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PHP OVER ERLANG

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Erlang SOLUTIONS

THE JOURNEY

1. What's PHP?

2. BEAM and, why PHP?

3. PHP over Erlang (a.k.a. **ephp**)

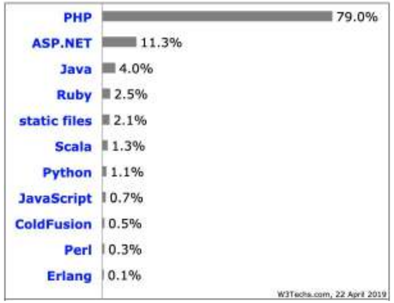
1.

WHAT'S PHP?

WHAT’S PHP?

Some features

- “Accepted” syntax (yes, Java and C like)
- Easy to understand and very simple (arrays are everything)
- A lot of examples. Working examples. Some of them:
- Most of the servers in Internet run PHP:

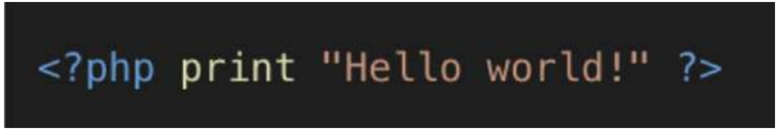


W3Techs.com, 22 April 2019

WHAT'S PHP?

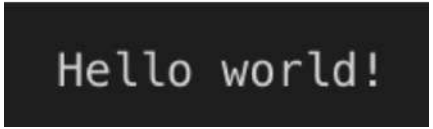
Hello world code example

You can think this is a typical “hello world!” example for PHP:



```
<?php print "Hello world!" ?>
```

Actually, it’s NOT. You can use this one instead:

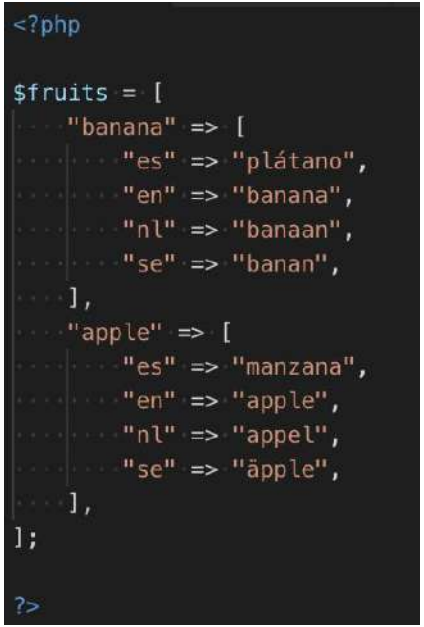


```
Hello world!
```

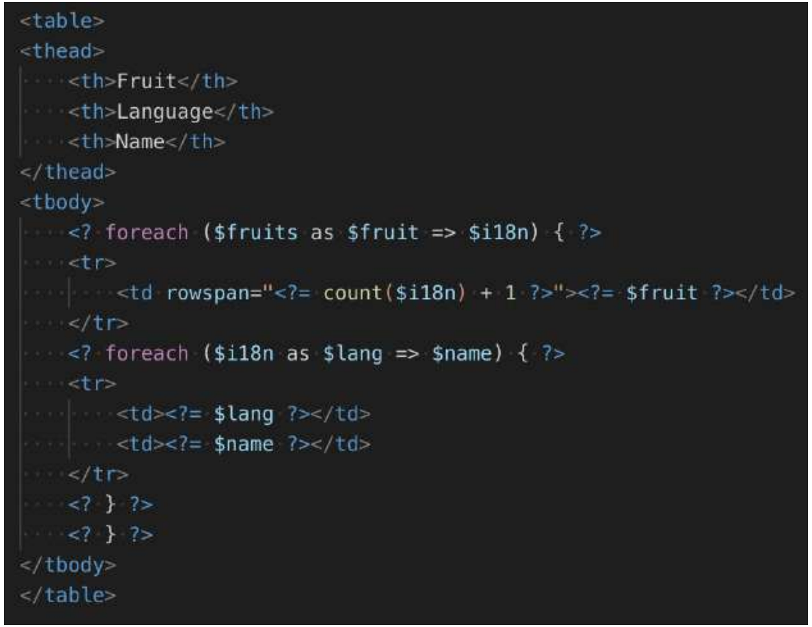
PHP is a **template language**… on steroids!

WHAT’S PHP?

Another code example



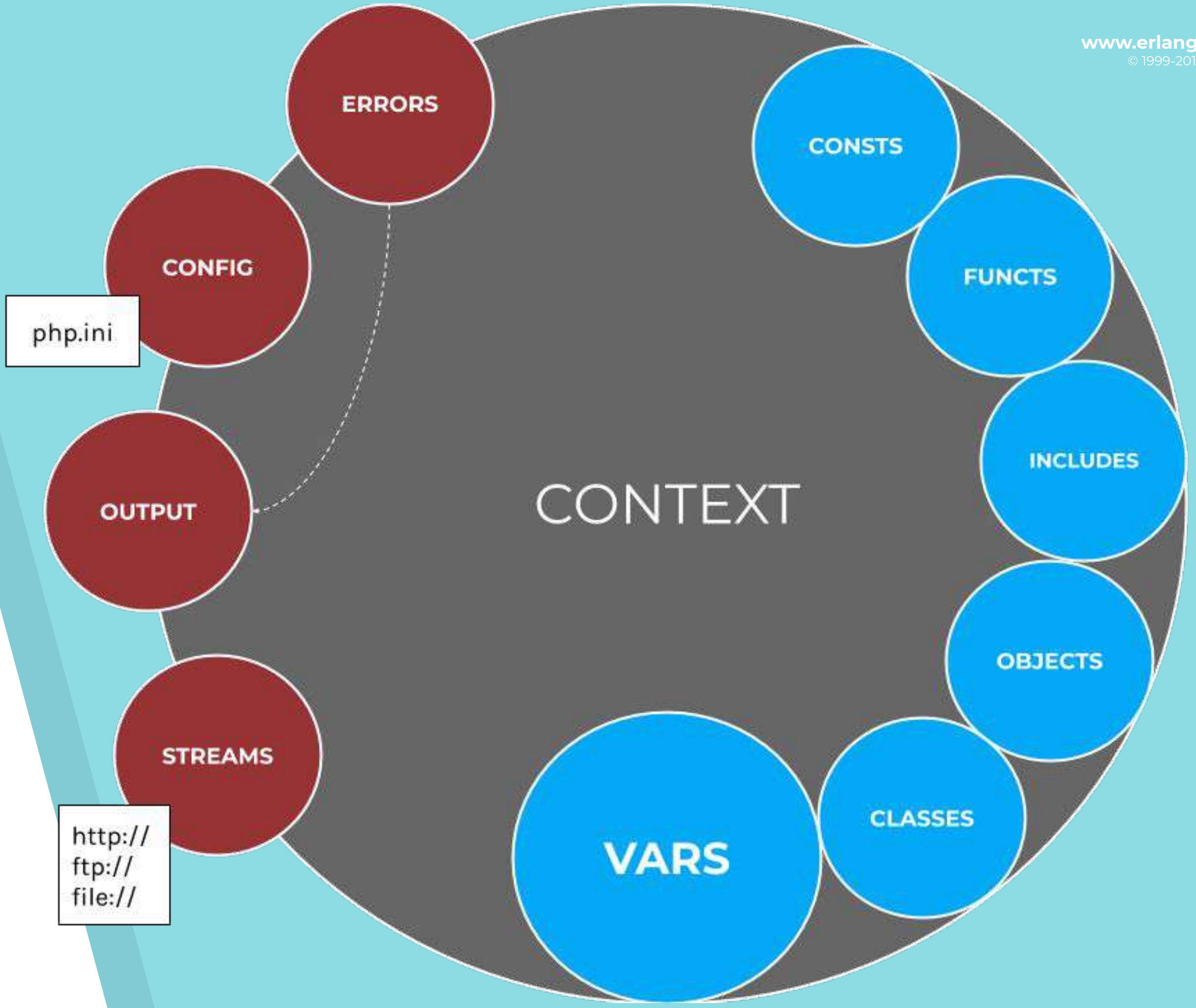
```php
<?php

$fruits = [
    "banana" => [
        "es" => "plátano",
        "en" => "banana",
        "nl" => "banaan",
        "se" => "banan",
    ],
    "apple" => [
        "es" => "manzana",
        "en" => "apple",
        "nl" => "appel",
        "se" => "äpple",
    ],
];

?>
```



```
<table>
<thead>
    <th>Fruit</th>
    <th>Language</th>
    <th>Name</th>
</thead>
<tbody>
    <? foreach ($fruits as $fruit => $i18n) { ?>
    <tr>
        <td rowspan="<?= count($i18n) + 1 ?>"><?= $fruit ?></td>
    </tr>
    <? foreach ($i18n as $lang => $name) { ?>
    <tr>
        <td><?= $lang ?></td>
        <td><?= $name ?></td>
    </tr>
    <? } ?>
    <? } ?>
</tbody>
</table>
```

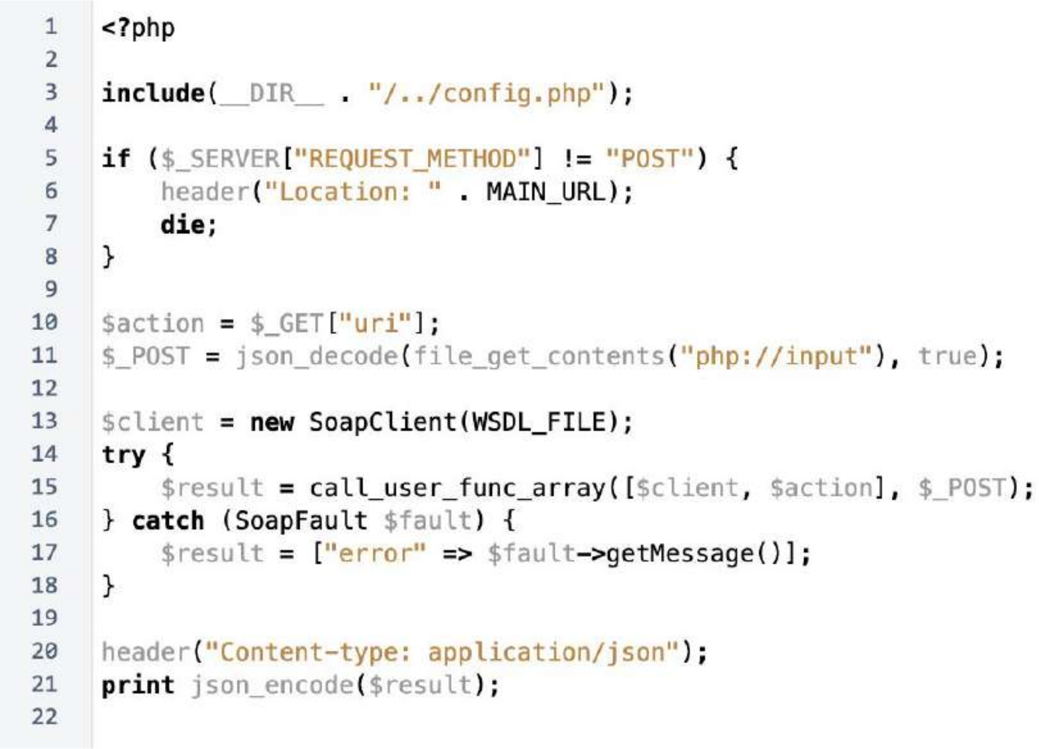
WHAT'S PHP?

Architecture



WHAT'S PHP?

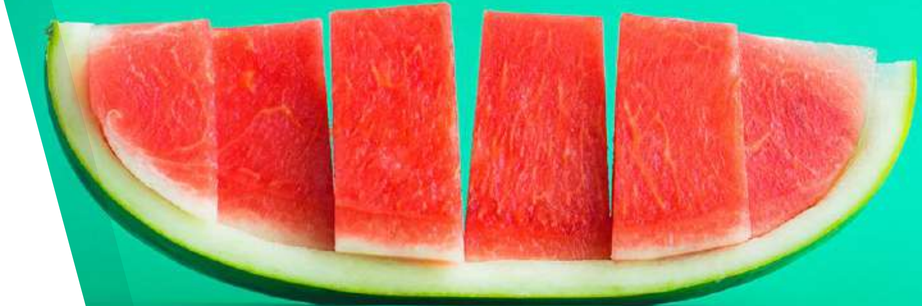
Another more code example



```php
<?php

include(__DIR__ . "/../config.php");

if ($_SERVER["REQUEST_METHOD"] != "POST") {
    header("Location: " . MAIN_URL);
    die;
}

$action = $_GET["uri"];
$_POST = json_decode(file_get_contents("php://input"), true);

$client = new SoapClient(WSDL_FILE);
try {
    $result = call_user_func_array([$client, $action], $_POST);
} catch (SoapFault $fault) {
    $result = ["error" => $fault->getMessage()];
}

header("Content-type: application/json");
print json_encode($result);

```

2.

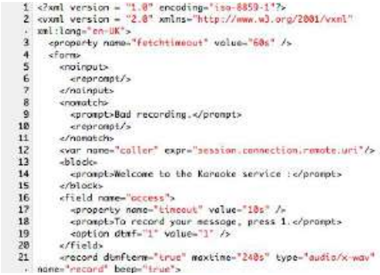
BEAM AND WHY PHP?



BEAM AND WHY PHP?

Telco companies use it!

- Because of **VoiceXML**:



```xml
<?xml version = "1.0" encoding="iso-8859-1"?>
<vxml version = "2.0" xmlns="http://www.w3.org/2001/vxml"
xml:lang="en-UK">
  <property name="fetchtimeout" value="60s" />
  <form>
    <noinput>
      <reprompt/>
    </noinput>
    <nomatch>
      <prompt>Bad recording.</prompt>
      <reprompt/>
    </nomatch>
    <var name="caller" expr="session.connection.remote.uri"/>
    <block>
      <prompt>Welcome to the Karaoke service :</prompt>
    </block>
    <field name="access">
      <property name="timeout" value="10s" />
      <prompt>To record your message, press 1.</prompt>
      <option dtmf="1" value="1" />
    </field>
    <record dtmfterm="true" maxtime="240s" type="audio/x-wav"
name="record" beep="true">
```

- Because of integration with **Asterisk**
- Because of integration with **FreeSwitch**
- Easy to learn → Lot of developers to hire

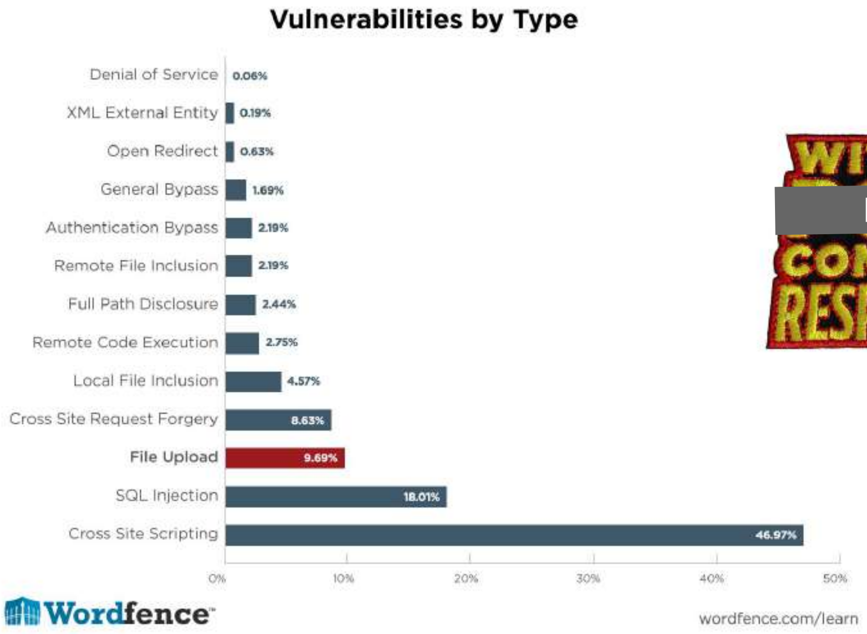
BEAM AND WHY PHP?

PHP Technology is limited…

- No concurrency control (**no!** Using Redis isn’t concurrency development)
- Single-thread (no background tasks, **no!** cron isn’t a good solution)
- No real-time, even PHP running is usually time limited
- Limited to the Operating System processes / threads
- Websockets… what’s that?

BEAM AND WHY PHP?

PHP Technology is very flexible and then very insecure



BEAM AND WHY PHP?

… then BEAM saves the day!

- **BUT** even if it’s easy to learn, OTP isn’t
- **BUT** it hasn’t an “accepted” syntax… it’s weird
- **BUT** there are no working code (maybe only Zotonic these days)
- **BUT** workarounds are better than start from scratch
- **BUT** needs to be more simple, flexible and have more examples

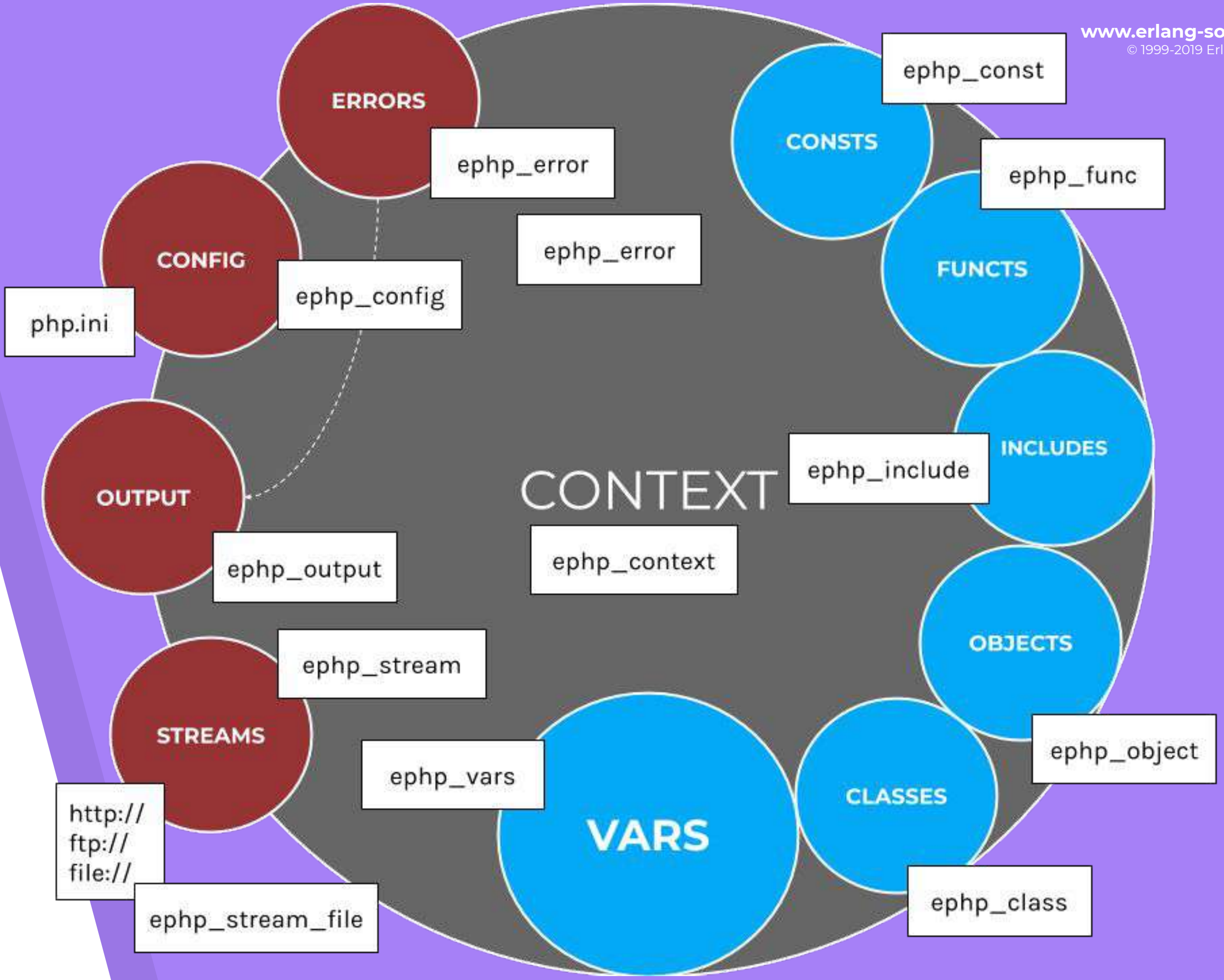
3.

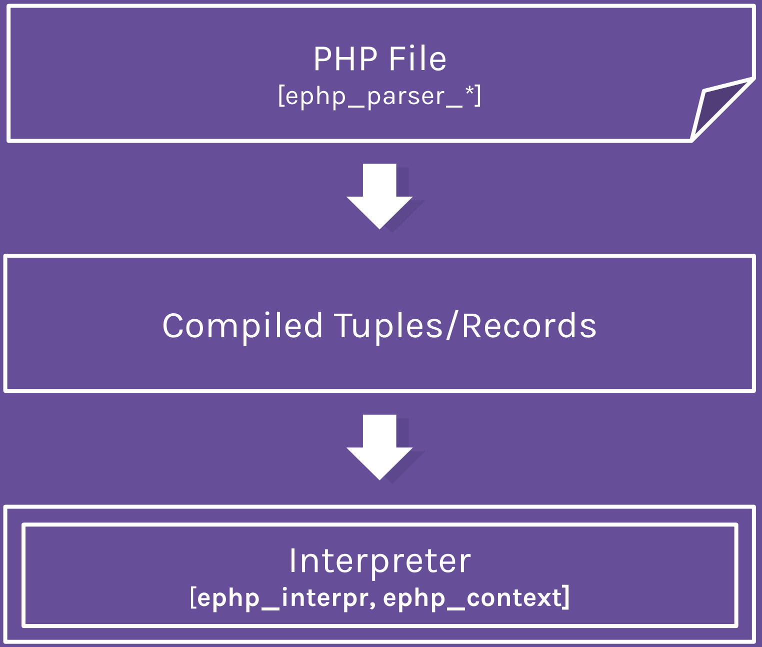
PHP over ERLANG (ephp)

PHP over ERLANG

(ephp)

Architecture

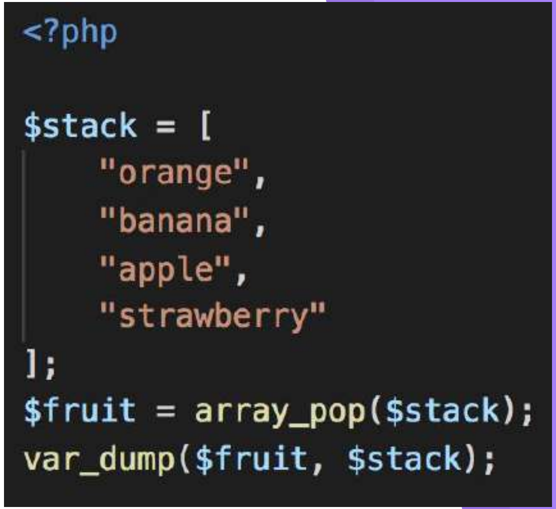




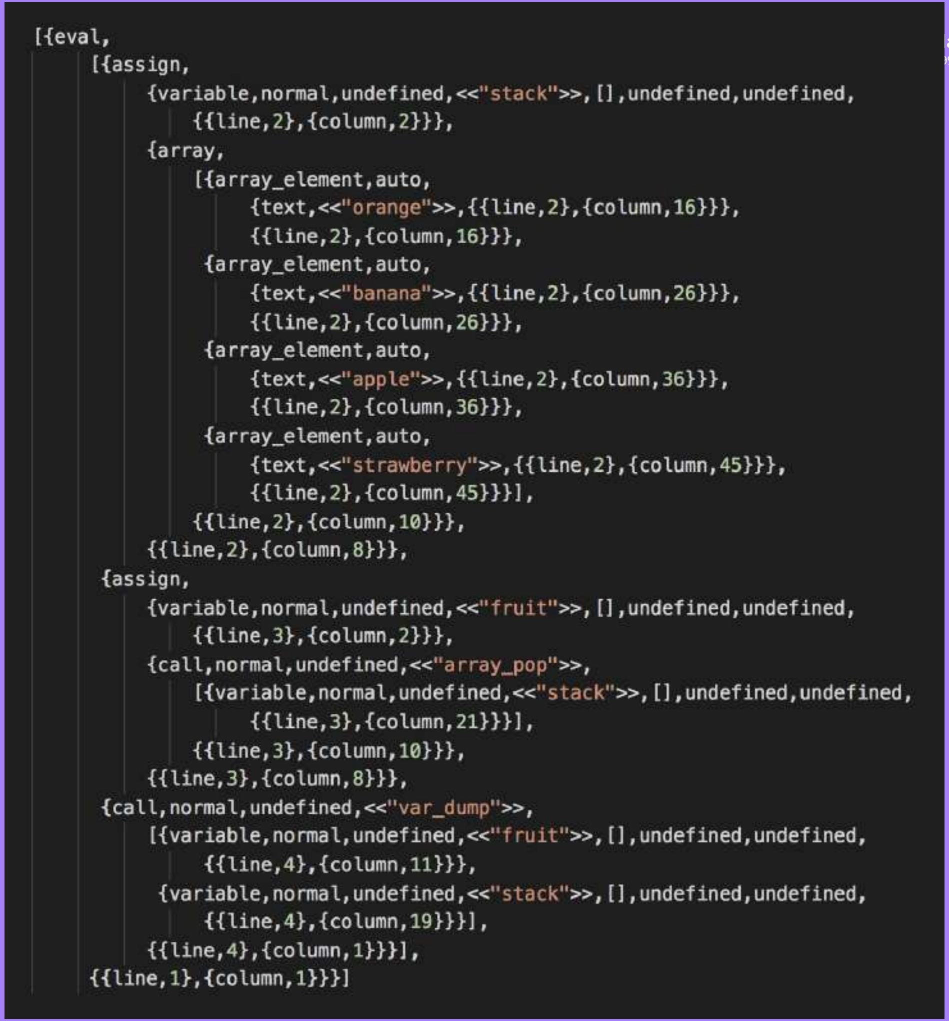
PHP over ERLANG

(ephp)

Architecture



```php
<?php

$stack = [
    "orange",
    "banana",
    "apple",
    "strawberry"
];
$fruit = array_pop($stack);
var_dump($fruit, $stack);
```

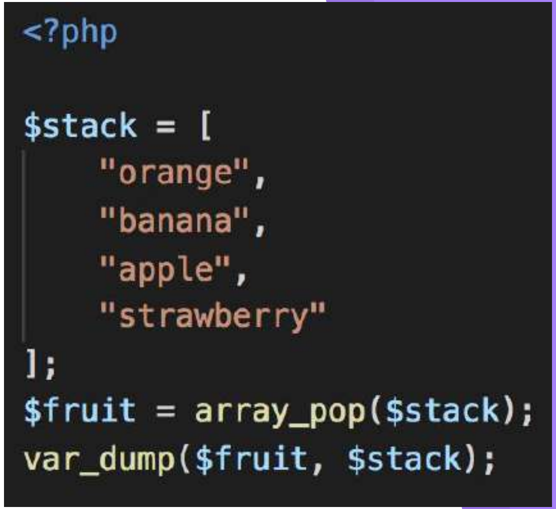


```erlang
[{eval,
     [{assign,
          {variable,normal,undefined,<<"stack">>,[],undefined,undefined,
              {{line,2},{column,2}}},
          {array,
              [{array_element,auto,
                   {text,<<"orange">>,{{line,2},{column,16}}},
                   {{line,2},{column,16}}},
               {array_element,auto,
                   {text,<<"banana">>,{{line,2},{column,26}}},
                   {{line,2},{column,26}}},
               {array_element,auto,
                   {text,<<"apple">>,{{line,2},{column,36}}},
                   {{line,2},{column,36}}},
               {array_element,auto,
                   {text,<<"strawberry">>,{{line,2},{column,45}}},
                   {{line,2},{column,45}}}],
              {{line,2},{column,10}}},
          {{line,2},{column,8}}},
      {assign,
          {variable,normal,undefined,<<"fruit">>,[],undefined,undefined,
              {{line,3},{column,2}}},
          {call,normal,undefined,<<"array_pop">>,
              [{variable,normal,undefined,<<"stack">>,[],undefined,undefined,
                   {{line,3},{column,21}}}],
              {{line,3},{column,10}}},
          {{line,3},{column,8}}},
      {call,normal,undefined,<<"var_dump">>,
          [{variable,normal,undefined,<<"fruit">>,[],undefined,undefined,
               {{line,4},{column,11}}},
           {variable,normal,undefined,<<"stack">>,[],undefined,undefined,
               {{line,4},{column,19}}}],
          {{line,4},{column,1}}}],
     {{line,1},{column,1}}}]
```

PHP over ERLANG

(ephp)

Architecture



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    "apple",
    "strawberry"
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$fruit = array_pop($stack);
var_dump($fruit, $stack);
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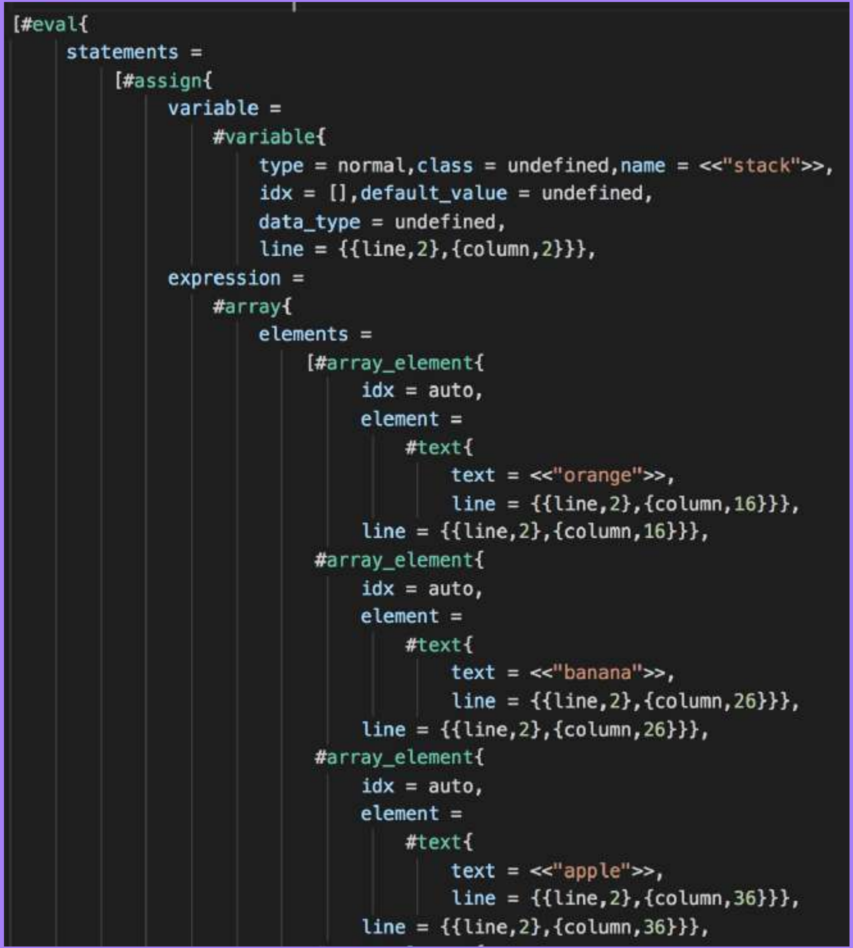


```erlang
[#eval{
    statements =
        [#assign{
            variable =
                #variable{
                    type = normal,class = undefined,name = <<"stack">>,
                    idx = [],default_value = undefined,
                    data_type = undefined,
                    line = {{line,2},{column,2}}},
            expression =
                #array{
                    elements =
                        [#array_element{
                            idx = auto,
                            element =
                                #text{
                                    text = <<"orange">>,
                                    line = {{line,2},{column,16}}},
                            line = {{line,2},{column,16}}},
                         #array_element{
                            idx = auto,
                            element =
                                #text{
                                    text = <<"banana">>,
                                    line = {{line,2},{column,26}}},
                            line = {{line,2},{column,26}}},
                         #array_element{
                            idx = auto,
                            element =
                                #text{
                                    text = <<"apple">>,
                                    line = {{line,2},{column,36}}},
                            line = {{line,2},{column,36}}},
```

PHP over ERLANG

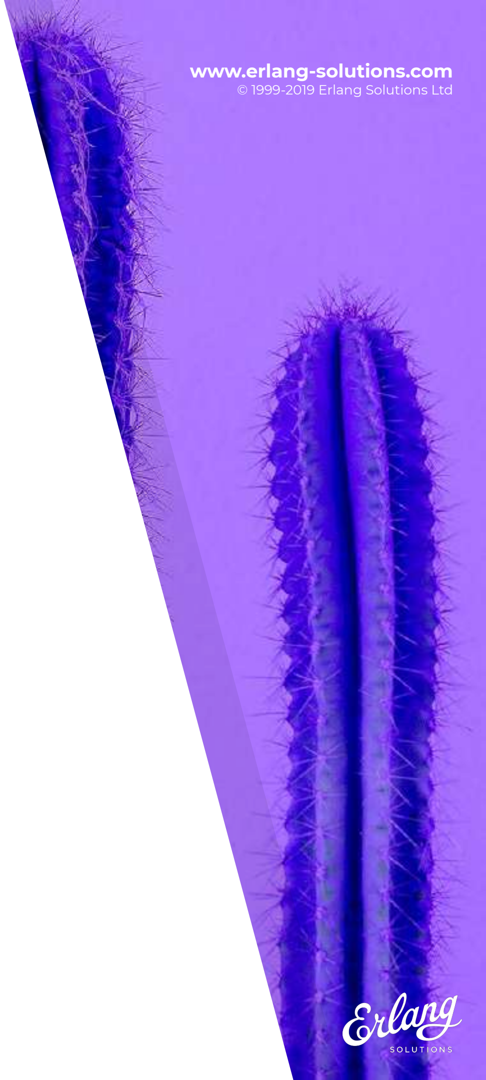
(ephp)

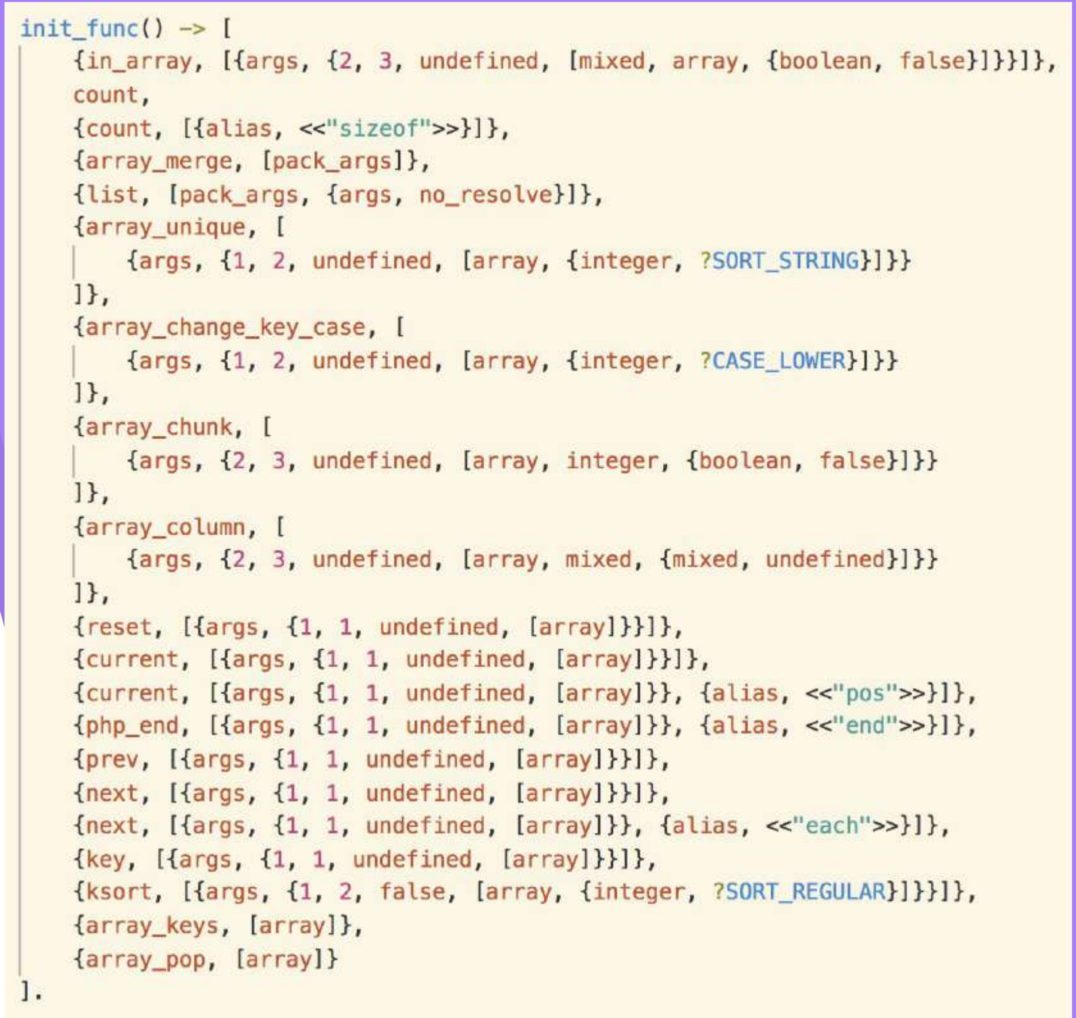
Architecture

PHP over ERLANG (ephp)

Extensibility… **ephp_func** behaviour

- **init_func** (required) list of functions to use
- **init_config** (required) configuration parameters (php.ini)
- **init_const** (required) list of constants with their values
- **handle_error** (optional) let us define new error messages
- **get_classes** (optional) list of classes added by the module



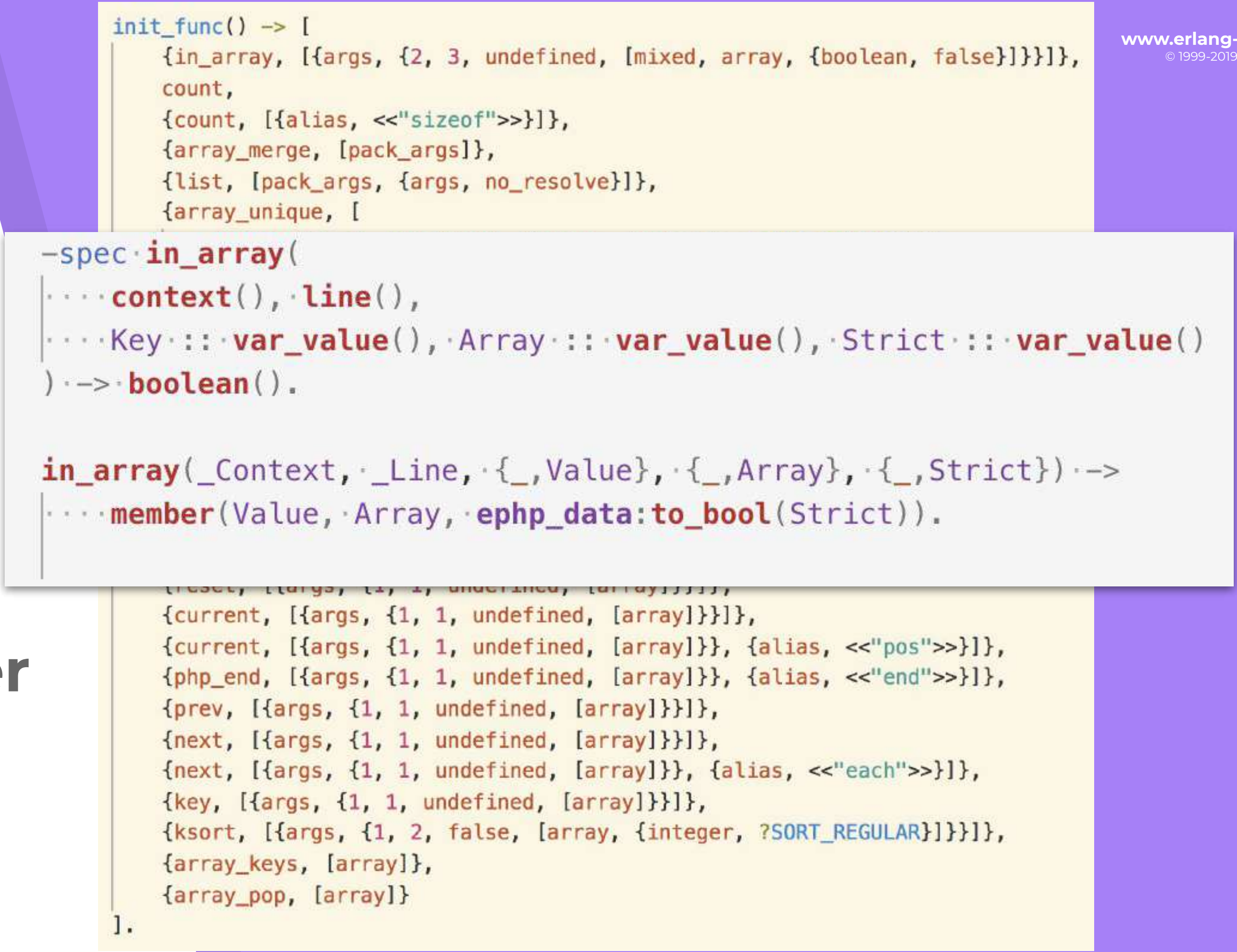


```
init_func() -> [
    {in_array, [{args, {2, 3, undefined, [mixed, array, {boolean, false}]}}]},
    count,
    {count, [{alias, <<"sizeof">>}]},
    {array_merge, [pack_args]},
    {list, [pack_args, {args, no_resolve}]},
    {array_unique, [
        {args, {1, 2, undefined, [array, {integer, ?SORT_STRING}]}}
    ]},
    {array_change_key_case, [
        {args, {1, 2, undefined, [array, {integer, ?CASE_LOWER}]}}
    ]},
    {array_chunk, [
        {args, {2, 3, undefined, [array, integer, {boolean, false}]}}
    ]},
    {array_column, [
        {args, {2, 3, undefined, [array, mixed, {mixed, undefined}]}}
    ]},
    {reset, [{args, {1, 1, undefined, [array]}}]},
    {current, [{args, {1, 1, undefined, [array]}}]},
    {current, [{args, {1, 1, undefined, [array]}}, {alias, <<"pos">>}]},
    {php_end, [{args, {1, 1, undefined, [array]}}, {alias, <<"end">>}]},
    {prev, [{args, {1, 1, undefined, [array]}}]},
    {next, [{args, {1, 1, undefined, [array]}}]},
    {next, [{args, {1, 1, undefined, [array]}}, {alias, <<"each">>}]},
    {key, [{args, {1, 1, undefined, [array]}}]},
    {ksort, [{args, {1, 2, false, [array, {integer, ?SORT_REGULAR}]}}]},
    {array_keys, [array]},
    {array_pop, [array]}
].
```

PHP over ERLANG

(ephp)

Extensibility



```erlang
init_func() -> [
    {in_array, [{args, {2, 3, undefined, [mixed, array, {boolean, false}]}}]},
    count,
    {count, [{alias, <<"sizeof">>}]},
    {array_merge, [pack_args]},
    {list, [pack_args, {args, no_resolve}]},
    {array_unique, [
```

```erlang
-spec in_array(
    context(), line(),
    Key :: var_value(), Array :: var_value(), Strict :: var_value()
) -> boolean().

in_array(_Context, _Line, {_,Value}, {_,Array}, {_,Strict}) ->
    member(Value, Array, ephp_data:to_bool(Strict)).
```

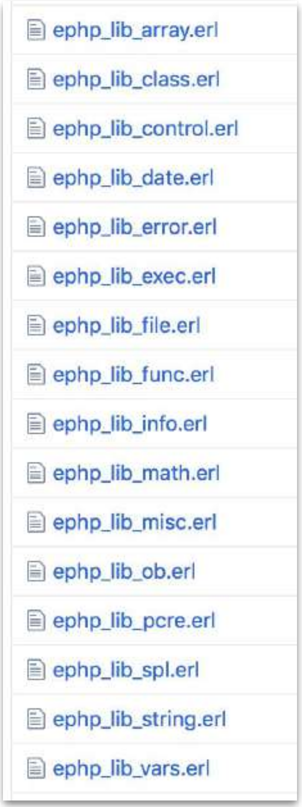
```erlang
    {reset, [{args, {1, 1, undefined, [array]}}]},
    {current, [{args, {1, 1, undefined, [array]}}]},
    {current, [{args, {1, 1, undefined, [array]}}, {alias, <<"pos">>}]},
    {php_end, [{args, {1, 1, undefined, [array]}}, {alias, <<"end">>}]},
    {prev, [{args, {1, 1, undefined, [array]}}]},
    {next, [{args, {1, 1, undefined, [array]}}]},
    {next, [{args, {1, 1, undefined, [array]}}, {alias, <<"each">>}]},
    {key, [{args, {1, 1, undefined, [array]}}]},
    {ksort, [{args, {1, 2, false, [array, {integer, ?SORT_REGULAR}]}}]},
    {array_keys, [array]},
    {array_pop, [array]}
].
```

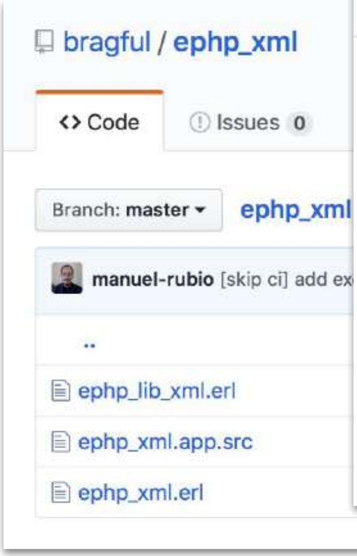
PHP over ERLANG

(ephp)

Extensibility

PHP over ERLANG (ephp)

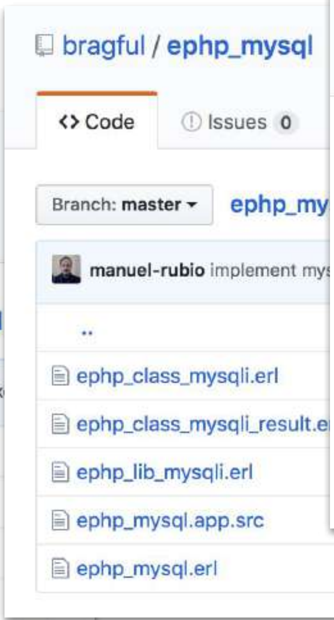

- ephp_lib_array.erl
- ephp_lib_class.erl
- ephp_lib_control.erl
- ephp_lib_date.erl
- ephp_lib_error.erl
- ephp_lib_exec.erl
- ephp_lib_file.erl
- ephp_lib_func.erl
- ephp_lib_info.erl
- ephp_lib_math.erl
- ephp_lib_misc.erl
- ephp_lib_ob.erl
- ephp_lib_pcre.erl
- ephp_lib_spl.erl
- ephp_lib_string.erl
- ephp_lib_vars.erl


bragful / ephp_xml

ephp_xml

manuel-rubio [skip ci] add ex

- ..
- ephp_lib_xml.erl
- ephp_xml.app.src
- ephp_xml.erl


bragful / ephp_mysql

ephp_my

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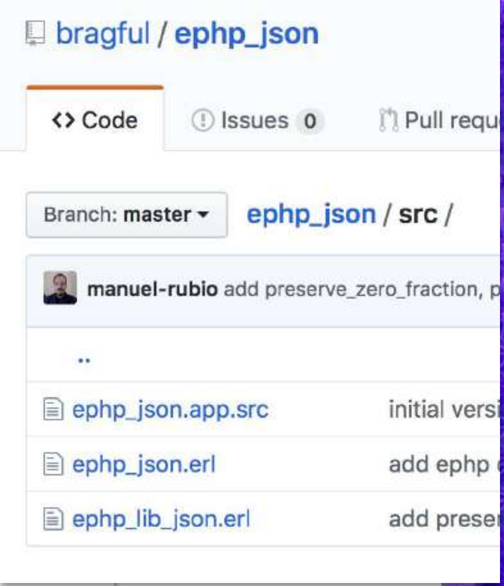
- ..
- ephp_class_mysqli.erl
- ephp_class_mysqli_result.e
- ephp_lib_mysqli.erl
- ephp_mysql.app.src
- ephp_mysql.erl

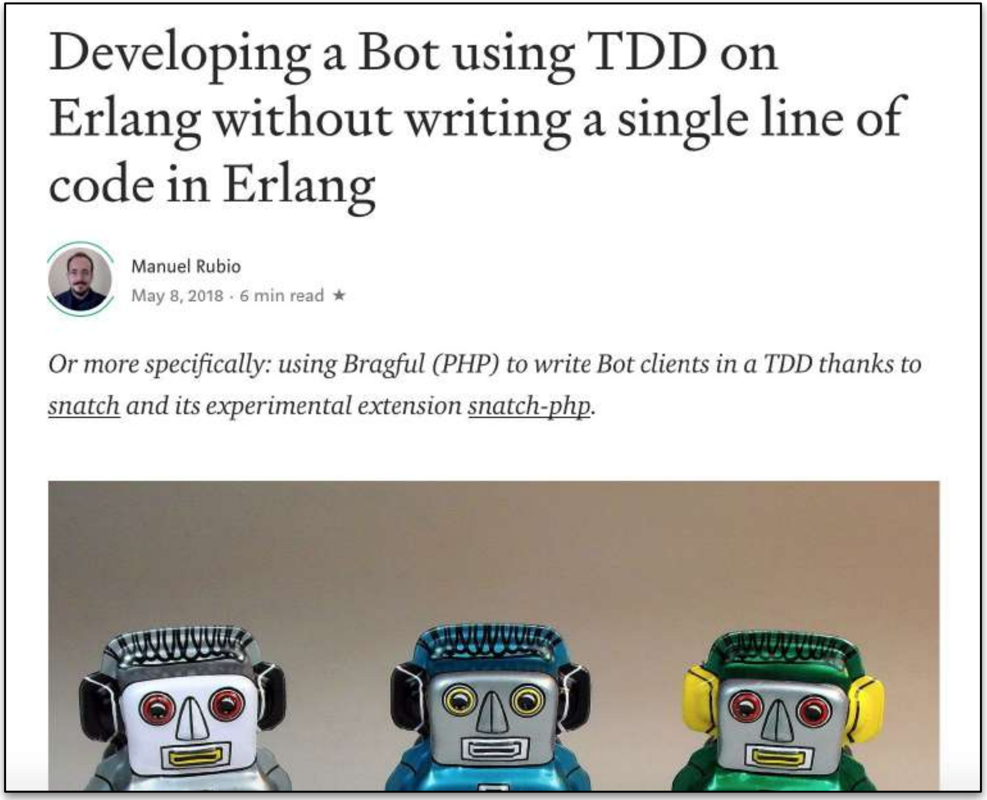

bragful / ephp_json

ephp_json / src /

manuel-rubio add preserve_zero_fraction, p

..	
ephp_json.app.src	initial versi
ephp_json.erl	add ephp
ephp_lib_json.erl	add prese

PHP over ERLANG (ephp)

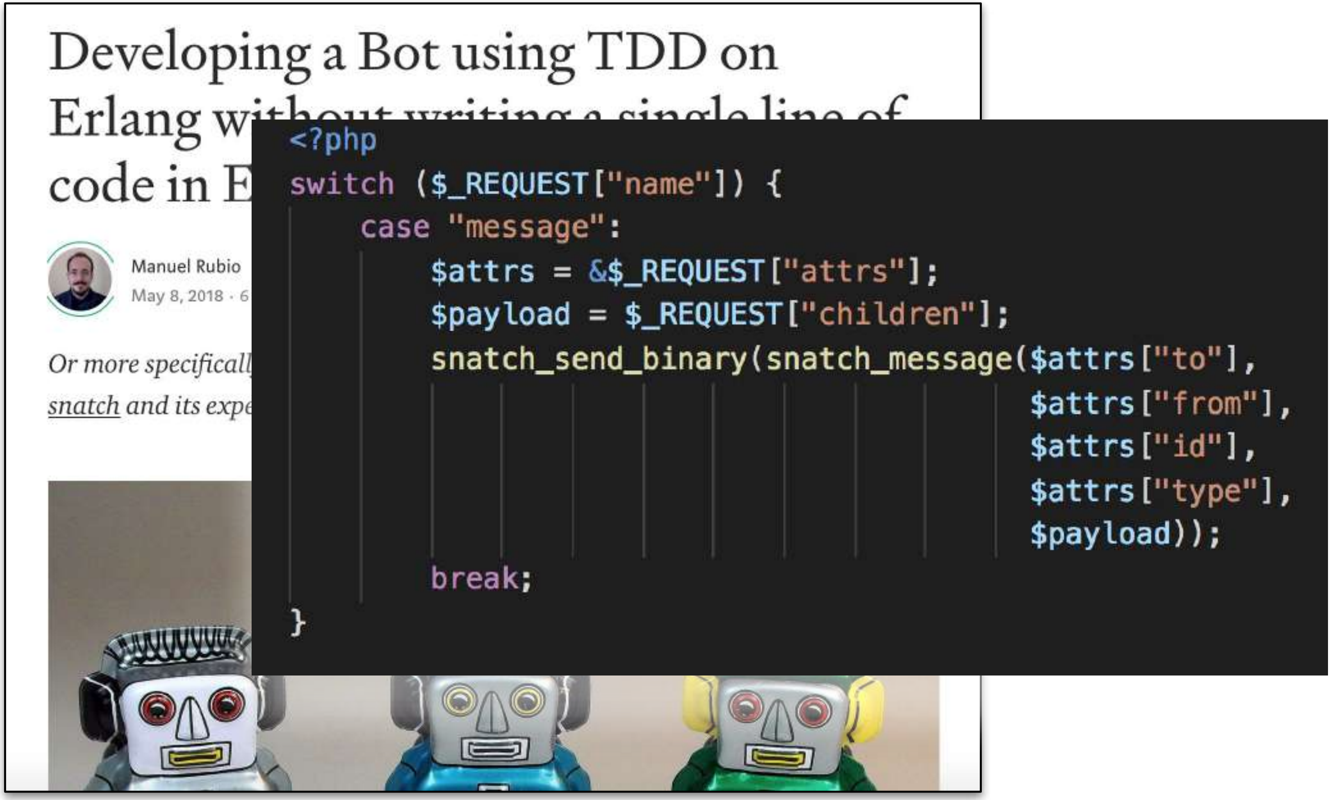


Developing a Bot using TDD on Erlang without writing a single line of code in Erlang

Manuel Rubio
May 8, 2018 · 6 min read ★

Or more specifically: using Bragful (PHP) to write Bot clients in a TDD thanks to snatch and its experimental extension snatch-php.

PHP over ERLANG (ephp)



Developing a Bot using TDD on Erlang wi

code in E

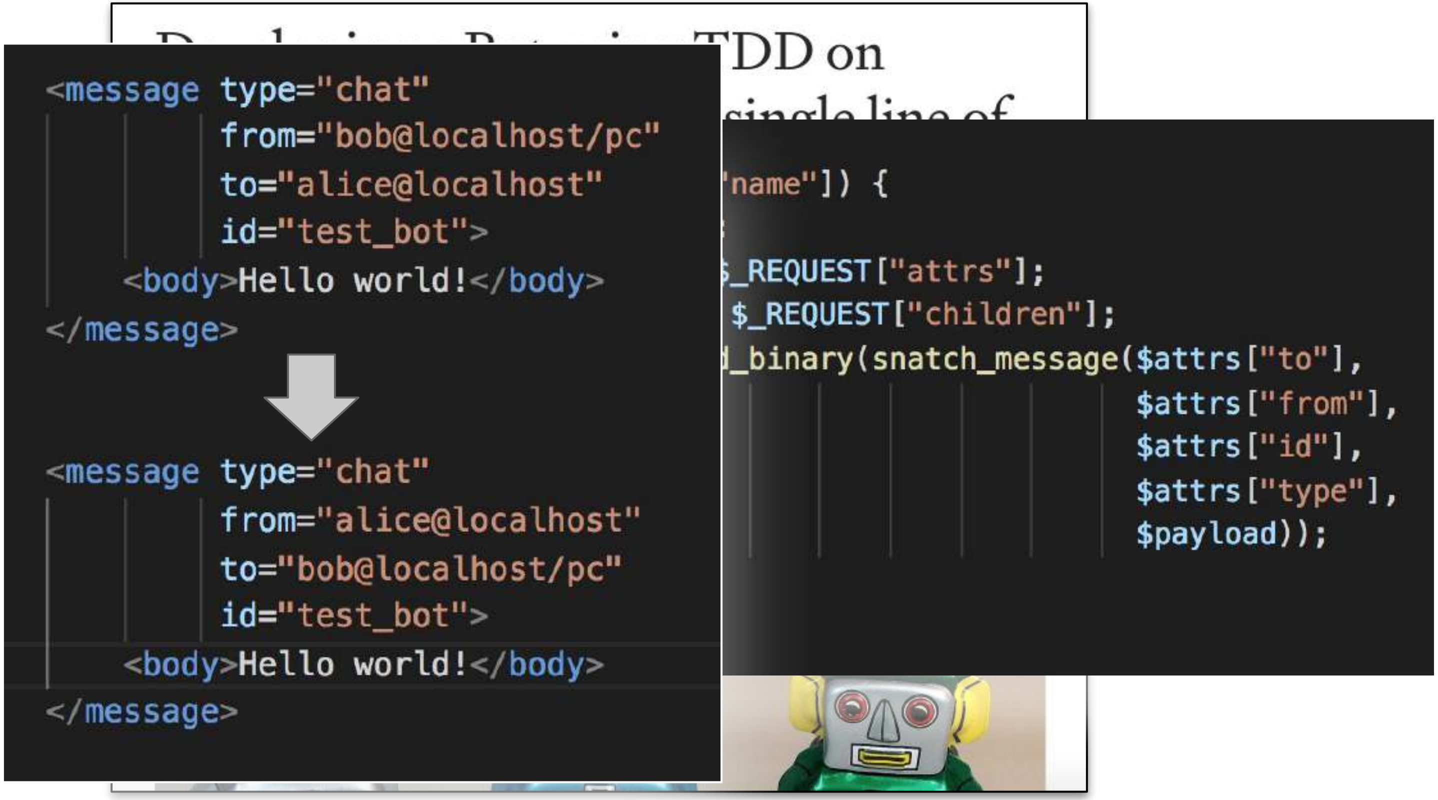
Manuel Rubio
May 8, 2018 · 6

Or more specificall

snatch and its expe

```php
<?php
switch ($_REQUEST["name"]) {
    case "message":
        $attrs = &$_REQUEST["attrs"];
        $payload = $_REQUEST["children"];
        snatch_send_binary(snatch_message($attrs["to"],
                                          $attrs["from"],
                                          $attrs["id"],
                                          $attrs["type"],
                                          $payload));
        break;
}
```

PHP over ERLANG (ephp)



TDD on
single line of

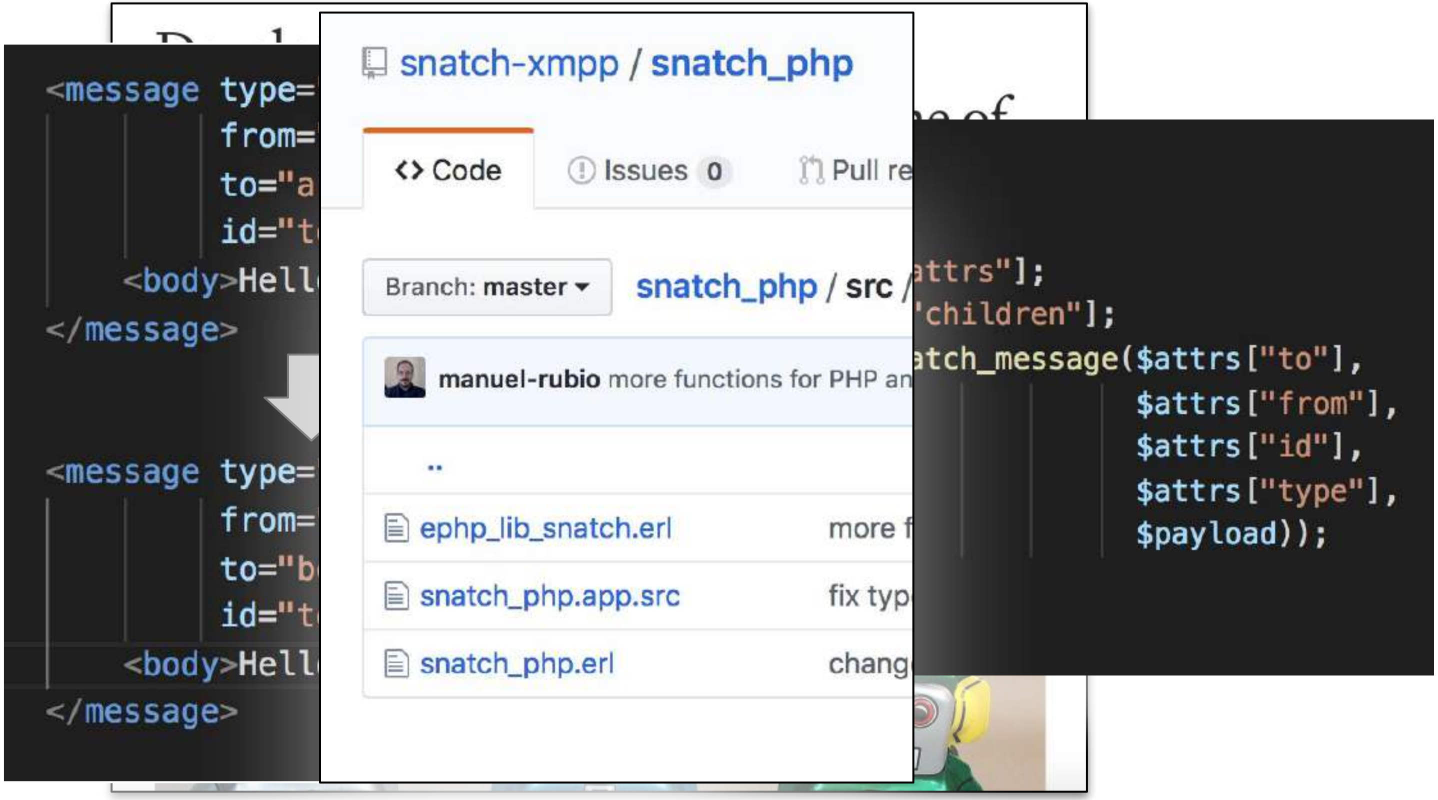
```
<message type="chat"
         from="bob@localhost/pc"
         to="alice@localhost"
         id="test_bot">
    <body>Hello world!</body>
</message>
```

⇩

```
<message type="chat"
         from="alice@localhost"
         to="bob@localhost/pc"
         id="test_bot">
    <body>Hello world!</body>
</message>
```

```
'name"]) {

$_REQUEST["attrs"];
 $_REQUEST["children"];
_binary(snatch_message($attrs["to"],
                       $attrs["from"],
                       $attrs["id"],
                       $attrs["type"],
                       $payload));
```

PHP over ERLANG (ephp)



```
<message type=
         from=
         to="a
         id="t
   <body>Hell
</message>
```

```
<message type=
         from=
         to="b
         id="t
   <body>Hell
</message>
```

snatch-xmpp / snatch_php

snatch_php / src /

manuel-rubio more functions for PHP an

..

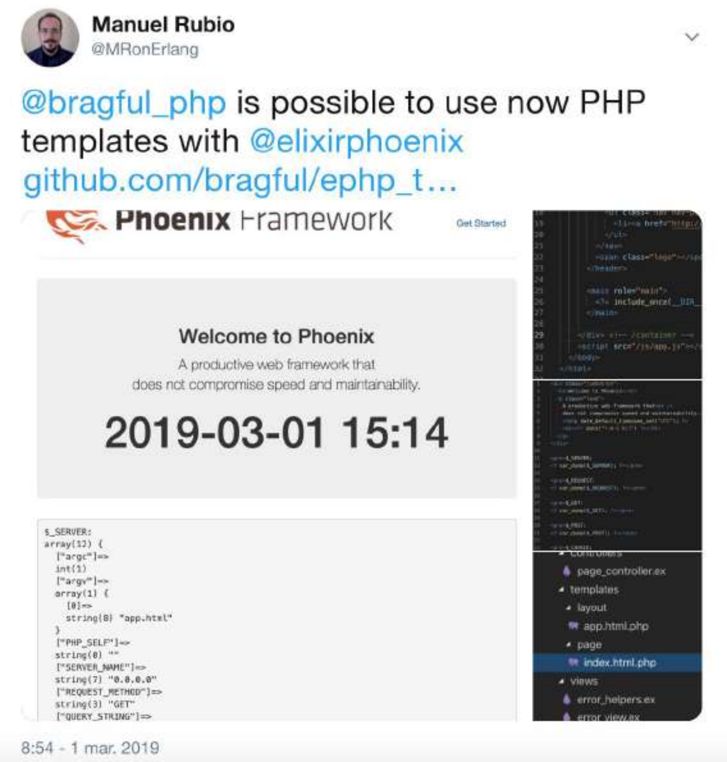
ephp_lib_snatch.erl more f

snatch_php.app.src fix typ

snatch_php.erl chang

```
attrs"];
'children"];
atch_message($attrs["to"],
             $attrs["from"],
             $attrs["id"],
             $attrs["type"],
             $payload));
```

PHP over ERLANG (ephp)



Manuel Rubio
@MRonErlang

@bragful_php is possible to use now PHP templates with @elixirphoenix github.com/bragful/ephp_t...

Welcome to Phoenix

A productive web framework that does not compromise speed and maintainability.

2019-03-01 15:14

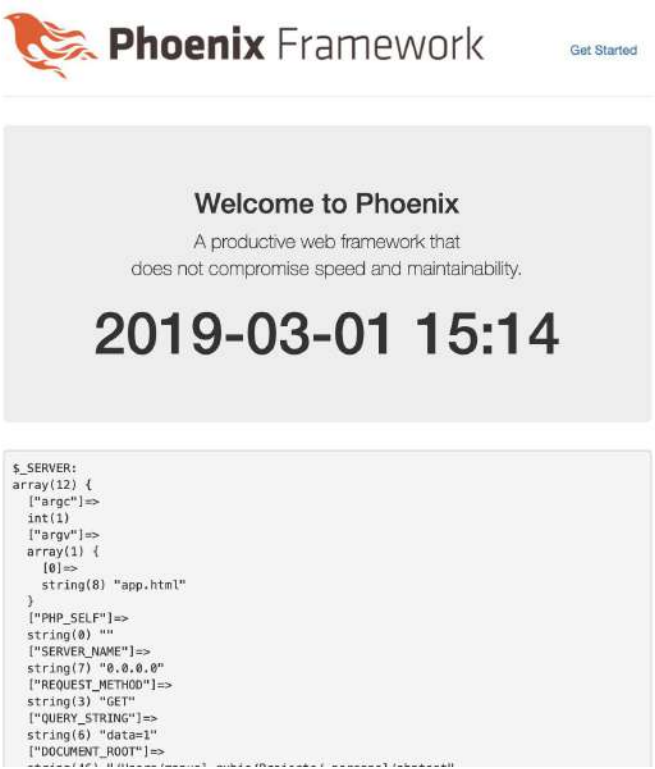
```
$_SERVER:
array(12) {
  ["argc"]=>
  int(1)
  ["argv"]=>
  array(1) {
    [0]=>
    string(8) "app.html"
  }
  ["PHP_SELF"]=>
  string(0) ""
  ["SERVER_NAME"]=>
  string(7) "0.0.0.0"
  ["REQUEST_METHOD"]=>
  string(3) "GET"
  ["QUERY_STRING"]=>
```

```
        <li><a href="http://
      </ul>
    </nav>
    <span class="logo"></span>
  </header>

  <main role="main">
    <?= include_once(__DIR__
  </main>

</div> <!-- /container -->
<script src="/js/app.js"></
</body>
</html>
```

```
  controllers
    page_controller.ex
  templates
    layout
      app.html.php
    page
      index.html.php
  views
    error_helpers.ex
    error_view.ex
```

8:54 - 1 mar. 2019

PHP over ERLANG (ephp)

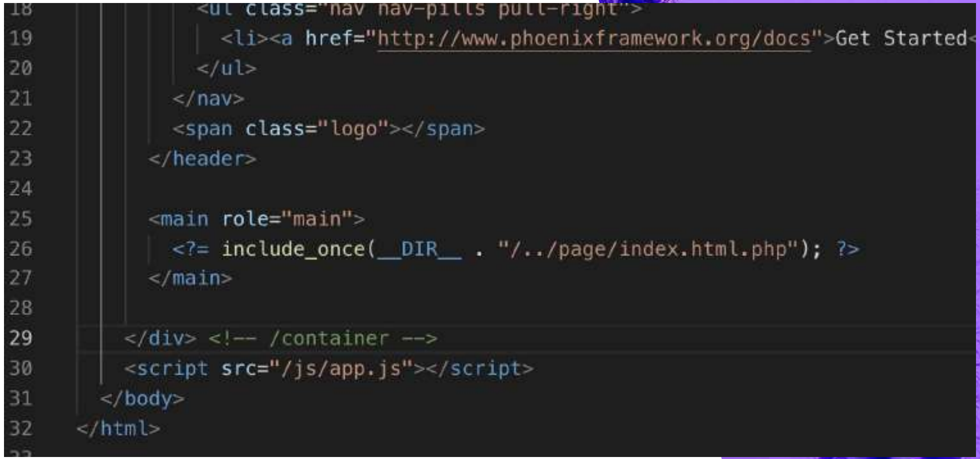


Welcome to Phoenix

A productive web framework that does not compromise speed and maintainability.

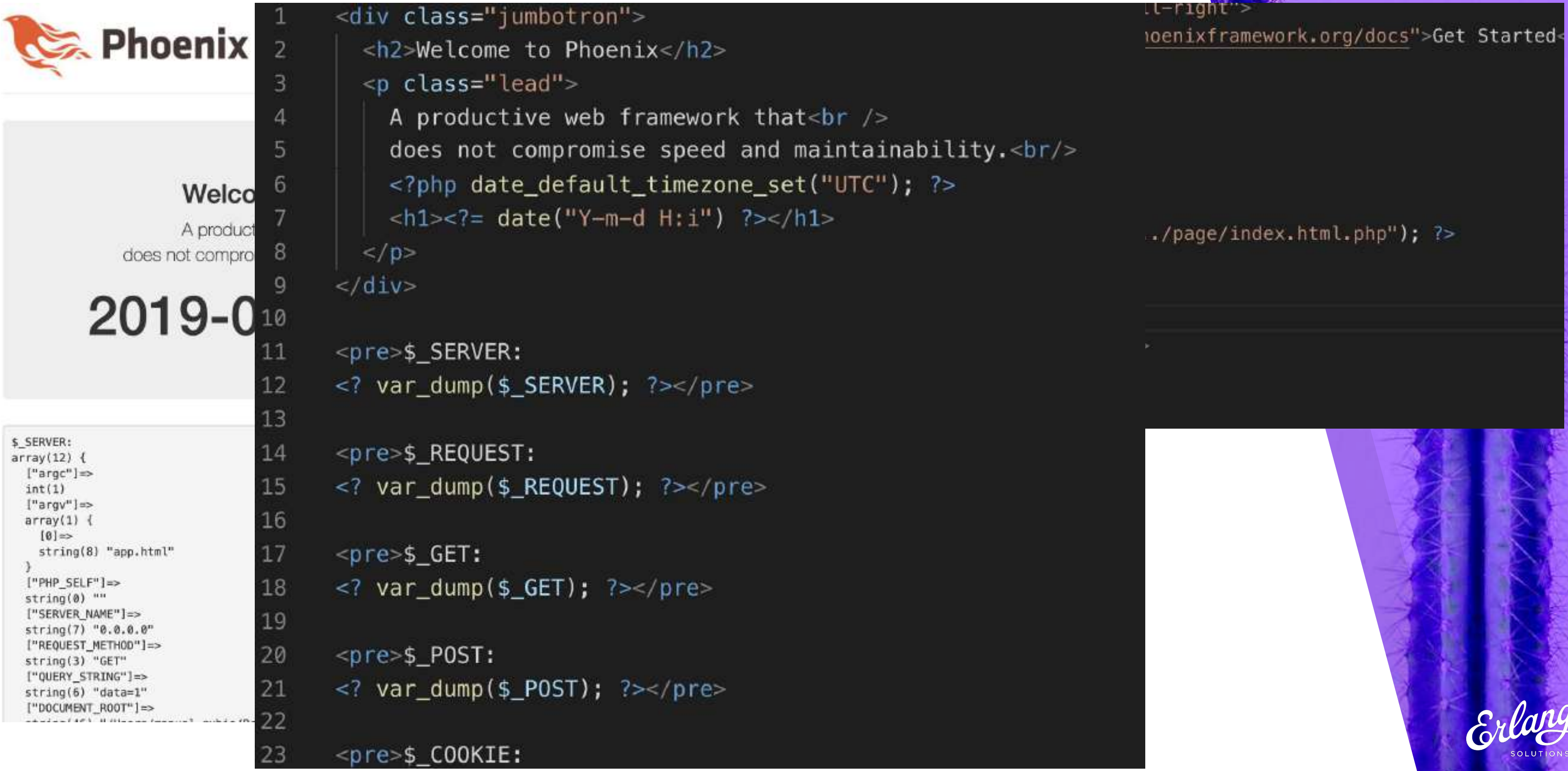
2019-03-01 15:14

```
$_SERVER:
array(12) {
  ["argc"]=>
  int(1)
  ["argv"]=>
  array(1) {
    [0]=>
    string(8) "app.html"
  }
  ["PHP_SELF"]=>
  string(0) ""
  ["SERVER_NAME"]=>
  string(7) "0.0.0.0"
  ["REQUEST_METHOD"]=>
  string(3) "GET"
  ["QUERY_STRING"]=>
  string(6) "data=1"
  ["DOCUMENT_ROOT"]=>
```



```
                <ul class="nav nav-pills pull-right">
                  <li><a href="http://www.phoenixframework.org/docs">Get Started<
                </ul>
              </nav>
              <span class="logo"></span>
            </header>

            <main role="main">
              <?= include_once(__DIR__ . "/../page/index.html.php"); ?>
            </main>

          </div> <!-- /container -->
          <script src="/js/app.js"></script>
        </body>
      </html>
```

PHP over ERLANG (ephp)



Phoenix

Welco

A product
does not compro

2019-0

```
$_SERVER:
array(12) {
  ["argc"]=>
  int(1)
  ["argv"]=>
  array(1) {
    [0]=>
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  ["REQUEST_METHOD"]=>
  string(3) "GET"
  ["QUERY_STRING"]=>
  string(6) "data=1"
  ["DOCUMENT_ROOT"]=>
```
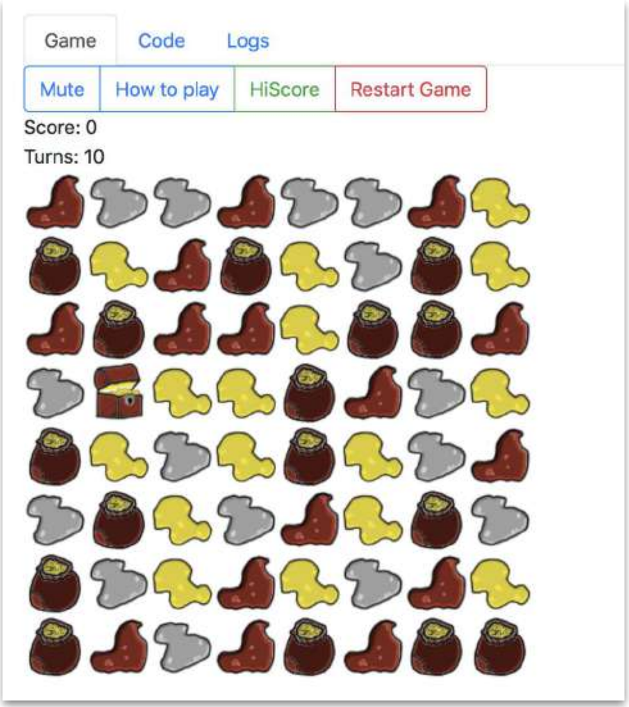
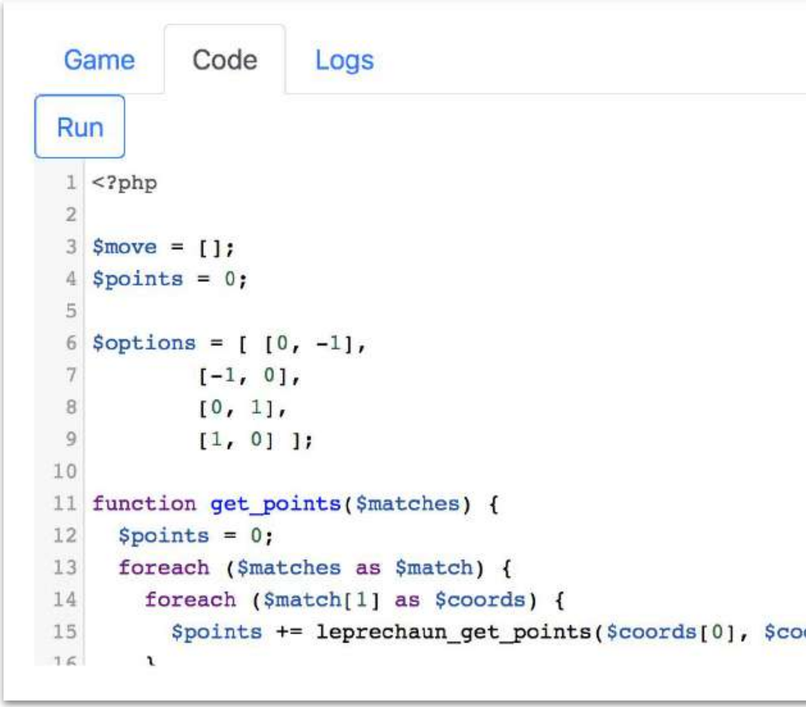

```
<div class="jumbotron">
  <h2>Welcome to Phoenix</h2>
  <p class="lead">
    A productive web framework that<br />
    does not compromise speed and maintainability.<br/>
    <?php date_default_timezone_set("UTC"); ?>
    <h1><?= date("Y-m-d H:i") ?></h1>
  </p>
</div>

<pre>$_SERVER:
<? var_dump($_SERVER); ?></pre>

<pre>$_REQUEST:
<? var_dump($_REQUEST); ?></pre>

<pre>$_GET:
<? var_dump($_GET); ?></pre>

<pre>$_POST:
<? var_dump($_POST); ?></pre>

<pre>$_COOKIE:
```

```
l-right">
oenixframework.org/docs">Get Started

./page/index.html.php"); ?>
```

PHP over ERLANG (ephp)



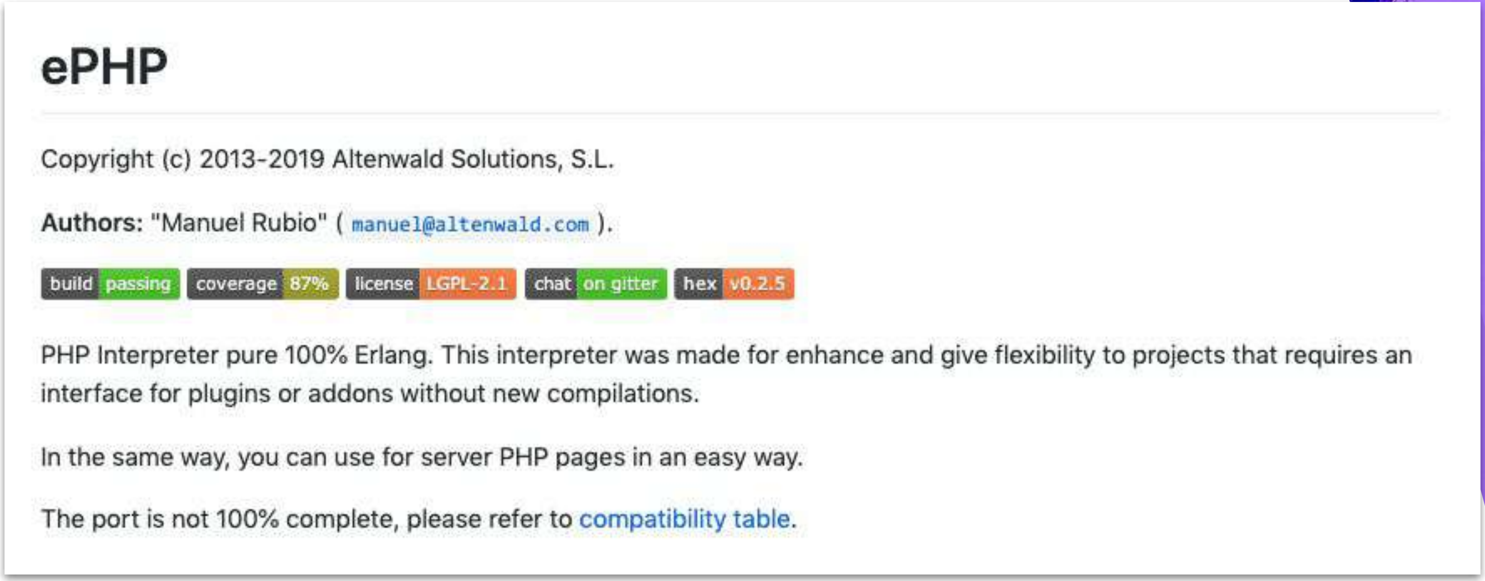
Score: 0
Turns: 10



```php
<?php

$move = [];
$points = 0;

$options = [ [0, -1],
             [-1, 0],
             [0, 1],
             [1, 0] ];

function get_points($matches) {
  $points = 0;
  foreach ($matches as $match) {
    foreach ($match[1] as $coords) {
      $points += leprechaun_get_points($coords[0], $coords[1]);
    }
```

*graphics by
Ana M. Rubio

PHP over ERLANG (ephp)



ePHP

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Authors: "Manuel Rubio" (`manuel@altenwald.com`).

build passing | coverage 87% | license LGPL-2.1 | chat on gitter | hex v0.2.5

PHP Interpreter pure 100% Erlang. This interpreter was made for enhance and give flexibility to projects that requires an interface for plugins or addons without new compilations.

In the same way, you can use for server PHP pages in an easy way.

The port is not 100% complete, please refer to compatibility table.

THANK YOU

Q&A

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Erlang SOLUTIONS