Study Unit 11: PHP BASICS (ARRAYS, COOKIES, SESSION)

Outline

Student will able to handle different kind of PHP arrays and can manage array data and also learn about very important server side and front end global variables session and cookie and can maintain user detail on server as well browser basic HTML

- Arrays
- Cookie
- Session

Learning Outcomes of Study Unit 11

Upon completion of this study unit, you should be able handle different kind of PHP arrays and can manage array data and also learn about very important server side and front end global variables

1.1: PHP Arrays

- Numeric Array
- Associative Array
- Multidimensional Array

1.2: PHP Cookies

- Setting cookies in PHP
- Accessing Cookies
- Deleting Cookies

1.3: PHP Sessions

- Starting Session
- Destroying Session
- Turning on Session

1.4: Introduction of JavaScript

1.1 : ARRAYS

An array is a data structure that stores one or more similar type of values in a single value. For example if you want to store 100 numbers then instead of defining 100 variables its easy to define an array of 100 length.

There are three different kind of arrays and each array value is accessed using an ID c which is called array index.

- **Numeric array** – An array with a numeric index. Values are stored and accessed in linear fashion.
- **Associative array** – An array with strings as index. This stores element values in association with key values rather than in a strict linear index order.
- **Multidimensional array** – An array containing one or more arrays and values are accessed using multiple indices

NOTE – Built-in array functions is given in function reference PHP Array Functions

Numeric Array

These arrays can store numbers, strings and any object but their index will be represented by numbers. By default array index starts from zero.

```
<html>
   <body>

      <?php
         /* First method to create array. */
         $numbers = array( 1, 2, 3, 4, 5);

         foreach( $numbers as $value ) {
            echo "Value is $value <br />";
         }

         /* Second method to create array. */
```

```
         $numbers[0] = "one";
         $numbers[1] = "two";
         $numbers[2] = "three";
         $numbers[3] = "four";
         $numbers[4] = "five";

         foreach( $numbers as $value ) {
            echo "Value is $value <br />";
         }
      ?>

   </body>
</html>
```

This will produce the following result −

```
Value is 1
Value is 2
Value is 3
Value is 4
Value is 5
Value is one
Value is two
Value is three
Value is four
Value is five
```

The associative arrays are very similar to numeric arrays in term of functionality but they are different in terms of their index. Associative array will have their index as string so that you can establish a strong association between key and values.

To store the salaries of employees in an array, a numerically indexed array would not be the best choice. Instead, we could use the employees names as the keys in our associative array, and the value would be their respective salary.

NOTE – Don't keep associative array inside double quote while printing otherwise it would not return any value.

```
<html>
   <body>

      <?php
         /* First method to associate create array. */
         $salaries = array("mohammad" => 2000, "qadir" => 1000, "zara" => 500);

         echo "Salary of mohammad is ". $salaries['mohammad'] . "<br />";
         echo "Salary of qadir is ".  $salaries['qadir']. "<br />";
         echo "Salary of zara is ".  $salaries['zara']. "<br />";

         /* Second method to create array. */
         $salaries['mohammad'] = "high";
         $salaries['qadir'] = "medium";
         $salaries['zara'] = "low";

         echo "Salary of mohammad is ". $salaries['mohammad'] . "<br />";
         echo "Salary of qadir is ".  $salaries['qadir']. "<br />";
         echo "Salary of zara is ".  $salaries['zara']. "<br />";
      ?>

   </body>
</html>
```

This will produce the following result −

```
Salary of mohammad is 2000
Salary of qadir is 1000
Salary of zara is 500
Salary of mohammad is high
Salary of qadir is medium
Salary of zara is low
```

A multi-dimensional array each element in the main array can also be an array. And each element in the sub-array can be an array, and so on. Values in the multi-dimensional array are accessed using multiple index.

Example

In this example we create a two dimensional array to store marks of three students in three subjects

This example is an associative array, you can create numeric array in the same fashion.

```
<html>
   <body>

      <?php
         $marks = array(
            "mohammad" => array (
               "physics" => 35,
               "maths" => 30,
               "chemistry" => 39
            ),
```

```
            "qadir" => array (
               "physics" => 30,
               "maths" => 32,
               "chemistry" => 29
            ),

            "zara" => array (
               "physics" => 31,
               "maths" => 22,
               "chemistry" => 39
            )
         );

         /* Accessing multi-dimensional array values */
         echo "Marks for mohammad in physics : " ;
         echo $marks['mohammad']['physics'] . "<br />";

         echo "Marks for qadir in maths : ";
         echo $marks['qadir']['maths'] . "<br />";

         echo "Marks for zara in chemistry : " ;
         echo $marks['zara']['chemistry'] . "<br />";
      ?>

   </body>
</html>
```

This will produce the following result −

```
Marks for mohammad in physics : 35
Marks for qadir in maths : 32
Marks for zara in chemistry : 39
```

1.2 : PHP COOKIES

Cookies are text files stored on the client computer and they are kept of use tracking purpose. PHP transparently supports HTTP cookies.

There are three steps involved in identifying returning users −

- Server script sends a set of cookies to the browser. For example name, age, or identification number etc.
- Browser stores this information on local machine for future use.
- When next time browser sends any request to web server then it sends those cookies information to the server and server uses that information to identify the user.

This chapter will teach you how to set cookies, how to access them and how to delete them.

Cookies are usually set in an HTTP header (although JavaScript can also set a cookie directly on a browser). A PHP script that sets a cookie might send headers that look something like this −

```
HTTP/1.1 200 OK
Date: Fri, 04 Feb 2000 21:03:38 GMT
Server: Apache/1.3.9 (UNIX) PHP/4.0b3
Set-Cookie: name=xyz; expires=Friday, 04-Feb-07 22:03:38 GMT;
```

```
                path=/; domain=tutorialspoint.com
Connection: close
Content-Type: text/html
```

As you can see, the Set-Cookie header contains a name value pair, a GMT date, a path and a domain. The name and value will be URL encoded. The expires field is an instruction to the browser to "forget" the cookie after the given time and date.

If the browser is configured to store cookies, it will then keep this information until the expiry date. If the user points the browser at any page that matches the path and domain of the cookie, it will resend the cookie to the server.The browser's headers might look something like this −

```
GET / HTTP/1.0
Connection: Keep-Alive
User-Agent: Mozilla/4.6 (X11; I; Linux 2.2.6-15apmac ppc)
Host: zink.demon.co.uk:1126
Accept: image/gif, */*
Accept-Encoding: gzip
Accept-Language: en
Accept-Charset: iso-8859-1,*,utf-8
Cookie: name=xyz
```

A PHP script will then have access to the cookie in the environmental variables $_COOKIE or $HTTP_COOKIE_VARS[] which holds all cookie names and values. Above cookie can be accessed using $HTTP_COOKIE_VARS["name"].

PHP provided **setcookie()** function to set a cookie. This function requires upto six arguments and should be called before <html> tag. For each cookie this function has to be called separately.

```
setcookie(name, value, expire, path, domain, security);
```

Here is the detail of all the arguments −

- **Name** − This sets the name of the cookie and is stored in an environment variable called HTTP_COOKIE_VARS. This variable is used while accessing cookies.
- **Value** − This sets the value of the named variable and is the content that you actually want to store.

- **Expiry** − This specify a future time in seconds since 00:00:00 GMT on 1st Jan 1970. After this time cookie will become inaccessible. If this parameter is not set then cookie will automatically expire when the Web Browser is closed.
- **Path** − This specifies the directories for which the cookie is valid. A single forward slash character permits the cookie to be valid for all directories.
- **Domain** − This can be used to specify the domain name in very large domains and must contain at least two periods to be valid. All cookies are only valid for the host and domain which created them.
- **Security** − This can be set to 1 to specify that the cookie should only be sent by secure transmission using HTTPS otherwise set to 0 which mean cookie can be sent by regular HTTP.

Following example will create two cookies **name** and **age** these cookies will be expired after one hour.

```
<?php
   setcookie("name", "John Watkin", time()+3600, "/","", 0);
   setcookie("age", "36", time()+3600, "/", "",  0);
?>
<html>

   <head>
      <title>Setting Cookies with PHP</title>
   </head>

   <body>
      <?php echo "Set Cookies"?>
   </body>

</html>
```

PHP provides many ways to access cookies. Simplest way is to use either $_COOKIE or $HTTP_COOKIE_VARS variables. Following example will access all the cookies set in above example.

```
<html>
```

```
   <head>
      <title>Accessing Cookies with PHP</title>
   </head>

   <body>

      <?php
         echo $_COOKIE["name"]. "<br />";

         /* is equivalent to */
         echo $HTTP_COOKIE_VARS["name"]. "<br />";

         echo $_COOKIE["age"] . "<br />";

         /* is equivalent to */
         echo $HTTP_COOKIE_VARS["age"] . "<br />";
      ?>

   </body>
</html>
```

You can use **isset()** function to check if a cookie is set or not.

```
<html>

   <head>
      <title>Accessing Cookies with PHP</title>
   </head>

   <body>

      <?php
```

```
         if( isset($_COOKIE["name"]))
            echo "Welcome " . $_COOKIE["name"] . "<br />";

         else
            echo "Sorry... Not recognized" . "<br />";
      ?>

   </body>
</html>
```

Officially, to delete a cookie you should call setcookie() with the name argument only but this does not always work well, however, and should not be relied on.

It is safest to set the cookie with a date that has already expired −

```
<?php
   setcookie( "name", "", time()- 60, "/","", 0);
   setcookie( "age", "", time()- 60, "/","", 0);
?>
<html>

   <head>
      <title>Deleting Cookies with PHP</title>
   </head>

   <body>
      <?php echo "Deleted Cookies" ?>
   </body>

</html>
```

1.3 : PHP SESSION

An alternative way to make data accessible across the various pages of an entire website is to use a PHP Session.

A session creates a file in a temporary directory on the server where registered session variables and their values are stored. This data will be available to all pages on the site during that visit.

The location of the temporary file is determined by a setting in the **php.ini** file called **session.save_path**. Before using any session variable make sure you have setup this path.

When a session is started following things happen −

- PHP first creates a unique identifier for that particular session which is a random string of 32 hexadecimal numbers such as 3c7foj34c3jj973hjkop2fc937e3443.
- A cookie called **PHPSESSID** is automatically sent to the user's computer to store unique session identification string.
- A file is automatically created on the server in the designated temporary directory and bears the name of the unique identifier prefixed by sess_ ie sess_3c7foj34c3jj973hjkop2fc937e3443.

When a PHP script wants to retrieve the value from a session variable, PHP automatically gets the unique session identifier string from the PHPSESSID cookie and then looks in its temporary directory for the file bearing that name and a validation can be done by comparing both values.

A session ends when the user loses the browser or after leaving the site, the server will terminate the session after a predetermined period of time, commonly 30 minutes duration.

A PHP session is easily started by making a call to the **session_start()** function.This function first checks if a session is already started and if none is started then it starts one. It is recommended to put the call to **session_start()** at the beginning of the page.

Session variables are stored in associative array called **$_SESSION[]**. These variables can be accessed during lifetime of a session.

The following example starts a session then register a variable called **counter** that is incremented each time the page is visited during the session.

Make use of **isset()** function to check if session variable is already set or not.

Put this code in a test.php file and load this file many times to see the result −

```
<?php
   session_start();

   if( isset( $_SESSION['counter'] ) ) {
      $_SESSION['counter'] += 1;
   }else {
      $_SESSION['counter'] = 1;
   }

   $msg = "You have visited this page ".  $_SESSION['counter'];
   $msg .= "in this session.";
?>

<html>

   <head>
      <title>Setting up a PHP session</title>
   </head>

   <body>
      <?php  echo ( $msg ); ?>
   </body>

</html>
```

It will produce the following result −

```
You have visited this page 1in this session.
```

A PHP session can be destroyed by **session_destroy()** function. This function does not need any argument and a single call can destroy all the session variables. If you want to destroy a single session variable then you can use **unset()** function to unset a session variable.

Here is the example to unset a single variable −

```
<?php
   unset($_SESSION['counter']);
?>
```

Here is the call which will destroy all the session variables −

```
<?php
   session_destroy();
?>
```

You don't need to call start_session() function to start a session when a user visits your site if you can set **session.auto_start** variable to 1 in **php.ini** file.

There may be a case when a user does not allow to store cookies on their machine. So there is another method to send session ID to the browser.

Alternatively, you can use the constant SID which is defined if the session started. If the client did not send an appropriate session cookie, it has the form session_name=session_id. Otherwise, it expands to an empty string. Thus, you can embed it unconditionally into URLs.

The following example demonstrates how to register a variable, and how to link correctly to another page using SID.

```php
<?php
   session_start();

   if (isset($_SESSION['counter'])) {
      $_SESSION['counter'] = 1;
   }else {
      $_SESSION['counter']++;
   }

   $msg = "You have visited this page ".  $_SESSION['counter'];
   $msg .= "in this session.";

   echo ( $msg );
?>

<p>
   To continue  click following link <br />

   <a  href = "nextpage.php?<?php echo htmlspecialchars(SID); ?>">
</p>
```

It will produce the following result −

```
You have visited this page 1in this session.
To continue click following link
```

1.4 : INTRODUCTION OF JAVASCRIPT

Why Study JavaScript?

JavaScript is one of the **3 languages** all web developers **must** learn:

1. **HTML** to define the content of web pages
2. **CSS** to specify the layout of web pages
3. **JavaScript** to program the behavior of web pages

Web pages are not the only place where JavaScript is used. Many desktop and server programs use JavaScript. Node.js is the best known. Some databases, like MongoDB and CouchDB, also use JavaScript as their programming language.

JavaScript is a lightweight, interpreted **programming** language. It is designed for creating network-centric applications. It is complimentary to and integrated with Java. **JavaScript** is very easy to implement because it is integrated with HTML. It is open and cross-platform.

Javascript is a MUST for students and working professionals to become a great Software Engineer specially when they are working in Web Development Domain. I will list down some of the key advantages of learning Javascript:

- Javascript is the most popular **programming language** in the world and that makes it a programmer's great choice. Once you learnt Javascript, it helps you developing great front-end as well as back-end softwares using different Javascript based frameworks like jQuery, Node.JS etc.

- Javascript is everywhere, it comes installed on every modern web browser and so to learn Javascript you really do not need any special environment setup. For example Chrome, Mozilla Firefox , Safari and every browser you know as of today, supports Javascript.
- Javascript helps you create really beautiful and crazy fast websites. You can develop your website with a console like look and feel and give your users the best Graphical User Experience.
- JavaScript usage has now extended to mobile app development, desktop app development, and game development. This opens many opportunities for you as Javascript Programmer.
- Due to high demand, there is tons of job growth and high pay for those who know JavaScript. You can navigate over to different job sites to see what having JavaScript skills looks like in the job market.
- Great thing about Javascript is that you will find tons of frameworks and Libraries already developed which can be used directly in your software development to reduce your time to market.

There could be 1000s of good reasons to learn Javascript Programming. But one thing for sure, to learn any **programming language**, not only Javascript, you just need to code, and code and finally code until you become expert.

Just to give you a little excitement about **Javascript programming**, I'm going to give you a small conventional Javascript Hello World program, You can try it using Demo link

```
<html>
   <body>
      <script language = "javascript" type = "text/javascript">
         <!--
            document.write("Hello World!")
         //-->
      </script>
   </body>
</html>
```

There are many useful **Javascript frameworks** and libraries available:

- Angular

- React
- jQuery
- Vue.js
- Ext.js
- Ember.js
- Meteor
- Mithril
- Node.js
- Polymer
- Aurelia
- Backbone.js

It is really impossible to give a complete list of all the available Javascript frameworks and libraries. The Javascript world is just too large and too much new is happening.

JavaScript

As mentioned before, **JavaScript** is one of the most widely used **programming languages** (Front-end as well as Back-end). It has it's presence in almost every area of software development. I'm going to list few of them here:

- **Client side validation** - This is really important to verify any user input before submitting it to the server and Javascript plays an important role in validting those inputs at front-end itself.
- **Manipulating HTML Pages** - Javascript helps in manipulating HTML page on the fly. This helps in adding and deleting any HTML tag very easily using javascript and modify your HTML to change its look and feel based on different devices and requirements.
- **User Notifications** - You can use Javascript to raise dynamic pop-ups on the webpages to give different types of notifications to your website visitors.
- **Back-end Data Loading** - Javascript provides Ajax library which helps in loading back-end data while you are doing some other processing. This really gives an amazing experience to your website visitors.
- **Presentations** - JavaScript also provides the facility of creating presentations which gives website look and feel. JavaScript provides RevealJS and BespokeJS libraries to build a web-based slide presentations.
- **Server Applications** - Node JS is built on Chrome's Javascript runtime for building fast and scalable network applications. This is an event based library which helps in developing very sophisticated server applications including Web Servers.
- https://www.w3schools.com/js/js_intro.asp

.

Self-Review Questions (SRQ) For Study Session 11

Now that you have completed this study unit, you can assess how well you have achieved its Learning Outcomes by answering these questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting or Online interactive sessions. You can also check your answers at the Self-Review Answers section which is located at the end of this Module.

1. Describe about PHP arrays with examples? 2. What are Cookies? How we can setup, access, delete a Cookie with PHP? 3. How we can start and destroy Session in PHP with detail?	4. What are the benefit of learning JavaScript? Describe with detail. 5. Create a Login and logout form with Session Variable in PHP.

Self-Review Answers (SRA) for Study Unit 12

1. 1: Describe about PHP arrays with examples?

An array is a data structure that stores one or more similar type of values in a single value. For example if you want to store 100 numbers then instead of defining 100 variables its easy to define an array of 100 length.
There are three different kind of arrays and each array value is accessed using an ID c which is called array index.

- Numeric array − an array with a numeric index. Values are stored and accessed in linear fashion.
- Associative array − an array with strings as index. This stores element values in association with key values rather than in a strict linear index order.
- Multidimensional array − an array containing one or more arrays and values are accessed using multiple indices

Note: For Example please see above Slides

1. 2: What are Cookies? How we can setup, access, delete a Cookie with PHP?

Cookies are text files stored on the client computer and they are kept of use tracking purpose. PHP transparently supports HTTP cookies.

There are three steps involved in identifying returning users −

- Server script sends a set of cookies to the browser. For example name, age, or identification number etc.
- Browser stores this information on local machine for future use.
- When next time browser sends any request to web server then it sends those cookies information to the server and server uses that information to identify the user.

Note: Setting up, Access, Delete Cookies please see above slides.

3: How we can start and destroy Session in PHP with detail?

A PHP session is easily started by making a call to the **session_start()** function.This function first checks if a session is already started and if none is started then it starts one. It is recommended to put the call to **session_start()** at the beginning of the page.

Session variables are stored in associative array called **$_SESSION[]**. These variables can be accessed during lifetime of a session.

The following example starts a session then register a variable called **counter** that is incremented each time the page is visited during the session.

Make use of **isset()** function to check if session variable is already set or not.

Put this code in a test.php file and load this file many times to see the result −

```
<?php
   session_start();

   if( isset( $_SESSION['counter'] ) ) {
      $_SESSION['counter'] += 1;
   }else {
      $_SESSION['counter'] = 1;
   }

   $msg = "You have visited this page ".  $_SESSION['counter'];
   $msg .= "in this session.";
?>

<html>

   <head>
```

```
      <title>Setting up a PHP session</title>
   </head>

   <body>
      <?php  echo ( $msg ); ?>
   </body>

</html>
```

It will produce the following result −

```
You have visited this page 1in this session.
```

A PHP session can be destroyed by **session_destroy()** function. This function does not need any argument and a single call can destroy all the session variables. If you want to destroy a single session variable then you can use **unset()** function to unset a session variable.

Here is the example to unset a single variable −

```
<?php
   unset($_SESSION['counter']);
?>
```

Here is the call which will destroy all the session variables −

```
<?php
   session_destroy();
?>
```

You don't need to call start_session() function to start a session when a user visits your site if you can set **session.auto_start** variable to 1 in **php.ini** file.

There may be a case when a user does not allow to store cookies on their machine. So there is another method to send session ID to the browser.

Alternatively, you can use the constant SID which is defined if the session started. If the client did not send an appropriate session cookie, it has the form session_name=session_id. Otherwise, it expands to an empty string. Thus, you can embed it unconditionally into URLs.

The following example demonstrates how to register a variable, and how to link correctly to another page using SID.

```
<?php
   session_start();

   if (isset($_SESSION['counter'])) {
      $_SESSION['counter'] = 1;
   }else {
      $_SESSION['counter']++;
   }

   $msg = "You have visited this page ".  $_SESSION['counter'];
   $msg .= "in this session.";

   echo ( $msg );
?>
```

```
<p>
   To continue  click following link <br />

   <a  href = "nextpage.php?<?php echo htmlspecialchars(SID); ?>">
</p>
```

It will produce the following result −

```
You have visited this page 1in this session.
To continue click following link
```

4: What are the benefit of learning JavaScript? Describe with detail?

JavaScript is most commonly used as a **client side scripting language**. This means that JavaScript code is written into an HTML page. When a user requests an HTML page with JavaScript in it, the script is sent to the browser and it's up to the browser to do something with it.

The purpose of JavaScript language, when used in web development, is to manipulate the web page elements and to make it **dynamic.**

- Javascript has many **prewritten functionalities**, and you can make websites interactive with the users.
- JS can change HTML content, HTML styles, HTML attributes.
- It can detect what browser a person is using and **customize the webpages** to their browser.
- It **interacts** with multiple frames.
- You can add **Animations, arts** on the webpage.
- You can make **web applications** with help of JS.
- Provide users with helpful **feedbacks.**
- Examine or change HTML form data.

- **Other uses for JavaScript include security password creation, check forms, interactive games, and special effects. It's also used to build mobile apps and create server-based applications.**

5: Create a Login and logout form with Session Variable in PHP.

For practice use following website …..

https://www.studentstutorial.com/php/login-logout-with-session

https://www.wdb24.com/session-in-php-example-for-login-logout/

References and Additional Reading Materials

- https://www.w3schools.com/php/php_ref_array.asp
- https://www.w3schools.com/php/php_cookies.asp
- https://www.w3schools.com/php/php_sessions.asp
- https://www.tutorialspoint.com/php/php_introduction.htm
- https://www.tutorialspoint.com/php/index.htm