

## PHP and MySQL

### Course Summary

#### Description

In this PHP training course, students will learn to create database-driven websites using PHP and MySQL or the database of their choice. The class also covers SQL basics.

#### Objectives

After taking this course, students will be able to:

- Learn how PHP works.
- Learn the basic syntax of PHP.
- Learn to create dynamic interactive pages with PHP.
- Learn to manipulate files with PHP.
- Learn to work with arrays in PHP.
- Learn to validate forms with PHP.
- Learn to write functions in PHP.
- Learn to manipulate and manage database data with PHP.
- Learn to authenticate users with PHP.
- Learn to manage sessions with PHP.
- Learn to work with the MDB2 package.
- Learn advanced form validation with regular expressions.
- Learn to send email with PHP.
- Understand how MySQL works.
- Learn to use SQL to output reports with MySQL.
- Learn to modify MySQL data with SQL.

#### Topics

- PHP Basics
- Flow Control
- Arrays
- PHP and HTML Forms
- String Manipulation
- Reusing Code and Writing Functions
- Simple SELECTs
- Advanced SELECTs
- Subqueries, Joins and Unions
- Inserting, Updating and Deleting Records
- Managing Data
- MDB2
- Authentication with PHP and SQL
- Regular Expressions
- Session Control and Cookies
- Sending Email with PHP
- File System Management

#### Prerequisites

Experience in the following is required for this PHP class:

- HTML

Experience in the following would be useful for this PHP class:

- CSS
- Basic Programming
- XML

#### Duration

Five Days

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### Course Outline

#### I. *PHP Basics*

- A. Welcome to the Server-side
  - 1. What is a web server?
  - 2. Dynamic Websites
- B. Google Chrome DevTools: Network Tab
  - 1. Status Codes
- C. How PHP Works
  - 1. The php.ini File
  - 2. PHP Tags
  - 3. Hello, World!
- D. Comments
- E. PHP Statements and Whitespace
- F. PHP Functions
- G. php.net
- H. Exercise: Using php.net
- I. Variables
  - 1. Variable Types
  - 2. Variable Names (Identifiers)
  - 3. Type Juggling and Casting
  - 4. Hello Variables!
- J. Exercise: First PHP Script
- K. Variable Scope
  - 1. Superglobals
- L. Single Quotes vs. Double Quotes
- M. Concatenation
- N. Passing Variables on the URL
- O. Exercise: Passing Variables via the Query String
- P. User-defined Functions (UDFs)
  - 1. Defining and Calling Functions
  - 2. Default Values
  - 3. Variable Scope
  - 4. By Reference vs. By Value
- Q. Introduction to the Poet Tree Club
- R. Including Files
  - 1. require
  - 2. require\_once
- S. Exercise: Using Header and Footer Includes
- T. Constants
- U. Error Reporting
- V. Exercise: Displaying Errors

- W. Including a Secure Configuration File
- X. Exercise: Including a Configuration File

#### II. *Flow Control*

- A. if / if-else / if-elseif-else
  - 1. Simple if Condition
  - 2. if-else Condition
  - 3. if-elseif-else statement
  - 4. False Equivalents: Falsy Values
- B. switch/case
- C. Ternary Operator
- D. Exercise: Working with Conditions
- E. Loops
  - 1. while
  - 2. dowhile
  - 3. for
  - 4. break and continue
- F. Exercise: Working with Loops

#### III. *Arrays*

- A. Indexed Arrays
  - 1. Initializing Arrays
  - 2. Appending to an Array
  - 3. Reading from Arrays
  - 4. Looping through Arrays
- B. Exercise: Working with Indexed Arrays
- C. Associative Arrays
  - 1. Initializing Associative Arrays
  - 2. Reading from Associative Arrays
  - 3. Looping through Associative Arrays
  - 4. Superglobal Arrays
- D. Exercise: Working with Associative Arrays
- E. Multi-dimensional Arrays
  - 1. Reading from Two-dimensional Arrays
  - 2. Looping through Two-dimensional Arrays
  - 3. Two-dimensional Associative Arrays

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### Course Outline (cont.)

- 4. Non-tabular Multi-dimensional Arrays
- F. Array Manipulation Functions
- G. in\_array() Function
- H. Exercise: Array Practice

#### IV. PHP and HTML Forms

- A. HTML Forms
  - 1. How HTML Forms Work
- B. Form Submissions
- C. Sanitizing Form Data
  - 1. htmlspecialchars()
  - 2. htmlentities()
  - 3. filter\_var()
  - 4. filter\_input()
- D. Validating Form Data
  - 1. Was the Field Filled In?
  - 2. Is the Entered Value an Integer?
  - 3. Is it an Email?
  - 4. Is it a Valid Password and Do the Passwords Match?
  - 5. Do the Combined Values Create a Valid Date?
  - 6. Did the User Check the Box?
- E. Exercise: Processing Form Input

#### V. String Manipulation

- A. Formatting Strings
  - 1. Concatenation
  - 2. String Manipulation Functions
  - 3. Examples of String Functions
- B. Exercise: Working with String Manipulation Functions

#### VI. Reusing Code and Writing Functions

- A. Including Files
  - 1. require
  - 2. require\_once
- B. Exercise: Adding a Header and Footer
  - 1. auto\_prepend\_file and auto\_append\_file
- C. User Functions
  - 1. Defining and Calling Functions
  - 2. Default Values
  - 3. Variable Scope
  - 4. By Reference vs. By Value
- D. Form Processing
  - 1. Code Organization

- E. Exercise: Form Validation and Presentation Functions

#### VII. Simple SELECTs

- A. Introduction to the Northwind Database
- B. Some Basics
  - 1. Comments
  - 2. Whitespace and Semi-colons
  - 3. Case Sensitivity
- C. SELECTing All Columns in All Rows
- D. Exercise: Exploring the Tables
- E. SELECTing Specific Columns
- F. Exercise: SELECTing Specific Columns
- G. Sorting Records
  - 1. Sorting by a Single Column
  - 2. Sorting By Multiple Columns
  - 3. Ascending and Descending Sorts
- H. Exercise: Sorting Results
- I. The WHERE Clause and Logical Operator Symbols
  - 1. Checking for Equality
  - 2. Checking for Inequality
- J. Exercise: Using the WHERE Clause to Check for Equality or Inequality..252
  - 1. Checking for Greater or Less Than
- K. Exercise: Using the WHERE Clause to Check for Greater or Less Than.256
- L. Checking for NULL
- M. Exercise: Checking for NULL
- N. WHERE and ORDER BY
- O. Exercise: Using WHERE and ORDER BY Together
- P. Checking Multiple Conditions with Boolean Operators
  - 1. AND
  - 2. OR
  - 3. Order of Evaluation
- Q. Exercise: Writing SELECTs with Multiple Conditions
- R. The WHERE Clause and Logical Operator Keywords
  - 1. The BETWEEN Operator
  - 2. The IN Operator

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### Course Outline (cont.)

- 3. The LIKE Operator
- 4. The NOT Operator
- S. Exercise: More SELECTs with WHERE

#### VIII. Advanced SELECTs

- A. Calculated Fields
  - 1. Concatenation
  - 2. Mathematical Calculations
  - 3. Aliases
- B. Exercise: Calculating Fields
- C. Aggregate Functions and Grouping
  - 1. Aggregate Functions
  - 2. Grouping Data
- D. Exercise: Working with Aggregate Functions
  - 1. Selecting Distinct Records
- E. Built-in Data Manipulation Functions
  - 1. Common Math Functions
  - 2. Common String Functions
  - 3. Common Date Functions
- F. Exercise: Data Manipulation Functions

#### IX. Subqueries, Joins and Unions

- A. Subqueries
- B. Exercise: Subqueries
- C. Joins
  - 1. Table Aliases
  - 2. Multi-table Joins
- D. Exercise: Using Joins
- E. Outer Joins
  - 1. Unions
  - 2. UNION ALL
- F. UNION Rules
- G. Exercise: Working with Unions

#### X. Inserting, Updating and Deleting Records

- A. INSERT
- B. Exercise: Inserting Records
- C. UPDATE
- D. DELETE
- E. Exercise: Updating and Deleting Records

#### XI. Managing Data

- A. Querying a Database
  - 1. mysqli() Overview
  - 2. mysqli Methods and Properties

- 3. Inserting and Updating Records
- B. Exercise: Inserting Records
- C. mysqli Prepared Statements

#### XII. MDB2

- A. Advantages and Disadvantages of MDB2
  - 1. Why use a database abstraction layer?
  - 2. When not to use a database abstraction layer?
- B. Using MDB2
- C. Exercise: Creating a Customer Report

#### XIII. Authentication with PHP and SQL

- A. The Registration Process
- B. Passwords and Pass Phrases
- C. Registration with Tokens
- D. Exercise: Creating a Registration Form
- E. Sessions
  - 1. Session Variables
- F. Cookies
- G. Exercise: Logging in
- H. Logging Out
- I. \$\_REQUEST Variables
- J. Exercise: Resetting the Pass Phrase

#### XIV. Regular Expressions

- A. Perl-compatible Regular Expression Functions
  - 1. preg\_match()
  - 2. preg\_replace()
  - 3. Regular Expression Tester
- B. Regular Expression Syntax
  - 1. Start and End ( ^ \$ )
  - 2. Number of Occurrences ( ? + \* { } )
  - 3. Common Characters ( . \d \D \w \W \s \S )
  - 4. Grouping ( [ ] )
  - 5. Negation ( ^ )
  - 6. Subpatterns ( ( ) )
  - 7. Alternatives ( | )
  - 8. Escape Character ( \ )
- C. Form Validation Functions with Regular Expressions

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### Course Outline (cont.)

#### *XV. Session Control and Cookies*

- A. Sessions
  - 1. Configuring Sessions
  - 2. Session Functions
- B. Cookies
- C. Exercise: Authentication with Session Control

#### *XVI. Sending Email with PHP*

- A. mail()
  - 1. Shortcomings of mail()
- B. Setting Up PHPMailer
  - 1. Get and Install the Latest Version of PHPMailer
- C. Mail Server
- D. Exercise: Including a Mail Configuration File
- E. Sending Email with PHPMailer
- F. PHPMailer Methods and Properties
- G. Exercise: Creating a Contact Form

#### *XVII. File System Management*

- A. Opening a File
  - 1. fopen()
- B. Reading from a File
  - 1. fgets()
- C. Writing to a File
  - 1. fwrite()
- D. Exercise: Writing to a File
- E. File Locking
  - 1. flock()
- F. Uploading Files via an HTML Form
- G. Getting File Information
- H. More File Functions
- I. Directory Functions
  - 1. Getting a Directory Listing
- J. Exercise: Creating a Resume Management Page