

New funks with PHP 5

Linux Tag 2003

July 11th, 2003. Karlsruhe, Germany

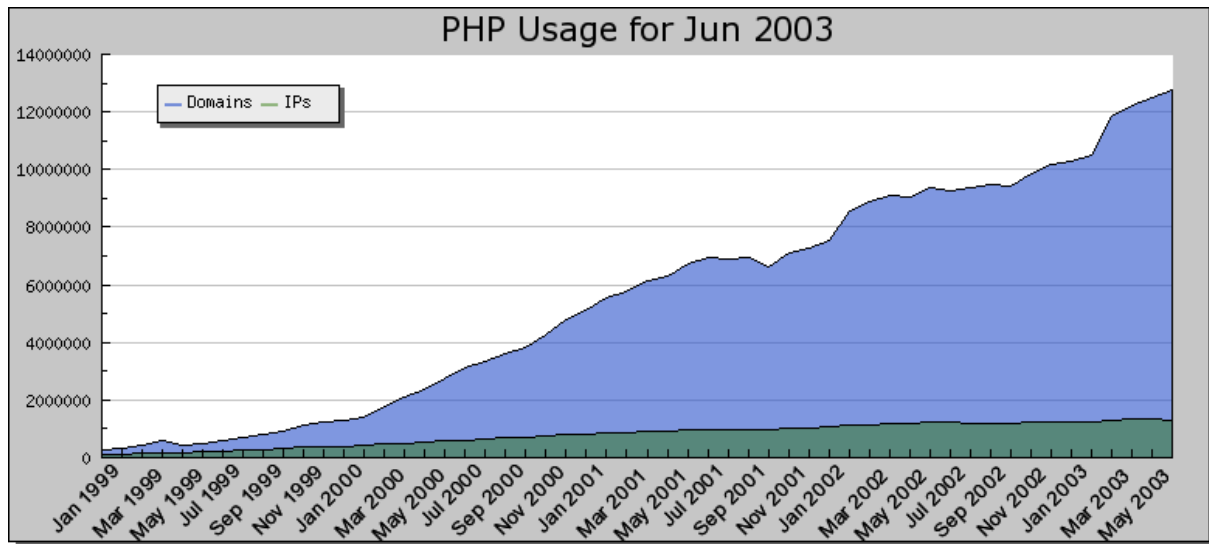
Derick Rethans <d.rethans@jdimedia.nl>

<http://pres.derickrethans.nl/php5lt>

- o PHP: Hypertext Preprocessor
- o Started in 1997
- o Apache module
- o but also IIS, Iplanet, thttpd...
- o SQLite and MySQL integration
- o but also MSSQL, Oracle, PGSql...

June 2003 Netcraft Report

- o 40,936,076 Domains queried
- o 12,749,410 Domains. 1,317,425 IP addresses
- o PHP installed on 31% of all domains



Source: Netcraft

March 2003 Apache Module Report

- o 6,813,534 Apache Servers surveyed
- o 3,510,294 (51.52%) PHP
- o 2,075,828 (30.47%) OpenSSL
- o 2,007,598 (29.46%) mod_ssl
- o 1,486,868 (21.82%) Frontpage
- o 1,407,732 (20.66%) mod_perl
- o 401,097 (5.89%) DAV
- o 348,856 (5.12%) mod_throttle
- o 206,122 (3.03%) mod_jk
- o 175,924 (2.87%) AuthMySQL
- o 190,290 (2.79%) mod_log_bytes
- o 185,076 (2.72%) mod_bwlimited

Source: SecuritySpace.com

- o Open Source: Apache like BSD-style license
- o 701 developers
- o ~25 active (on PHP source)
- o Documentation in 26 languages
- o PHP 4.0.0 since May 2000
- o PHP 4.3.2 in June 2003
- o PHP 5.0.0beta1 in June 2003

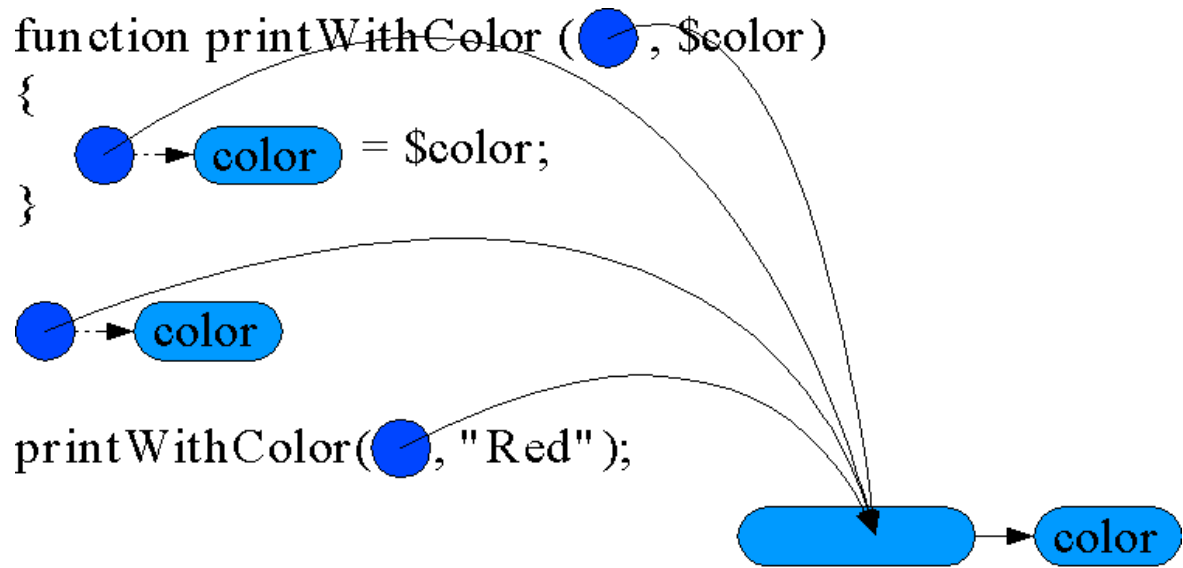
```
<?php
class OS {
    var $name;

    function OS($name) {
        $this->name = $name;
    }
}

function changeName($obj, $name) {
    $obj->name = $name;
}

$linux = new OS('linux');
changeName($linux, 'windows');
echo $linux->name;

? >
```

- o Pass by reference
- o Objects are referenced by a handle.



o Implicit cloning

```
<?php
class OS {
    var $name;

    function OS($name) {
        $this->name = $name;
    }
}

function changeName($obj, $name) {
    $obj->name = $name;
}

$linux = new OS('linux');
$win = $linux->__clone();
changeName($win, 'windows');
echo $linux->name. "\n";
echo $win->name;
```

```
? >
```

```
linux
windows
```

- o New type constructors: `__construct()`.
- o Finally destructors: `__destruct()`.



```
<?php
class Construction {
    var $area;
    function __construct($area) {
        $this->$area = $area;
    }
    function __destruct() {
        echo "Leaving {$this->area}\n";
    }
}

$c = new Construction('London');
$vegas = $c;
$vegas->area = "Las Vegas";

echo "\$c = NULL\n";
$c = NULL;
echo "\$vegas = NULL\n";
$vegas = NULL;
? >

$c = NULL
$vegas = NULL
Leaving Las Vegas
EOS
```

- o 'Strongest' access level
- o Can only be accessed/called from the same class
- o Force use of get()/set() functions to access properties

```
<?php
```

```
class Bedroom {
    private $action;

    function __construct() {
        $this->action = 'fun';
    }
}
```

```
$br = new Bedroom();
echo $br->action. "\n";
```

```
? >
```

```
Fatal error: Cannot access private property bedroom::$action in - on line 12
```

- o Only accessible/callable by the same, or an inherited class
- o Useful for 'packages'

```
<?php
class Bedroom {
    protected $action;

    function __construct() {
        $this->action = 'fun';
    }

    protected function peek() {
        echo $this->action. "\n";
    }
}

class Keyhole extends Bedroom {
    function peek() {
        echo $this->action. "\n";
    }
}

$kh = new Keyhole();
$kh->peek();

$br = new Bedroom();
$br->peek();           / Doesn't work /
? >
```

- o Property access handlers
- o In combination with private
- o As replacement for 'dynamic properties'

```
<?php
class OSses {
    private $names = array();

    public function __set($name, $value) {
        if (!in_array($name, array('windows', 'dos')))
            $this->names[$name] = $value;
    }

    public function getNames() {
        return $this->names;
    }
}

$osses = new OSses();
$osses->linux = 'rocks';
$osses->windows = 'blows';

var_dump($osses->getNames());
? >

array(1) {
    ["linux"]=>
    string(5) "rocks"
}
```

o Catch method calls

```
<?php
class hello {
    function __call($name, $args) {
        echo "Hello $name!\n";
    }
}
```

```
$h = new hello;
$h->sterling();
$h->rasmus();
? >
```

```
Hello sterling!
Hello rasmus!
```

PHP 4:

```
<?php
  if (@mysql_connect('localhost', 'root', 'ut34Fb1Y:')) {
    if (@mysql_select_db('game')) {
      $r = mysql_query('SELECT * FROM news ORDER BY date DESC LIMIT 1');
      ...
    }
  }
```

PHP 5:

```
<?php
  try {
    mysql_connect('localhost', 'root', 'ut34Fb1Y:');
    mysql_select_db('game');
    $r = mysql_query('SELECT * FROM news ORDER BY date DESC LIMIT 1');
  } catch (Exception $e) {
    / Do recovery /
    exit();
  }
```



- o PHP Extension and Application Repository
- o Commandline tool for maintenance
- o Dependency checking

```
[derick@kossu derick]$ sudo pear -v install Net_DIME
downloading Net_DIME-0.3.tgz ...
...done: 6,740 bytes
install ok: Net_DIME 0.3
```

```
[derick@kossu derick]$ sudo pear list-upgrades
Available Upgrades (beta):
=====
Package          Version  Size
DB                1.4.0   60kB
HTML_QuickForm   3.0Beta2 60kB
Net_SMTP         1.2.3   6.1kB
```

```
[derick@kossu derick]$ sudo pear list-all | head -6
All packages:
=====
Package          Latest  Local
apd              0.4p2
bcompiler       0.4     0.4
PHPDoc          0.1.0   0.1.0
```

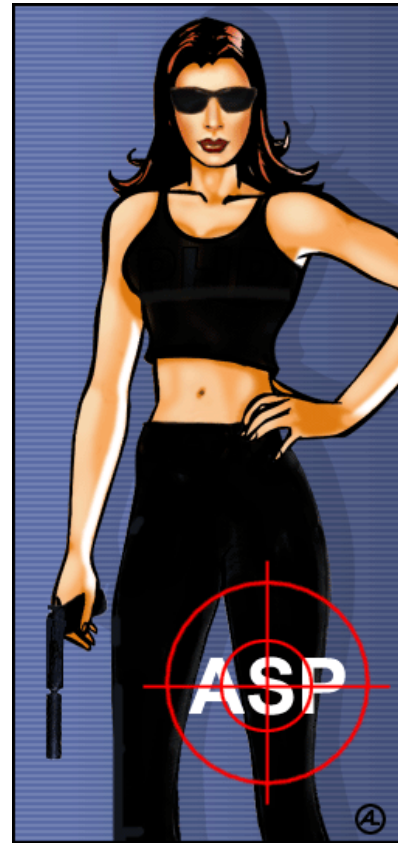


- o PHP Extension Code Library
- o Shared extensions
- o Makes use of the 'pear' tool
- o Future home for all extensions

```
[derick@kossu nl]$ sudo pear -v install
http://files.derickrethans.nl/xdebug-1.2.0.tgz
downloading xdebug-1.2.0.tgz ...
...done: 58,608 bytes
28 source files, building
running: phpize
PHP Api Version      : 20020918
Zend Module Api No  : 20020429
Zend Extension Api No : 20021010
building in /var/tmp/pear-build-root/xdebug-1.2.0
running: /tmp/tmpXOqy3A/xdebug-1.2.0/configure
running: make
xdebug.so copied to /tmp/tmpXOqy3A/xdebug-1.2.0/xdebug.so
install ok: xdebug 1.2.0
```

- o Command Line Interface
- o Actually not new in PHP 5, but was introduced in PHP 4.2.0
- o Useful tool for shell scripts

```
[derick@kossu nl]$ php -v
PHP 5.0.0-dev (cli) (built: May 20 2003 11:06:44)
Copyright (c) 1997-2003 The PHP Group
Zend Engine v2.0.0-dev, Copyright (c) 1998-2003 Zend Technologies
```



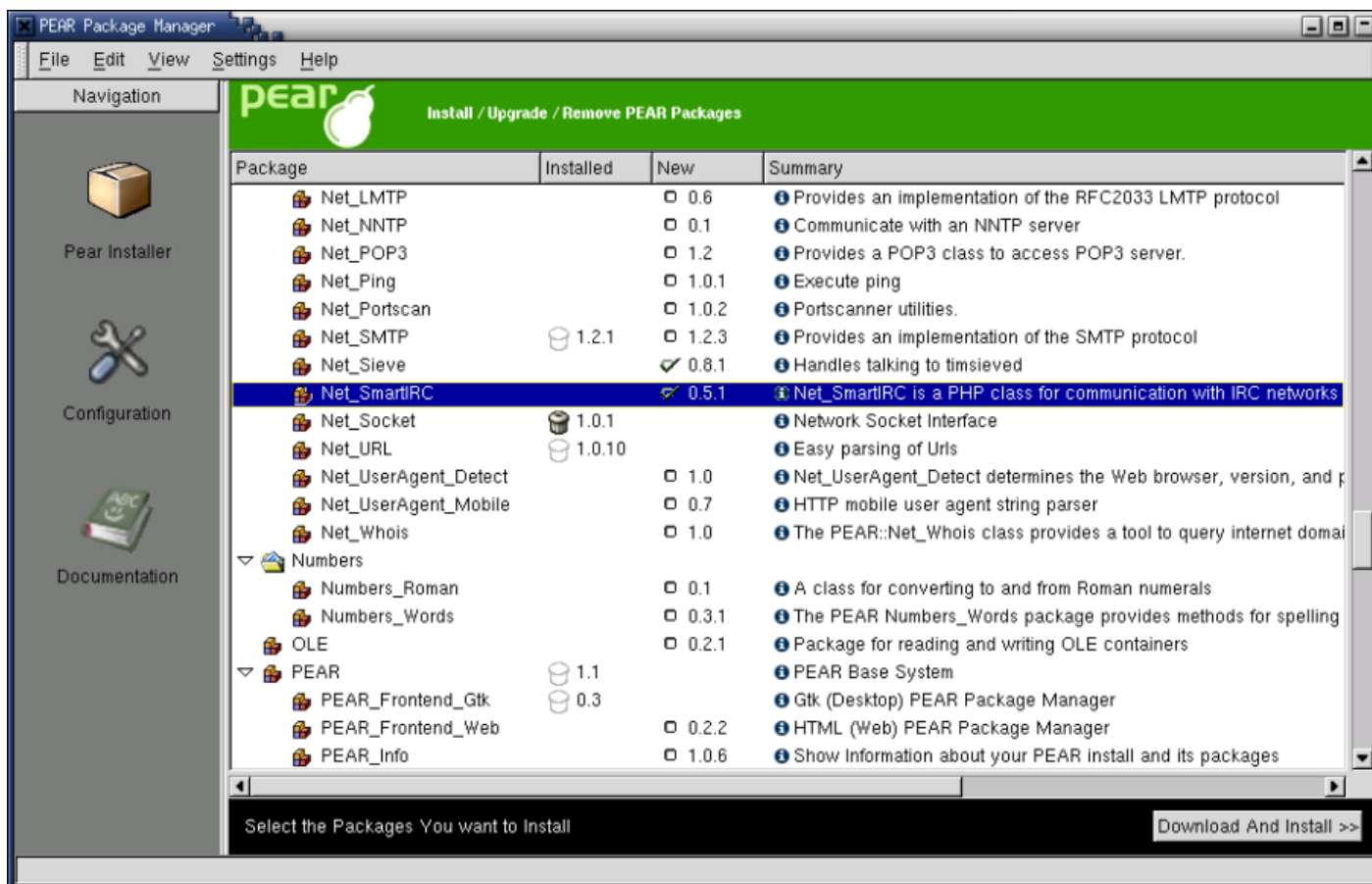
- o New in PHP 5

- o Processing from the commandline

```
-B <begin_code>  Run PHP <begin_code> before processing input lines
-R <code>        Run PHP <code> for every input line
-F <file>       Parse and execute <file> for every input line
-E <end_code>   Run PHP <end_code> after processing all input lines
```

```
$ find . |
  php -B '$1 = 0;'
      -R '$1+=count(file($argn));'
      -E 'echo "Lines: $1\n";'
```

```
Lines: 102643
```



```
<?php
if (!extension_loaded('gtk')) {
    dl( 'php_gtk.' . PHP_SHLIB_SUFFIX);
}

/ Called when the window is being destroyed. Simply quit the main loop. /
function destroy()
{
    Gtk::main_quit();
}

/ Called when button is clicked. Print the message and destroy the window. /
function hello()
{
    global $window;
    print "Hello World!\n";
    $window->destroy();
}

$window = &new GtkWindow();
$window->connect('destroy', 'destroy');

/* Create a button, connect its clicked signal to hello() function and add
   the button to the window. /
$button = &new GtkButton('Hello World!');
$button->connect('clicked', 'hello');
$window->add($button);

$window->show_all();
Gtk::main();
? >
```



Example XML to parse:

```
<books>
  <book>
    <title>The Grapes of Wrath</title>
    <author>John Steinbeck</author>
  </book>
  <book>
    <title>The Pearl</title>
    <author>John Steinbeck</author>
  </book>
</books>
```

Expected output:

```
The Grapes of Wrath was written by John Steinbeck
The Pearl was written by John Steinbeck
```

```
<?php
$doc = domxml_open_file('book.xml');
$root = $doc->child_nodes();
$root = $root[0];
$books = $root->child_nodes();

foreach ($books as $book) {
    if (@$book->tagname == 'book') {
        $content = $book->child_nodes();
        foreach ($content as $elem) {
            if (@$elem->tagname == 'author') {
                $author = $elem->get_content();
            }
            if (@$elem->tagname == 'title') {
                $title = $elem->get_content();
            }
        }
        echo "{$title} was written by {$author}\n";
    }
}
? >
```

```
<?php
$books = simplexml_load_file('book.xml')->book;

foreach ($books as $book) {
    echo $book->title." was written by {$book->author}\n";
}
? >
```

- o **K.I.S.S.**
Keep It Simple Stupid

Before:

```
<security>
  <id>15</id>
</security>
```

Change the ID:

```
<?php
$s = simplexml_load_file('security.xml');
echo $s->id;
$s->id = 20;
simplexml_save_file($s, 'security.new.xml');
? >
```

After:

```
<security>
  <id>20</id>
</security>
```

- o Streams?
- o php://
- o http://, https://, ftp://, ftps://
- o compression.gzip://, compression.bz2://
- o User streams (register_streams())
- o Filters (php://filter)

```
<?php
/* This will output the contents of
   www.example.com entirely in uppercase */
readfile("php://filter/read=string.toupper/resource=http://www.example.com");

/ This will do the same as above except it will ROT13 encode it /
readfile("php://filter/read=string.rot13/resource=http://www.example.com");
? >
```

- o Bundled with PHP 5
- o Fast and easy interface to 'flatfiles'
- o SQL 99 subset
- o No daemon required
- o Enabled by default
- o Callbacks for normal functions and aggregation functions

```
<?php
function sqlite_starts_with($title, $char)
{
    $title = strtolower($title);
    $char = strtolower($char);
    if (!strlen($title) || !strlen($char)) {
        return FALSE;
    }
    return ($title{0} == $char{0});
}

$idx = sqlite_open("livedocs-en.sqlite");
sqlite_create_function($idx, 'STARTS_WITH', 'sqlite_starts_with');

$q = sqlite_query($idx,
    "SELECT title, id FROM idents WHERE STARTS_WITH(title, '$idx')");
if ($q) {
    while ($r = sqlite_fetch_array($q, SQLITE_NUM)) {
        list($title, $id) = $r;
        echo "$id: $title\n";
    }
}
? >
```

- o No more "echo" debugging"
- o Zend extension
 - zend_extension=/path/to/xdebug.so
 - zend_extension_ts=C:/path/to/xdebug.dll
- o Hooks into the standard error handler
and into the execution of functions

Updated error handler:

```
Warning: mysql_select_db() [function.mysql-select-db]: Can't connect to local MySQL server through socket '/var/lib/mysql/mysql.sock' (2) in /home/httpd/html/www.derickrethans.nl/html/xdebug/include/header.php on line 97
```

Call Stack		
#	Function	Location
1	{main}()	/home/httpd/html/www.derickrethans.nl/html/xdebug/updates.php:0
2	include(include/header.php)	/home/httpd/html/www.derickrethans.nl/html/xdebug/updates.php:1
3	mysql_select_db('blog')	/home/httpd/html/www.derickrethans.nl/html/xdebug/include/header.php:97

Updated var_dump() function:

```
array
  0 =>
    array
      0 => true
      1 => false
      2 => 3
    'twee' =>
      array
        0 => '4'
        1 => null
        2 => '6'
```

Function trace				
Time	#	Function	Location	Memory
0	->	require_once(config.php)	/home/httpd/html/ecommerce/modules/user/webshop/index.php:13	190928
0.010361	->	require_once(session.php)	/home/httpd/html/ecommerce/modules/user/webshop/index.php:14	349944
0.010426	->	define ('IMAGE_THUMBNAI', 1)	/home/httpd/html/ecommerce/common/session.php:17	350008
0.010527	->	define ('IMAGE_ITEMINFO', 2)	/home/httpd/html/ecommerce/common/session.php:18	349960
0.010587	->	define ('BASKET_FROM_SESSION', 0)	/home/httpd/html/ecommerce/common/session.php:22	350176
0.010620	->	define ('BASKET_FROM_ORDER', -2147483648)	/home/httpd/html/ecommerce/common/session.php:23	350120
0.010649	->	define ('BASKET_EDIT', 1)	/home/httpd/html/ecommerce/common/session.php:25	350088
0.010673	->	define ('BASKET_FOOTER', 2)	/home/httpd/html/ecommerce/common/session.php:26	350104
0.010695	->	define ('BASKET_USERINFO', 4)	/home/httpd/html/ecommerce/common/session.php:27	350120
0.010717	->	define ('BASKET_CHECKOUT', 8)	/home/httpd/html/ecommerce/common/session.php:28	350136
0.010740	->	define ('BASKET_BONUS_ON', 16)	/home/httpd/html/ecommerce/common/session.php:29	350152
0.010762	->	define ('BASKET_BONUS_OFF', 32)	/home/httpd/html/ecommerce/common/session.php:30	350168
0.010786	->	define ('CONTACT_COMPANY', 1)	/home/httpd/html/ecommerce/common/session.php:33	350120
0.010808	->	define ('CONTACT_PERSON', 2)	/home/httpd/html/ecommerce/common/session.php:34	350136
0.010831	->	define ('ORDER_STATUS_UNFINISHED', 1)	/home/httpd/html/ecommerce/common/session.php:37	350152
0.010855	->	define ('ORDER_STATUS_ORDERED', 2)	/home/httpd/html/ecommerce/common/session.php:38	350176

- o xdebug_start_trace()
- o xdebug_dump_function_trace()

Function Summary Profile (sorted by avg. execution time)			
Total Time Taken	Avg. Time Taken	Number of Calls	Function Name
0.0402980473	0.0402980473	1	*teaser_boxes
0.0315849416	0.0315849416	1	{include}
0.0170339423	0.0170339423	1	*set_sidebar_basket
0.0064459829	0.0064459829	1	{require_once}
0.0064249564	0.0064249564	1	*randomize_boxes
0.0247020079	0.0041170013	6	*currency_output_vat
0.0243179310	0.0034739901	7	*convert_currency
0.0288108429	0.0028810843	10	preg_replace_callback
0.0016710435	0.0016710435	1	*get_category_box
0.0014149420	0.0014149420	1	*get_manufacturer_box
0.0013270202	0.0013270202	1	*db->db
0.0129320472	0.0012932047	10	*get_cache_object

- o Basic profiling.
- o xdebug_start_profile()
- o xdebug_dump_function_profile(mode)
- o 8 profiling modes

```
root@kossu.office.jdimedia.nl: /dat/dev/php/xdebug/debugclient
This is Xdebug version 1.3.0dev.
Copyright 2002 by Derick Rethans, JDI Media Solutions.
(init) bre convert_currency
1 Breakpoint set on function.
(init) run
Starting program: /home/httpd/html/ecommerce/modules/user/webshop/index.php
Breakpoint, convert_currency(2300,005)
    at /home/httpd/html/ecommerce/common/algorithms.php:299
260         global $db;

(cmd) print db
$db = class db {var $con = resource(8) of type (mysql link); var $options = array ()}

(cmd) show
$db
$_SESSION
$value
$curr_data
$GLOBALS
(cmd) print value
$value = 2300,005

(cmd) eval $value = 2350
2350

(cmd) print value
$value = 2350

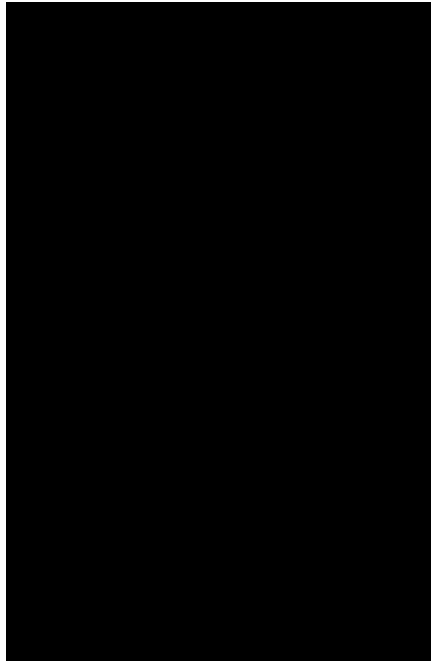
(cmd) cont
Continuing.
Breakpoint, convert_currency(2300,005)
    at /home/httpd/html/ecommerce/common/algorithms.php:299
262         $curr_data = get_currency_data ($db);

(cmd) delete convert_currency
2 Breakpoint removed.
```

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