PHP Querying

Lecture 21

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Fri, Mar 2, 2018

1. Connect to the Database
2. Querying the Database
3. Searching the Database
4. Deleting from the Database
5. Inserting into a Database
6. Updating the Database
7. Assignment

Outline

1. Connect to the Database
2. Querying the Database
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Connect to the Database

Connect to the Database

```
$mysqli = new mysqli("localhost", username, password, database);
```

- There are a variety of ways to connect to a database.
- We will use the “object-oriented” method as opposed to the procedural method.
- With the single call to the `mysqli` constructor, we can connect to MySQL and open the database.
- This function returns a pointer to a `mysqli` object which, in turn, refers to the database.

Connect to the Database

Test the Connection

```
if ($mysqli->connect_error)
    die("Connection error: " . $mysql->connect_error)
```

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Connect to the Database

Connect to the Database

```php
$mysqli = new mysqli("localhost", "billybob", "euclid",
    "company");
if ($mysqli->connect_error)
    die("Failed to connect to MySQL: "
        . $mysqli->connect_error);
```

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Querying the Database

Querying the Database

```
$query = "SELECT * FROM employees";
$result = $mysqli->query($query)
if (!$result)
    die("Query failed: " . $mysqli->error);
```

- Suppose that we want to execute the query

  `SELECT * FROM employees;`
- We use the `query()` function of the `mysqli` object.

Querying the Database

Querying the Database

```
if ($result->num_rows == 0)
    echo "No data were not found";
else
{
//  Process the data in the $row array
}
```

- The `query()` function, if successful, returns a `mysqli_result` object that contains an array of rows of data.
- The data member `num_rows` is the number of rows in the returned table.

Querying the Database

Querying the Database

```
for ($i = 0; $i < $result->num_rows; $i++)
{
    $row = $result->fetch_array();
//  Process the data in the $row array
}
```

- Use the `fetch_array()` function to get the first row.
- On every subsequent call to `fetch_array()`, it returns the next row.
- After the last row (or if there were no rows), `fetch_array()` return null.

Querying the Database

Querying the Database

```
$row = $result->fetch_array();
while ($row != NULL)
{
//  Process the data in the $row array
    $row = $result->fetch_array();
}
```

- A **while** loop works, but it is risky.
- How do you stop an infinite loop when it is running on the remote server?

Querying the Database

Querying the Database

```
$row = $result->fetch_array();
$fname = $row['fname'];
$lname = $row['lname'];
$bdate = $row['bdate'];
$salary = $row['salary'];
echo "$fname $lname was born on $bdate and has"
    . " a salary of $salary<br/>";
```

- `$row` is an associative array.
- The index is the column name.
- The value is the entry in the table.

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Searching the Database

Search the Database

```
$ssn = "246813579";
$query = "SELECT fname, lname FROM employees WHERE "
    . "ssn=’$ssn’";
$result = $mysqli->query($query)
    or die("Query failed: " . $mysqli->error);
if ($result->num_rows == 0)
    echo "Employee with SSN $ssn was not found";
else
{
    $row = $result->fetch_array();
    $fname = $row[’fname’];
    $lname = $row[’lname’];
    echo "$fname $lname was found";
}
```

Searching the Database

- Now suppose that we want to report the dependents of that employee.
- We must
    - Search for search the `dependents` table of the employee's Social Security number.
    - Retrieve the names of his dependents.
    - Report the dependents' names.

Searching the Database

Search the Database

```
$query = "SELECT dep_name FROM dependents WHERE ssn=’$ssn’";
$result = $mysqli->query($query)
    or die("Query failed: " . $mysqli->error);
if ($result->num_rows == 0)
    echo "$fname $lname has no dependents";
else
{
    echo "The dependents of $fname $lname are<br/>";
    while ($row = $result->fetch_array())
    {
        $dep_name = $row[’dep_name’];
        echo "$dep_name<br/>";
    }
}
```

Searching the Database

- Suppose that we want to report the dependents of all employees.
- We must
  - Execute one query to get the employees' names and SSN's.
  - For each SSN in the result, search the `dependents` table of the employee's to get the names of that employee's dependents.
  - Report the employee's name and the dependents' names, or report that the employee has no dependents.

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Deleting from the Database

- Suppose that we want to delete an employee from the database.
- We must
  - Select the employee from a list.
  - Delete the employee's tuple from the `employees` table.
  - Delete the employee's tuples from the `dependents` and `works` tables.

Deleting from the Database

In the HTML Form

```
<form method="POST" action="del_emp.php">
Select the employee to be deleted:
<select name="ssn">
<?php
$query = "SELECT fname, lname, ssn FROM employees";
$result = $mysqli->query($query);
while ($row = $result->fetch_array())
{
    $fname = $row[’fname’];
    $lname = $row[’lname’];
    $ssn = $row[’ssn’];
    echo "<option value=’$ssn’>$fname $lname</option>";
}
?>
</select><br/>
<input type="submit" value="Delete Employee"/>
<input type="reset"/>
</form>
```

Deleting from the Database

In the filedel_emp.php

```
$query = "DELETE FROM employees WHERE ssn=’$ssn’";
$result = $mysqli->query($query)
    or die("Query failed: " . $mysqli->error);
$query = "DELETE FROM dependants WHERE ssn=’$ssn’";
$result = $mysqli->query($query)
    or die("Query failed: " . $mysqli->error);
$query = "DELETE FROM works WHERE ssn=’$ssn’";
$result = $mysqli->query($query)
    or die("Query failed: " . $mysqli->error);
```

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Inserting into a Database

- We will use the `company` database for our examples.
- Suppose that we want to add an employee to the database.
- We must get from the user the employee's
  - First and last names.
  - Social Security number.
  - Sex.
  - Birthday.
  - Salary.
  - Department.
- Then insert these data into the `employees` table.

The HTML Form

- In the HTML form, we need
  - Text boxes for the first name, last name, Social Security number, and salary.
  - Select elements for the sex, birthday, and department.
  - Select elements for the birthday (month, day, year).
  - Select elements or radio buttons for the sex and department.
- We can fill the sex and birthday choices with the obvious values.
- For the department, we should construct the list of options from the database, using the `departments` table.

Inserting into a Database

Getting the Birthday

```
<?php
echo "<select name=’month’>";
$month = array("January", "February", "March", "April",
    "May", "June", "July", "August", "September",
    "October", "November", "December");
for ($i = 0; $i < count($month); $i++)
    echo "<option value=’$i+1’>$month[$i]</option>";
echo "</select>";

echo "<select name=’day’>";
for ($i = 1; $i <= 31; $i++)
    echo "<option value=’$i’>$i</option>";
echo "</select>";

echo "<select name=’year’>";
for ($i = 2014; $i >= 1914; $i--)
    echo "<option value=’$i’>$i</option>";
echo "</select><br/>";
?>
```

Inserting into a Database

Getting the Department

```
<?php
echo "<select name=’dept’>";
$query = "SELECT dept, dept_name FROM departments";
$result = $mysqli->query($query)
    or die("Query failed: " . $mysqli->error);
while ($row = $result->fetch_array())
{
    $dept = $row[’dept’];
    $dept_name = $row[’dept_name’];
    echo "<option value=’$dept’>$dept_name</option>";
}
echo "</select><br/>";
?>
```

Inserting into the Database

Insert into the Database

```
$fname  = $_POST['fname'];
$lname  = $_POST['lname'];
$ssn    = $_POST['ssn'];
$salary = $_POST['salary'];
$sex    = $_POST['sex'];
$month  = $_POST['month'];
$day    = $_POST['day'];
$year   = $_POST['year'];
$dept   = $_POST['dept'];
$query = "SELECT * FROM employees WHERE ssn = '$ssn'";
$result = $mysqli->query($query);
if ($result->num_rows > 0)
    echo "$fname $lname is already in the database";
```

- We must get the form information and find out whether the employee is already in the database.

Inserting into the Database

Insert into the Database

```
else
{
    if ($month < 10)
        $month = "0$month";
    if ($day < 10)
        $day = "0$day";
    $bdate = "$year-$month-$day";
    $query = "INSERT INTO employees VALUES(’$fname’, ’$lname’, "
        . "’$ssn’, ’$bdate’ ,’$sex’, $salary, $dept)";
    $mysqli->query($query)
        or die("Query failed: " . $mysqli->error);
    echo "$fname $lname has been inserted."
}
```

- If he is not already in the database, then add him.

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Updating the Database

- We want to update the data for an employee.
- We must
  - Select the employees name and Social Security number from the `employees` table.
  - Display the current employee information.
  - Allow the information to be edited.
  - Save the changes.

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Assignment

- Visit the W3Schools website
  - `http://www.w3schools.com/html/`
  - Visit the sections labeled “PHP MySQL Intro” through ”PHP DELETE.”
- Visit the PHP website

  `http://php.net/manual/en/book.mysql.php`

  and check out the functions that we used.