OpenEyes - Setting up a development environment on a Macintosh

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Introduction

In 2001 Apple introduced a new operation system (OSX) based on UNIX. As a result, modern Macintosh systems represent an ideal development environment for OpenEyes, since most of the open source software employed in OpenEyes was developed and runs well on a UNIX operating system. This document provides a step by step guide to setting up a Macintosh computer as a development environment. When installing UNIX software, the use of MacPorts is recommended, as it greatly simplifies the steps required to install and update UNIX software. Familiarity with the use of the command line is essential for carrying out this task. The following table summarises the software required, and the function of each component.

Software	Function
Apache	Industry standard web server software
PHP	Main language for OpenEyes
MySQL	Back end database

Software Installation

Install Developer Tools

Your Macintosh installation disks include an optional installation of the OSX Development tools, which are also available for download from the Apple website. Run this installer to make Xcode (integrated development environment) and other tools available.

Installing MacPorts

Download the latest version of the MacPorts package installer from the MacPorts website. At the time of writing the required file was “MacPorts-2.1.3-10.8-MountainLion.pkg”. Following download, run the package installer which will proceed with the installation (accept all defaults). This installs a skeleton structure in a separate directory (/opt/local), allowing you to install any UNIX software without interfering with items supplied with the operating system, which tend to be installed in /usr/local.

Once installation is complete, run the Terminal application, as all subsequent steps will be run from the command line.

The next step is to update all the ports in the tree by running the following command;

```
▸ sudo /opt/local/bin/port -v selfupdate
```

To simplify command line access to the Developer tools, and newly installed software through MacPorts, add the following line to your BASH profile.

```
PATH=/Developer/usr/bin:/Developer/usr/sbin:/opt/local/bin:/opt/local/sbin:$PATH
```

Installing the Apache web server

A version of Apache is provided with the standard installation. However this version is not updated using the OSX software update system, so it is recommended to install the latest version using MacPorts. This can be achieved as follows;

1. Turn off the Apple provided version

Turn off Apple’s "Personal Web Sharing" in the System Preferences so that the default Apache server is not running.

2. Install Apache

Return to the Terminal, and run the following commands to install the latest version of Apache;

```
▸ cd /opt/local
▸ sudo port install apache2
```

This will take some time (about 15 minutes), so go and make a cup of tea.

3. Configuring Apache

When installation is complete, you should edit the Apache configuration file by running the following command;

```
▸ sudo edit apache2/conf/httpd.conf
```

FInd the following line,

```
DocumentRoot "/opt/local/apache2/htdocs"
```

and change it to the path to your ‘Sites’ folder, for example (replace ‘bill’ with your user name);

```
DocumentRoot "/Users/bill/Sites”
```

Repeat for the following line,

```
<Directory "/opt/local/apache2/htdocs">
```

Changing it to;

```
<Directory "/Users/bill/Sites">
```

Find the following line;

```
#ServerName www.example.com:80
```

and uncomment it, replacing the domain with localhost as follows;

```
ServerName localhost:80
```

Save the edited file, entering your password if requested by the editor software.

4. Running Apache

The following command will launch Apache, and will also make use of launchd to ensure it runs at boot time.

```
▸ sudo launchctl load -w /Library/LaunchDaemons/
  org.macports.apache2.plist
```

5. Testing Apache

To test that everything is working, use a text editor to save the following lines in a text file called index.html placed in your Sites sub-directory (eg: /Users/bill/Sites/index.html)

```
<html><body><h1>Apache is running successfully</h1></body></html>
```

Pointing your browser to http://localhost/ should display this file. Any subsequent edits of the Apache httpd.conf file should be followed by running the following command to force Apache to reload the configuation

```
▸ sudo /opt/local/apache2/bin/apachectl -k restart
```

Create a virtual domain

We recommend changing the default Apache configuration so that OpenEyes runs in it's own subdomain. This is a more supported configuration in terms of how the code is being managed, and it will mean not having to move the .htaccess file each time you pull new code. The following steps will create a subdomain called ‘openeyes.localdomain’.

6. Edit the Apache configuration files

```
▸ sudo edit /opt/local/apache2/conf/httpd.conf
```

Scroll to the last page of the file, and uncomment the second of the following two lines;

```
# Virtual hosts
#Include conf/extra/httpd-vhosts.conf
```

Apache will then look at an additional configuration file when it loads. Now edit this file;

```
▸ sudo edit /opt/local/apache2/conf/extra/httpd-vhosts.conf
```

remove the Virtual host example, and replace with two, the first of which should look like this;

```
# Localhost
```

```
<VirtualHost *:80>
    ServerName localhost
    <Directory "/Users/bill/Sites">
        Options Indexes FollowSymLinks
        AllowOverride None
        Order allow,deny
        Allow from all
    </Directory>
</VirtualHost>
```

Ensure you replace "/Users/bill/Sites" with the path to the directory that you want to serve websites from. This section will enable other websites in your ‘Sites’ directory to continue as normal. Now add a second virtual host;

```
# Local virtual server for OpenEyes
<VirtualHost *:80>
    ServerName openeyes.localdomain
    DocumentRoot /Users/bill/Sites/openeyesdev/OpenEyes

    <Directory /Users/bill/Sites/openeyesdev/OpenEyes>
        Options FollowSymLinks
        AllowOverride All
        Order allow,deny
        Allow from all
    </Directory>

    RewriteEngine On
    RewriteRule "^(.*/)?\.git/" - [F,L]

    ErrorLog /var/log/apache2/openeyes-error.log
    LogLevel warn
    CustomLog /var/log/apache2/openeyes-access.log combined
</VirtualHost>
```

7. Restart Apache

Force Apache to re-read the configuration files by re-starting it;

```
sudo /opt/local/apache2/bin/apachectl -k restart
```

Installing MySQL

1. Install software

Change your directory back to /opt/local by typing at the command line

```
cd /opt/local
```

Install the latest version of MySQL server by typing the following;

```
sudo port install mysql5-server
```

2. Configure MySQL

Set up the main database;

```
sudo -u mysql mysql_install_db5
sudo chown -R mysql:mysql /opt/local/var/db/mysql5/
sudo chown -R mysql:mysql /opt/local/var/run/mysql5/
sudo chown -R mysql:mysql /opt/local/var/log/mysql5/
```

Rename link to mysql client to make it more familiar

```
sudo cd /opt/local/bin
sudo mv mysql5 mysql
```

3. Running MySQL

Launch MySQL server and ensure it auto starts when rebooting

```
sudo launchctl load -w /Library/LaunchDaemons/
org.macports.mysql5.plist
```

4. Configuring MySQL

Copy a template configuration file to my.cnf

```
sudo cp -Rfp /opt/local/share/mysql5/mysql/my-small.cnf /opt/
local/etc/mysql5/my.cnf
```

Edit the file and ensure following line is included in both the [mysqld] and [mysql] sections

```
local-infile=1
```

Re-start MySQL by repeating step 3 above.

Installing PHP

1. Install software

Change your directory back to /opt/local by typing at the command line;

```
▸ cd /opt/local
```

Install the latest version of PHP, including necessary extensions, by typing the following;

```
▸ sudo port install php5 +apache2
▸ sudo port install php5-mysql
▸ sudo port install php5-sockets
```

2. Let Apache know that PHP is available

The following commands register PHP with Apache and alters the httpd.conf file accordingly

```
▸ cd /opt/local/apache2/modules
▸ sudo /opt/local/apache2/bin/apxs -a -e -n "php5" libphp5.so
```

3. Edit the Apache configuration file using the following command

```
▸ sudo edit /opt/local/apache2/conf/httpd.conf
```

Add the following lines to the end of the file

```
#
# Include PHP configurations
#
Include conf/extra/mod_php.conf
```

Restart Apache to read the new httpd.conf file

```
▸ sudo /opt/local/apache2/bin/apachectl -k restart
```

4. Create a custom php.ini file

Copy the supplied development ini file to the active location;

```
sudo cp /opt/local/etc/php5/php.ini-development /opt/local/etc/php5/php.ini
```

5. Configure PHP

Edit the PHP.ini file by typing;

```
sudo edit /opt/local/etc/php5/php.ini
```

Find the ‘Module Settings’ section and uncomment the date.timezone line, making it equal to GMT;

```
date.timezone = GMT
```

Find the line beginning ‘pdo_mysql.default_socket=’ and edit it to equal the default MySQL socket;

```
pdo_mysql.default_socket=/opt/local/var/run/mysql5/mysqld.sock
```

Similarly for the line beginning ‘mysql.default_socket =’;

```
mysql.default_socket = /opt/local/var/run/mysql5/mysqld.sock
```

And for ‘mysqli.default_socket =’;

```
mysqli.default_socket = /opt/local/var/run/mysql5/mysqld.sock
```

Also, add a location for an error log;

```
error_log = /opt/local/var/log/php_errors.log
```

For this to work, you will need to create the file and change ownership to www;

```
sudo cd /opt/local/var/log
sudo touch php_errors.log
sudo chown www php_errors.log
```

Restart Apache;

```
sudo /opt/local/apache2/bin/apachectl -k restart
```

6. Testing PHP

To test that everything is working, use a text editor to save the following lines in a text file called phpinfo.php placed in your Sites sub-directory (eg: /Users/bill/Sites/phpinfo.php)

```
<?php phpinfo();?>
```

Point your browser to http://localhost/phpinfo.php and a very long page of information about your php installation should be displayed.