

Stopwatch

Version 2.3

Richard Plevin & Associates
stopwatch@plevin.com

intro;¬Introduction

The Stopwatch application automates the time tracking and billing functions required by an hourly consultant. Major features include:

- The ability to enter and edit expenses and work session data
- A timer to track working time on the computer
- Automatic generation of invoices, invoice detail reports, and expense reports, using simple user-defined RTF template files

Stopwatch currently uses a tpestream file to store all client, work session and expense information. autosave;¬This file is saved whenever any data is modified, therefore no "Save" command is required. The file is stored as
~/Library/Stopwatch/client.data. Before writing a new version of this file, the old one is moved to client.data~ as a backup.

installation;¬Installation

Currently, Stopwatch is distributed only in source. Open the project and build the app with a build argument "install" to install it in

\$(HOME)/Apps.

client inspector;↵Entering Client Information

When Stopwatch is launched, it checks if any clients are currently defined. If not, it pops up the Client Inspector so you can immediately begin adding new clients. You can use the Cmd-3 accelerator key at any time to bring up this inspector view.

Most of the information in this panel is used only during the invoice generation process. There are a couple of exceptions however:

- "Company Name" is used in the inspector's client browser.
- "Short Name" is used for display in the main Stopwatch window.
- "Hourly Rate" is used to compute the summary of current billable hours in the inspector's Sessions view.

paste.tiff ↵

add client;↵Adding a New Client

Start by typing data into the Company Name field. This will enable the "Add" button. Enter data into each of the fields and press "Add" for each new client, or press Cmd-+ (command shift plus).

modify client;↵Modifying an Existing Client

Typing on any field for a previously defined client will enable the "Modify" button. To apply your modifications to the selected client, click the modify button, or press Cmd-m.

delete client;↵Deleting a Client

A client entry can be deleted by selecting the client's name in the browser and pressing the "Delete" button or by typing Cmd-d. Deleted clients are saved on a list until the program exits. undelete client;↵While

there are deleted clients to be restored, the "Edit" menu's "Undelete" item is enabled. This can also be invoked by typing Cmd-z. Undeleting the item removes it from the deletion list, making the previously deleted item available.

Entering Sessions

using timer;¬When you are working at your machine, the usual way to track billable time is to select a client in the main window, and press the "Start" button or type Cmd-\$ to start the stopwatch.

942256_paste.tiff ¬

While the timer is active, the "Start" button remains highlighted and the label changes to "Stop". (The "Start" menu item also changes to "Stop") The "Elapsed:" field shows the elapsed time for the current session. The application's Mini Window also sports the elapsed time, which is shown in **bold** when active. (Thanks, Henry!)

task description;¬Prior to pressing the "Stop" button, a task description can be entered in the "Task:" field. This is saved along with the session data for use in generating an invoice detail report. The Cmd-\$ key can also be used to stop the session.

When a client is selected, the most recent task description string for that client is displayed in the task field.

examining sessions;¬Examining Sessions and Expenses

The Client Inspector panel allows you to inspect and edit all data related to a client. The inspector can be activated by double clicking on a client in the main window's browser. The inspector can also be activated to

show it's Session view, Expense view and Client view respectively by typing Cmd-1, Cmd-2 and Cmd-3.

Typing Cmd-1 selects the "Sessions" item from the pop-up list, which looks like this:

592152_paste.tiff ↵

Note that the sessions are sorted in reverse chronological order, so that the most recent sessions are at the top of the browser. It turns out that these are the ones you edit the most, so this turns out to be quite handy.

The "Hours:" display shows the number of hours worked for the selected client, and the total number of hours worked for the billing period. The "Billings:" display shows the current billings for the selected client, and the total across all clients. Kind of like a taxi meter...

Editing Sessions

entering sessions;↵A session can be entered "manually" by either selecting a client and pressing the "Add" button, or by double-clicking on a client. modifying sessions;↵Sessions can be modified by double-clicking on the session entry in the second browser panel. In either of these cases, the following Session Editor window is displayed:

815744_paste.tiff ↵

Simply enter the data or modify any fields and press OK (or hit the return key.)

deleting sessions;↵To delete a session, select the item in the lower

browser pane and press the "Delete" button, or type Cmd-d. undelete session;¬While there are deleted sessions to be restored, the "Edit" menu's "Undelete" item is enabled. This can also be invoked by typing Cmd-z. Undeleting a session removes it from the deletion list, making the previously deleted session available.

The duration field allows the length of the session to be entered in any of three formats:

<i>n</i>	Without decimal point or ":", the duration is taken to be in minutes, e.g. 45 means 45 minutes.
<i>h.d</i>	With a decimal point, the duration is taken as this floating point number of hours, e.g. 1.5 means one and one half hours.
<i>h:m</i>	With a colon ":", the duration is interpreted as hours and minutes, e.g. 1:30 means one and one half hours.

compacting sessions;¬**Compacting Sessions**

To reduce the number of redundant entries in the Invoice Detail report, you can "compact" the session entries by typing Cmd-k. This adds together the time for any consecutive sessions occurring on the same day, for the same client, with the same task description. The times of all such sessions are added together, leaving only one session containing the total time.

Editing Expenses

editing expenses;¬Entering, modifying and deleting expenses is just like operating on sessions (for a description of editing sessions, click here: [Manual.rtf](#);entering sessions;¬) except that you must first select the "Expenses" item from the pop-up list to display the expense

records in the lower pane.

invoicing;➤Invoicing

The invoicing system takes formatted template files containing certain pre-defined keywords and substitutes client data for the keywords, creating new files in the directory indicated in the Preferences panel (for info regarding Preferences, click here: ;Manual.rtf;invoice directory preference;➤.) There are three template files, one for invoice detail, one for expense reporting and one for the overall invoice.

Here's an example invoice file showing the use of keywords. A table of available keywords is show below. (Click here ;Manual.rtf;keywords;➤ to see the table.)

INVOICE

<i>Invoice number:</i>	[number]	<i>Invoice Date:</i>	[today]
<i>To:</i>	[contact] [client] [street] [city], [state] [zip]		
<i>Period:</i>	[startdate] thru [enddate]		
<i>Hourly rate:</i>	[\$[rate]]		
<i>Consulting fees:</i>	[\$[billings]] (\$[hours]hrs @ \$[rate]/hr)		
<i>Expenses:</i>	[\$[expenses]]		

Amount due:

\$_[total]

Payment due net 30

Invoice numbers are generated automatically by taking the value of the Stopwatch Last Invoice Number parameter from the defaults database and incrementing it for each new invoice generated. (Click [here](#) ;Manual.rtf;invoice number preference;↵ for information about setting the Last Invoice Number.)

likely month;↵The "Likely Month" for the Invoice

The invoice generation subsystem uses a simple-minded heuristic to determine the month for which the invoice is being generated: *If the current day of the month is less than 20, then it is assumed that the invoice is being generated for the previous month. If it is the 20th or later, then it is assumed that the invoice is being generated for the current month.*

Note that this causes certain dates to be written into the generated files, which will have to be edited if the heuristic is incorrect!

[This logic will be replaced later by a panel which allows you to select the period for which the invoices should be generated. It didn't make it into this release due to lack of inspiration...]

creating templates;↵Creating Templates

When the "Generate Invoices" command (Cmd-g) is executed, Stopwatch checks for each of the following files:

~/Library/Stopwatch/Templates/InvoiceTemplate.rtf

~/Library/Stopwatch/Templates/DetailTemplate.rtf
~/Library/Stopwatch/Templates/ExpenseTemplate.rtf

If any of these files is missing (actually if it can't be opened for reading) the corresponding file is copied into place from the app wrapper. It is probably easiest to start with these templates and edit them to your liking. (Click here ;Manual.rtf;invoice generation;↗ to learn about Generating Invoices.)

editingTemplates;↗The Invoicing menu item has a submenu titled "Edit Templates" which has menu items which provide an easy means of editing the templates. When one of the items, ("Invoice", "Detail", or "Expense") is selected, the appropriate template file from ~/Library/Stopwatch/Templates is opened in Edit. If any of the three files are not found in this directory, they are automatically copied from the app wrapper.

keywords;↗Template Keywords

The following keywords are available for use in template files:

[number]	the current invoice number
[today]	today's date, formatted as "March 31, 1993"
[contact]	the client contact field from the Client Editor
[client]	client name field from Client Editor
[street]	street address
[city]	city
[state]	state
[zip]	zip code
[enddate]	the end date of invoice period, as mm/dd/yy
[startdate]	the start date of invoice period

[billings]	total hourly billings
[expenses]	total expenses
[total]	billings + expenses
[hours]	total hours worked for invoice period
[rate]	hourly rate
[date]	date of a session or expense
[length]	length of a session, in hours (detail only)
[amount]	expense amount (expense only)
[description]	description (session task or expense)

There are a variable number of session and expense records that must be written to the invoice detail and expense files. To handle this, the invoicing system performs keyword substitution on all defined keywords, and when it finds a line containing the keyword `[description]`, it uses that entire line as the format for each expense or session record. The list of sessions or expenses is then traversed and a separate line is written to the generated file for each record, using the line containing `[description]` as the template for each record.

The start date of the invoice period is determined as follows: if the current day of the month is less than 20, it is assumed that the start date is the first of the *prior* month. If the day is the 20th or beyond, it assumes the start date is the first of the *current* month. In either case, the end date is the last day of the same month.

Note: There can be no whitespace between the keywords and the brackets. Also, make sure you don't have any font changes between brackets, or RTF inserts characters that screw up the parse. (If your keywords are not getting translated, you should check the template file by opening it in Emacs or the like to see what's really there...)

invoice generation;¬**Invoice Generation**

This is the coolest part of the system: press "Cmd-g". You've just generated all of your invoices! The files will appear in the directory given by the `Stopwatch InvoiceDir` entry in the defaults database.

This is settable via the Preferences panel (see below

```
;Manual.rtf;invoice directory preference;¬.)
```

The names of the generated files include the invoice number for uniqueness. The filenames are composed of the client's short name, the invoice number, a three-character month designator, and the string "inv", "dtl", or "exp" according to the type of the file, and the ".rtf" extension. For example, for a client named "foo", with a current invoice number of 9301, being generated on the 4th of May would create the invoice file `foo.9301.may.inv.rtf`.

Deleting Session and Expense Data

save as;¬After invoices are generated, you can archive the prior month's data using the "Save As" option (cmd-S) under the File menu and then delete all the session and expense data using the delete all;¬"Delete All" item (cmd-D) under the Sessions menu. Prior to deleting the data, the following panel is displayed to double-check the your intentions:

763957_paste.tiff ¬

Note: In an future release, the simple tpestream file used to store the data will be replaced with a simple database, probably using the Indexing Kit once it is stable. At that point, this ugly misfeature requiring the deletion of the prior month's data will be eliminated. Until then,

well, you get what you pay for...

preferences;¬Preferences

Below is an example of the preferences panel, which can be invoked with Cmd-P. invoice number preference;¬The "Last invoice number:" is sets the number of the last invoice number generated. The next invoice number generated by Stopwatch will be one greater than this value. The defaults database is updated with the incremented value after each invoice is generated. (Click here ;Manual.rtf;invoicing;¬ to see the section entitled *Invoicing*.)

255738_paste.tiff ¬

The invoice directory preference;¬"Invoice directory" buttons sets the directory into which the generated invoice and expense report files are written.

The dwrites;¬dwrites corresponding to these values are:

```
Stopwatch InvoiceDir /tmp/invoices
Stopwatch InvoiceNum 20
```

import / export;¬Importing and Exporting Data

The "Import" and "Export" commands read and write session data to and from flat files. import format;¬Each line of the file ends with a newline character, and contains the following tab-delimited elements:

- Client short name
- Session start date (mm/dd/yy format)
- Session start time (hh:mm) format
- Session duration in minutes
- Task description

In the current release, the expense data is not written out by the export command. (Sorry, nobody needed it!)

Import Data

import data;¬On import, the session entries in the flat file are merged with those already loaded by Stopwatch.