Chapter 3: Creating Dynamic Web Sites

PHP Form Handling

The PHP superglobals $_GET and $_POST are used to collect form-data.

The example below displays a simple HTML form with two input fields and a submit button:

Ex:

```
<html>
   <body>
      <form action="welcome.php" method="post">
      Name: <input type="text" name="name"><br>
      E-mail: <input type="text" name="email"><br>
      <input type="submit">
      </form>
   </body>
</html>
```

- When the user fills out the form above and clicks the submit button, the form data is sent for processing to a PHP file named "welcome.php". The form data is sent with the HTTP POST method.
- To display the submitted data you could simply echo all the variables. The "welcome.php" looks like this:

```
<html>
   <body>
      Welcome <?php echo $_POST["name"]; ?><br>
      Your email address is: <?php echo $_POST["email"]; ?>
   </body>
</html>
```

- The same result could also be achieved using the HTTP GET method:

```
<html>
   <body>
        <form action="welcome_get.php" method="get">
        Name: <input type="text" name="name"><br>
        E-mail: <input type="text" name="email"><br>
        <input type="submit">
        </form>
   </body>
</html>
```

and "welcome_get.php" looks like this:

```
<html>
   <body>
      Welcome <?php echo $_GET["name"]; ?><br>
      Your email address is: <?php echo $_GET["email"]; ?>
   </body>
</html>
```

GET vs. POST

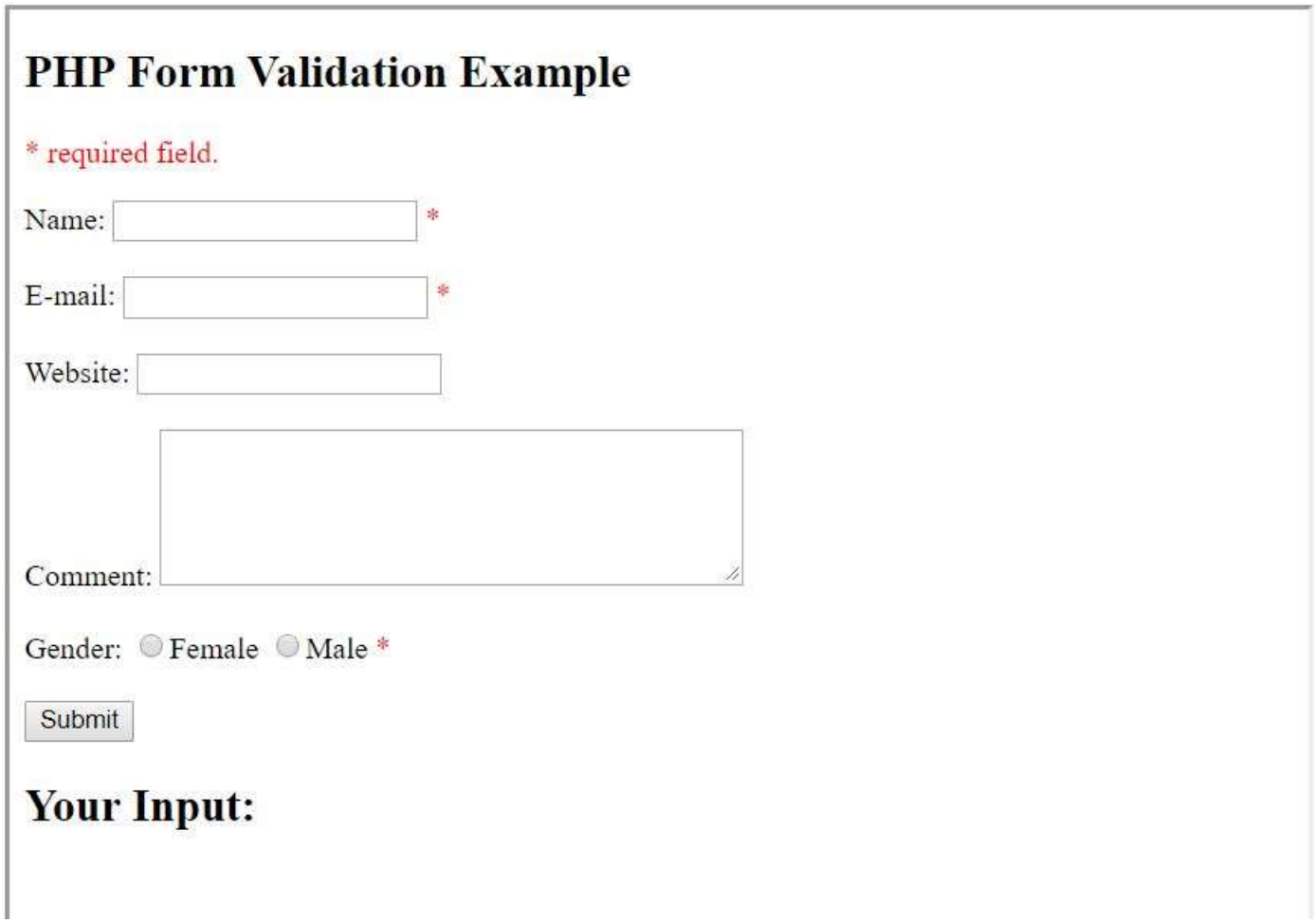
$_GET is an array of variables passed to the current script via the URL parameters.
$_POST is an array of variables passed to the current script via the HTTP POST method.

- **When to use GET?**
  - 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. The limitation is about 2000 characters. However, because the variables are displayed in the URL, it is possible to bookmark the page. This can be useful in some cases.
  - GET may be used for sending non-sensitive data.
- **When to use POST?**
  - 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.
  - the variables are not displayed in the URL, it is not possible to bookmark the page.

Form Validation

The HTML form we will be working at in these chapters, contains various input fields: required and optional text fields, radio buttons, and a submit button:

Think SECURITY when processing PHP forms!



The validation rules for the form above are as follows:

Field	Validation Rules
Name	Required. + Must only contain letters and whitespace
E-mail	Required. + Must contain a valid email address (with @ and .)
Website	Optional. If present, it must contain a valid URL
Comment	Optional. Multi-line input field (textarea)
Gender	Required. Must select one

➢ Text Fields

The name, email, and website fields are text input elements, and the comment field is a textarea. The HTML code looks like this:

```
Name: <input type="text" name="name">
E-mail: <input type="text" name="email">
Website: <input type="text" name="website">
Comment: <textarea name="comment" rows="5" cols="40"></textarea>
```

➢ Radio Buttons

The gender fields are radio buttons and the HTML code looks like this:

```
Gender:
<input type="radio" name="gender" value="female">Female
<input type="radio" name="gender" value="male">Male
```

➢ The Form Element

The HTML code of the form looks like this:

```
<form method="post" action="<?php echo htmlspecialchars($_SERVER["PHP_SELF"]);?>">
```

- **What is the $_SERVER["PHP_SELF"] variable?**
  The $_SERVER["PHP_SELF"] is a super global variable that returns the filename of the currently executing script.
  So, the $_SERVER["PHP_SELF"] sends the submitted form data to the page itself, instead of jumping to a different page. This way, the user will get error messages on the same page as the form.
- **What is the htmlspecialchars() function?**
  The htmlspecialchars() function converts special characters to HTML entities. This means that it will replace HTML characters like < and > with < and >. This prevents attackers from exploiting the code by injecting HTML or Javascript code (Cross-site Scripting attacks) in forms

➢ Validate Form Data With PHP

- The first thing we will do is to pass all variables through PHP's htmlspecialchars() function.

  When we use the htmlspecialchars() function; then if a user tries to submit the following in a text field:

  ```
  <script>location.href('http://www.hacked.com')</script>
  ```

  This would not be executed, because it would be saved as HTML escaped code, like this:

  ```
  &lt;script&gt;location.href('http://www.hacked.com')&lt;/script&gt;
  ```

  The code is now safe to be displayed on a page or inside an e-mail.

- We will also do two more things when the user submits the form:
  1. Strip unnecessary characters (extra space, tab, newline) from the user input data (with the PHP **trim()** function).
  2. Remove backslashes (\) from the user input data (with the PHP **stripslashes()** function).

  Ex:

```php
<?php
// define variables and set to empty values
$name = $email = $gender = $comment = $website = "";

if ($_SERVER["REQUEST_METHOD"] == "POST") {
  $name = test_input($_POST["name"]);
  $email = test_input($_POST["email"]);
  $website = test_input($_POST["website"]);
  $comment = test_input($_POST["comment"]);
  $gender = test_input($_POST["gender"]);
}

function test_input($data) {
  $data = trim($data);
  $data = stripslashes($data);
  $data = htmlspecialchars($data);
  return $data;
}
?>
```

Required Fields

In the following code we have added some new variables: $nameErr, $emailErr, $genderErr, and $websiteErr. These error variables will hold error messages for the required fields. We have also added an if else statement for each $_POST variable. This checks if the $_POST variable is empty (with the PHP empty() function). If it is empty, an error message is stored in the different error variables, and if it is not empty, it sends the user input data through the test_input() function:

```
<?php
// define variables and set to empty values
$nameErr = $emailErr = $genderErr = $websiteErr = "";
$name = $email = $gender = $comment = $website = "";
if ($_SERVER["REQUEST_METHOD"] == "POST") {
  if (empty($_POST["name"])) {
    $nameErr = "Name is required";
  } else {
    $name = test_input($_POST["name"]);
  }
  if (empty($_POST["email"])) {
    $emailErr = "Email is required";
  } else {
    $email = test_input($_POST["email"]);
  }
  if (empty($_POST["website"])) {
    $website = "";
  } else {
    $website = test_input($_POST["website"]);
  }
  if (empty($_POST["comment"])) {
    $comment = "";
  } else {
    $comment = test_input($_POST["comment"]);
  }
  if (empty($_POST["gender"])) {
    $genderErr = "Gender is required";
  } else {
    $gender = test_input($_POST["gender"]);
  }
}
?>
```

Display The Error Messages

Then in the HTML form, we add a little script after each required field, which generates the correct error message if needed (that is if the user tries to submit the form without filling out the required fields):

```
<form method="post" action="<?php echo htmlspecialchars($_SERVER["PHP_SELF"]);?>">
Name: <input type="text" name="name">
<span class="error">* <?php echo $nameErr;?></span>
<br><br>
E-mail:
<input type="text" name="email">
<span class="error">* <?php echo $emailErr;?></span>
<br><br>
Website:
<input type="text" name="website">
<span class="error"><?php echo $websiteErr;?></span>
<br><br>
Comment: <textarea name="comment" rows="5" cols="40"></textarea>
<br><br>
Gender:
<input type="radio" name="gender" value="female">Female
<input type="radio" name="gender" value="male">Male
<span class="error">* <?php echo $genderErr;?></span>
<br><br>
<input type="submit" name="submit" value="Submit">
</form>
```

Forms - Validate Name , E-mail and URL

- **Validate Name**

  The code below shows a simple way to check if the name field only contains letters and whitespace. If the value of the name field is not valid, then store an error message:

```
$name = test_input($_POST["name"]);
if (!preg_match("/^[a-zA-Z ]*$/",$name)) {
  $nameErr = "Only letters and white space allowed";
}
```

  Note: The **preg_match()** function searches a string for pattern, returning true if the pattern exists, and false otherwise.

- **Validate E-mail**

  The easiest and safest way to check whether an email address is well-formed is to use PHP's **filter_var()** function.

  In the code below, if the e-mail address is not well-formed, then store an error message:

```
$email = test_input($_POST["email"]);
if (!filter_var($email, FILTER_VALIDATE_EMAIL)) {
  $emailErr = "Invalid email format";
}
```

- **Validate URL**

  The code below shows a way to check if a URL address syntax is valid (this regular expression also allows dashes in the URL). If the URL address syntax is not valid, then store an error message:

```
$website = test_input($_POST["website"]);
if (!preg_match("/\b(?:(?:https?|ftp):\/\/|www\.)[-a-z0-
9+&@#\/%?=~_|!:,.;]*[-a-z0-9+&@#\/%=~_|]/i",$website)) {
  $websiteErr = "Invalid URL";
}
```

Keep the Values in The Form

To show the values in the input fields after the user hits the submit button, we add a little PHP script inside the value attribute of the following input fields: name, email, and website. In the comment textarea field, we put the script between the <textarea> and </textarea> tags. The little script outputs the value of the $name, $email, $website, and $comment variables.

Then, we also need to show which radio button that was checked. For this, we must manipulate the checked attribute (not the value attribute for radio buttons):

```
Name: <input type="text" name="name" value="<?php echo $name;?>">
E-mail: <input type="text" name="email" value="<?php echo $email;?>">
Website: <input type="text" name="website" value="<?php echo $website;?>">
Comment: <textarea name="comment" rows="5" cols="40"><?php echo
$comment;?></textarea>
Gender:
<input type="radio" name="gender"
<?php if (isset($gender) && $gender=="female") echo "checked";?>
value="female">Female
<input type="radio" name="gender"
<?php if (isset($gender) && $gender=="male") echo "checked";?>
value="male">Male
```

Now, the script looks like this:

```
<!DOCTYPE HTML>
<html>
<head>
<style>
.error {color: #FF0000;}
</style>
</head>
<body>

<?php
// define variables and set to empty values
$nameErr = $emailErr = $genderErr = $websiteErr = "";
$name = $email = $gender = $comment = $website = "";

if ($_SERVER["REQUEST_METHOD"] == "POST") {
  if (empty($_POST["name"])) {
    $nameErr = "Name is required";
  } else {
    $name = test_input($_POST["name"]);
    // check if name only contains letters and whitespace
    if (!preg_match("/^[a-zA-Z ]*$/",$name)) {
      $nameErr = "Only letters and white space allowed";
    }
  }

  if (empty($_POST["email"])) {
    $emailErr = "Email is required";
  } else {
    $email = test_input($_POST["email"]);
    // check if e-mail address is well-formed
    if (!filter_var($email, FILTER_VALIDATE_EMAIL)) {
      $emailErr = "Invalid email format";
    }
  }
  if (empty($_POST["website"])) {
    $website = "";
  } else {
    $website = test_input($_POST["website"]);
    // check if URL address syntax is valid (this regular expression also
allows dashes in the URL)
    if (!preg_match("/\b(?:(?:https?|ftp):\/\/|www\.)[-a-z0-
9+&@#\/%?=~_|!:,.;]*[-a-z0-9+&@#\/%=~_|]/i",$website)) {
      $websiteErr = "Invalid URL";
    }
  }
```

```
  if (empty($_POST["comment"])) {
    $comment = "";
  } else {
    $comment = test_input($_POST["comment"]);
  }

  if (empty($_POST["gender"])) {
    $genderErr = "Gender is required";
  } else {
    $gender = test_input($_POST["gender"]);
  }
}

function test_input($data) {
  $data = trim($data);
  $data = stripslashes($data);
  $data = htmlspecialchars($data);
  return $data;
}
?>

<h2>PHP Form Validation Example</h2>
<p><span class="error">* required field.</span></p>
<form method="post" action="<?php echo htmlspecialchars($_SERVER["PHP_SELF"]);?
>">
  Name: <input type="text" name="name" value="<?php echo $name;?>">
  <span class="error">* <?php echo $nameErr;?></span>
  <br><br>
  E-mail: <input type="text" name="email" value="<?php echo $email;?>">
  <span class="error">* <?php echo $emailErr;?></span>
  <br><br>
  Website: <input type="text" name="website" value="<?php echo $website;?>">
  <span class="error"><?php echo $websiteErr;?></span>
  <br><br>
  Comment: <textarea name="comment" rows="5" cols="40"><?php echo $comment;?></
textarea>
  <br><br>
  Gender:
  <input type="radio" name="gender" <?php if (isset($gender) &&
$gender=="female") echo"checked";?> value="female">Female
  <input type="radio" name="gender" <?php if (isset($gender) &&
$gender=="male") echo"checked";?> value="male">Male
  <span class="error">* <?php echo $genderErr;?></span>
  <br><br>
  <input type="submit" name="submit" value="Submit">
</form>
```

```
<?php
echo "<h2>Your Input:</h2>";
echo $name;
echo "<br>";
echo $email;
echo "<br>";
echo $website;
echo "<br>";
echo $comment;
echo "<br>";
echo $gender;
?>
</body>
</html>
```

Assignment 2: Write the needed HTML code to make a form that has the fields presented below, then use PHP to collect the values and print them as shown below: