

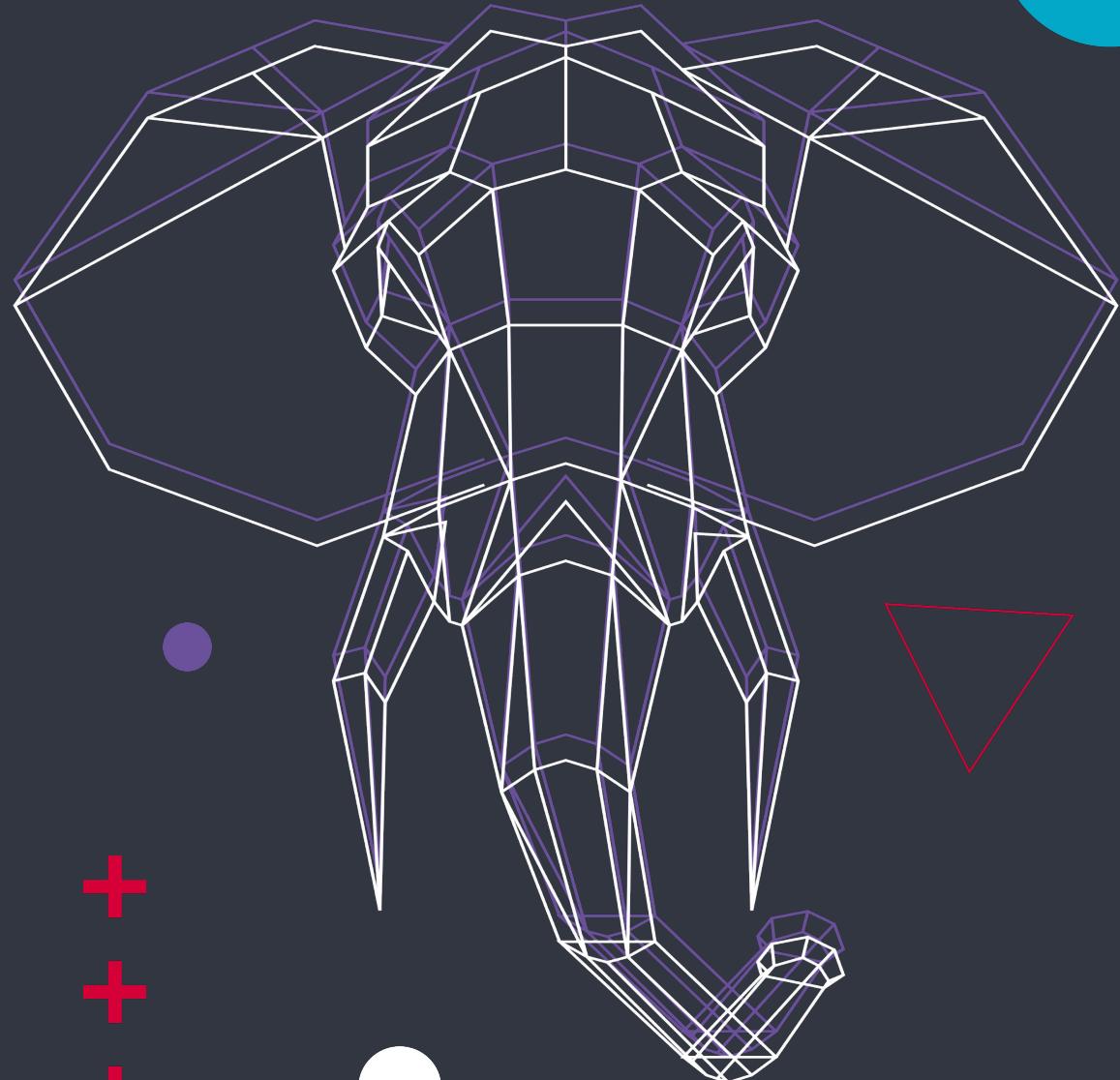


locaweb

PHP

COMMUNITY SUMMIT **ONLINE** • **22**

// JUNTE-SE À MANADA



locaweb

php²²



+++

FLAVIO HELENO

Especialista em TI @ Beta Learning



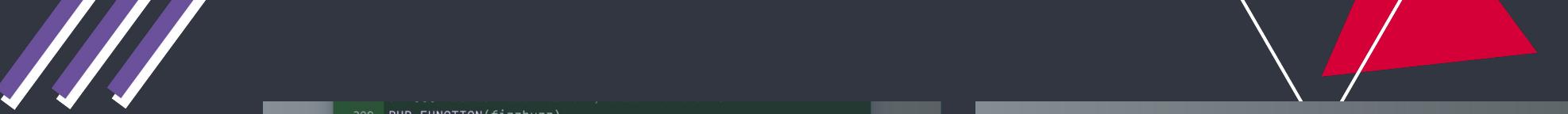
locaweb

Estendendo o PHP, uma função por vez

Functions are "self contained" modules of code that accomplish a specific task.

Functions usually "take in" data, process it, and "return" a result. Once a function is written, it can be used over and over and over again. Functions can be "called" from the inside of other functions.





Estendendo o PHP, uma função por vez

Vamos escolher uma função e implementá-la diretamente no core da linguagem

```
209 PHP_FUNCTION(fizzbuzz)
210 {
211     zend_long count;
212
213     ZEND_PARSE_PARAMETERS_START(1, 1)
214         Z_PARAM_LONG(count)
215     ZEND_PARSE_PARAMETERS_END();
216
217     if (count < 1) {
218         zend_throw_exception_ex(
219             spl_ce_InvalidArgumentException,
220             0,
221             "Argument $count must be greater than 0"
222         );
223     }
224
225     // init return value as an array
226     array_init(return_value);
227
228     zend_long i;
229     for (i = 1; i <= count; i++) {
230         if (i % 15 == 0) {
231             add_next_index_str(
232                 return_value,
233                 zend_string_init("FizzBuzz", strlen("FizzBuzz"), 0)
234             );
235
236             continue;
237         }
238
239         if (i % 3 == 0) {
240             add_next_index_str(
241                 return_value,
242                 zend_string_init("Fizz", strlen("Fizz"), 0)
243             );
244
245             continue;
246         }
247
248         if (i % 5 == 0) {
249             add_next_index_str(
250                 return_value,
251                 zend_string_init("Buzz", strlen("Buzz"), 0)
252             );
253
254             continue;
255         }
256
257         add_next_index_long(return_value, i);
258     }
259 }
```

Fizz Buzz

FizzBuzz

+++



Fizz buzz (often spelled **FizzBuzz** in this context) has been used as an interview screening device for computer programmers.



Writing a program to output the first 100 FizzBuzz numbers is a relatively trivial problem requiring little more than a loop and conditional statements.



However, its value in coding interviews is to analyze fundamental coding habits that may be indicative of overall coding ingenuity.

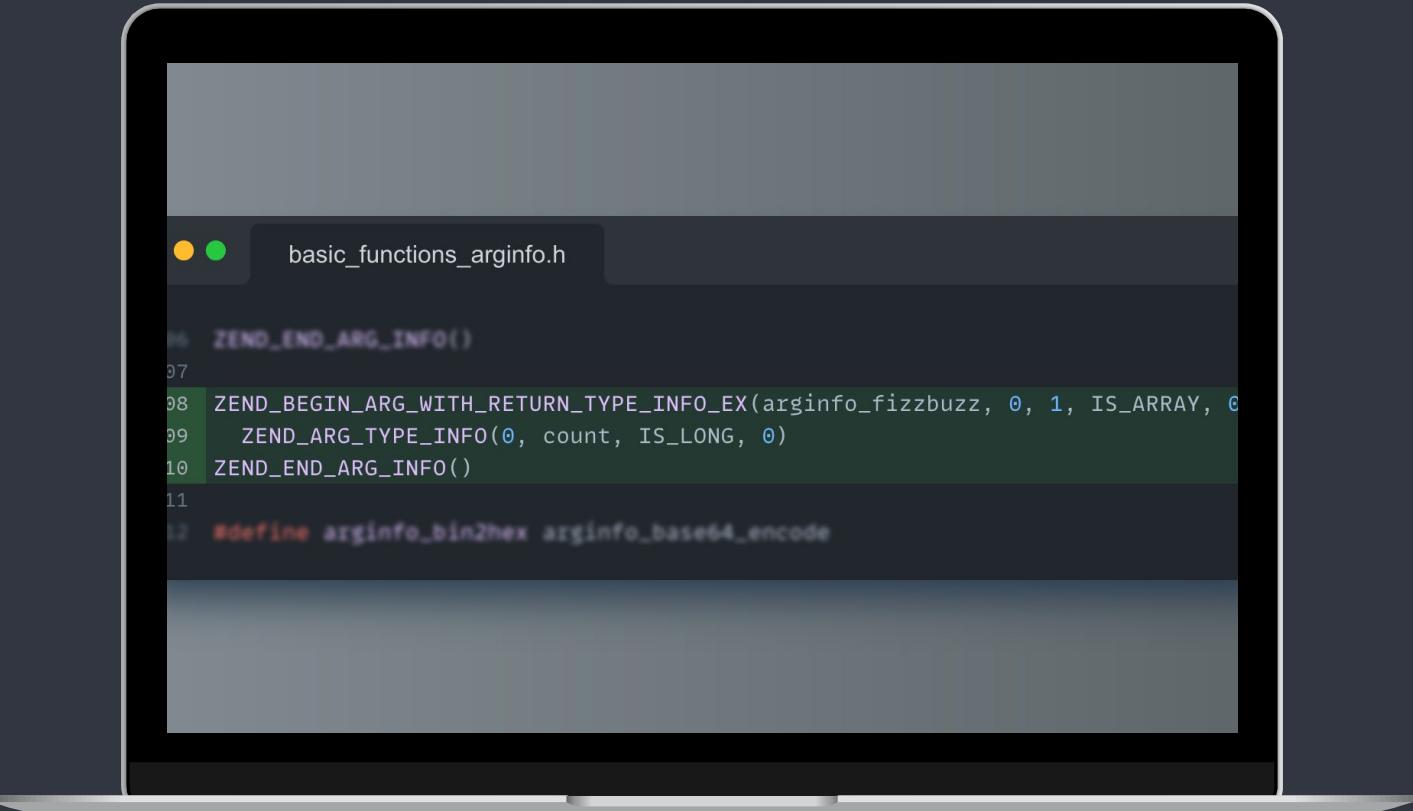


A screenshot of a Mac OS X desktop. In the foreground, a terminal window titled "basic_functions.stub.php" is open, showing the following PHP code:

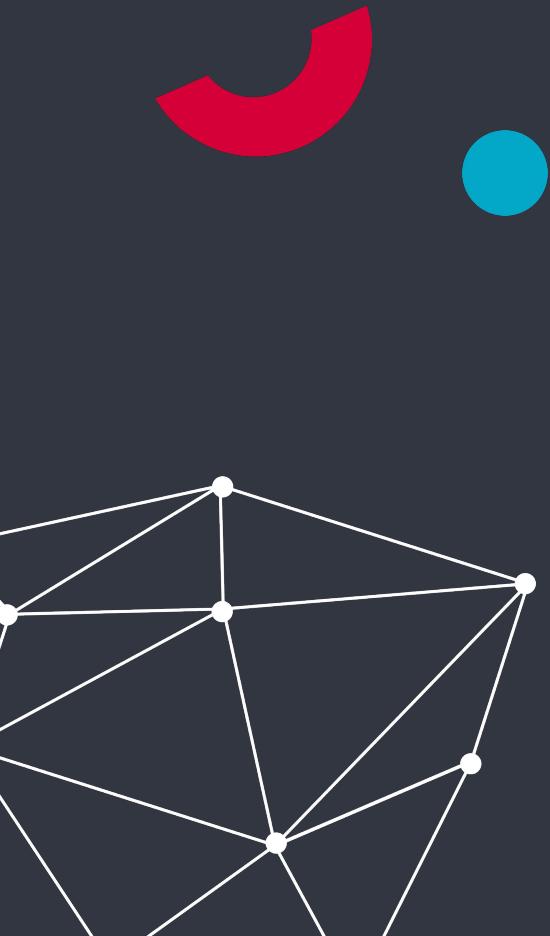
```
709 /* string.c */
710
711 function fizzbuzz(int $count): array {}
712
713 /* Bzefcount 1 */
714 function bin2hex(string $string): string {}
```

The terminal window has a dark background with light-colored text. The file path "basic_functions.stub.php" is visible in the title bar. The snappify.io logo is at the bottom right of the screen.

*Tudo começa com um **stub**, que é escrito no bom e velho
PHP nosso de cada dia.*



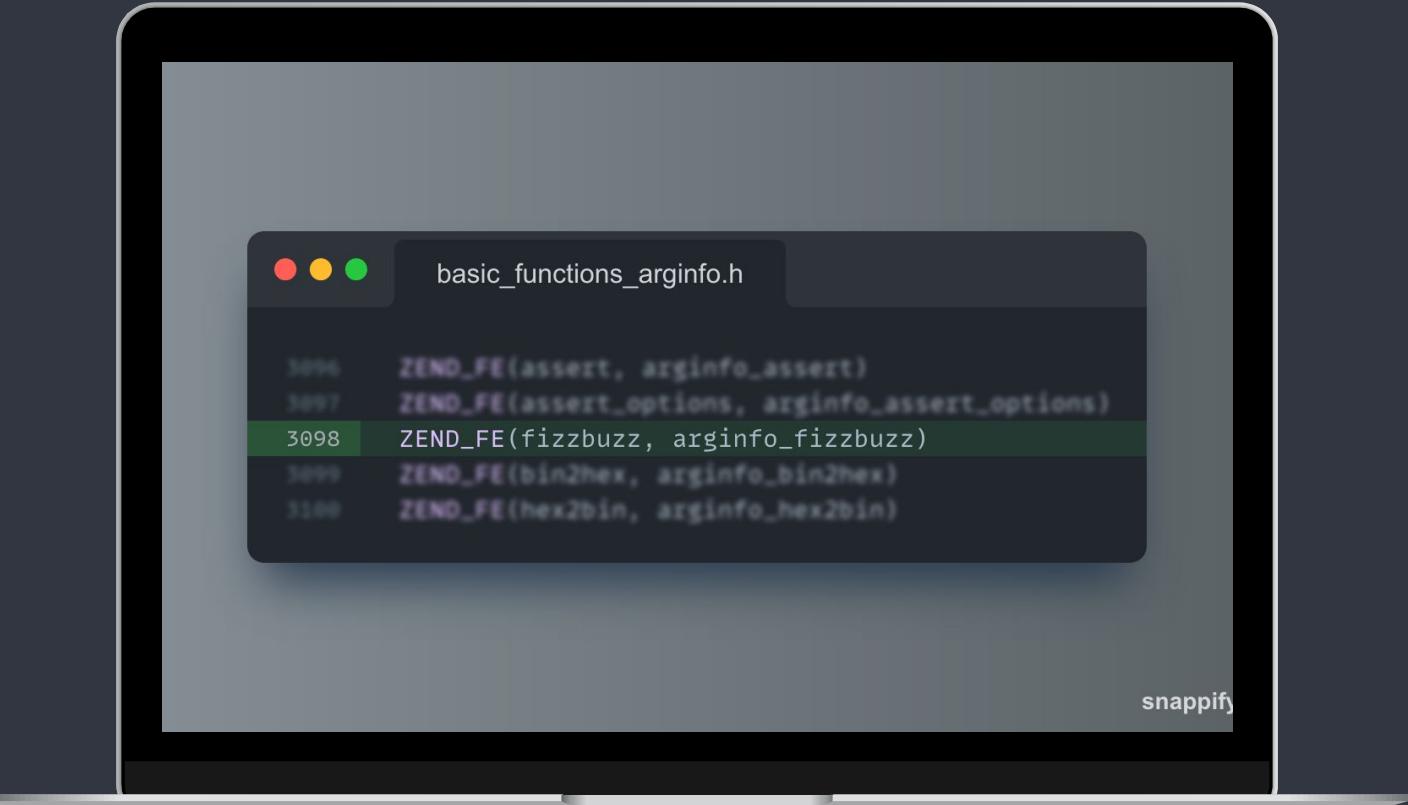
A assinatura da função será usada para gerar o registro das informações sobre argumentos e retorno.





```
2458 ZEND_FUNCTION(assert);  
2459 ZEND_FUNCTION(assert_options);  
2460 ZEND_FUNCTION(fizzbuzz);  
2461 ZEND_FUNCTION(bin2hex);  
2462 ZEND_FUNCTION(hex2bin);
```

*A macro **Zend Function** registra a função na tabela de funções.*



A macro `Zend Function Entry` vincula o registro extraído da assinatura da função com o registro da função.



A implementação da função começa com mais uma macro, a PHP Function.





```
208 // {{{ Prints Fizz for % 3; Buzz for % 5 +/
209 PHP_FUNCTION(fizzbuzz)
210 {
211     zend_long count;
212
213     ZEND_PARSE_PARAMETERS_START(1, 1)
214         Z_PARAM_LONG(count)
215     ZEND_PARSE_PARAMETERS_END();
216 }
217 // }}} +/
```

*A primeira etapa é receber os parâmetros da função, usando
a Fast Parameter Parsing API.*

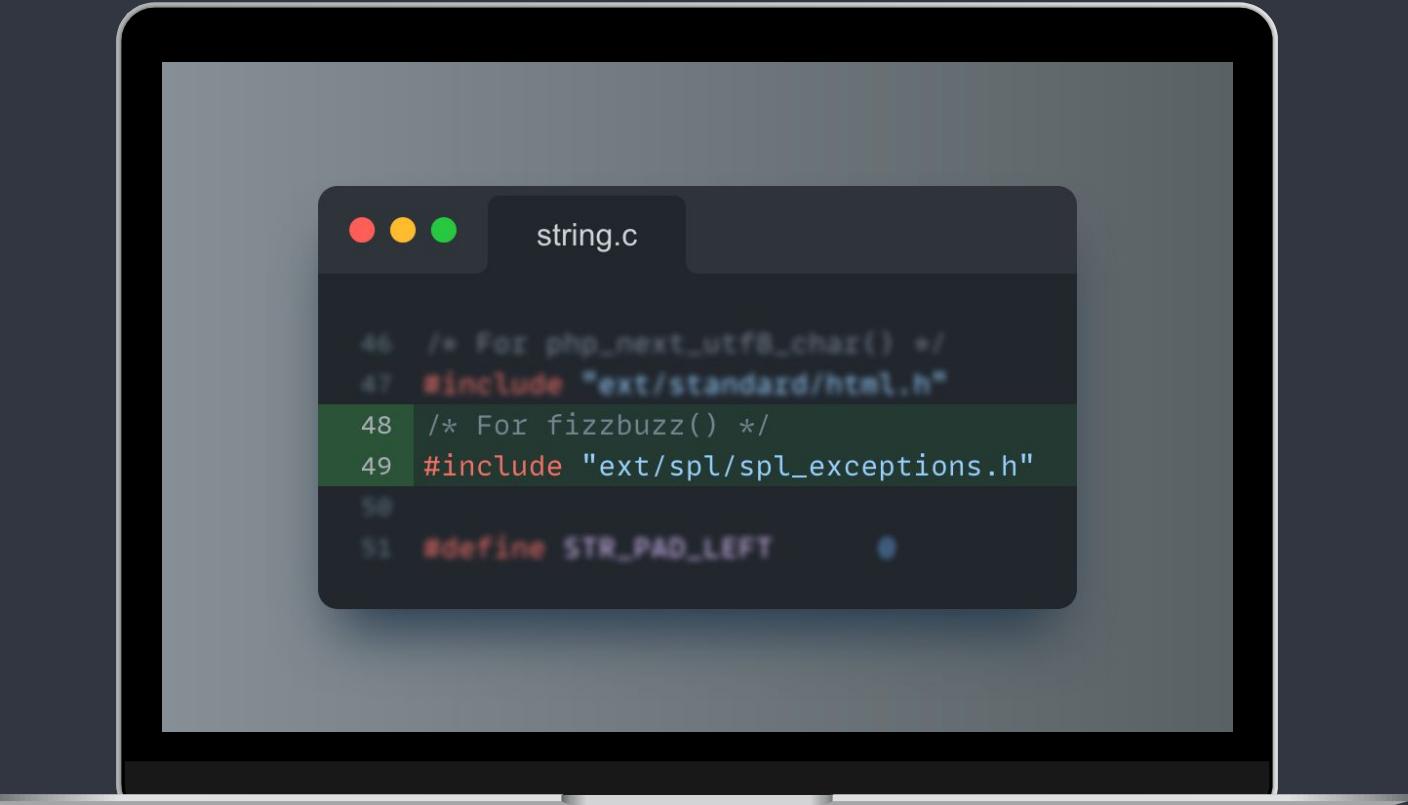




```
215 ZEND_PARSE_PARAMETERS_END();
216
217 if (count < 1) {
218     zend_throw_exception_ex(
219         spl_ce_InvalidArgumentException,
220         0,
221         "Argument $count must be greater than 0"
222     );
223 }
224 */
225 /* }}} */
```

Pela definição do fizzbuzz, o parâmetro \$count deve ser um número positivo maior que zero.





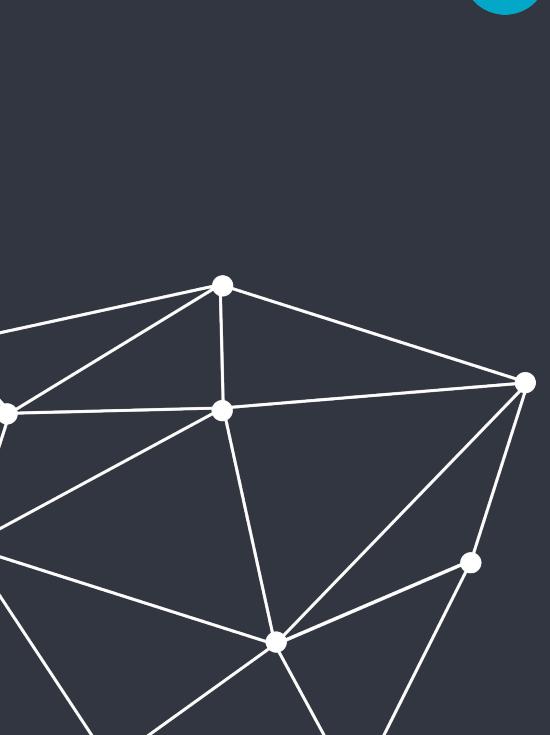
*É necessário incluir o cabeçalho que define a Class Entry
spl_ce_InvalidArgumentException para poder usá-la.*



A screenshot of a terminal window titled "string.c". The window has three colored window control buttons (red, yellow, green) at the top left. The title bar says "string.c". The code editor shows the following C code:

```
225 // init return value as an array
226 array_init(return_value);
227
228 zend_long i;
229 for (i = 1; i <= count; i++) {
230 }
231 }
232 /* }}} */
```

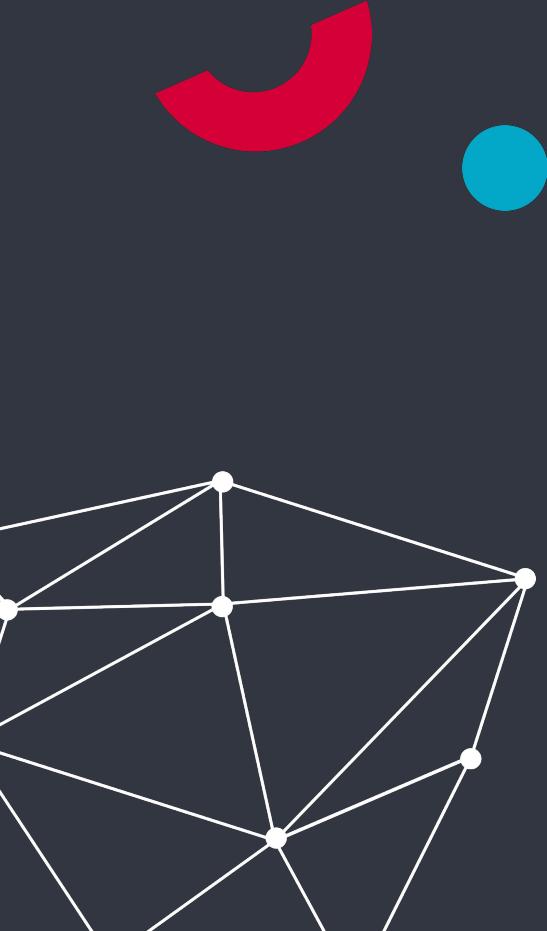
Preparar o `return_value` como um array e começar o loop!





```
string.c
229 if (i % 15 == 0) {
230     add_next_index_str(
231         return_value,
232         zend_string_init("FizzBuzz", strlen("FizzBuzz"), 0)
233     );
234
235     continue;
236 }
237 }
238 */
239 */
240 /* */
```

É hora do *FizzBuzz* no array de retorno.





```
string.c
237 }
238 if (i % 3 == 0) {
239     add_next_index_str(
240         return_value,
241         zend_string_init("Fizz", strlen("Fizz"), 0)
242     );
243     continue;
244 }
245 }
246 */
247 */
248 */
249 /* }}} */
```

O mesmo para o Fizz..

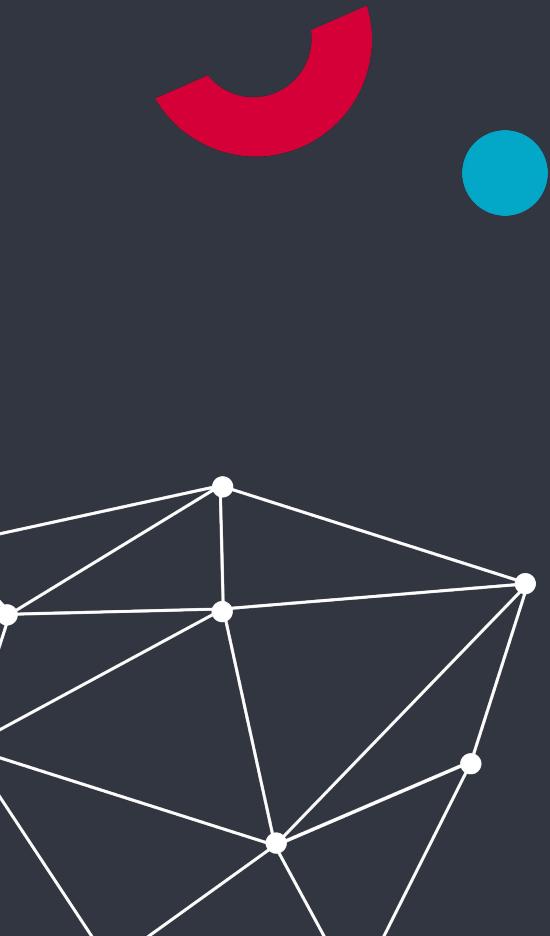


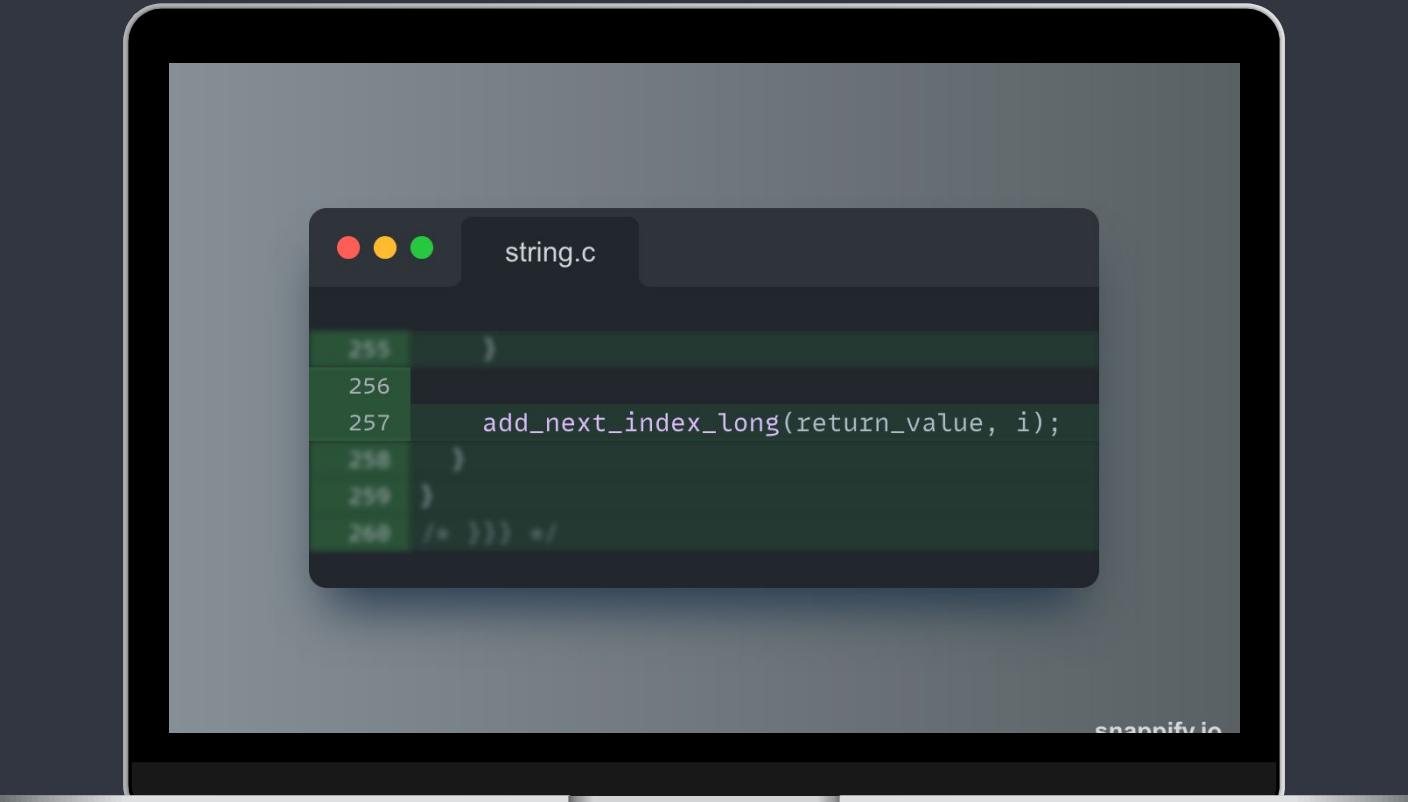


A screenshot of a terminal window titled "string.c". The code shown is a snippet from the PHP source code, specifically the "string.c" file. The code handles the generation of the word "Buzz" when a number is divisible by 5. It includes a conditional statement to add the string "Buzz" to the output if the index *i* is divisible by 5, and a *continue* statement to skip the current iteration. The code is written in C and uses standard syntax for loops and conditionals.

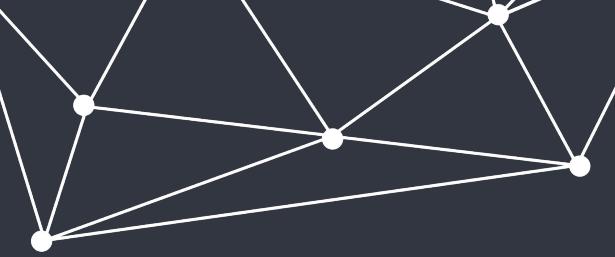
```
246 }
247
248 if (i % 5 == 0) {
249     add_next_index_str(
250         return_value,
251         zend_string_init("Buzz", strlen("Buzz"), 0)
252     );
253     continue;
254 }
255
256 }
257 }
258 /* }}} */
```

..e para o Buzz.





*Para finalizar, o caso em que apenas o valor do **contador** é adicionado à resposta.*



Código pronto, partiu deploy!



Brincadeira! Antes de disponibilizar a função para outros desenvolvedores é importante testá-la :-)

```
222 );
223 }
224
225 // init return value as an array
226 array_init(return_value);
227
228 zend_long i;
229 for (i = 1; i <= count; i++) {
230     if (i % 15 == 0) {
231         add_next_index_str(
232             return_value,
233             zend_string_init("FizzBuzz", strlen("FizzBuzz"), 0)
234         );
235
236         continue;
237     }
238
239     if (i % 3 == 0) {
240         add_next_index_str(
241             return_value,
242             zend_string_init("Fizz", strlen("Fizz"), 0)
243         );
244 }
```

```
211 <?php  
212 try {  
213     fizzbuzz(-1);  
214 } catch (Exception $e) {  
215     var_dump($e->getMessage());  
216 }  
217  
218 try {  
219     fizzbuzz(0);  
220 } catch (Exception $e) {  
221     var_dump($e->getMessage());  
222 }  
223  
224 var_dump(fizzbuzz(36));  
225  
226 ?>  
227 --EXPECT--  
228 string(38) "Argument $count must be greater than 0"  
229 string(38) "Argument $count must be greater than 0"  
230 array(36) {  
231     [0] =>  
232         ...  
233 }
```

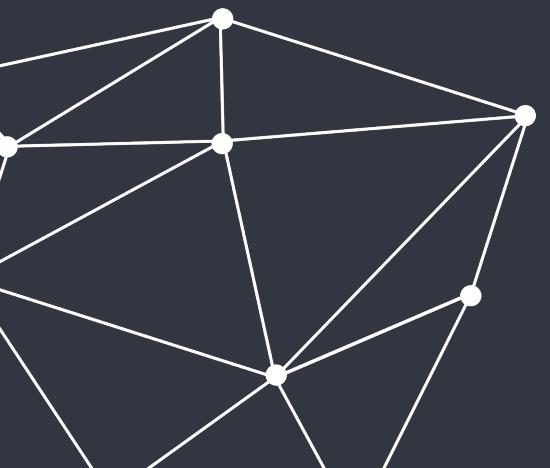


Partiu escrever TESTES!

A suíte de testes do PHP 8.1 conta com mais de 17 mil testes



No cabeçalho, definimos a descrição do teste.





```
1 --TEST--  
2 Test FizzBuzz implementation  
3 --FILE--  
4 <?php  
5 try {  
6     fizzbuzz(-1);  
7 } catch (Exception $e) {  
8     var_dump($e->getMessage());  
9 }
```

Caso de teste para o **contador** com valor negativo.

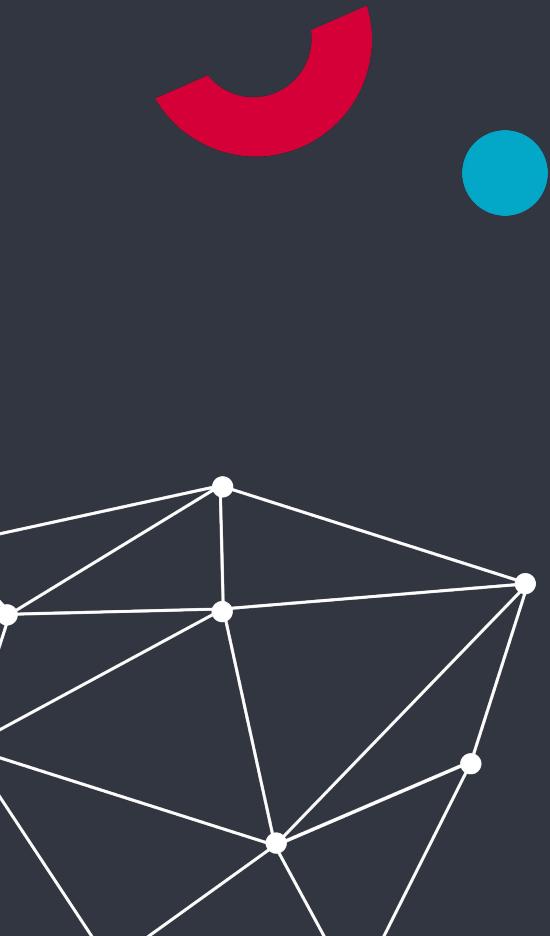


A screenshot of a Mac OS X desktop environment. A terminal window titled "005.php" is open, showing the following PHP code:

```
9 )
10
11 try {
12     fizzbuzz(0);
13 } catch (Exception $e) {
14     var_dump($e->getMessage());
15 }
16
```

The terminal has a dark green background with light green syntax highlighting for the code. The window title bar is dark grey with colored window control buttons (red, yellow, green).

*Caso de teste para o **contador** com valor zero.*





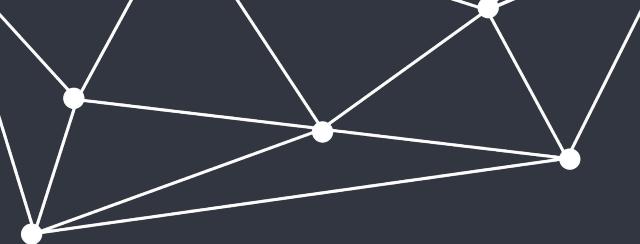
A screenshot of a terminal window titled "005.phpt". The code inside the window is:

```
10
11 var_dump(fizzbuzz(36));
12
13 ?>
```

Caso de teste com os 36 primeiros itens.

A screenshot of a terminal window titled "005.phpt". The window shows a series of test cases for an array. Lines 20 through 33 are displayed, each starting with a line number and followed by either an error message or an expected value. The error messages are "string(38) "Argument \$count must be greater than 0"" for lines 21 and 22. The expected values for lines 23 through 33 are arrays with indices [0] through [4] containing the strings "int(1)", "int(2)", "int(4)", and "string(4) "Fizz"" respectively, followed by "[3]=> int(4)" and "[4]=> string(4) "Buzz"".

Saída esperada do teste.



A execução dos testes é simples e conta com um script auxiliar, chamado **run-tests.php**

Código e slides disponíveis em
<https://github.com/flavioheleno/phpcs22>

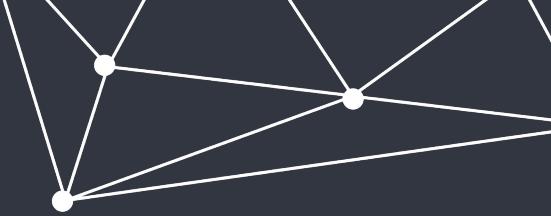
+++

```
PHP_OS      : Linux - Linux 389644da04c3 5.10.124-linuxkit #1
INI actual  : /usr/src/php-src
More .INIs  :

PHP        : /usr/local/bin/php-cgi
PHP_SAPI   : cgi-fcgi
PHP_VERSION: 8.1.11
ZEND_VERSION: 4.1.11
PHP_OS      : Linux - Linux 389644da04c3 5.10.124-linuxkit #1
INI actual  : /usr/src/php-src
More .INIs  :

PHP        : /usr/local/bin/phpdbg
PHP_SAPI   : phpdbg
PHP_VERSION: 8.1.11
ZEND_VERSION: 4.1.11
PHP_OS      : Linux - Linux 389644da04c3 5.10.124-linuxkit #1
INI actual  : /usr/src/php-src
More .INIs  :

CWD        : /usr/src/php-src
Extra dirs :
VALGRIND    : Not used
=====
Running selected tests.
PASS Test FizzBuzz implementation [tests/strings/005.php]
=====
Number of tests : 1 1
Total time : 0.000000
```



Referências

- <https://www.cs.utah.edu/~germain/PPS/Topics/functions.html>
- https://en.wikipedia.org/wiki/Fizz_buzz#Programming
- https://wiki.php.net/rfc/fast_zpp
- https://github.com/ThomasWeinert/php-extension-sample/blob/exception_spl/sample.c



php

COMMUNITY SUMMIT ONLINE • 22

// JUNTE-SE À MANADA

OBRIGADO!

locaweb