

Xdebug

Forum PHP Paris 2004

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<http://pres.derickrethans.nl/xdebug-forum4>



Share your information

?

Who...

- did never hear about **PHP**?
- used PHP in a web application?
- wrote PHP applications > **10k** LOC?
- wrote PHP applications > **100k** LOC?
- uses Xdebug already?

```
[derick@localhost derick]$ cat recursive.php
<?php
    function a() {
        a();
    }

    a();
?>
[derick@localhost derick]$ php recursive.php
Segmentation fault
```

Fatal error: Maximum function nesting level of '4' reached, aborting! in **/home/httpd/html/test/xdebug/infinite.php** on line **3**

Call Stack

#	Function	Location
1	{main}()	/home/httpd/html/test/xdebug/infinite.php:0
2	a()	/home/httpd/html/test/xdebug/infinite.php:6
3	a()	/home/httpd/html/test/xdebug/infinite.php:3
4	a()	/home/httpd/html/test/xdebug/infinite.php:3

```
xdebug.max_nesting_level=4
```

```
array
  0 => null
  1 => 3.1415926
  2 =>
    array
      'dutch' =>
        object(locale)[1]
          public 'lang' => 'nl'
          public 'variation' => 'NL'
          public 'charsets' =>
            array
              0 => 'iso-8859-1'
              1 => 'iso-8859-15'
          private 'mb_supported' => false
          private 'self' =>
            &object(locale)[1]
          protected 'id' => 1
```


Warning: `chdir()` [[function.chdir](#)]: No such file or directory (errno 2) in `/dat/docs/magazine/phpa/code/xdebug/listing2.php` on line 34

Call Stack

#	Function	Location
1	{main}()	/dat/docs/magazine/phpa/code/xdebug/listing2.php:0
2	change_dir('foo123')	/dat/docs/magazine/phpa/code/xdebug/listing2.php:37
3	chdir ('/foo123')	/dat/docs/magazine/phpa/code/xdebug/listing2.php:34

Warning: `chdir()` [[function.chdir](#)]: No such file or directory (errno 2) in /dat/docs/magazine/phpa/code/xdebug/listing2.php on line 34

Call Stack

#	Function	Location
1	{main}()	/dat/docs/magazine/phpa/code/xdebug/listing2.php:0
2	change_dir('foo123')	/dat/docs/magazine/phpa/code/xdebug/listing2.php:37
3	chdir ('/foo123')	/dat/docs/magazine/phpa/code/xdebug/listing2.php:34

Variables in local scope (#2)

Variable	Value
\$path =	'/foo123'
\$dir =	'foo123'

```
; enable showing local vars in error messages
xdebug.show_local_vars=1
```


Warning: chdir(): No such file or directory (errno 2) in /dat/docs/magazine/phpa/code/xdebug/listing2.php on line 36

Call Stack

#	Function	Location
1	{main}()	/dat/docs/magazine/phpa/code/xdebug/listing2.php:0
2	change_dir('foo123')	/dat/docs/magazine/phpa/code/xdebug/listing2.php:39
3	chdir('/foo123')	/dat/docs/magazine/phpa/code/xdebug/listing2.php:36

Dump \$_GET

`$_GET[42] = 'the answer to life, the universe and everything'`

```

;♦show all GET variables in error messages
xdebug.dump.GET=*
; show the login and password POST variables
xdebug.dump.POST=login,password
; show the PHP's session cookie
xdebug.dump.COOKIE=PHPSESSID

```

```
[derick@kossu] - mc - /dat/ez.no-33/var/ezno

TRACE START [2004-06-03 13:52:21]
0.0032 235760 -> {main}() /dat/ez.no-33/index.php:0
0.0036 235840 -> microtime() /dat/ez.no-33/index.php:34
0.0037 235856 -> ob_start() /dat/ez.no-33/index.php:35
0.0037 278880 -> error_report() /dat/ez.no-33/index.php:74
0.0084 611512 -> include_once(/dat/ez.no-33/lib/ezutils/classes/ezsys.php) /dat/ez.no-33/lib/ezutils/cl
0.0106 766520 -> include_once(/dat/ez.no-33/lib/ezutils/classes/ezsys.php) /dat/ez.no-33/lib/ezutils/cl
0.0106 766568 -> define('EZ_SYS_DEBUG_INTERNALS', FALSE) /dat/ez.no-33/lib/ezutils/classes/ezsys.php:
0.0107 765856 -> define('EZ_LEVEL_NOTICE', 1) /dat/ez.no-33/lib/ezutils/classes/ezdebug.php:85
0.0107 765872 -> define('EZ_LEVEL_WARNING', 2) /dat/ez.no-33/lib/ezutils/classes/ezdebug.php:86

/tmp/trace.2043925204.xt [R0] 2,1 Top
0.0456 1698456 -> eztextcodec::internalcharset() /dat/ez.no-33/lib/ezil8n/classes/eztextcodec.php:581
0.0456 1698456 -> ezcharsetinfo::realcharset('iso-8859-15') /dat/ez.no-33/lib/ezil8n/classes/eztex
0.0457 1698424 -> ezcharsetinfo::alias() /dat/ez.no-33/lib/ezil8n/classes/ezcharsetinfo.php:212
0.0457 1702584 -> is_array(array('ascii' => 'us-ascii', 'latin1' => 'iso-8859-1', 'latin2' => 'is
0.0461 1702664 -> strtolower('iso-8859-15') /dat/ez.no-33/lib/ezil8n/classes/ezcharsetinfo.php:213
0.0500 1966816 -> include_once(/dat/ez.no-33/lib/ezlocale/classes/ezlocale.php) /dat/ez.no-33/index.php:24
0.0501 1966904 -> define('EZ_LEVEL_WARNING_INTERNALS', FALSE) /dat/ez.no-33/lib/ezlocale/classes/ezlocale
0.0501 19658 -> ezini::instance() /dat/ez.no-33/index.php:246
0.0502 166224 -> ezini::instance() /dat/ez.no-33/index.php:246
0.0516 1966840 -> ezini::variable('RegionalSettings', 'Debug') /dat/ez.no-33/index.php:247

/tmp/trace.2043925204.xt [R0] 349,5 1%
```

```
xdebug.auto_trace=1 ; enable tracing
xdebug.trace_output_dir=/tmp ; trace output directory
xdebug.trace_output_name=crc32 ; tracefile extension
xdebug.collect_params=0 ; parameter collection
xdebug.collect_includes=1 ; collecting includes
xdebug.extended_info=0 ; extended code generation
xdebug.show_mem_delta=1 ; memory difference
```


~/.vim/filetype.vim

```
augroup filetypedetect
au BufNewFile,BufRead *.xt setf xt
augroup END
```

~/.vim/syntax/xt.vim

(<http://xdebug.org/files/xt.vim>)

```
if version < 600
  syntax clear
elseif exists("b:current_syntax")
  finish
endif

syn match begin          "^TRACE START"
syn match end            "^TRACE END"
syn match date           "\[.*\]"

syn match min_memory     "+\d\+"
syn match pls_memory     "-\d\+"
syn match nll_memory     "+0"

syn match level          "->"
syn match lineno         ":\d\+$"

syn match methodcall     "\k\+>"
syn match staticcall     "\k\+:"
syn match functionb      "\k\+("
syn match functione      ") "

syn match main           "{main}()"
syn match include        "include\(_once\)\=('.\+')

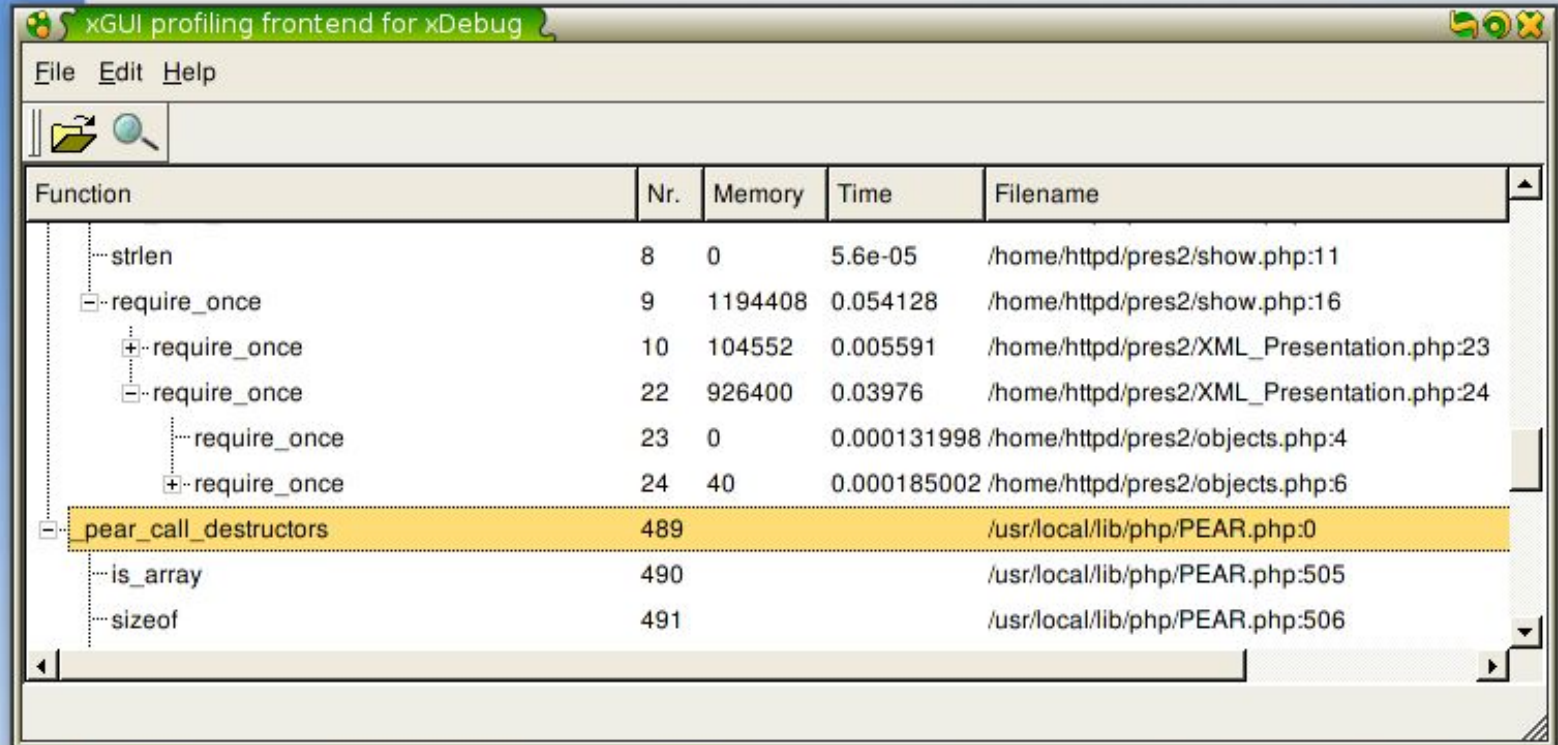
```

Execution trace to file

Automatic readable format

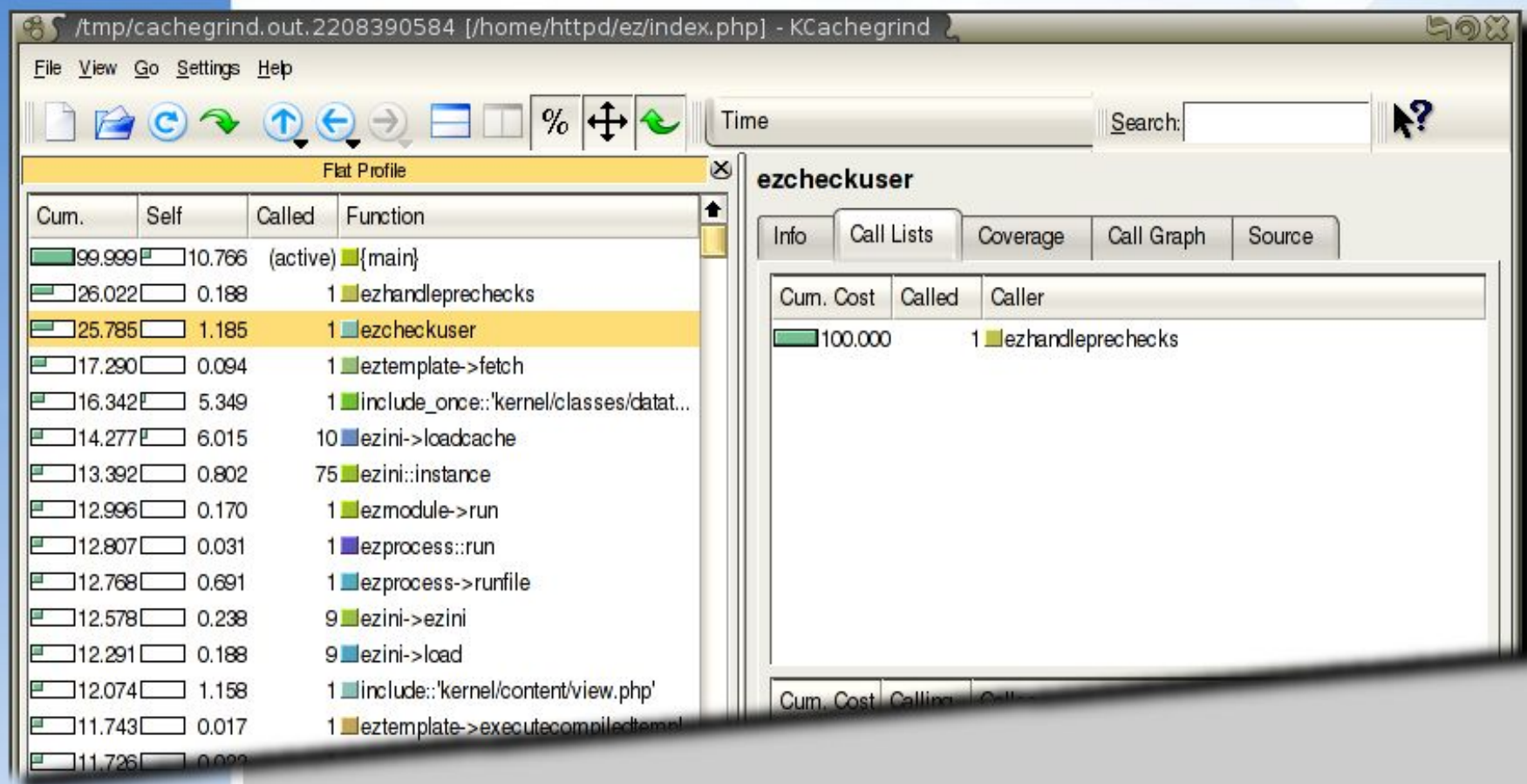
```
[derick@kossu]
File Edit View Terminal Tabs Help
Version: 2.0.0dev
TRACE START [2004-08-28 21:12:37]
1 0 0 0.001881 57336 {main} 1 /home/httpd/pres2/show.php 0
2 1 0 0.002255 57336 error_reporting 0 /home/httpd/pres2/show.php 2
2 1 1 0.002332 57344
2 2 0 0.002862 64360 require_once 1 /home/httpd/pres2/config.php /home/httpd
2 2 1 0.003043 65576
2 3 0 0.003120 62840 compact 0 /home/httpd/pres2/show.php 7
2 3 1 0.003225 63816
2 4 0 0.003459 66824 require_once 1 /home/httpd/pres2/sniff.php /home/httpd/pre
3 5 0 0.003563 66832 strstr 0 /home/httpd/pres2/sniff.php 4
3 5 1 0.003641 66832
2 4 1 0.003696 66888
2 6 0 0.003748 64160 set_time_limit 0 /home/httpd/pres2/show.php 10
2 6 1 0.003855 64160
2 7 0 0.003893 64160 strlen 0 /home/httpd/pres2/show.php 11
2 7 1 0.003949 64160
2 8 0 0.005437 99816 require_once 1 /home/httpd/pres2/XML_Presentation.php /ho
3 9 0 0.010074 143232 require_once 1 /usr/local/lib/php/XML/Parser.php /home/h
4 10 0 0.014375 250952 require_once 1 /usr/local/lib/php/PEAR.php /usr/local/lib/
5 11 0 0.014486 250992 define 0 /usr/local/lib/php/PEAR.php 25
5 11 1 0.014576 250992
/tmp/trace.2043925204.xt [R0] 1,1 Top
```

```
xdebug.auto_trace=1 ; enable tracing
xdebug.trace_format=1 ; selects computerized format
xdebug.trace_options=0 ; sets extra option (1 = append)
```



Function	Nr.	Memory	Time	Filename
strlen	8	0	5.6e-05	/home/httpd/pres2/show.php:11
require_once	9	1194408	0.054128	/home/httpd/pres2/show.php:16
+ require_once	10	104552	0.005591	/home/httpd/pres2/XML_Presentation.php:23
- require_once	22	926400	0.03976	/home/httpd/pres2/XML_Presentation.php:24
- require_once	23	0	0.000131998	/home/httpd/pres2/objects.php:4
+ require_once	24	40	0.000185002	/home/httpd/pres2/objects.php:6
- pear_call_destructors	489			/usr/local/lib/php/PEAR.php:0
is_array	490			/usr/local/lib/php/PEAR.php:505
sizeof	491			/usr/local/lib/php/PEAR.php:506

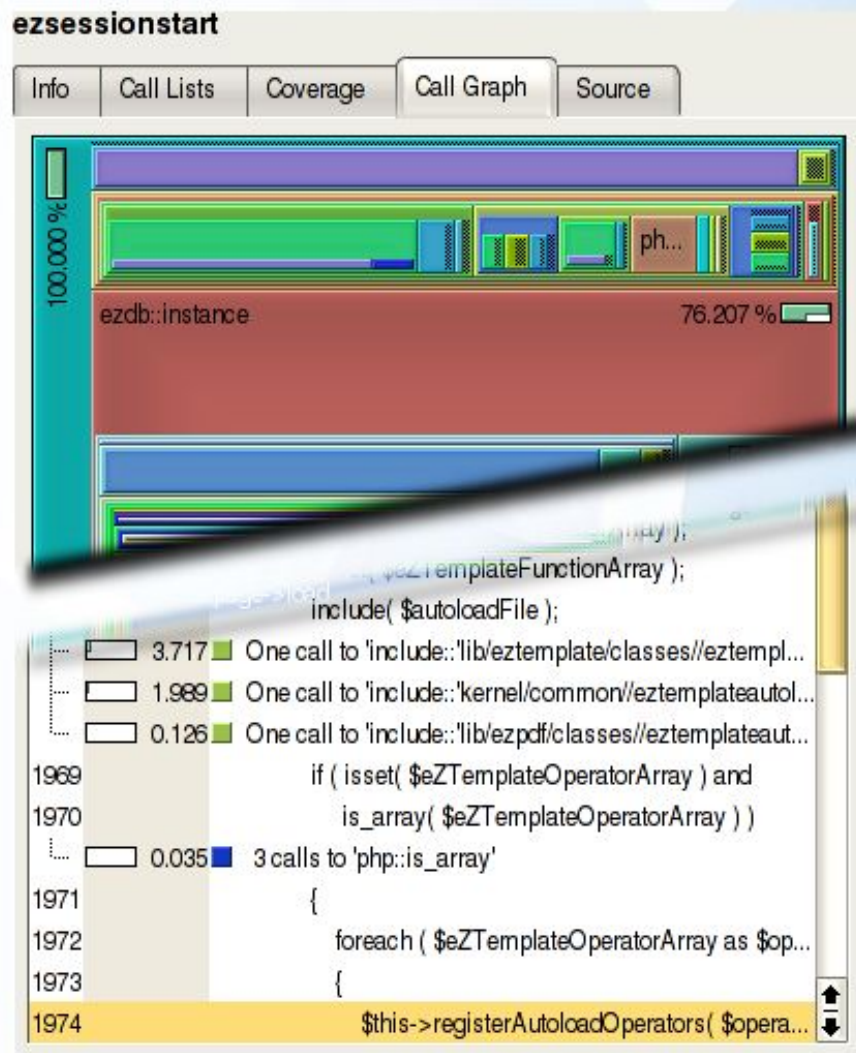
Still in development, and not yet public.
Qt, multi-platform (Linux, MacOSX, Windows).



```
xdebug.profiler_enable=1           ; enable profiler
xdebug.profiler_output_dir=/tmp     ; output directory
xdebug.profiler_output_name=crc32   ; file extension
```

- Call graph
- Area shows time spend
- Stacked to show callees

- Source annotations
- Number of calls
- Total time per function



Function to test (bigassfunction.php):

```
<?php
function test_parse_time($f)
{
    if (preg_match("/[0-9]{12}/", $f)) {
        $type = "YYYYMMDDHHii";
    } else if (preg_match("/[0-9]{8}\ [0-9]{4}/", $f)) {
        $type = "YYYYMMDD HHii";
    } else if (preg_match("/[0-9]{4}-[0-9]{2}-[0-9]{2}/", $f)) {
        $type = "YYYY-MM-DD";
    } else {
        $type = "*unknown*";
    }

    echo "This is a $type format.\n";
}
?>
```

Test driver (basic.t):

```
<?php
$text = realpath("tests/bigassfunction.php");
include $text;

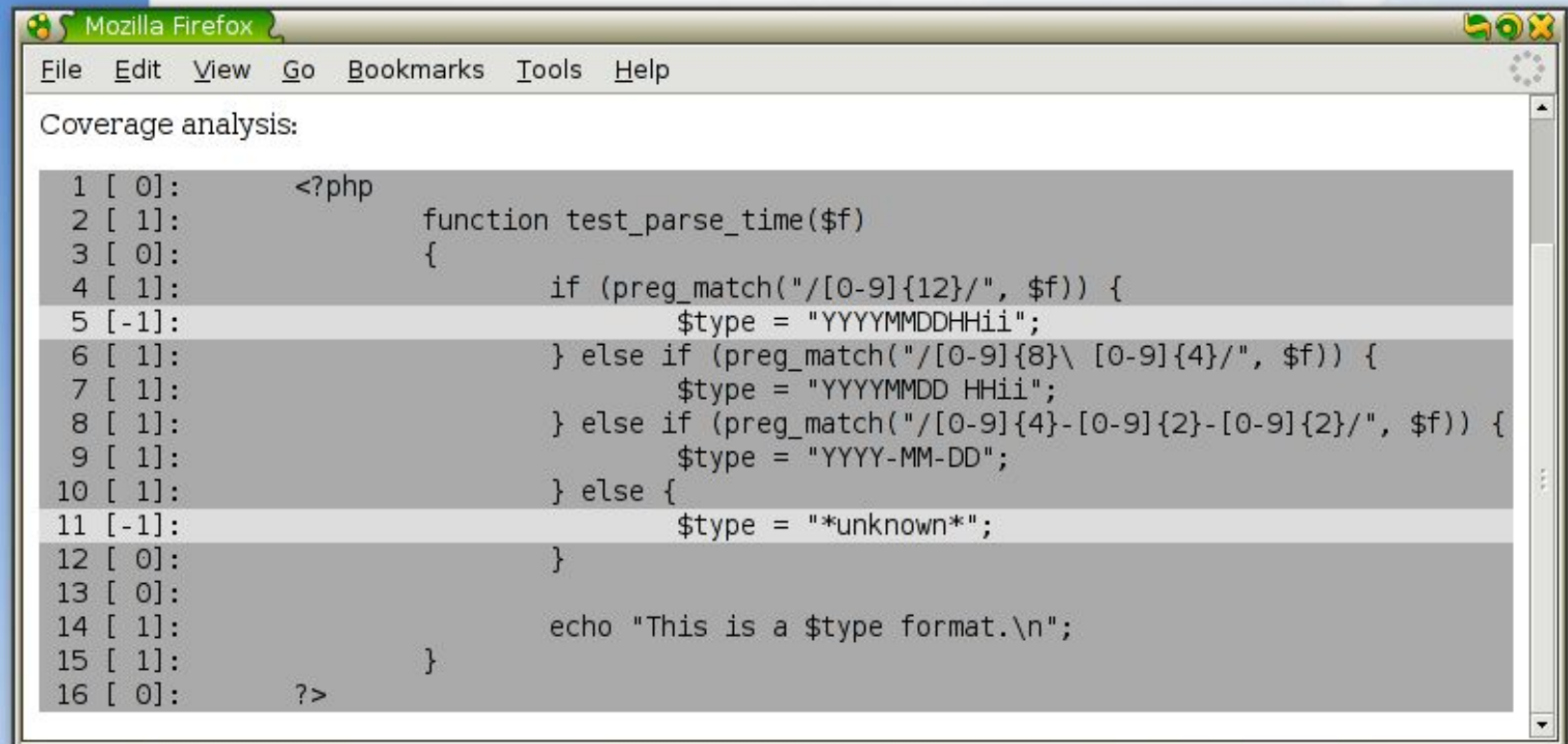
$formats = array('2004-08-17 21:20', '20040817 2120');
foreach ($formats as $format) {
    test_parse_time($format);
}
?>
```



```
<?php
    echo "Output:\n\n";
    xdebug_start_code_coverage();
    include 'tests/basic.t';
    $cc = xdebug_get_code_coverage();
    xdebug_stop_code_coverage();

    $clean = array();
    $clean[$test] = $cc[$test];

    foreach ($clean as $file => $cc) {
        echo "<pre>";
        $fc = file($file);
        $line_nos = array_keys($cc);
        foreach ($fc as $ln => $line) {
            if (in_array($ln + 1, $line_nos)) {
                $bgc = "aaaaaa";
            } else {
                $bgc = "dddddd";
            }
            echo "<div style='background-color: #$bgc'>";
            echo @sprintf("%3d [%2d]:\t", $ln + 1, $cc[$ln + 1]);
            echo htmlspecialchars($line);
            echo "</div>";
        }
        echo "</pre>";
    }
?>
```

The screenshot shows a Mozilla Firefox browser window displaying a code coverage analysis report. The report is titled "Coverage analysis:" and lists 16 lines of PHP code with their corresponding coverage status in brackets. Lines 5, 11, and 16 are highlighted in grey, indicating they were executed. Lines 2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 14, and 15 are in white, indicating they were not executed. The code defines a function `test_parse_time($f)` that uses `preg_match` to determine a date format string `$type` based on the input `$f`. The function then echoes a message: "This is a \$type format.\n".

```
1 [ 0]:      <?php
2 [ 1]:          function test_parse_time($f)
3 [ 0]:          {
4 [ 1]:              if (preg_match("/[0-9]{12}/", $f)) {
5 [-1]:                  $type = "YYYYMMDDHHii";
6 [ 1]:              } else if (preg_match("/[0-9]{8}\ [0-9]{4}/", $f)) {
7 [ 1]:                  $type = "YYYYMMDD HHii";
8 [ 1]:              } else if (preg_match("/[0-9]{4}-[0-9]{2}-[0-9]{2}/", $f)) {
9 [ 1]:                  $type = "YYYY-MM-DD";
10 [ 1]:              } else {
11 [-1]:                  $type = "*unknown*";
12 [ 0]:              }
13 [ 0]:
14 [ 1]:          echo "This is a $type format.\n";
15 [ 1]:      }
16 [ 0]:      ?>
```

`xdebug_start_code_coverage()`
`xdebug_stop_code_coverage()`
`xdebug_get_code_coverage()`

- GDB debugger mode
 - GDB like environment
 - Two output possibilities: text and XML
 - Available in Xdebug 1.3.x and 2.x

- DBGp debugger mode
 - Language independent
 - Plain text in, XML out
 - Available in Xdebug 2.x

- Input commands as "command line parameters"
- **property_get** -n \$foo -d 2 -i 81
- Output data as **documented** XML:

```
data_length  
[NULL]  
<response command="command_name" transaction_id="transaction_id"/>  
[NULL]
```

- Cross-language: PHP, Python, Perl...
- Supported in Xdebug 2
- Clients: Komodo, Maguma Workbench, TruStudio

dbg://file:///home/httpd/www.derickrethans.nl/html/include/header.php - ActiveState Komodo - Debugger is in Break Mode

File Edit Code View Debug Project Toolbox Tools Window Help

Projects | Code | Start Page | index.php | header.php

Name

- ezcamp
- files
- images
- include
 - footer.php
 - friendlysites.html
 - header-gallery.php
 - header.php
 - links.php
 - photos.php
 - travels inc

```

$perm_link .= "?item=$key#$key";
} else if (preg_match('/^question_([0-9]*)$/', $key, $m))
$perm_link = 'question.php?id=' . $m[1];
}

?>
<span class='sans'>a href='<?php echo $perm_link; ?>'>permalink</a> | <?
<br />
<?php

```

Enter a new value for \$key:

20041105

☒ Interpret as String ☐ Interpret as Expression

OK Cancel

Breakpoints | Command Output | SCC Output | **Debug: header.php**

Break at /home/httpd/www.derickrethans.nl/html/include/header.php, line 252.

Name	Type	Value
comment_co...	string	no comments
row	bool	0
perm_link	string	month-2004-11.php?item=20041105...
key	string	20041105
month	string	2004-11

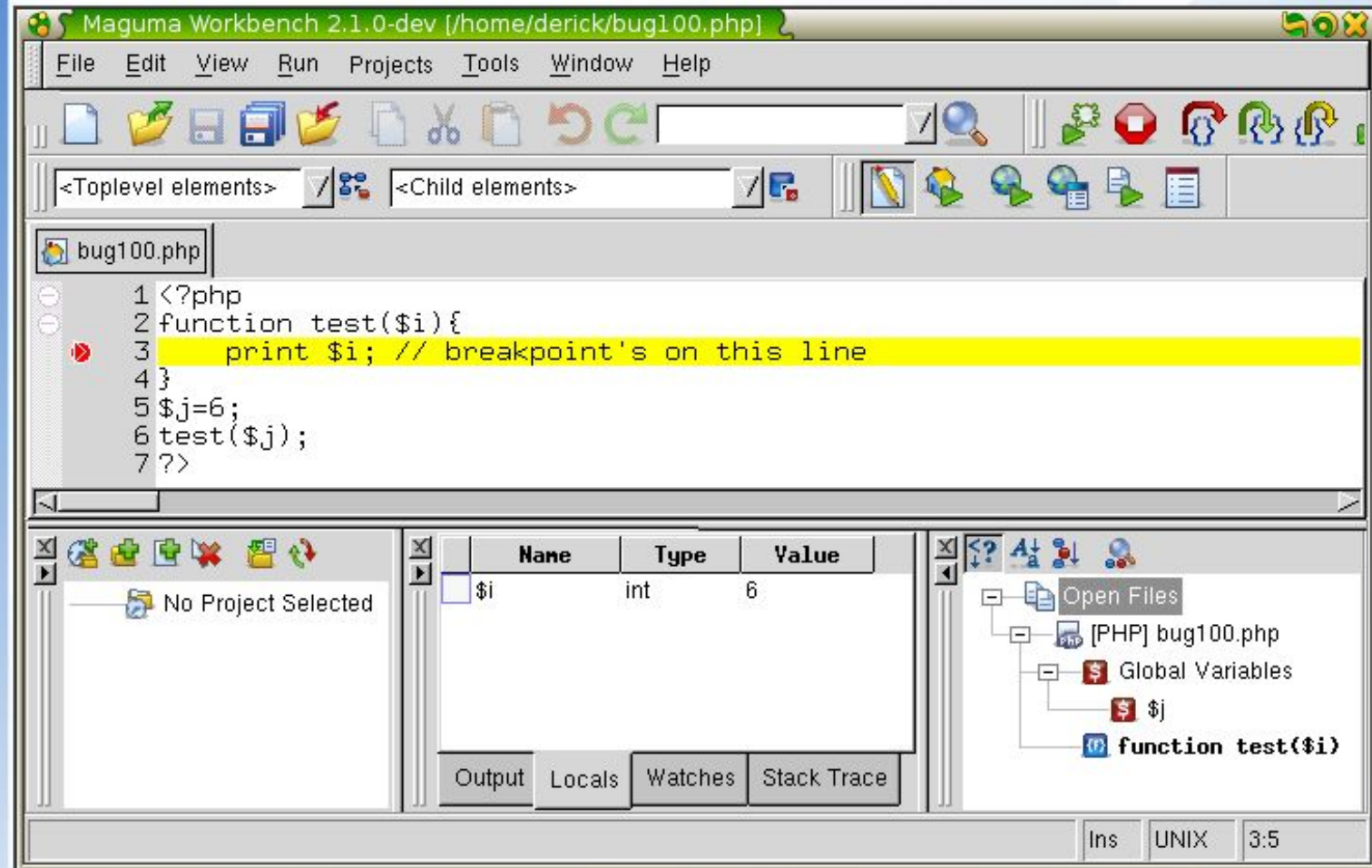
Watch Locals Globals

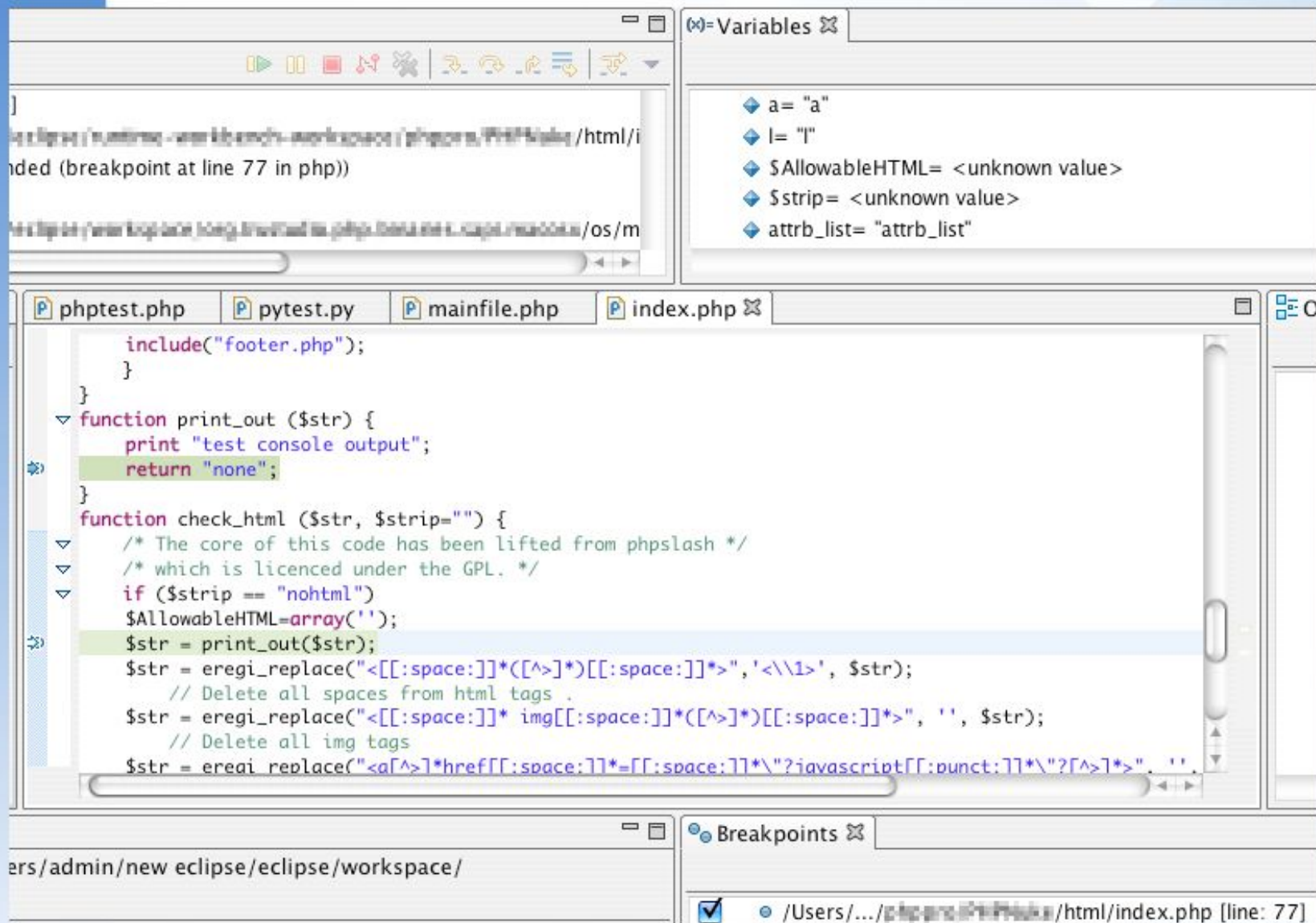
Call Stack Location

- header.php, line 252, in comments
- index.php, line 63, in {main}

Output Call Stack HTML

Ready 8859-... Ln: 252 Col: 1 PHP





The screenshot displays the TruStudio IDE interface with the Xdebug client. The main editor shows a PHP file named `index.php` with the following code:

```

include("footer.php");
}
function print_out ($str) {
    print "test console output";
    return "none";
}
function check_html ($str, $strip="") {
    /* The core of this code has been lifted from phpslash */
    /* which is licenced under the GPL. */
    if ($strip == "nohtml")
        $AllowableHTML=array('');
    $str = print_out($str);
    $str = eregi_replace("<[[:space:]]*([>]*)[[:space:]]*>", '<\1>', $str);
    // Delete all spaces from html tags .
    $str = eregi_replace("<[[:space:]]* img[[:space:]]*([>]*)[[:space:]]*>", '', $str);
    // Delete all img tags
    $str = eregi_replace("<a[>]*href[[:space:]]*=[[:space:]]*\"?javascript[[:punct:]]*\"?([>]*)>", '',

```

The **Variables** panel on the right shows the following variables:

- `a = "a"`
- `l = "l"`
- `$AllowableHTML = <unknown value>`
- `$strip = <unknown value>`
- `attrb_list = "attrb_list"`

The **Breakpoints** panel at the bottom right shows a single breakpoint set at `/Users/.../php-proj-1/html/index.php [line: 77]`.

- Protects against infinite recursion
- **Colored** **var_dump()**
- Stacktraces
- Functiontraces
- parameters to functions
- function/methodname, classname
- file:line locations
- memory allocation
- Profiling
- Script execution analysis
- "Remote" debugging



Xdebug site: <http://xdebug.org>

DBGp specification:
<http://xdebug.org/docs-dbgp.php>

Questions?: derick@xdebug.org