CS 5513 – Dr. Le Gruenwald

PHP Web-Application Example

PHP Installation Recommendations

If you're not familiar with PHP development environment and want to try it out, we recommend:

- Download & Install Oracle Virtual Box – software for installing virtual (guest) operating systems and running them from existing (host) operating system - https://www.virtualbox.org/wiki/Downloads
  - User Manual - https://www.virtualbox.org/manual/UserManual.html
- Download & Install Ubuntu 18.04 LTS as your guest operating system
  - https://ubuntu.com/download/desktop
- Follow Microsoft's instruction on installing PHP, Apache Web-server & ODBC driver for Azure SQL Database
  - https://docs.microsoft.com/en-us/sql/connect/php/installation-tutorial-linux-mac?view=sql-server-2017#installing-the-drivers-on-ubuntu-1604-1804-and-1810

Useful Links

- PHP Language Reference - https://www.php.net/manual/en/langref.php
- PHP Tutorial - https://www.w3schools.com/php/default.asp
- PHP & Azure SQL - https://docs.microsoft.com/en-us/azure/sql-database/sql-database-connect-query-php

Source Files

- Below source files compose a simple PHP web-application which uses Azure SQL database to store and update the data about upcoming movie nights at someone's house.
- SQL file is expected to be executed once in your SQL IDE of choice (Azure Data Studio, for example).
- PHP files are expected to be placed at the root directory of your web-server ("/var/www/html" for Apache HTTP Web-server installed in Ubuntu 18.04 LTS).
- Once the PHP files are copied over to the intended destination, and assuming your web-server is running on localhost you can test them by visiting http://localhost/get_all_movies.php and http://localhost/add_movie_form.php in your browser.

create_table.sql

Executing the queries in the below .sql file (with Azure Data Studio, for example) creates a very simple database for storing information about upcoming movie nights at someone's house.

```
DROP TABLE movie_night; --Drop the table if it was previously created


--Create the new table for movie_nights schedule
CREATE TABLE movie_night (
    start_time DATETIME PRIMARY KEY,
    movie_name VARCHAR(64),
    duration_min INT,
    guest_1 VARCHAR(64),
    guest_2 VARCHAR(64),
    guest_3 VARCHAR(64),
    guest_4 VARCHAR(64),
    guest_5 VARCHAR(64),
);


--Insert two records to begin with
INSERT INTO movie_night
 (start_time, movie_name, duration_min, guest_1, guest_2)
VALUES
 ('2019-12-31 20:00:00', 'Home Alone', 150, 'Taras', 'Jared'),
```

```
('2020-01-03 19:00:00', 'Diehard', 180, 'Taras', 'Aaron');
```

data_handler.php

Below PHP file contains code used to connect to the Azure SQL Database and execute the example queries. This file should be located at the root folder of your web-server ("/var/www/html" for Apache HTTP Web-server installed in Ubuntu 18.04 LTS). *Make sure to substitute your own values into $serverName, "database", "uid" and "pwd".*

```
<?php
    // Displays SQL errors
    function formatErrors($errors) {
        echo "Error information: <br/>";
        foreach ($errors as $error) {
            echo "SQLSTATE: ". $error['SQLSTATE'] . "<br/>";
            echo "Code: ". $error['code'] . "<br/>";
            echo "Message: ". $error['message'] . "<br/>";
        }
    }

    // Returns the connection to the Azure SQL database
    function getConnection() {
        $serverName = "<Replace Me>.database.windows.net";
        $connectionOptions = array(
            "database" => "<Replace Me>",
            "uid" => "<Replace Me>",
            "pwd" => "<Replace Me>"
        );

        // Establishes the connection
        $conn = sqlsrv_connect($serverName, $connectionOptions);
```

```
    if ($conn === false) {
        die(formatErrors(sqlsrv_errors()));
    }

    return $conn;
}

// Returns an array of all movie_night records
function getAllMovies() {
    $conn = getConnection();

    // Select Query
    $tsql = "SELECT * FROM movie_night";

    // Prepare & execute the query
    $stmt = sqlsrv_query($conn, $tsql);

    // Error handling
    if ($stmt === false) {
        die(formatErrors(sqlsrv_errors()));
    }

    // Iterate over returned records and pack them into an array
    $result = array();
    while ($row = sqlsrv_fetch_array($stmt, SQLSRV_FETCH_ASSOC)) {
        array_push($result, $row);
    }
```

```
        // Close the DB connection
        sqlsrv_free_stmt($stmt);
        sqlsrv_close($conn);

        return $result;
    }

    // Insets the new movie_night record with the given attribute values
    function addMovie($startTime, $movieName, $duration, $g1, $g2, $g3, $g4,
$g5) {
        $conn = getConnection();

        // Insert SQL query template
        $tsql = "INSERT INTO movie_night ".
                "(start_time, movie_name, duration_min, guest_1, guest_2, guest_3,
guest_4, guest_5) ".
              "VALUES ".
                "(?, ?, ?, ?, ?, ?, ?, ?)";

        // Prepares the SQL query
        $stmt = sqlsrv_prepare($conn, $tsql, array($startTime, $movieName,
$duration, $g1, $g2, $g3, $g4, $g5));

        // Error handling
        if ($stmt === false) {
            die(formatErrors(sqlsrv_errors()));
```

```
    }

    // Executes the query
    $result = sqlsrv_execute($stmt);

    // Close the database connection
    sqlsrv_free_stmt($stmt);
    sqlsrv_close($conn);

    return $result;
  }
?>
```

get_all_movies.php

Executing below PHP file generates an HTML file with a table containing all the records from the movie_night SQL database table. This file should be located at the root folder of your web-server ("/var/www/html" for Apache HTTP Web-server installed in Ubuntu 18.04 LTS)

```
<!DOCTYPE html>
<html>
  <head>
  <meta charset="UTF-8">
    <title>Movie Nights</title>
  </head>
  <body>
    <!-- The table for displaying all the movie records -->
    <table cellspacing="2" cellpadding="2" border="1">
      <tr> <!-- The table headers row -->
        <td align="center">
```

```
    <h4>Time</h4>
  </td>
  <td align="center">
    <h4>Movie Name</h4>
  </td>
  <td align="center">
    <h4>Duration</h4>
  </td>
  <td align="center">
    <h4>Guest 1</h4>
  </td>
  <td align="center">
    <h4>Guest 2</h4>
  </td>
  <td align="center">
    <h4>Guest 3</h4>
  </td>
  <td align="center">
    <h4>Guest 4</h4>
  </td>
  <td align="center">
    <h4>Guest 5</h4>
  </td>
</tr>

<?php
    require 'data_handler.php';
```

```
            // Get an array of movie night from the database
            $movies = getAllMovies();

            // For each array entry, print out a table row with its attribute values
            foreach ($movies as $row) {
                echo ("<tr>".
                    "<td>".$row['start_time']->format('Y-m-d H:i:s')."</td>".
                    "<td>".$row['movie_name']."</td>".
                    "<td>".$row['duration_min']."</td>".
                    "<td>".$row['guest_1']."</td>".
                    "<td>".$row['guest_2']."</td>".
                    "<td>".$row['guest_3']."</td>".
                    "<td>".$row['guest_4']."</td>".
                    "<td>".$row['guest_5']."</td>".
                "</tr>".PHP_EOL);
            }
        ?>

    </table>
  </body>
</html>
```

add_movie_form.php

Below PHP file (strictly speaking it's just a static HTML file) generates an HTML for collection of user input to insert a new record into a movie_night table. Upon form submission, add_movie.php (see below) file will be invoked to process the user input. This file should be located at the root folder of your web-server ("/var/www/html" for Apache HTTP Web-server installed in Ubuntu 18.04 LTS)

```
<!DOCTYPE html>
<html>
	<head>
		<meta charset="UTF-8">
		<title>Add Movie Night</title>
	</head>
	<body>
		<h2>Add Movie Night</h2>
		<!--
			Form for collecting user input for the new movie_night
record.
			Upon form submission, add_movie.php file will be invoked.
		-->
		<form action="add_movie.php">
			<!-- The form organized in an HTML table for better clarity. --
>
			<table border=1>
				<tr>
					<th colspan="2">Enter the Movie Night
Data:</th>
				</tr>
				<tr>
```

```
            <td>Movie night time:</td>
            <td><div style="text-align: center;">
            <input type=text name=start_time>
            </div></td>
        </tr>
        <tr>
            <td>Movie Name:</td>
            <td><div style="text-align: center;">
            <input type=text name=movie_name>
            </div></td>
        </tr>
        <tr>
            <td>Duration:</td>
            <td><div style="text-align: center;">
            <input type=text name=duration_min>
            </div></td>
        </tr>
        <tr>
            <td>Guest 1 Name:</td>
            <td><div style="text-align: center;">
            <input type=text name=guest_1>
            </div></td>
        </tr>
        <tr>
            <td>Guest 2 Name</td>
            <td><div style="text-align: center;">
            <input type=text name=guest_2>
```

```
        </div></td>
    </tr>
    <tr>
        <td>Guest 3 Name</td>
        <td><div style="text-align: center;">
        <input type=text name=guest_3>
        </div></td>
    </tr>
    <tr>
        <td>Guest 4 Name</td>
        <td><div style="text-align: center;">
        <input type=text name=guest_4>
        </div></td>
    </tr>
    <tr>
        <td>Guest 5 Name</td>
        <td><div style="text-align: center;">
        <input type=text name=guest_5>
        </div></td>
    </tr>
    <tr>
        <td><div style="text-align: center;">
        <input type=reset value=Clear>
        </div></td>
        <td><div style="text-align: center;">
        <input type=submit value=Insert>
        </div></td>
```

```
                </tr>
            </table>
        </form>
    </body>
</html>
```

add_movie.php

Below PHP file processes the user request to insert a new record into movie_night table initiated by the add_movie_form.php file and generates the HTML file response confirming the insertion or notifying of the problem. This file should be located at the root folder of your web-server ("/var/www/html" for Apache HTTP Web-server installed in Ubuntu 18.04 LTS)

```
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>Query Result</title>
    </head>
    <body>
    <?php
        require 'data_handler.php';

        // Get the attribute values passed from the input form.
        $startTime = $_REQUEST['start_time'];
        $movieName = $_REQUEST['movie_name'];
        $durationString = $_REQUEST['duration_min'];
        $g1 = $_REQUEST['guest_1'];
```

```
$g2 = $_REQUEST['guest_2'];
$g3 = $_REQUEST['guest_3'];
$g4 = $_REQUEST['guest_4'];
$sg5 = $_REQUEST['guest_5'];

// Check whether the required attributes were provided
if (!$startTime || !$movieName || !$durationString) {
        // If not, redirect back to the form page
        header("Location: add_movie_form.php");
        exit();
}

// Insert the new record into the database
if (addMovie($startTime, $movieName, $duration, $g1, $g2, $g3,
$g4, $g5)) {
        // If the insertion was successful, print out a confirmation
message
        ?>
        <h2>The Movie Night:</h2>
        <ul>
                <li>Start Time: <?= $startTime ?></li>
                <li>Movie Name: <?= $movieName ?></li>
                <li>Duration: <?= $durationString ?></li>
                <li>Guest 1: <?= $g1 ?></li>
                <li>Guest 2: <?= $g2 ?></li>
                <li>Guest 3: <?= $g3 ?></li>
                <li>Guest 4: <?= $g4 ?></li>
```

```
                    <li>Guest 5: <?= $g5 ?></li>
                </ul>
                <h2>Was successfully inserted.</h2>
                <a href="get_all_movies.php">See all movie nights.</a>
                <?php
            } else {
                // If the insertion was unsuccessful, print out SQL errors
                ?>
                    <h2>There was a problem inserting the
course</h2><br/>
                <?php
                    sqlsrv_errors();
            }
        ?>
        </body>
</html>
```