

Debuugin!

A guide to interactive debugging in PHP
Presented to the Nashville PHP User Group

“Stuckness shouldn't be avoided. It's the psychic predecessor of all real understanding. An egoless acceptance of stuckness is a key to an understanding of all Quality, in mechanical work as in other endeavors.”

02/08/11 - Lacy Rhoades (@lacyrhoades, Gmail, etc.) - Nashville Tennessee

Nashville PHP User Group

- ❖ NashvillePHP.org - suggest a topic today!
- ❖ Ben Ramsey
 - ❖ Ryan Weaver
 - ❖ You!
- ❖ Second Tuesday
 - ❖ usually at CoLab Nashville
- ❖ Beer and stuff!

Debugging Methodologies

- ❖ `var_dump`, `print_r`, and `die`
- ❖ logs
 - ❖ Apache logs (both access and error)
 - ❖ application logs
 - ❖ captain's log
- ❖ Firebug, Charles, WebScarab, Wireshark, et al
- ❖ Interactive Debugging!

The Setup

- ❖ Traditional LAMP stack
 - ❖ Apache & PHP
- ❖ Xdebug
 - ❖ an extension for PHP
- ❖ IDE (or debugger)
 - ❖ must support Xdebug's protocol(s)
 - ❖ NetBeans, Eclipse, PHPStorm, MacGDBp

Xdebug & what it does for you..

- ❖ Detailed stack traces in place of simple error messages
- ❖ Inspection of line numbers, memory allocation ...
- ❖ Protection against infinite recursion
- ❖ `xdebug.scream`
- ❖ Profiling
- ❖ Code coverage analysis
- ❖ Interactive debugging!



6	0.5007	28429144	mysql_free_result ()	../wp-db.php:1144
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(!) Warning: fopen(/Users/lacy/workspace/wordpress/2922490434d51c50d3099d.tmp) [function.fopen]: failed to open stream: Permission denied in /Users/lacy/workspace/wordpress/wp-admin/includes/misc.php on line 580

Call Stack

#	Time	Memory	Function	Location
1	0.0053	778856	{main}()	../install.php:0
2	0.3265	28408584	wp_install()	../install.php:215
3	0.8602	28610760	WP_Rewrite->flush_rules()	../upgrade.php:85
4	0.8632	28612736	iis7_save_url_rewrite_rules()	../rewrite.php:1952
5	0.8652	28612952	win_is_writable()	../misc.php:158
6	0.8652	28613080	win_is_writable()	../misc.php:575
7	0.8653	28613256	fopen ()	../misc.php:580

(!) Warning: fopen(/Users/lacy/workspace/wordpress/web.config) [function.fopen]: failed to open stream: Permission denied in /Users/lacy/workspace/wordpress/wp-admin/includes/misc.php on line 580

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Success!

WordPress has been installed. Were you expecting more steps? Sorry to disappoint.

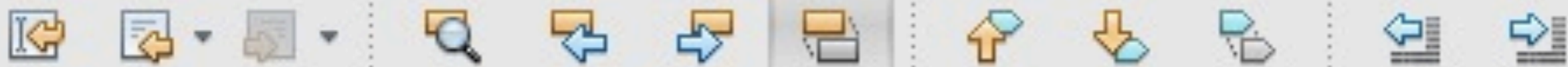
Username **admin**

Password *Your chosen password.*

Log In

Interactive Debugging Basics

- ❖ the “debug mode”
 - ❖ stateful, configurable
 - ❖ “How will the debugging signals be sent to the IDE?”
 - ❖ What URL/script should the IDE open/run when you begin “debugging”?
- ❖ Breakpoints



```

7      *
8      * @package      danecarder
9      * @subpackage  model
10     * @author       Your name here
11     * @version      SVN: $Id: Builder.php 7490 2010-03-29 19:5
12     */
13     class dcPainting extends BasedcPainting
14     {
15         public function postSave($event)
16         {
17             $obj = $event->getInvoker();
18
19             $image_filename = sfConfig::get('sf_upload_dir').'/';
20             $thumb_filename = sfConfig::get('sf_upload_dir').'/t
21
22             if (file_exists($image_filename))
23             {
24                 // resize image
25             }
26
27             if (file_exists($thumb_filename))
28             {
29                 $img = new sfImage($thumb_filename);

```

Interactive Debugging Basics

The screenshot shows the MacGDBp interface. At the top, there are control buttons for stepping back, stepping forward, and running. Below these is a variable watch window with the following data:

Variable	Value	Type
class	sfContext	string
configuration	...	frontendConfigura...
current	...	uninitialized
instances	...	uninitialized
name	...	null
_COOKIE	...	array
_ENV	...	array
_FILES	...	array
_GET	...	array
_POST	...	array
_REQUEST	...	array
_SERVER	...	array
GLOBALS	...	array

Below the watch window is a code editor showing PHP code. The current line of execution is highlighted in red:

```
48 static public function createInstance(sfApplicationConfiguration $configuration, $name)
49 {
50     if (null === $name)
51     {
52         $name = $configuration->getApplication();
53     }
54     self::$current = $name;
55     self::$instances[$name] = new $class();
56     if (!self::$instances[$name] instanceof sfContext)
57     {
```

- ❖ Watches
- ❖ Controls
- ❖ Step Over
- ❖ Step Into
- ❖ Step Out
- ❖ Run vs. Detach
- ❖ Stop

Interactive Debugging in Xdebug

- ❖ Xdebug operates in one of two modes:
 1. passing arguments to a script or URL
 2. “autostart” mode
- ❖ The init signal
- ❖ IDE responds
- ❖ feature negotiation, breakpoints
- ❖ Xdebug can pass signals
- ❖ IDE can pass control signals

Xdebug Installation

- ❖ Working LAMP / MAMP stack (of course)
- ❖ The Xdebug extension.. (xdebug.so)
 - ❖ MAMP.app comes with this file precompiled
 - ❖ MacPorts provides the file by way of the php5-xdebug port
 - ❖ Ubuntu / Debian has the php5-xdebug package
- ❖ Either the file will need to be installed in the php extensions dir or mentioned in your php.ini file like so:
 - ❖ `zend_extension="/usr/local/php/modules/xdebug.so"`

Xdebug Configuration

- ❖ php.ini settings are as follows..
 - ❖ xdebug.default_enable = 1
 - ❖ xdebug.scream = 1
 - ❖ xdebug.remote_enable = 1
 - ❖ xdebug.remote_autostart = 1
 - ❖ xdebug.remote_host = localhost
 - ❖ xdebug.remote_port = 9000
 - ❖ xdebug.remote_handler = dbgp
 - ❖ xdebug.idekey = xdebug

Interactive Debugging in Review

- ❖ The right tool for the job
- ❖ As a training exercise or for exploration
 - ❖ Where am I and how did I get here?
- ❖ For maintenance of unfamiliar code
- ❖ It's like bullet time!

Precautions and Reading

- ❖ Xdebuggin' out in production and general bugginess
- ❖ Obscures the error & exception messages in the response
- ❖ Restarting (IDE and/or Apache) frequently may be required!

- ❖ xdebug.org/docs
- ❖ devzone.zend.com/article/2803-Introducing-xdebug