Chapter 10

Server Side Scripting Using PHP

Overview of PHP

PHP is a server side scripting language used to create dynamic web pages.PHP stands for Hypertext Preprocessor.It is an interpreted language.It is embedded in HTML.It is an open source language.Rasmus Lerdorf is called the father of PHP.PHP supports different databases hence large –scale websites are developed using PHP.

Beneficts of Using PHP

The following are the beneficts of using PHP

PHP programs are independent of browser.

- The code is executed on the server hence it is more secure.
- Easy to learn.
- It is free to use .
- It executes faster than other scripting languages.
- It supports different databases.
- It works on different platforms such as Windows,Linux,UNIX etc.
- It offers many levels of security.

Basics of PHP

1)Setting up the environment

To run PHP a web development environment is needed.This needs a PHP compatible web server and interpreter.Packages like WAMP,LAMP,XAMPP etc can be used which includes a web server.

2)Writing the code and running the script

PHP scripts are mearly plain text.A PHP script begins with <?PHP and ends with ?> .The PHP code is saved with extension .PHP and is saved in the root directory of web server.

3)Embedding HTML and PHP

PHP codes are embedded in HTML document using the <?PHP and ?> tags.

4)**Comments in PHP**

Comments are used to make code more readable.There are two types of comments Single line and Multi line comments.A Single line comment starts with // while multi line comment begins with /* and ends with */ .

5)**Output statements in PHP**

There are two methods for displaying statements in PHP, by using

1)**echo and print**

Both echo and print are used to display result(Statements). The echo and print statement can be used with or without parentheses.

Difference between echo and print

echo - can output one or more strings

print - can only output one string, and returns always 1

echo is faster than print as echo does not return any value.

2)**Var_dump ( )**

The var_dump( ) function is used to display data type and value of a variable.

Example:-

$weekday=”Monday” ;

var_dump($weekday);

The Output is

String(6) “Monday “

The output shows that value is a string data type of length 6 characters.

Fundamentals of PHP

Variables

Every variable in PHP begins with **$** sign,followed by its name.In PHP variables does not need to be declared before using it.PHP automatically determine the data type depending on the type of value assigned to it.

Example:-

```
$x = 5;
$y = 10.5;
```

Note: When you assign a text value to a variable, put quotes around the value.

Rules for naming variables in PHP

- A variable name starts with the $ sign, followed by the name of the variable
- A variable name must start with a letter or the underscore character
- A variable name cannot start with a number
- A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and _)
- Variable names are case-sensitive ($age and $AGE are two different variables).
- Special characters(Spaces,Periods,Commas,Question Mark etc) are not allowed in variable names

Data Types

Data type specifies the type of data and the operations that can be performed on the data.Data types in PHP are classified two, Core data type and Special data type.

Core data type

The core data type includes integers,float,boolean and string data types.

Integers

An integer is a whole number ie,number without fractional part(including negative numbers).

Example:--24,58,64 etc.

Float

Floating point numbers are represented by float or double data type.

Example:-12.56,24 E4 etc.

String

A string is a group of characters.They are enclosed between Single or Double quotation mark.

Example: “Hello”,’Hai’.

Boolean

The boolean data type represent **TRUE(1)** or **FALSE(0)** values.

Special data types

Special data type includes NULL,Array,Objects and Resource.

NULL

The NULL data type represents NULL values.It is used for emptying variables.

Array

An array holds multiple values.There are three types of array in PHP,indexed array,associative array and multidimensional array.

Object

An object is a collection of both data and function.An object is an instance of a class.Objects are created using the ‘new’ Keyword.

Resources

Resources are special varables that holds external resources like file handler,database objects etc.They are created using specific functions.

Operators in PHP

An operator is a symbol which performs a specific task.The important operators in PHP are

1)**Assignment Operator**

The assignment operator(=) is used to assign a value to a variable.

Example:- $a=10; //Assigns the value 10 to the variable a.

$p=$a; //Assigns the value in the variable a to variable p.

2)**Relational Operators**

The relational operators are used for comparison.They include

Operator	Meaning
= =	Equal to
! =	Not Equal to
<	Less Than
>	Greater Than
< =	Less than or equal to
> =	Greater than or equal to

3)**Logical Operators**

The logical operators are used to combine conditional statements.They include

Operator	Name	Example	Result
and	And	$x and $y	True if both $x and $y are true
or	Or	$x or $y	True if either $x or $y is true
xor	Xor	$x xor $y	True if either $x or $y is true, but not both
&&	And	$x && $y	True if both $x and $y are true
||	Or	$x || $y	True if either $x or $y is true
!	Not	!$x	True if $x is not true

4)**Arithmetic Operator**

Arithmetic operators are used to perform arithmetic operations.They include

Operator	Name	Example	Result
+	Addition	$x + $y	Sum of $x and $y
-	Subtraction	$x - $y	Difference of $x and $y
*	Multiplication	$x * $y	Product of $x and $y
/	Division	$x / $y	Quotient of $x and $y
%	Modulus	$x % $y	Remainder of $x divided by $y
**	Exponentiation	$x ** $y	Result of raising $x to the $y'th power (Introduced in PHP 5.6)

5)**String Operators**

The two types of string operators are concatenation operator('.) and concatenation assignment operator('. =').The concatenation operator joins two strings together while the concatenation assignment operator adds the arguments on the right side with arguments on the left side of assignment operator.

6)**Combined Operator**

The combined operator includes, + =,- =,* =,/ =,% = and . =.

Increment and Decrement Operator

The increment operator increments the value by 1 and decrement operator decrements the value by 1.There are two forms of increment and decrement operator,Prefix and postfix form.

Escape Sequence

An escape sequence, tells PHP to treat a character in a special way.

Escape Sequence	Usage
\"	Double Quotes
\'	Single Quotes
\n	New Line
\t	Tab
\\	Backslash
\$	Dollar Sign
\r	Carriage Return

Control Structures in PHP

Control structures are used to alter the normal sequence of execution of a program.The control structures in PHP are classified into two types Conditional statements and Looping statements.

Conditional Statements

The conditional statements are based on a condition.It includes if,if.... else,if... elseif and switch statements.

if statement

The syntax of if statement is

```
if(condition/expression)
{
 Statements;
}
```

Note:-The statements are executed only when the condition becomes True.

if...else Statement

The syntax of if... else statement is

```
if(condition/expression)
{
 Statements;
}
else
{
Statements;
}
```

if...elseif statements

The syntax of if...elseif statement is

```
if(expression)
{
 Statements;
}
elseif(expression)
{
Statements;
}
else
{
Statements;
}
```

Switch statement

The switch statement is a multibranching statement.The synatx is

```
switch(expression)
{
case label:Statements;
                break;
case label:Statements;
                break;
```

.....

default:Statements;

}

Looping statements

A loop is a group of statements executed repeatedly.The three types of looping statements are

1)**while loop**

The synatx is

while(expression)

{

Statements;

}

2)**do..... while loop**

The synatx is

do

{

Statements;

} while(expression);

3)**for loop**

The synatx of for loop is

for(initialization;condition;updation)

{

Statements;

}

break and continue

The continue keyword forces to skip the rest of the statements and continue to the next iteration.The break keyword is used to terminate a loop(for,do..while,while etc).

Arrays in PHP

An array in PHP is a collection of key and values.It maps(associates) values to key.The keys are used to identify values and values stores data.

There are three types of arrays in PHP

Indexed array,Associative array and Multidimensional arrays.

Indexed array

An array with numeric index is called indexed array.They can store numbers,strings etc.By default the index starts at zero.The function array( ) is used to create an array.

Creating an array

There are two ways to create an array

$array_name=array(value1,value2,value3,.... etc);

Or

$array[key]=value;

Example;

$rollno=array(110,1102,1106,1109);

$colors=array("Red","Green","Blue");

Or

$rollno[0]=110;

$rollno[1]=1102;

$rollno[2]=1106;

Associative arrays

Arrays with named keys are called associative array.They have index as string. This type of array is also referred to as a hash or map. An associative array assigns names to positions in the array.

Different ways to create associative array

There are two ways to create an associative array:

```
$age = array("Peter"=>"35", "Ben"=>"37", "Joe"=>"43");
```

or

```
$age['Peter'] = "35";
$age['Ben'] = "37";
$age['Joe'] = "43";
```

Foreach loops in PHP

The foreach loop works only on arrays, and is used to loop through each key/value pair in an array.The syntax is

```
foreach ($array as $value)
{
   code to be executed;
}
```

Example:-

```
<?php
$colors = array("red", "green", "blue", "yellow");

foreach ($colors as $value) {
   echo "$value <br>";
}
?>
```

User defined functions in PHP

A user defined function starts with function keyword.The synatx for declaring a function is

function functionName()

{

Code to be executed;

}

Built in functions in PHP

The important built in functions in PHP are

1) Date ( ) function

The PHP date() function is used to format a date and/or a time.It's syntax is

date(*format*,*timestamp*)

Parameter	**Description**
format	Required. Specifies the format of the timestamp
timestamp	Optional. Specifies a timestamp. Default is the current date and time

The required *format* parameter of the date() function specifies how to format the date (or time).

Here are some characters that are commonly used for dates:

- d - Represents the day of the month (01 to 31)
- m - Represents a month (01 to 12)
- Y - Represents a year (in four digits)
- l (lowercase 'L') - Represents the day of the week

Other characters, like"/", ".", or "-" can also be inserted between the characters to add additional formatting.

Example:-

```
echo "Today is " . date("Y/m/d") . "<br>";
echo "Today is " . date("Y.m.d") . "<br>";
echo "Today is " . date("Y-m-d") . "<br>";
echo "Today is " . date("l");
```

Output:-

Today is 2015/12/15
Today is 2015.12.15
Today is 2015-12-15
Today is Tuesday

String functions in PHP

PHP includes many functions that operate on strings.The important string functions in PHP are

1)chr ( ) :-It returns a character from a specified value.

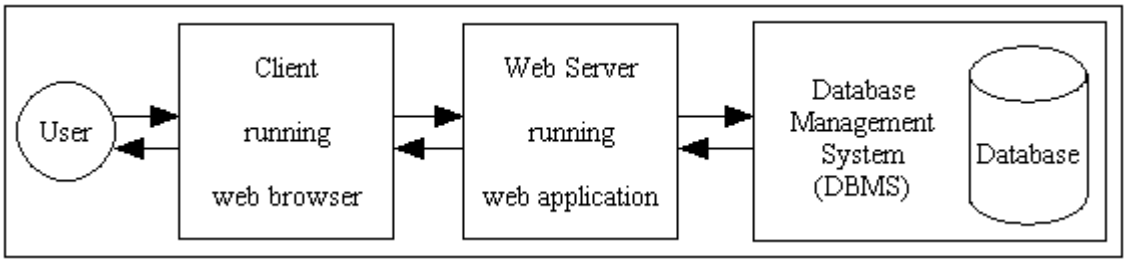
2)strlen ( ) :-It returns the number of characters in a string.

3)strpos ( ) :-It finds the position of first occurrence of a string inside another string.

4)strcmp ( ):-It compares two strings.The syntax is strcmp(String1,String2).It returns 0 if two strings are identical.

Three tier architecture in PHP

Three tier architecture is a client-server achitecture.The functionalities(user interface,application programs,data storage etc) are separated into layers called tiers.Each tier is located separately on a computer.The three tiers in web application development are, Client,Web server and Database.



Tier 1:-It is the front end where the content is rendered by the browser.

Tier 2:-It accepts requests,runs the script and sends the output to the browser.

Tier 3:-It is the backend(Database or data store).It interprets and executes SQL commands.

PHP Forms

Forms are used to collect information and pass it to server.Form elementsare used to input and amnipulate data.

PHP Global Variables - Superglobals

Several predefined variables in PHP are "superglobals", which means that they are always accessible, regardless of scope - and you can access them from any function, class or file without having to do anything special.

The PHP superglobal variables are:

- $GLOBALS
- $_SERVER
- $_REQUEST
- $_POST
- $_GET
- $_FILES
- $_ENV
- $_COOKIE
- $_SESSION

PHP $GLOBALS

$GLOBALS is a PHP super global variable which is used to access global variables from anywhere in the PHP script (also from within functions or methods).

PHP stores all global variables in an array called $GLOBALS[*index*]. The *index* holds the name of the variable.

PHP $_SERVER

$_SERVER is a PHP super global variable which holds information about headers, paths, and script locations.

PHP $_REQUEST

PHP $_REQUEST is used to collect data after submitting an HTML form.

PHP $_POST

PHP $_POST is widely used to collect form data after submitting an HTML form with method="post". $_POST is also widely used to pass variables.

PHP $_GET

PHP $_GET can also be used to collect form data after submitting an HTML form with method="get".

Difference between GET and POST methods

Information sent from a form with the GET method is **visible to everyone** (all variable names and values are displayed in the URL). GET also has limits on the amount of information to send. Information sent from a form with the POST method is **invisible to others** (all names/values are embedded within the body of the HTTP request) and has **no limits** on the amount of information to send.

Note:-

GET method	POST method
It can be cached	It cannot be cached
It remain in the browser history	It does not remain in the browser history
It can be bookmarked when dealing with sensitive data	It can be used to sent sensitive data.
It has Length restriction	It has no length restriction
It can be bookmarked	It cannot be bookmarked

Connecting PHP to MySQL

Connecting PHP to MySQL is done in three steps

1)Open a connection to MySQL.

2)Specify the database to open.

3)Retrieve or insert data to/from database.

4)Close the connection.

Open a connection to MySQL

Before we use PHP to access records in the database we use myysql_connect ( ) function to open a connection to MySQL database. The mysql_connect( )function requires three parameters. The first is the name of the server, the second is your username and the third your password.The function returns True if the database worked else it returns False.The die function is similar to exit( ) function and is used to stop execution of script if the database cannot be connected.

Specify the database to open

The mysql_select_db ( ) function is used to select a particular database.

Reading data from database

Data is read from database in two steps.

a)Execute the SQL query on database using mysql_query( ) .

b)Populate row to array using mysql_fetch_array( ).

mysql_query ( ) function

The mysql_query( ) function is used to execute SQL query on a database.The function returns TRUE on sucess and FALSE on failure.

mysql_fetch_array( ) function

The mysql_fetch_array( ) function populate rows of a data as an array. It returns the values from the query's result set one row at a time.

Step 4

The mysql_close ( ) function is used to close a connection to the database server.

For example, the following code closes the connection established by the $link variable: **mysql_close**($link);

Creating a new table using PHP

The CREATE TABLE command can be used to create a able in PHP.

The Syntax is

$SQL="CREATE TABLE Table_Name(Column1 datatype,Column2 datatype ...)";

$select_query=mysql_query($SQL);

Inserting data into a table using PHP

The INSERT TABLE command can be used to insert data int a table.

The Syntax is

$SQL="INSERT TABLE Table_Name VALUES(".Value1","value2",....)";

$select_query=mysql_query($SQL);

Update data in a table using PHP

The UPDATE command can be used to update data in a table.

The Syntax is:-

$SQL="UPDATE Table_Name SET Column1=value WHERE condition" ;

$select_query=mysql_query($SQL);

Conclusion:-

PHP is a server side scripting language.

$GLOBALS is a PHP super global variable which is used to access global variables from anywhere in the PHP script

The print ( ) function returns 1 when the output is successful.

Var_dump ( ) function is used to display both data type and value of variable.

The three types of array in PHP are indexed array,associative array and multidimensional array.