

How Runtime Scripts Work, page 1.  
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## How Runtime Scripts Work

### UserLand Software, Inc.

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Comments, questions and suggestions are welcome!

## Background

Frontier scripts come in a variety of different packages, ranging from icons you double-click on in the Finder (these are called "desktop scripts") to scripts embedded within application programs.

In this document we review the different kinds of scripts and explain how each of the scripts in the Runtime package works.

## Desktop Scripts

### Background

When you double-click on a desktop script in the Finder, the script runs. It's the simplest kind of Frontier script.

Desktop scripts can operate on the folder they were launched from. For example, if you want to unlock all the locked files in your System Folder, you'd drag the Find Locked Files script into the System Folder and double-click on it.

We've included four sample desktop scripts in the Frontier Runtime package. They are located in the Sample Scripts sub-folder inside the Extras folder. Each script is described in the following four sections.

### Recently Changed Files...

This script creates a folder full of aliases of files that have changed recently. What's recent? That's up to you...

It displays a dialog asking you to enter a date, suggesting August 1, 1992 as a default. Enter a date in the same format you see, and click on OK to proceed, Cancel to exit the script.

The script travels thru the folder it was launched from and all of its sub-folders, and creates aliases of all the files changed since the date you entered. The aliases are created in a folder named "Recently Changed Files."

When it's finished, the script opens the Recently Changed Files folder and brings the Finder to the front.

### Find Locked Files...

This script travels thru the whole folder it was launched from and all of its sub-folders, looking for locked files. When it finds one, it displays a dialog asking if you want to unlock a specific file. Click on Yes to unlock it, No to not unlock it, or Cancel to halt the traversal.

Special feature: hold down the option key while clicking on Yes to unlock all subsequent files without confirmation.

### Open Folder...

This is a very simple, but very useful script. It opens a standard file dialog, asking you to select a folder to open.

Select a folder and click on the Folder button. An Apple Event message is sent to the Finder telling it to open the folder.

Suggestion: place this script at the desktop level.

This script is especially useful in conjunction with Boomerang, part of the Now Utilities, from Now Software.

### Find Bogus Dates...

Do ever come across a file on your hard disk that was created on January 1, 1904? Or a file that was modified in the year 2016? Or a file that whose modification date pre-dates its creation date? If so, and if it bothers you (or your backup software) this script will fix things up.

It's a Frontier desktop script, so when you double-click on it in the Finder it searches all the files and folders in the folder it was launched from.

As it scans it checks both the modification and creation dates for all files and folders and stops when it finds a date that is:

- **Earlier than January 24, 1984, the shipdate of the Macintosh. It's hard to imagine that you have any files older than that! Script writers may want to modify the script to put a later date in here; a likely candidate is the date you got your Macintosh.**
- **Later than the time the script started running. Time travel isn't possible (yet! -- it may of course be possible when Apple ships Knowledge Navigator).**
- **As an additional reality check, it makes sure that the creation date is earlier than the modification date.**

Before it fixes anything, it confirms with you by displaying a three-way dialog box. Click on Yes to fix the file, No to skip it, and Cancel to stop the traversal. If you hold down the option key and click on Yes it will continue the scan with stopping for confirmations.

## Droplets

**Droplets are small applications that have scripts embedded inside them. When you drag and drop a file onto the droplet's icon, the embedded script runs, and operates on the file, folder or disk you dragged.**

**We've included one sample droplet, Delete File, in the Sample Droplets sub-folder inside the Extras folder.**

**Any set of files or folders you drag onto the Delete File icon are deleted. Unlike the Trash icon on the Finder desktop, the deletion occurs immediately.**

**A special case: if you drag an alias of a file onto the Delete File icon, the original of the file is deleted, not the alias. Read the message displayed in the confirmation dialog carefully -- be sure that it's deleting the correct file before clicking on OK.**

*Note: this is not a problem with Frontier, Runtime or the Delete File droplet. When you drop an alias on an icon, the Macintosh Finder tells the droplet application to operate on the original file, not the alias.*

## Other Applications' Menu Bars

**Frontier scripts can also appear in the menu bars of applications that support UserLand's Menu Sharing protocol. Examples include all versions of StuffIt and CompuServe Navigator and future versions of many popular Macintosh applications.**

**For example, UserLand's BarChart sample application supports menu sharing. All of the commands in BarChart's Utilities menu are implemented as Frontier scripts.**

## QuicKeys Scripts

**With CE Software's QuicKeys 2.1, script writers can link Frontier scripts to any function key, or combination of option, shift, command, or control keys. Scripts can be scheduled to run at any time.**

**Frontier scripts can also send messages to QuicKeys, which in turn, can send keystrokes or mouse actions to applications that may not support System 7 Apple Events.**

## In the Finder's Menu Bar

### Background

Earlier this year Berkeley Systems and UserLand Software jointly developed and released a package called "FinderMenu" which opens up the menubar of the System 7 Finder to Frontier script writers.

A portion of that package is included in the Runtime 1.0 release. As a result, your Finder now has a Scripts menu. Each of the commands in this menu are implemented as Frontier scripts. When you select a command, Runtime executes the script that's linked into the menu item.

Many of these commands are probably on your wish-list of things the Finder could do. The following section explains each of the commands in the Scripts menu and its sub-menus.

### The Finder's Selection

Most of the commands operate on the Finder's selection. For example, to back up a folder, select the folder in the Finder by clicking on it, and then choose the Backup Folder command from the Backup sub-menu.

If there are two folders you want to back up, select both of them and choose the Backup Folder command. To select more than one file or folder, hold down the shift key in the Finder and click on its icon. Most commands can be made to operate on more than one Finder icon in this way.

### Seeing Changes in the Finder

It may take two or three seconds for the Finder's desktop or windows to reflect the result of the commands you choose. Sometimes it may be necessary to close and reopen a window to cause the Finder to refresh its display.

## Commands in the Finder's Scripts Menu

### Read Me...

Opens a TeachText window containing important notes and information about the Scripts menu. As its name implies, it fills the role of "readme" files that often ship with applications and system utilities.

### The Backup Sub-Menu

Set Backup Folder...

**The Backup sub-menu makes it easy to set up and manage backups of multiple projects, and because it's integrated into the Finder it's always easy to get to.**

**The key concept behind this sub-menu is your backup folder, the place where all your backups will be stored by the Backup Folder command.**

**Before doing any backups, determine which disk is going to contain the backup folder. It can be on your local computer, or on a network server volume. Think about how much space you want to have for backing up and how fast you want it to be. Create a new folder on that disk, call it Backups, for example, but you can name it anything you like.**

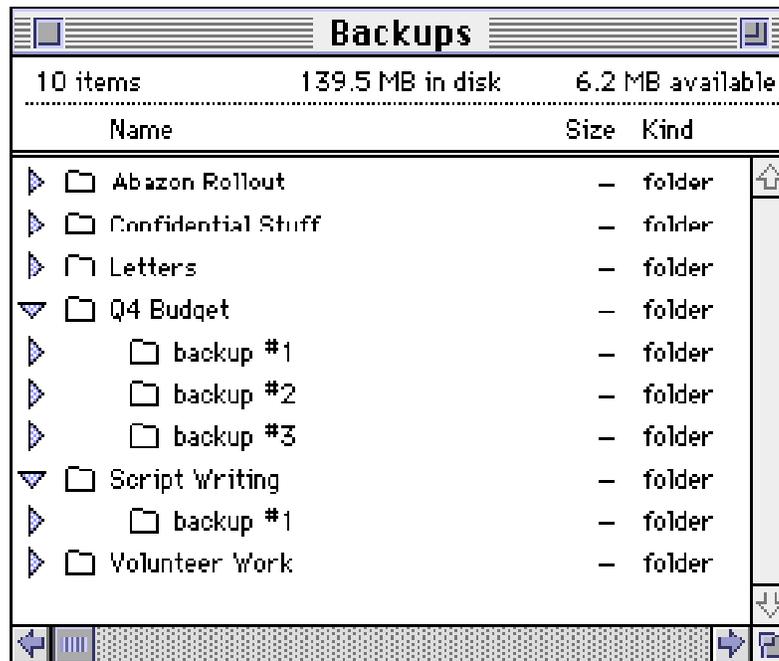
**Select the Set Backup Folder... command. A standard file dialog appears. Navigate to the folder you just created and put the cursor on it. Click on the Folder button. Now you're ready to use the Backup Folder command.**

**Note: Any time you want to change your backup folder, use the Set Backup Folder... command to reconfigure Frontier. Only one backup folder is used at any time. Selecting a new folder will cause all backups to go to that folder, the previous one is forgotten.**

## Backup Folder...

**In the Finder, select a folder or set of folders that you want to backup, then choose the Backup Folder... command.**

**Here's a picture that shows what a typical backup folder, looks like after doing a few backups:**



**A new folder is created as a sub-folder in the backup folder, with the same name as the folder you're backing up. Inside that folder, a sub-folder is created named backup #1. All the files in the selected folder are copied into the backup #1 folder.**

**The second time you back up the folder, the new folder will be called backup #2, and so on. The serial number assigned is always one-greater than the highest serial number already present in the backup folder.**

**To make it extra easy to select this command it has a single-keystroke equivalent: cmd-B.**

**This command can only be used to backup folder or disk icons. It can't be used to backup single files.**

### Open Backup Folder

**To open the top-level of the backup folder, click on the Finder desktop to eliminate any selection and choose the Open Backup Folder command.**

**If you want to view a specific backup folder, select the original folder in the Finder, and choose the command. Only the backup sub-folder corresponding to the original folder is opened.**

### Make Space...

**Sooner or later the disk that holds your backup folder will run out of space. This command makes space on your backup disk by removing all but the most recent backups from each sub-folder.**

**Before running this command, it might be a good idea to copy your entire backup folder to removable media and save it offline. At UserLand Software we use Syquest cartridges for this kind of backup. Tape drives and optical disks are great for offline backups too.**

## The Utilities Sub-Menu

### Launch Everything...

**The Launch Everything... command launches all files and documents contained within a folder and all nested sub-folders. A confirmation dialog appears before the script launches anything.**

**For example, if you are a C programmer you might want to have the following applications all running while you're working on a project: Think C, Think Reference, AppMaker, Resorcerer, DocServer and Frontier. You could create a folder containing aliases to all these programs. When it's time to start programming, put your cursor on the folder and select Launch Everything... from the Utils menu.**

**A user reports: "I've already put templates for my daily reports into a Launch Everything folder. It opens three Excel files with co-op advertising, sales reports, and sales charts. And it opens a Microsoft Word window with a template for writing a report. It's truly cool. This is better than aliasing in the Apple Menu Items folder, which can get very full. This is like resume files across applications, which is very useful."**

## Reconcile Folders...

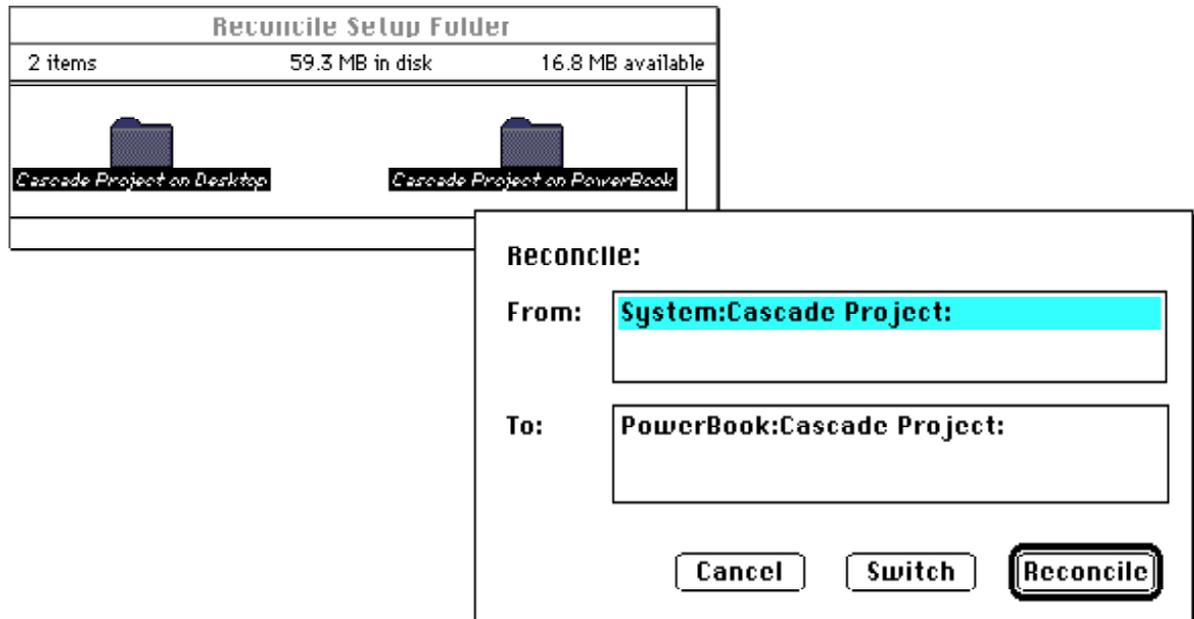
**Here's a very useful command for PowerBook users or for people with more than one Macintosh.**

**Suppose you're about to go on a trip and want to work on the "Cascade Project" while you're traveling. If you're like most PowerBook users, you have a copy of the folder on both machines. But the copy on your PowerBook is out of date. How do you reconcile the differences between the newer version of the folder on your desktop machine, and the older version on the PowerBook? That's what the Reconcile Folders... command does.**

**Before choosing the command, do a little setting up first:**

1. Connect your PowerBook to the desktop machine using the AppleShare software that comes with System 7. Mount the PowerBook's hard disk using the Chooser.
2. Create a new folder on your desktop hard disk called "Reconcile Setup Folder."
3. Select a folder on your PowerBook hard disk and create an alias to it. This folder should be one of the two folders you want to reconcile. Copy the alias into the Reconcile Setup Folder.
4. Select a folder on your desktop hard disk, create an alias to it, and copy the alias to the Reconcile Setup Folder. This folder should be the one that you want to reconcile with the one in step 3. Now you're ready to go!

**Select both aliases in the Reconcile Setup Folder, then select the Reconcile Folders... command from the Utils menu. A dialog box appears, like the one below:**



**The command can only guess which of the two folders is being copied from (the “source folder”) and which is being copied to (the “destination folder”). That’s why the Switch button is there. If the order is reversed, just click on the Switch button and the source folder becomes the destination folder and vice versa.**

**If you’re satisfied that this is what you want to do, click on the Reconcile button.**

**This is what the command does for you:**

1. It scans the source folder copying files that don’t exist in the destination folder, or have a more recent modification date than the same file in the destination folder.
2. It scans the destination folder looking for files that exist there that don’t exist in the source folder. It doesn’t delete these files, instead it moves them to a folder it creates called Extra Files. It pays to look in this folder before you delete it. Maybe you did some work on the PowerBook since your last trip? Better safe than sorry!

**When you return from your trip, select the same two aliases, but this time make sure that the source and destination are reversed.**

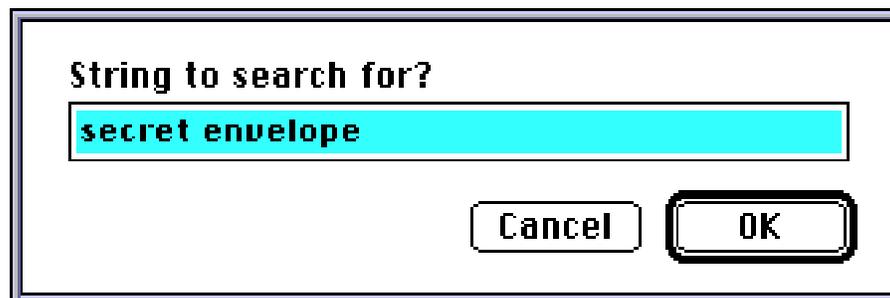
**For script writers we’ve included a new Frontier verb that reconciles two folders: `file.reconcileFolder`. You can use this verb in custom scripts.**

### Find In File...

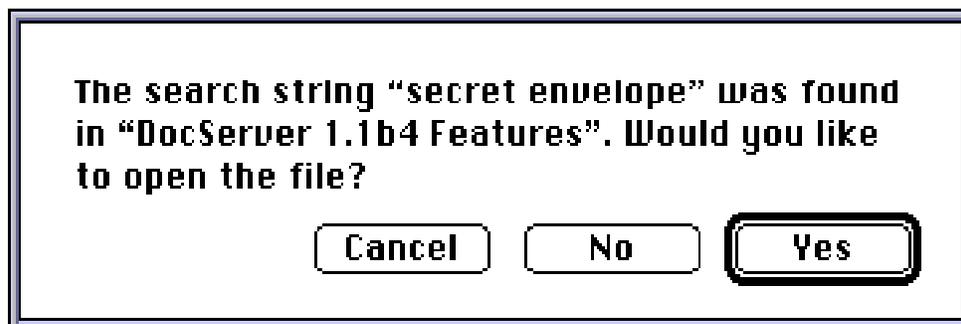
The System 7 Finder has a Find command, but it only looks at the external characteristics of files — when they were created, whether they have a certain character in their name, their version numbers, etc.

The Find In File... command looks inside files for text contained within the file.

First select a folder or group of folders you want to search in. Then choose the Find In File... command from the Utils menu. A dialog appears:



Click on OK to continue, Cancel to return to the Finder. The command then searches all the files in the folders you selected. If it finds a file containing the search string, it presents another dialog:

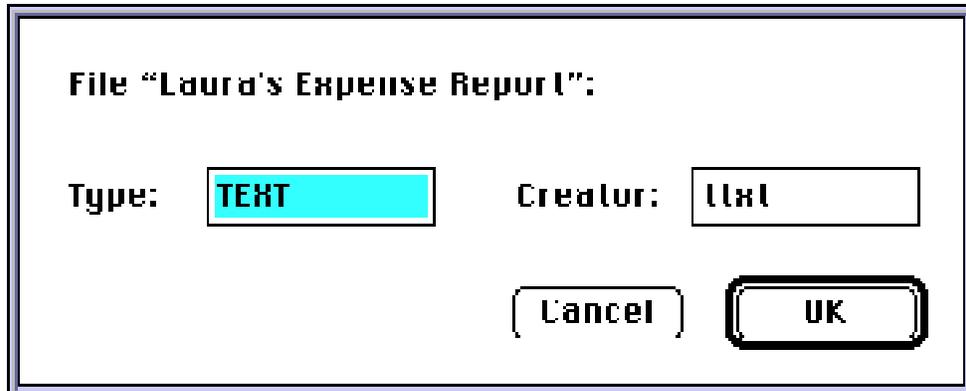


If you click on Yes, the file is opened and the search is completed. If you click on No, the search continues. If you click on Cancel, the script completes.

### Set File Type & Creator...

The Set File Type & Creator... command presents a dialog box that allows you to change the type and creator of any file you select in the Finder.

Here's what the dialog box looks like:



You may want to change the type of a file so that the application that created it will treat it differently. For example if you change the type of a TeachText file to ttxl, when the file is opened it's treated as read-only by the TeachText application.

You can change the creator of a file if you want a different application to launch when you double-click on it. For example, if you change the creator of a Studio/8 picture file from ST/8 to MDPL, MacDraw will launch and open the file when you double-click on it.

Changing file types and creators is seen as a "programmerish" thing by many people, but it's remarkable how many times one has to know about and possibly change this information in the course of using a Macintosh.

### Find Locked Files...

**Have you ever tried to trash a folder only to have the Finder report that there's a locked file somewhere deep within the folder hierarchy? Use the Find Locked Files... command to find and unlock deeply buried locked files.**

**Select the folder you're concerned about, and choose the Find Locked Files... command. When it finds a locked file, the command displays a dialog asking if you want to unlock a specific file:**



**Click on Yes to unlock it, No to not unlock it, or Cancel to halt the search.**

### Close Parent Folders

**If you have a lot of nested folders on your hard disk, this command can clean up extra windows after you zoomed thru your hard disk looking for a specific document or application.**

**Select a folder or file icon and choose the Close Parent Folders command to close the folder and all folders that contain it.**

**Frontier users: if you use this command a lot, you may want to assign a single keystroke using Frontier's menu bar editor.**

### Find File Creator

**Select a document file then choose the Find File Creator command to open the folder containing the application that created it. The application's icon is highlighted.**

## The Aliases Sub-Menu

New Alias in Folder...

**Creates aliases of all the selected icons. The aliases are placed in a folder you select from a standard Macintosh file dialog.**

In Apple Menu Items

**Creates aliases of all the selected icons in the Apple Menu Items sub-folder in your System Folder.**

**Files in this folder appear in the Apple menu which is always available regardless of which application is frontmost.**

In Control Panels

**Creates aliases of all the selected icons in the Control Panels sub-folder in your System Folder.**

In Startup Items

**Creates aliases of all the selected icons in the Startup Items sub-folder in your System Folder.**

**Files in this folder are automatically launched when the system starts up. It's a great place to put an alias of the Runtime application!**

In Extensions

**Creates aliases of all the selected icons in the Extensions sub-folder in your System Folder.**

On Desktop

**Creates aliases of all the selected icons on the Finder's desktop.**

**Tech note: the alias is created in the Desktop Folder on the system disk.**

Find Original of Alias

**The "original" of an alias is the file it points to. This command opens the folder that contains the alias of each selected alias files, and highlights its original file.**

## The Apps Sub-Menu

Add App to Menu...

**The Apps sub-menu contains a list of applications and documents that you want to launch frequently from the Finder.**

**To add something to the Apps menu, select its icon in the Finder and then choose the command. A dialog box confirms that you want to add this item to the Apps menu.**

**If its icon isn't at-hand, click on the desktop to get rid of any selection and choose the Add App to Menu... command. A standard file dialog box appears. Select the file you want to add to the menu and click on OK.**

**To be perfectly accurate, its name should be "Apps, Docs, Folders & Disks," because all those types of objects can be launched or opened from this menu. But Apps is a much more succinct and memorable name for this sub-menu.**

## The Folders Sub-Menu

System 7

### System Folder

The commands in this menu open specific Finder folders related to the Macintosh system software.

This command opens a window displaying the contents of the System Folder.

### Apple Menu Items

This command opens a window displaying the contents of the Apple Menu Items sub-folder in your System Folder.

### Control Panels

This command opens a window displaying the contents of the Control Panels sub-folder in your System Folder.

### Extensions

This command opens a window displaying the contents of the Extensions sub-folder in your System Folder.

### Preferences

This command opens a window displaying the contents of the Preferences sub-folder in your System Folder.

## **Startup Items**

This command opens a window displaying the contents of the Startup Items sub-folder in your System Folder.

## **Runtime**

### **Runtime Folder**

The commands in this menu open specific folders contained within your Frontier folder.

The Runtime Folder command opens the folder that contains the Runtime.root file.

### **Read Me Files**

This command opens a window displaying the contents of the Read Me Files sub-folder in your Runtime folder.

These files, in Word 4.0 format or TeachText format, include information on using Runtime, script writing for Runtime, how to register with UserLand Software, and where to go for more information.

### **Extras**

This command opens a window displaying the contents of the Extras sub-folder in your Runtime folder.

It contains a set of example Frontier desktop scripts and some scripts that are useful to Frontier 1.0 script writers. Over time, as new versions of Runtime are released, this folder may include other sub-folders.

### **Dialogs**

This command opens a window displaying the contents of the Dialogs sub-folder in your Runtime folder.

It contains files that are used in displaying and running dialog boxes. Runtime users can safely ignore the contents of this folder, but shouldn't move or delete the files contained inside the folder.

## Commands in Runtime's Menu Bar

### The File Menu

#### Show Window

**You can show or hide Runtime's main window. Choose the Show Window command to view Runtime's main window. It displays status information, such as the amount of memory available, the current user's name, and the number of scripts that are currently running.**

#### Hide Window

**This command hides Runtime's main window.**

#### Run Script...

**This command presents a standard Macintosh open file dialog. When you select a desktop script file from this dialog, Runtime executes the script as if you had double-clicked on it in the Finder.**

#### Quit

**This command exits from the Runtime application.**

## The Runtime Menu

How to Register...

**After confirmation, this command opens the How to Register document in the Read Me Files folder.**

Backup Runtime...

**After confirmation, this command creates a backup of the Runtime.root file in the backups sub-folder in your Runtime folder. If the folder doesn't exist it is created.**

**Each backup is numbered serially, the first backup is Runtime.root.1, the second Runtime.root.2, and so on.**

**Scripts can store and change information in the Runtime.root file. It makes sense to back it up periodically. This command makes it easy to do so.**

Open Runtime Folder

**This command opens the folder containing the Runtime.root file and brings the Finder to the front.**