



The PHP Company

# PHP 101

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# PHP Sessions

Session 1-9:00

- PHP101

Session 2-10:30

- PHP Arrays for the RPG Programmer

11:45

- Lunch

Session 3-12:30

- PHP Function Junction

Session 4-1:45

- PHP Toolkit Functions

Session 5-3:00

- Build your Intranet on IBM i for Free

4:00

- Goodies!

# Target audience

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- Interested in leveraging web technology and IBM i
- Learn more about how PHP integrates with IBM i
- Understand the development path from RPG to PHP
- Managing team of IBM i developers & looking to do more
- New to PHP in the IBM i arena

# Agenda

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- Brief intro to PHP
- Explore Database File Listing
- Explore IBM i Program Call
  
- Wrap up / Q&A





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# Introduction to PHP

# PHP Script Structure

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- PHP script structure
  - ▶ `<?php` will start a script
  - ▶ Optionally `?>` terminates block or script
  - ▶ Semicolon terminates code segment
  - ▶ May embed multiple block of PHP code in single script

```
<HTML><head><title>This is my script</title></head><body>  
<?php  
echo  
?>  
</bd  
  
<HTML><head><title>This is my script</title></head><body>  
<?php echo 'Hello World'; ?>  
  
</body></html>
```

# Variables

- **Rules**

- ▶ Case sensitive
- ▶ Begin with \$
  - \$thisIsMyVariable
  - \$\_\_AnotherVariable
  - \$ this is not a variable
- ▶ Implicit casting
- ▶ Can be re-typed (Dynamically Typed Language)

- **Constant - Variable that doesn't change**

- ▶ Define('TEACHER', "Mike Pavlak");

```
<?php
$field1 = 5;
$field2 = 10;
$field3 = $field1 + $field2;

?>
```

# Variables and their types

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- **Scalar**
  - ▶ Integer
    - -2,147,483,648 thru 2,147,483,647
    - Supports decimal, octal and hex representation
  - ▶ Floating-Point
    - 1.7E-308 thru 1.7E+308
    - 15 digits of decimal precision
  - ▶ Strings
    - Big. Really big. Too big to discuss!
  - ▶ Boolean
    - False is 0, 0.0, false keyword, empty string, object w/no values, null. All others are true
- **Object, array, null and resource**

# Variables...(cont.)

---

- **Scope**
  - ▶ Global - Available everywhere but inside function (sort of)
  - ▶ Local - Available only in a function, destroyed at end
  - ▶ Static - Available only in a function, but remains
  
- **Arrays (three types)**
  - ▶ Enumerated
  - ▶ Associative
  - ▶ Multi-dimensional

# Arrays: Value assignment

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- **Simple**

- ▶ `$Animals[0] = 'Dog'`
- ▶ `$Animals[1] = 'Cat'`
- ▶ `$Animals[2] = 'Hamster'`

- **Associative**

- ▶ `$Barnyard['Cow'] = 'Calf'`
- ▶ `$Barnyard['Chicken'] = 'Chick'`
- ▶ `$Barnyard['Horse'] = 'Foal'`

- **Multi-dimensional**

- ▶ `$farm[0] = $Animals`
- ▶ `$farm[1] = $Barnyard`

# Strings

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- Most of PHP is character strings
- **Single quotes**
  - ▶ Variables not expanded
  - ▶ Heavy use of concatenation `"."`
  - ▶ `$string_1 = 'This is the value of variable x: ' . $x`
- **Double quotes**
  - ▶ Variables interpolation
  - ▶ `$string_1 = "This is the value of variable x: $x"`

# Operators

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- Most common operators apply (+, -, \*, /, etc.)
- Concatenation
  - ▶ `$greeting = 'My name is '`
  - ▶ `DEFINE (TEACHER, 'Mike Pavlak')`
  - ▶ `$salute = $greeting . TEACHER` (My name is Mike Pavlak)
- Increment / decrement
  - ▶ `$a++, ++$a` (`$a = $a + 1`)
  - ▶ `$a--, --$a` (`$a = $a - 1`)
- Logical operators
  - ▶ `&&` and
  - ▶ `||` or
  - ▶ `!` not

# Comments

---

- A brief comment about comments
- `//` (C++ style)
  - ▶ indicates single line comment
  - ▶ May use at end of line of live code
  - ▶ Easily comments a line of code
- `/* ... */` (C Style)
  - ▶ Looks like CL? Pretty close
  - ▶ Comment block,
  - ▶ Can span multiple lines
- **Shell style #**

# The dreaded equal sign

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- = Single equal sign is assignment
  - ▶ `$X=3`
  - ▶ `$Y=$X`
  - ▶ Now `$Y = 3`
- == Double equal sign is for conditions
  - ▶ If `($x==$y) { do something} else {do something else}`
  - ▶ If you see single equal in condition, assignment will occur
- === Triple equal sign is exact equal conditions
  - ▶ `$X= 3 (Integer) $Y=3.0 (Float)`
  - ▶ If `($x==$y)` will resolve to **true**
  - ▶ If `($x=== $y)` will resolve to **false**

# Efficiency

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- **Garbage collection**
  - ▶ Copy on write
  - ▶ Symbol table
  - ▶ isset()
  - ▶ unset()
- **Dynamic array and string**
  - ▶ Fixed is always a better performer
  - ▶ Nothing “needs” to be fixed!

# Flow control

---

- If condition
  - ▶ work
- Else
  - ▶ work

One line, no parenthesis...

```
if ($x == 5)
    $x++;
else
    $x--;
```

```
if ($x == 5) {
    $x++;
    $y++;
}
else {
    $x--;
    $y--;
}
```

## Flow control (cont...)

---

- Switch (\$x) {
  - ▶ Case 'value1' :
    - Do something
    - Break
  - ▶ Case 'value1' :
    - Do something else
    - Break

```
Switch ($language) {  
Case 'RPG' :  
    $comment='Is number 1 on i5';  
break;  
Case 'PHP' :  
    $comment='Is gaining ground on i5';  
break;  
}
```

## Flow control (cont...)

---

- While (condition) {
  - ▶ Do something
- }
- Break and continue

```
While ($x < $y) {  
  $x++;  
  if ($x==5) break;  
  echo $x;  
}
```

# Flow control (cont...)

---

- **Foreach**
  - ▶ Iterate over elements in an array

```
$a[0]='ham';  
$a[1]='salami';  
$a[2]='bologna';  
  
foreach ($a as $index=>$value) {  
    echo 'Element ' . $index+1. ' is ' . $value . '<br>';  
}
```

```
Element 1 is ham  
Element 2 is salami  
Element 3 is bologna
```

# Functions

---

- **Most of PHP is functional**
  - ▶ Function is similar to RPG subroutine or procedure
  - ▶ Pass parms
  - ▶ Get results

```
<?php  
phpinfo()  
?>
```



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# Database Listing

# Employee list with payroll

---

- Describe the file
- Explore database access
- Perform some calculations
- Put the output to the web server



## Data looks like...

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- Raw data in STRSQL display...
- Using long field names, both long and short are accessible to PHP

```
EMPLOYEE_NAME      EMPNUM  EMPLOYEE_WEEK_PAY  EMPLOYEE_TAX_RATE  EMPINS
Gomez Adams        1        1,500.00           6.500              25.00
Herman Munster     2        1,200.00           6.500              27.00
Jimmy Buffet       3         750.00             3.500              53.00
Joe Walsh          4        1,950.00           7.500             122.00
***** End of data *****
```

# Payroll master output...

zend **php**<sup>09</sup> Zend/PHP Conference **Payroll Report**

Connected to i5

Name	Number	Gross	Tax Rate	Insurance	Net
Gomez Adams	1	\$1500.00	6.500	\$25.00	\$1465.25
Herman Munster	2	\$1200.00	6.500	\$27.00	\$1165.20
Jimmy Buffet	3	\$750.00	3.500	\$53.00	\$694.38
Joe Walsh	4	\$1950.00	7.500	\$122.00	\$1813.38

Total Gross Pay is \$5400.00  
Total tax payment is \$34,800.00  
Total insurance payment is \$227  
The average for each record is...USD 1,350.00

# The code: Connections

```
1 <html><head><title>Payroll Report</title>
2 <body bgcolor='#FFFFFF' text = '#00000'><FONT FACE="arial">
3 <h1><img src='ZendCon09-logo.gif'> Payroll Report</h1></head>
4
5
6 <?php
7
8 //define some variables for database connection
9 $conn = "LOCAL";
10
11 //connect to i5 DB2
12 $i5link = db2_connect($conn, "", "");
13 if ($i5link) echo "<p>Connected to i5</p>";
14 else echo "<p>Connection failed: ".db2_stmt_error().": ".db2_stmt_errormsg()."</p>";
15
16
17 //prepare sql statement
18 $sql = "SELECT * from zenddata.payroll_master";
19
20
21 //execute sql statement to retrieve the data
22 $stmt = db2_exec($i5link,$sql)
23 or die("<p>Failed query:".db2_stmt_error().": ".db2_stmt_errormsg()."</p>");
```

## The code: Loop di-loop

```
26 //begin output table content
27 echo "<table border='6' cellpadding=4 cellspacing=0 bordercolor='#000000' width='90%'>";
28 echo "<th>Name</th> <th>Number</th><th>Gross</th><th>Tax Rate</th><th>Insurance</th><th>Net</th>";
29
30 //fetch the data from each record and print them out
31 while($row=db2_fetch_array($stmt)){
32     //retrieve the fields from a row
33     list( $EMP_NAME, $EMP_NUM, $WEEKLY_PAY, $TAX, $INSURANCE)= $row;
34     $Net= $WEEKLY_PAY - ($WEEKLY_PAY * .001 * $TAX) - $INSURANCE;
35     echo("<tr><TD>$EMP_NAME</TD> <TD align='center'>$EMP_NUM</TD>
36     <TD align='right'>$$WEEKLY_PAY</TD>
37     <TD align='right'>$TAX</TD><TD align='right'>$$INSURANCE</TD><TD align='right'>$");
38
39     printf("%.2f", $Net);    echo("</TD></tr>");
40
41     $Total_Gross = $Total_Gross + $WEEKLY_PAY; //accumulate the total Gross
42     $Total_Net = $Total_Net + $Net; //accumulate the total Net
43     $Total_Ins = $Total_Ins + $INSURANCE; //accumulate the insurance
44     $Total_Tax = $Total_Tax + $WEEKLY_PAY * $TAX; //accumulate the tax
45     ++$Count; //count the total number of employees
46 }
47 echo "</table>"; //end of table output
```

## The code: Total time

```
50 //print out totals
51 echo("<p>Total Gross Pay is $");
52     printf("%.2f",$Total_Gross);
53 echo ("</p>");
54
55 echo("<p>Total tax payment is $");
56 echo number_format($Total_Tax, 2, '.', '');
57 echo ("</p>");
58
59 echo("<p>Total insurance payment is $$Total_Ins </p>");
60
61 $Average= round($Total_Gross / $Count, 2); // Average Pay Rate
62
63 setlocale(LC_MONETARY, 'en_US');
64 echo("<p>The average for each record is....");
65 echo money_format('%i',$Average);
66 echo ("</p>");
67
68 db2_close($i5link); //close the database connection
69
70 ?>
71 </FONT></body></html>
```

# Payroll master output...

zend **php**<sup>09</sup> Zend/PHP Conference **Payroll Report**

Connected to i5

Name	Number	Gross	Tax Rate	Insurance	Net
Gomez Adams	1	\$1500.00	6.500	\$25.00	\$1465.25
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Total Gross Pay is \$5400.00  
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# IBM i Program Call

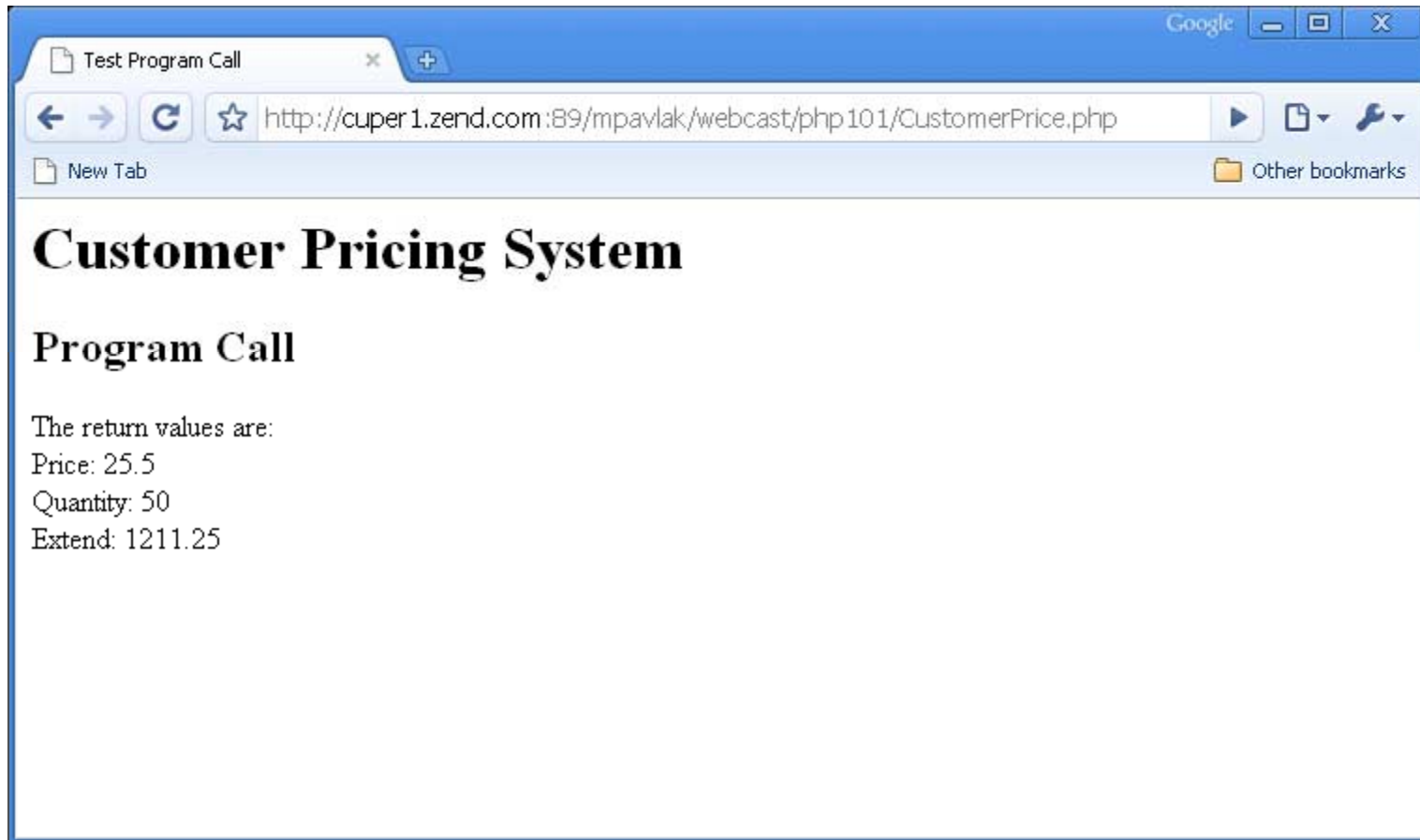
# Customer pricing

---

- Look at the requirement
- Customer list
- Add program call
- Put output to the web server



# Customer Price System Output



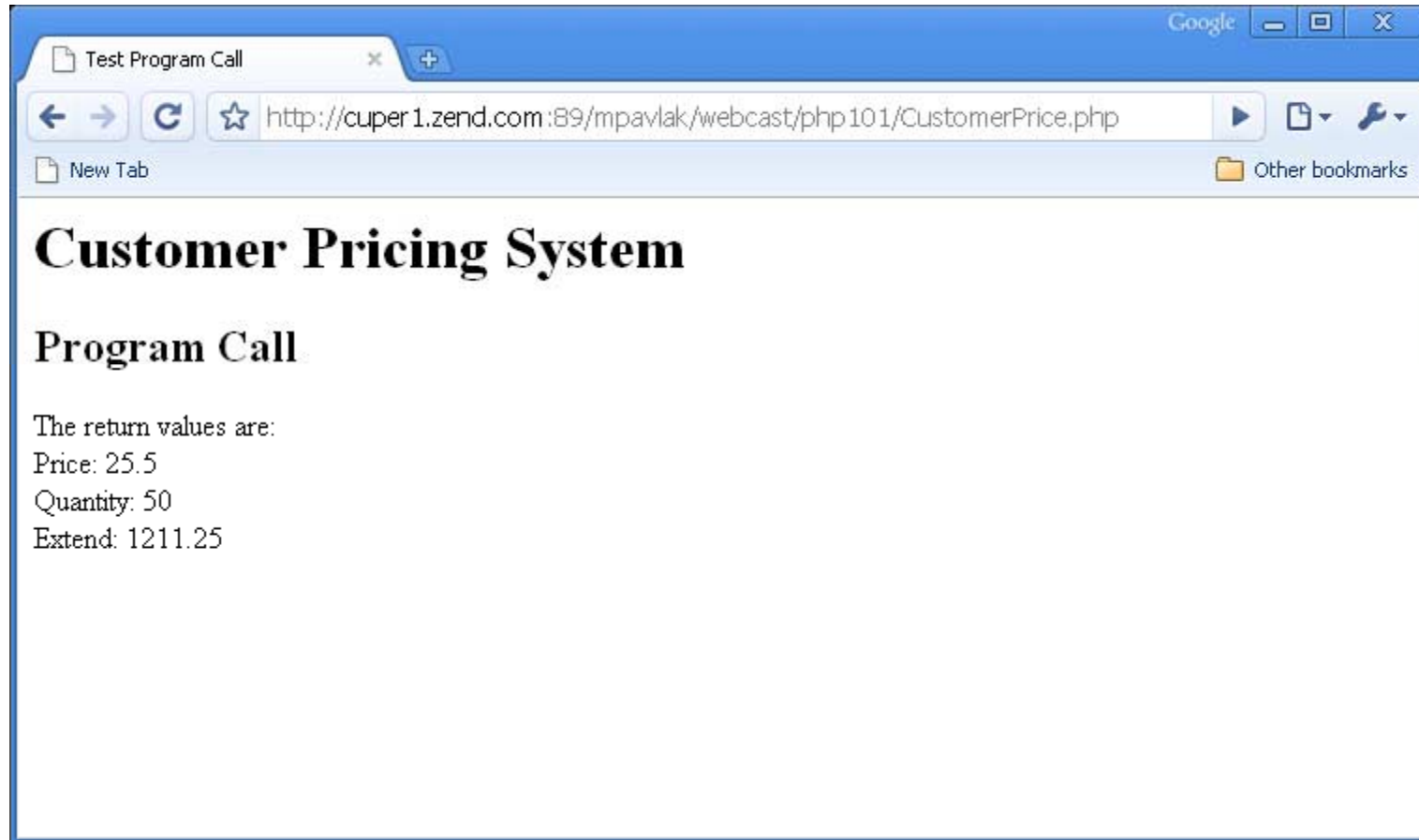
# The code: Setup

```
1 <html> <head><title>Test Program Call</title></head><body>
2
3 <h1>Customer Pricing System</h1>
4 <h2>Program Call</h2>
5
6 <?php
7
8 include("i5db2connectonly.php");
9
10 // Setup parameters in associative array...
11 $desc = array (
12     array ("name"=>"price", "io"=>I5_INOUT, "type" => I5_TYPE_PACKED,
13         "length"=> "9.2"),
14     array ("name"=>"qty", "io"=>I5_INOUT, "type" => I5_TYPE_PACKED,
15         "length"=> "9.2"),
16     array ("name"=>"extend", "io"=>I5_INOUT, "type" => I5_TYPE_PACKED,
17         "length"=> "11.2"),
18 );
19
20 // Prepare the program, similar to prototype in ILE...
21 $prog = i5_program_prepare("ZENDDATA/CUSTPRICE", $desc);
22 if ($prog === FALSE)
23 {
24     $errorTab = i5_error();    echo "Program prepare failed <br>";
25     var_dump($errorTab);    die();
26 }
```

# The code: Execution

```
29 // Load parameters...
30 $params = array ("price"=>"25.5", "qty"=>"50.0", "extend"=>"0.0");
31
32 // Map parameters to variables...
33 $retvals = array("price"=>"price", "qty"=>"qty", "extend"=>"extend");
34 $result = i5_program_call($prog, $params, $retvals);
35 if ($result === FALSE)
36 {
37     $errorTab = i5_error();
38     echo "FAIL : i5_program_call failure code <br>";
39     var_dump($errorTab);
40     die();
41 }
42
43 //Print for the non believers...
44 echo "The return values are: <br>", "Price: ", $price, "<br> Quantity: ",
45 $qty, "<br>", "Extend: ", $extend, "<br>";
46
47
48 i5_close($conn);
49 ?>
50 </body></html>
```

# Customer Price System Output



# Troubleshooting?

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- Debugger in Zend Core via Zend Studio
- Logs in '/usr/local/zend/apache2/logs/'
- Zend Platform, at your service!

```
+....6....+....7....+....8....+....9....+....0....+....1....+....2....+....3...
PHP Notice:  Undefined variable: Total_Ins in /www/zendcore/htdocs/mpavlak/webca
PHP Notice:  Undefined variable: Total_Tax in /www/zendcore/htdocs/mpavlak/webca
PHP Notice:  Undefined variable: Count in /www/zendcore/htdocs/mpavlak/webcast/p
File does not exist: /www/zendcore/htdocs/favicon.ico
script '/www/zendcore/htdocs/mpavlak/webcast/php101/CustomrPrice.php' not found
PHP Notice:  Undefined variable: Total_Gross in /www/zendcore/htdocs/mpavlak/web
PHP Notice:  Undefined variable: Total_Net in /www/zendcore/htdocs/mpavlak/webca
PHP Notice:  Undefined variable: Total_Ins in /www/zendcore/htdocs/mpavlak/webca
PHP Notice:  Undefined variable: Total_Tax in /www/zendcore/htdocs/mpavlak/webca
PHP Notice:  Undefined variable: Count in /www/zendcore/htdocs/mpavlak/webcast/p
File does not exist: /www/zendcore/htdocs/favicon.ico
script '/www/zendcore/htdocs/mpavlak/webcast/php101/CustomrPrice.php' not found
script '/www/zendcore/htdocs/mpavlak/webcast/php101/CustomrPrice.php' not found
File does not exist: /www/zendcore/htdocs/favicon.ico
```

# Zend Platform for advanced debugging!

The image shows a screenshot of the Zend Platform web interface. The main dashboard displays a table of events and a configuration section. An 'Event Details' window is open, showing information for a 'Slow Script Execution (Absolute)' event.

**Dashboard Events Table:**

Id	Event Type	Count	Last Occurrence	Location	URL
383	Slow Script Execution (Absolute)	1	15 Jul 2009 09:05:43	localhost	.../CustomerPrice.php
188	PHP Error	21	14 Jul 2009 10:43:40	localhost	.../zendcustlist1funct.php
205	PHP Error	145	14 Jul 2009 10:43:40	localhost	.../zendcustlist1funct.php
340	PHP Error	8	14 Jul 2009 10:43:40	localhost	.../zendcustlist1funct.php
382	PHP Error	2	13 Jul 2009 09:09:10	localhost	.../php102w5Ex3.php

**Event Details Window:**

**Event Details**  
Report for Slow Script Execution (Absolute) #383

**Severity:** Error

**Requested URL:** http://127.0.0.1:8000/mpavlak/webcast/php101/CustomerPrice.php

**Main file:** /www/zendcore/htdocs/mpavlak/webcast/php101/CustomerPrice.php

**Source file:** In file /www/zendcore/htdocs/mpavlak/webcast/php101/CustomerPrice.php

**Script ran for:** 7031 msec

**Event Occurrences Info:**  
Occurred once, on **15 Jul 2009 09:05:43**.  
Occurrence was on virtual host **127.0.0.1** on server **localhost**.

**Zend Studio Diagnostics:**  
Test URL | Debug URL | Profile URL | Show Source Code

**Event Context:**  
Data  
Variables  
Included Files  
Show Source Code

Preserve event (this event will not be deleted during database cleanups)

Delete Event | Ignore Event | Close Event

Close window

## More information...

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- <http://php.net>
  - ▶ The Online Manual
- <http://www.zend.com/en/solutions/modernize-ibm-i/>
  - ▶ For updated web pages containing IBM i PHP content
- <http://www.zend.com/en/products/platform/resources>
  - ▶ User and Installation Guides
- <http://www.zend.com/en/company/customers/>
  - ▶ Customer case studies
- <http://www.ibm.com/systems/i/software/php/index.html>
  - ▶ IBM home page for PHP on IBM i

## Good book!

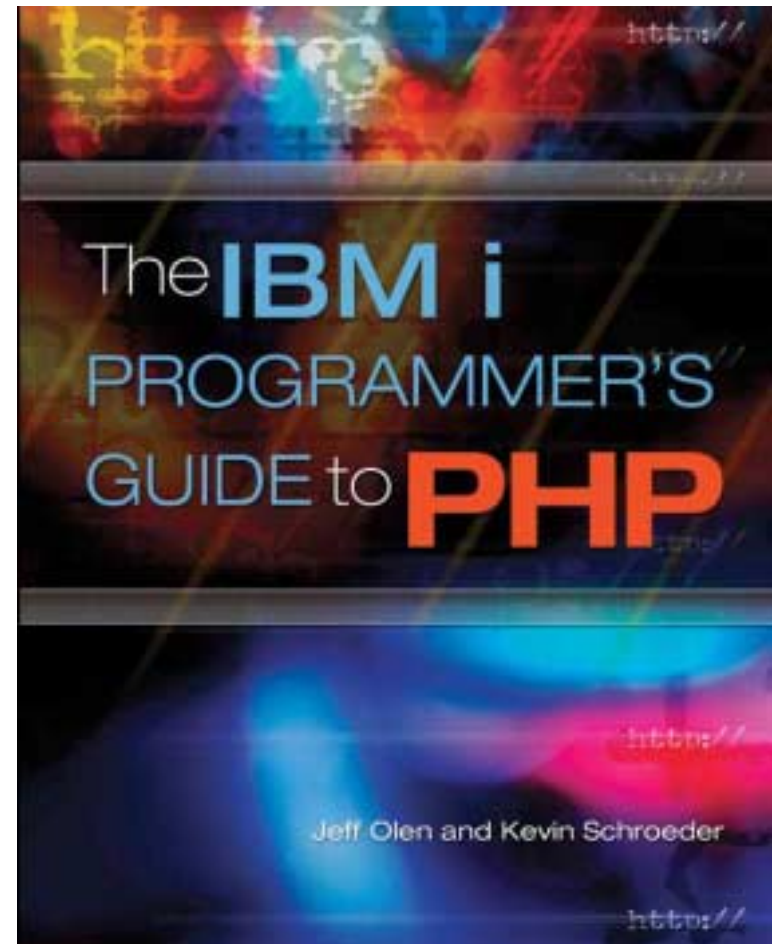
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Kevin Schroeder from Zend's  
Global Services Group

with

Jeff Olen, co-author of...

Get yours at MCPressonline  
or at fine bookstores everywhere



# Questions?

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Thank you!!

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