATABASE

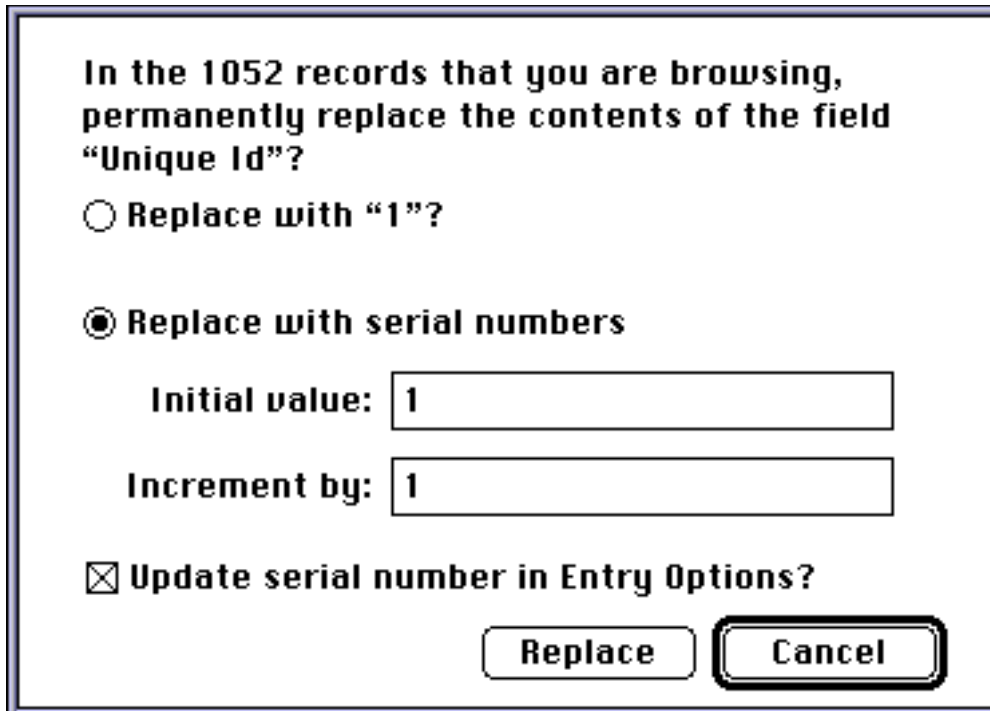
Open the file you’d like to distribute copies of for remote use. First add the required fields as specified in section **IV. Required Fields**. When creating the *Added Flag* and *Modified Flag* calculation fields, instead of manually typing in the calculation formulas, we’d like to suggest that you copy the formulas from the Required Fields table in section **IV**. and paste them directly into the formula box in the Options for field dialog box in FileMaker Pro. Be sure not to include the equal sign “=” when you copy the formulas from this guide.

The *Unique Key* field’s calculation requires that you now divert your attention to section **V. Unique Key Field**.

When you have finished adding all the required fields to your database and defining the *Unique Key* field’s calculation formula, follow the directions in section **VI. Required Layouts** for creating the “Run ProSync” and *Duplicate Check* layouts.

When your “Run ProSync” and *Duplicate Check* layouts have been created, follow the directions in section **VII. Adding ProSync Scripts**, substituting “ProSync” for “ProSync Questionables” as the Apple Event target application. We like buttons, and if you do too, please see section Chapter 5-17 of the FileMaker Pro User’s Guide for instructions on adding buttons to your file.

Next, select “Find All” from the “Select” menu. Click in the “Unique Id” field to make it the currently selected field. Then select the “Replace...” command from the “Edit” menu. In the resulting dialog box select “Replace with serial numbers,” enter “1” in the Initial Value field, be sure that the “Update serial numbers in Entry Options?” check box is checked, and click the “Replace” button.



The Replace dialog should appear as shown above.

Now you are ready to create an exact copy of your database file. Select “Save a copy as...” from FileMaker Pro’s File menu. Be sure that “copy of current file” is selected in the Save As dialog, and type any name you’d like except for “Questionables.” You have now created “master” and “remote” copies of your database.

Repeat the above steps, except this time “Save a copy as...” a “clone (no records)” and name your file “Questionables.” You will now need to follow the directions in section **VII. Adding ProSync Scripts** to add ProSync to your *Questionables* file.

Now open either your “remote” or “master” file and click the “ProSync” button in the “Run ProSync” layout, (or select the ProSync script from the Scripts menu). Though these two files are currently identical, ProSync needs to be run to prepare them for future synchronization. When ProSync has finished, the files are ready to be distributed.

X. HELPFUL FILEMAKER PRO USER’S GUIDE CHAPTERS

- Chapter 5-17 Using Buttons with Scripts
- Chapter 5-27 Using Apple Events

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