



The PHP Company

Workshop for PHP on IBM i

Lab 3



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Workshop Agenda

Time	Topic	Details
60	Presentation 1	Introduction & fundamentals of PHP
15	Break	
60	Presentation 2	Functions and Array Processing
15	Break	
60	Presentation 3	Data Access DB2 and MySQL
60	Lunch	
60	Presentation 4	Zend Server in action
15	break	
60	Presentation 5	i5 toolkit: examples - 1° part
15	break	
60	Presentation 6	i5 toolkit: examples - 2° part

PHP Virtual Lab Part 3

- ▶ Covering...
 - DB2 Data Access
 - Connections & Resources
 - Table access
 - Functions for table access
 - MySQL Data Access

How did you start programming?

- **RPG & COBOL**
 - ▶ Lots of reports!
 - ▶ Then a simple data inquiry
 - ▶ Then a load all subfile
 - ▶ Then a maintenance subfile
 - ▶ And so on...
- **This is a GREAT place to start with PHP, too!**
 - ▶ No reports, just data inquiry in web pages!
 - ▶ Build up the skills needed for more in depth development

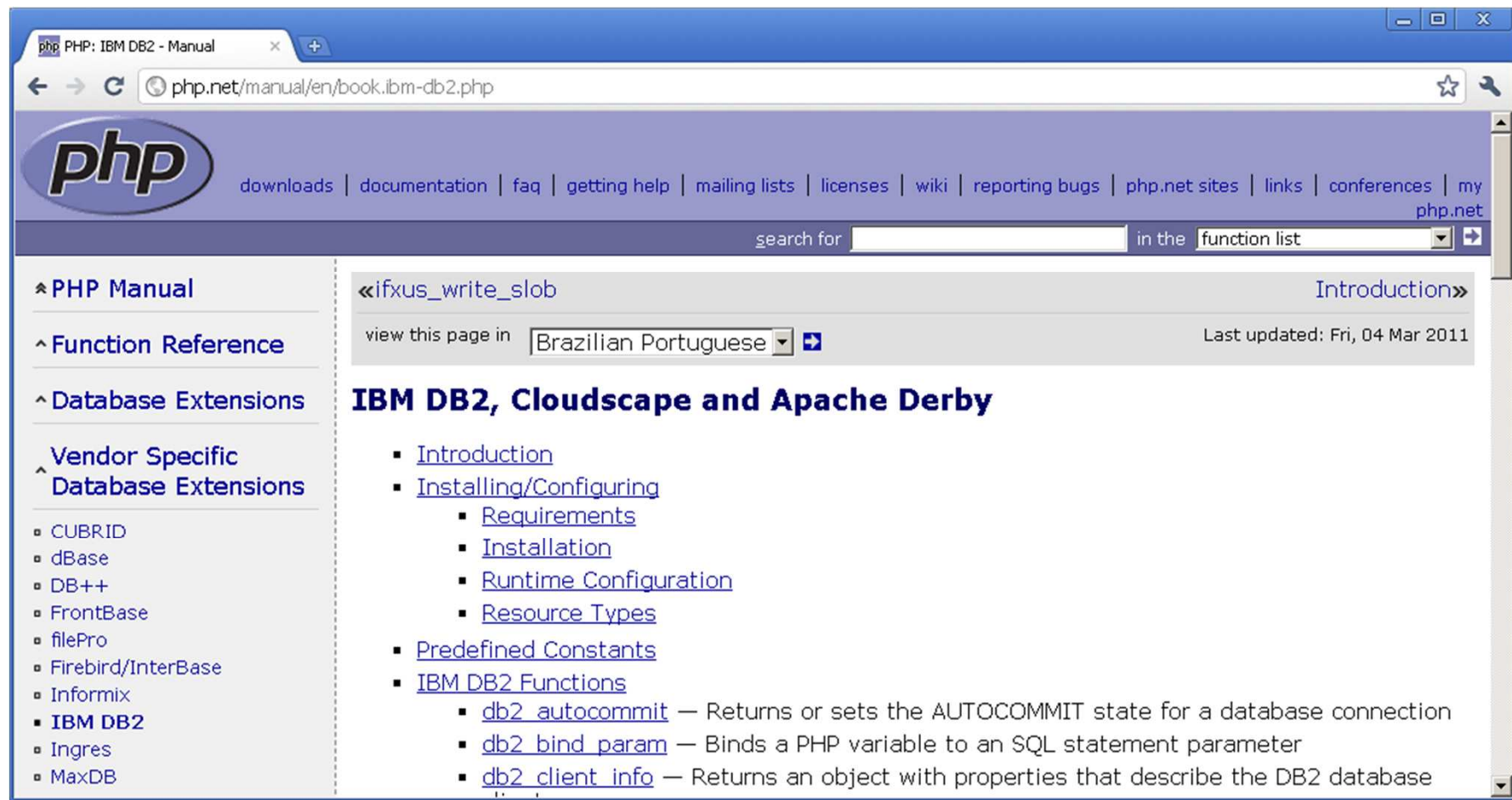
DB2 Data Access

DB2 functions in PHP

- There are several functions in PHP for DB2
 - ▶ Access database resources on IBM i and other platforms
 - ▶ Provided and supported by IBM
 - ▶ <http://php.net/manual/en/book.ibm-db2.php>

Where do you go for help?

<http://php.net/manual/en/book.ibm-db2.php>



The screenshot shows a web browser window displaying the PHP Manual page for IBM DB2, Cloudscape and Apache Derby. The browser's address bar shows the URL `php.net/manual/en/book.ibm-db2.php`. The page features the PHP logo and a navigation menu with links for downloads, documentation, faq, getting help, mailing lists, licenses, wiki, reporting bugs, php.net sites, links, conferences, and my php.net. A search bar is located below the navigation menu. The main content area is titled "IBM DB2, Cloudscape and Apache Derby" and includes a list of links for Introduction, Installing/Configuring (with sub-links for Requirements, Installation, Runtime Configuration, and Resource Types), Predefined Constants, and IBM DB2 Functions (with sub-links for `db2_autocommit`, `db2_bind_param`, and `db2_client_info`). The page also shows a language selector set to "Brazilian Portuguese" and a last updated date of "Fri, 04 Mar 2011".

Employee list with payroll

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



Data looks like...

- 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**⁰⁹ 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 = '#000000'><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**⁰⁹ 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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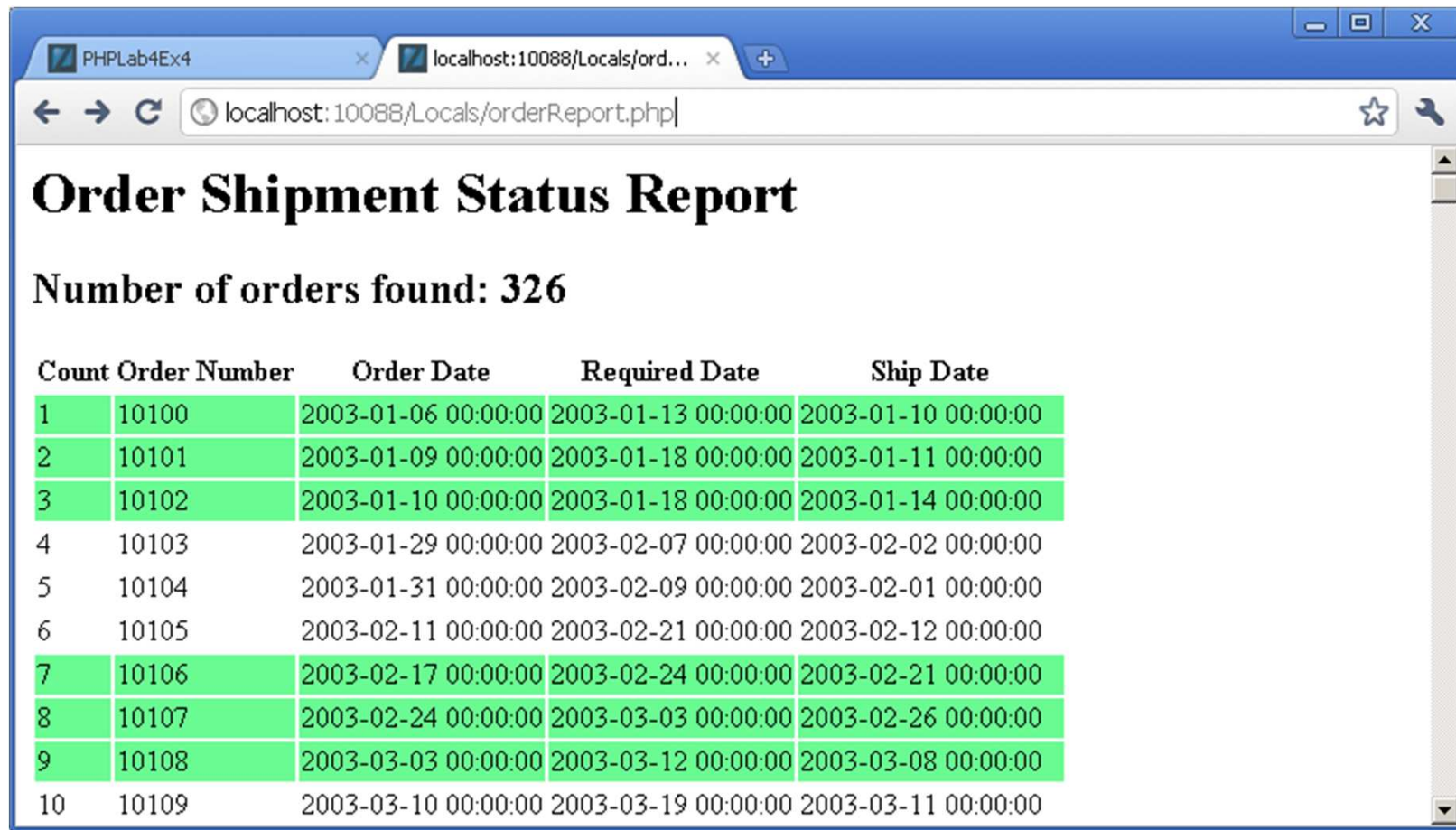
Total Gross Pay is \$5400.00
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Total insurance payment is \$227
The average for each record is...USD 1,350.00

Data Access with MySQL

MySQL is not much different than DB2, but...

- You can use similar functions in MySQL like those in DB2
- This example will illustrate MySQLi
 - ▶ Powerful Object Oriented approach to DB access
 - ▶ Makes efficient use of development time
 - ▶ Accessing MySQL right on the same IBM i as DB2!

Sample report

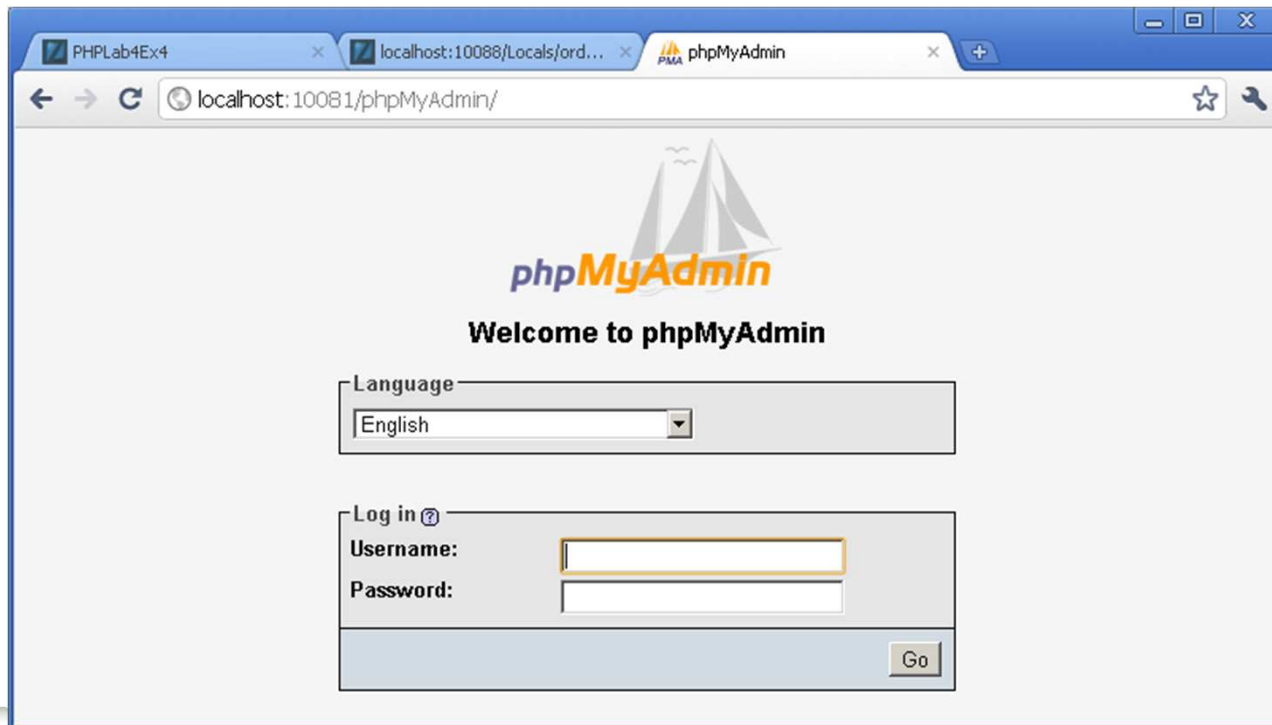


The screenshot shows a web browser window with two tabs. The active tab is titled 'localhost:10088/Locals/ord...' and the address bar shows 'localhost:10088/Locals/orderReport.php'. The page content includes a title 'Order Shipment Status Report', a summary 'Number of orders found: 326', and a table with 10 rows of order data. The table has columns for Count, Order Number, Order Date, Required Date, and Ship Date. The first three rows are highlighted in green.

Count	Order Number	Order Date	Required Date	Ship Date
1	10100	2003-01-06 00:00:00	2003-01-13 00:00:00	2003-01-10 00:00:00
2	10101	2003-01-09 00:00:00	2003-01-18 00:00:00	2003-01-11 00:00:00
3	10102	2003-01-10 00:00:00	2003-01-18 00:00:00	2003-01-14 00:00:00
4	10103	2003-01-29 00:00:00	2003-02-07 00:00:00	2003-02-02 00:00:00
5	10104	2003-01-31 00:00:00	2003-02-09 00:00:00	2003-02-01 00:00:00
6	10105	2003-02-11 00:00:00	2003-02-21 00:00:00	2003-02-12 00:00:00
7	10106	2003-02-17 00:00:00	2003-02-24 00:00:00	2003-02-21 00:00:00
8	10107	2003-02-24 00:00:00	2003-03-03 00:00:00	2003-02-26 00:00:00
9	10108	2003-03-03 00:00:00	2003-03-12 00:00:00	2003-03-08 00:00:00
10	10109	2003-03-10 00:00:00	2003-03-19 00:00:00	2003-03-11 00:00:00

Where did the data come from?

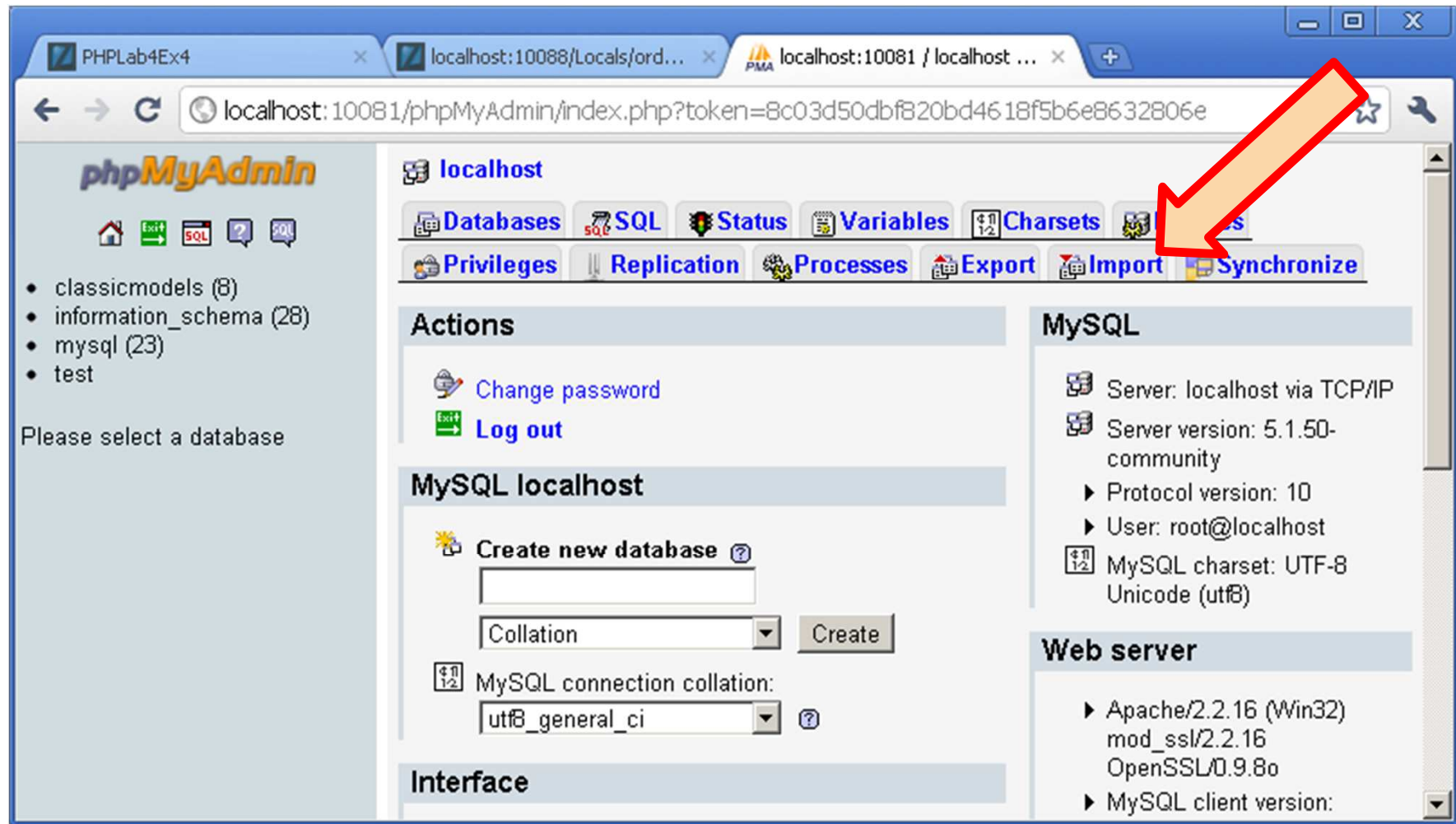
- Sample data available at MySQL
- Very simple script, included in your directory
- How did I load this? phpMyAdmin...



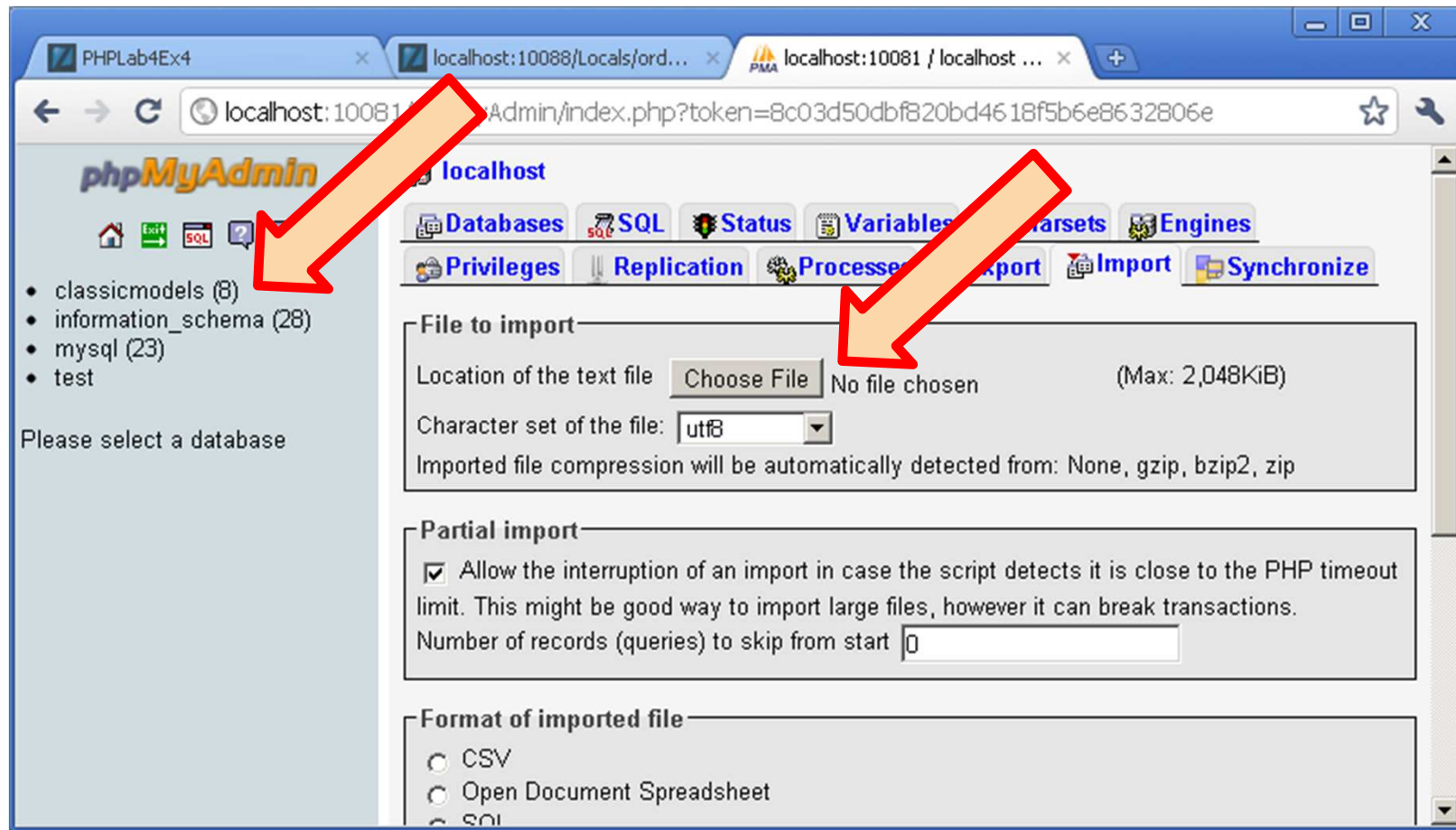
phpMyAdmin

- Part of the default Zend Server installation
- Must have MySQL running to see interface
- Default root password will give access
- Provides GUI interface to MySQL..default is command line
- Productivity features like:
 - ▶ Create users, tables, indexes, etc.
 - ▶ Look at table contents
 - ▶ Alter tables and content
 - ▶ Like DBU for MySQL!

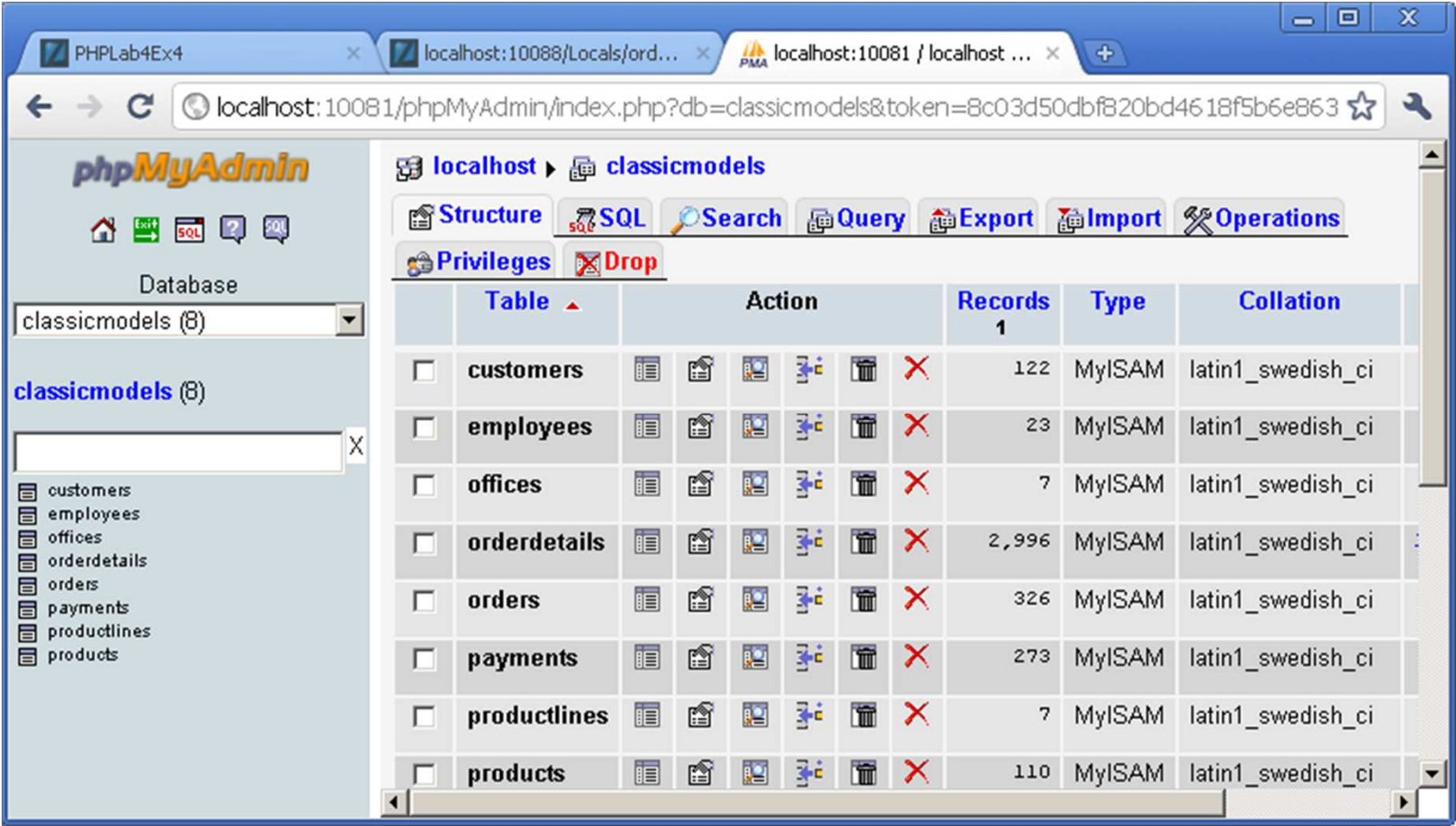
Main screen in phpMyAdmin



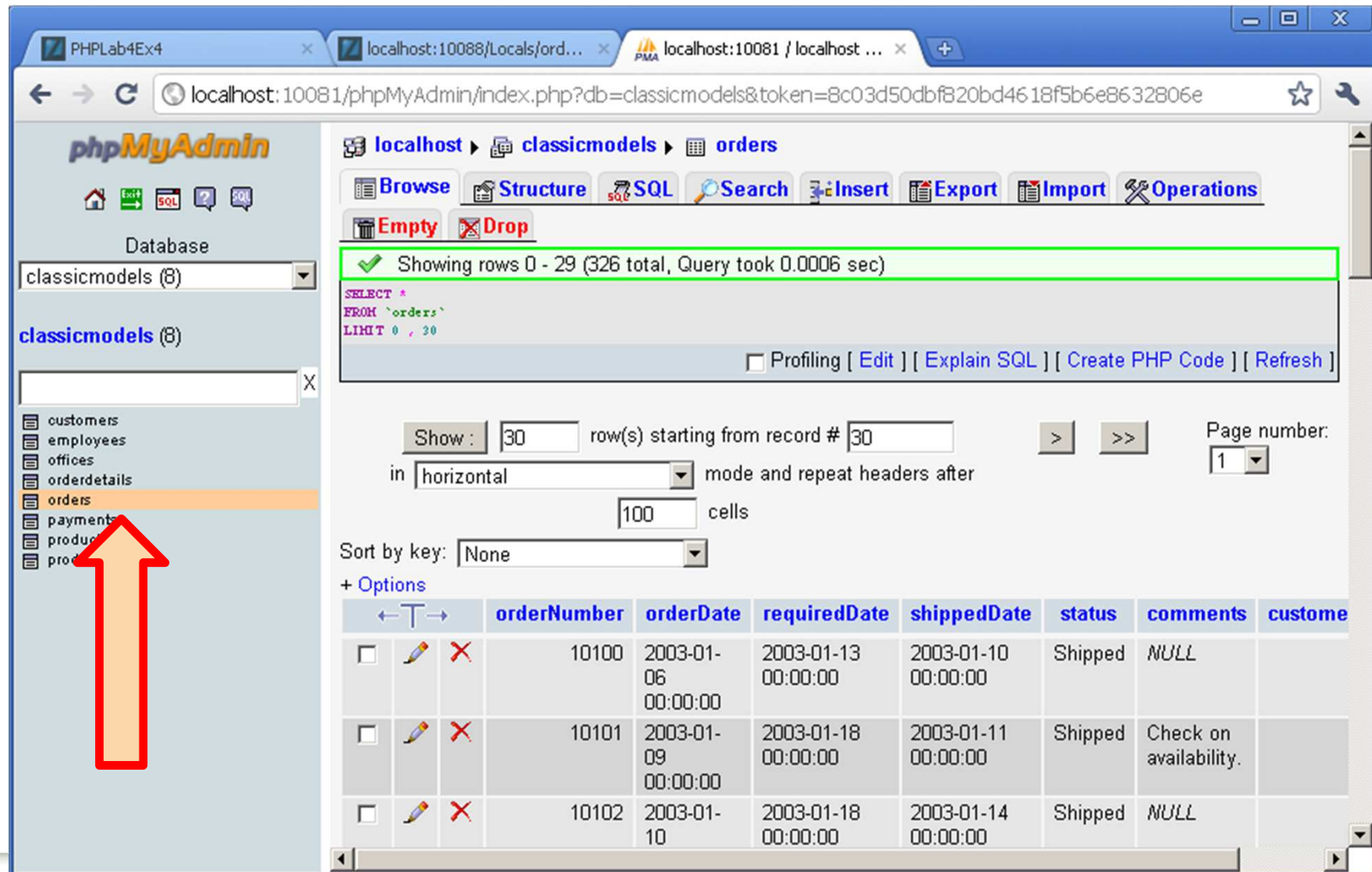
Pick the text file and DB loads instantly



Click on classicmodels DB and see tables...



Click on orders table & see data...

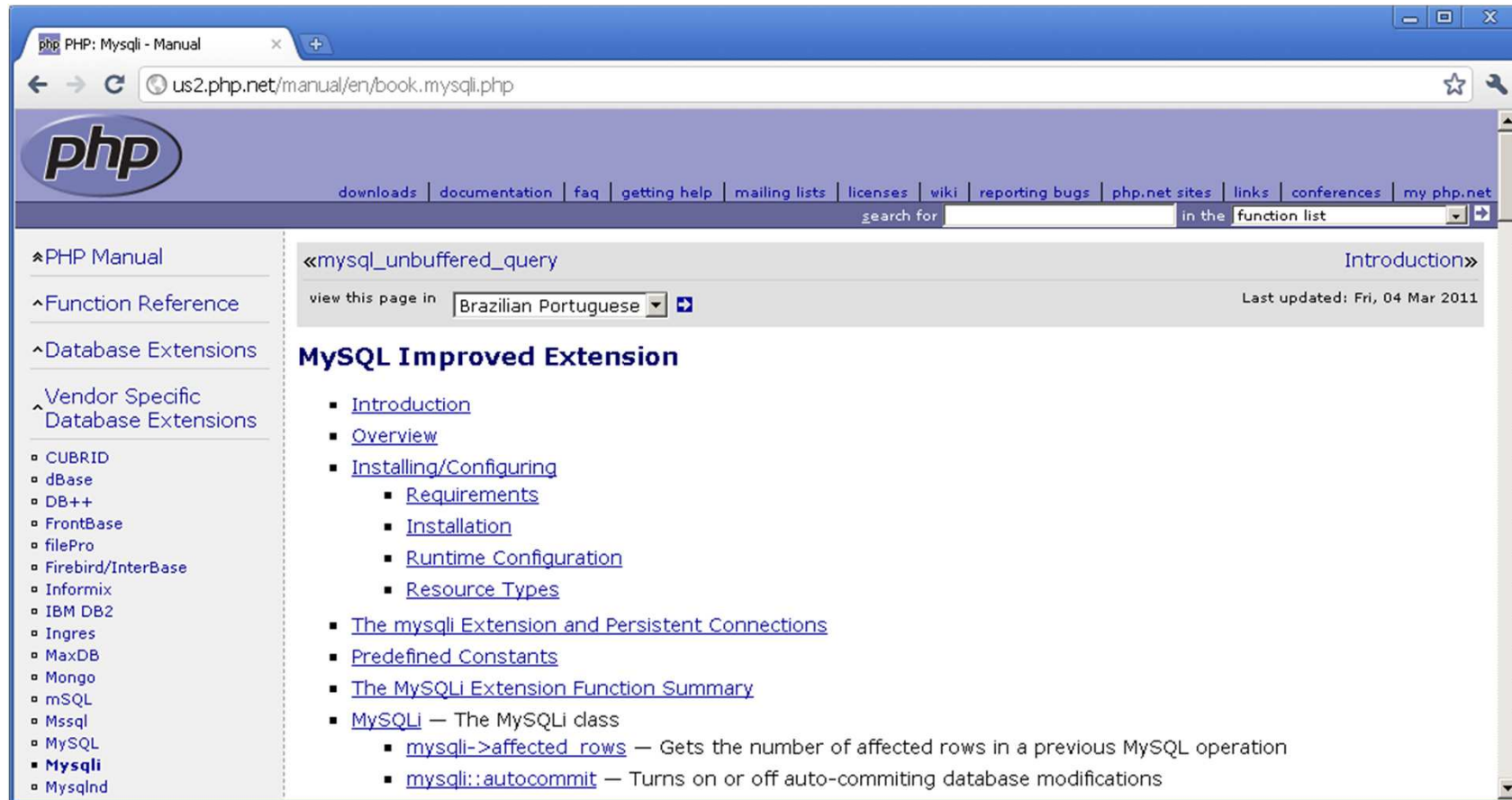


The screenshot shows the phpMyAdmin interface for a database named 'classicmodels'. The 'orders' table is selected, and its data is displayed in a table format. A red arrow points to the 'orders' table in the left sidebar. The table has columns: orderNumber, orderDate, requiredDate, shippedDate, status, comments, and customerName. The first three rows of data are visible.

	orderNumber	orderDate	requiredDate	shippedDate	status	comments	customerName
<input type="checkbox"/>	10100	2003-01-06 00:00:00	2003-01-13 00:00:00	2003-01-10 00:00:00	Shipped	NULL	
<input type="checkbox"/>	10101	2003-01-09 00:00:00	2003-01-18 00:00:00	2003-01-11 00:00:00	Shipped	Check on availability.	
<input type="checkbox"/>	10102	2003-01-10 00:00:00	2003-01-18 00:00:00	2003-01-14 00:00:00	Shipped	NULL	

MySQLi - Improved Extension

- OO based data access



Class methods to be explored...

- **MySQLi::Query**
 - ▶ Execute a MySQL Query
- **MySQLi::num_rows**
 - ▶ Retrieve the number of rows in a result set
- **MySQLi::fetch_assoc**
 - ▶ Retrieve one row from result set in an associative array
- **MySQLi::free**
 - ▶ Release the result set from the Query
- **MySQLi::close**
 - ▶ Close the connection to the database

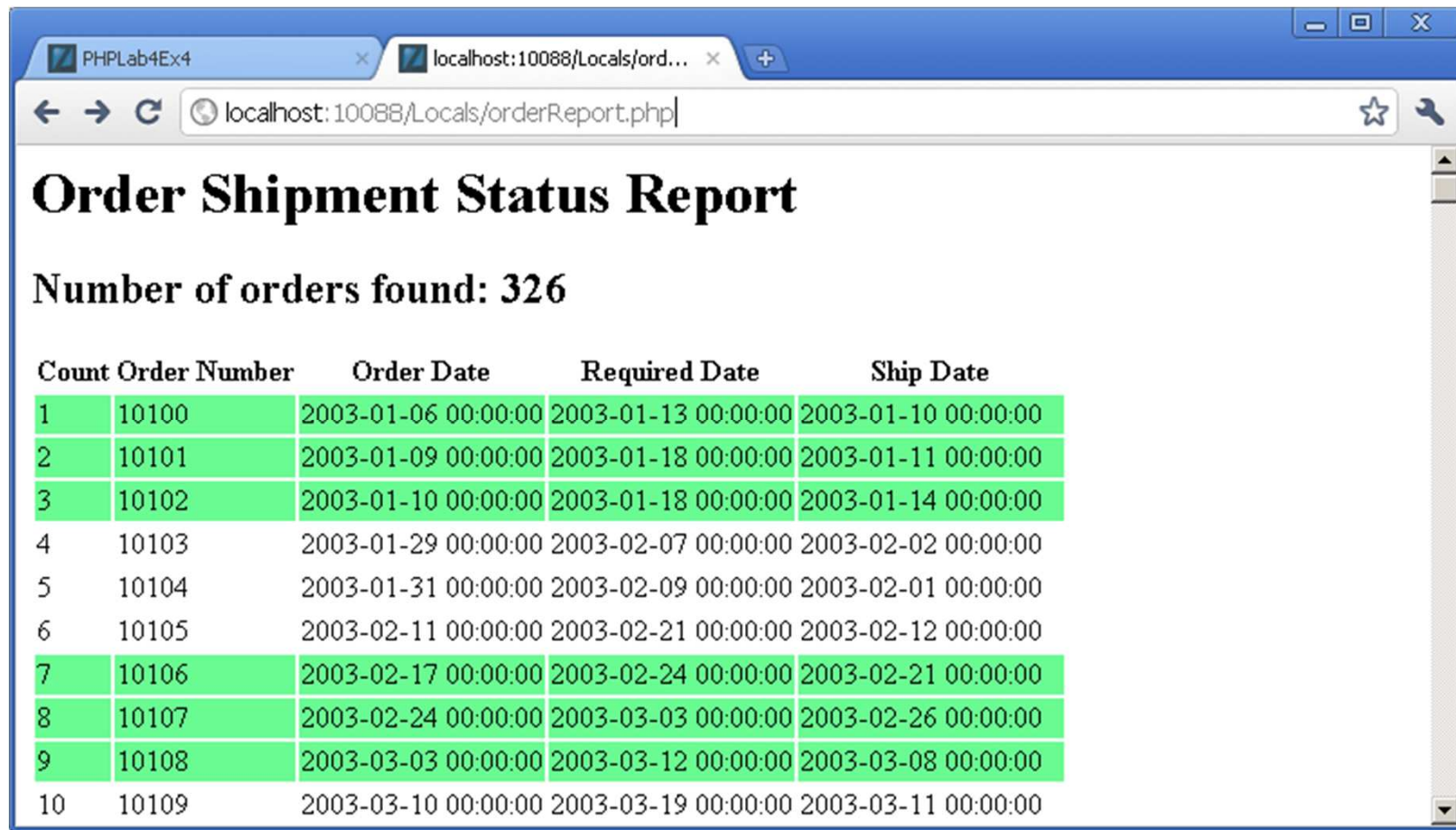
How does PHP work with MySQL?

```
7  $db = new mysqli('localhost', 'root', '', 'classicmodels');
8
9  if (mysqli_connect_errno()) {
10     echo 'Error: Could not connect to database. Please try again later.';
11     echo mysqli_connect_error();
12     exit;
13 }
14
15 $query = "select * from orders";
16 $result = $db->query($query);
17
18 $num_results = $result->num_rows;
19 echo "<h1>Order Shipment Status Report</h1>";
20 echo "<h2>Number of orders found: ".$num_results."</h2>";
```

Detail record processing...

```
28 $x=1;
29 for ($i=0; $i <$num_results; $i++) {
30     $row = $result->fetch_assoc();
31     if ($x<=3) print '<tr bgcolor="#6AFB92">';
32     else print '<tr bgcolor="#FFFFFF">';
33     If (++$x == 7) $x=1;
34
35     print '<td>'.($i+1)."</td>";          print "<td>".$row['orderNumber']. "</td>";
36     print "<td>".$row['orderDate']. "</td>";    print "<td>".$row['requiredDate']. "</td>";
37     if ($row['status'] == "Cancelled") {print "<td bgcolor=\"#FF0000\">Order Canceled</td>";}
38     elseif ($row['status'] == "On Hold") {print "<td bgcolor=\"yellow\">Order On Hold</td>";}
39     elseif ($row['status'] == "In Process") {print "<td bgcolor=\"green\">Order Not Shipped Yet</td>";}
40     else {
41         print "<td>".$row['shippedDate']. "</td>";
42     }
43     print "</tr>";
44 }
```

Sample report



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10	10109	2003-03-10 00:00:00	2003-03-19 00:00:00	2003-03-11 00:00:00

Workshop Lab 3

- **Three exercises**
 - ▶ Review the code of the DB2_Connect
 - ▶ Complete a DB2 Data Lookup
 - ▶ Enhance a MySQL data lookup

End of Part 3