

Psychology Experiments on the Web Using PHP and MySQL

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1 Basic Web Authoring

1.1 Setting up your webpage

If you do not already have a webpage, you may need to create a webpage folder.
(a) directions for PCs at work (b) directions for elsewhere.

1. Go to your filespace:
 - (a) Open the H: drive
 - (b) (or) Open the terminal (mac) and type `ssh -l psy### sysa.abdn.ac.uk`
or the Run command (PC) and type `telnet sysa.abdn.ac.uk`
2. Create a public.htm folder:
 - (a) Make a new folder and name it public.htm
 - (b) (or) type `mkdir ~/public.htm`
3. Publish the folder:

- (a) Go to <http://www.abdn.ac.uk/local/publish.htm>
- (b) (or) type `www.publish`

See also <http://www.abdn.ac.uk/diss/webpack/factsheet10.shtml>

1.2 HTML

It is essential to be able to write web pages from scratch (without an HTML editor such as Dreamweaver) in order to make dynamic web pages with PHP. You can edit your web pages with any text editor. I recommend jEdit (<http://www.jedit.org/>) for Mac and PC.

1.2.1 HTML Template

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
    "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en">
<head>
    <title>TITLE TO APPEAR IN BROWSER TITLE BAR</title>
    <meta http-equiv="Content-Type" content="application/xhtml+xml; charset=utf-8">
    <meta name="author" content="YOUR NAME" />
    <meta name="description" content="SHORT DESCRIPTION OF YOUR SITE" />
    <link rel="shortcut icon" href="/~psy###/php_practice/images/favicon.ico">
    <link rel="stylesheet" type="text/css"
        href="/~psy###/php_practice/include/style.css">
</head>
<body>

<h1>TITLE OF PAGE</h1>

<!-- MENU OF WEBPAGE -->

<ul id="menu">
    <li><a href="/~psy###/php_practice/">Home</a></li>
    <li><a href="/~psy###/php_practice/pubs/">Publications</a></li>
    <li><a href="/~psy###/php_practice/research/">Research</a></li>
</ul>

<!-- CONTENTS OF WEBPAGE -->

<p>PARAGRAPH OF WORDS</p>

<div class="buttons">
    <a href="http://www.abdn.ac.uk/psychology">Aberdeen Psychology</a>
</div>
```

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

1.2.2 Images

Images are fairly easy to insert into a webpage. It is good practice to keep all of your image files in a separate folder, usually named “images”. There are a few ways to display images.

```
<head>
<style type="text/css">
  #banana {
    width: 135px; height: 101px;
    background: url(/~psy###/php_practice/images/banana.jpg) no-repeat top left;
  }
</style>
</head>

<body>
<h2>Using the img tag</h2>
  

<h2>As the background of a div</h2>
  <div id="banana"></div>
</body>
```

1.2.3 Web Forms

Web forms are one of the main ways to collect data from your participants. There are several types of form inputs. The example below uses all of them.

```
<form action="/~psy###/php_practice/scripts/login.php"
  method="post" enctype="multipart/form-data">

<ul class="formlist">
  <!-- USERNAME (text input) -->
  <li>
    <label for="username">Username</label>
    <input name="username" id="username" type="text" />
  </li>

  <!-- PASSWORD (password input) -->
  <li class="shade">
    <label for="password">Password</label>
    <input name="password" id="password" type="password" />
  </li>
```

```

<!-- SEX (radiobutton input) -->
<li>
  <label for="sex">Sex</label>
  <ul class="radiogroup" id="sex">
    <li><input name="sex" id="male" type="radio" />
      <label for="male">Male</label></li>
    <li><input name="sex" id="female" type="radio" />
      <label for="female">Female</label></li>
  </ul>
</li>

<!-- YEAR (single option select input) -->
<li class="shade">
  <label for="year">Year in school</label>
  <select name="year" id="year">
    <option value="NULL"></option>
    <option value="1">First</option>
    <option value="2">Second</option>
    <option value="3">Third</option>
    <option value="4">Fourth</option>
    <option value="5">Postgrad</option>
    <option value="6">Staff</option>
  </select>
</li>

<!-- PETS (multiple option select input) -->
<li>
  <label for="pets">Pets<br />
    <span class="note">hold down cntl or cmd to select more than one</span>
  </label>
  <select multiple name="pets" id="pets" size="6">
    <option value="none">None</option>
    <option value="cat">Cat</option>
    <option value="dog">Dog</option>
    <option value="ferrett">Ferrett</option>
    <option value="fish">Fish</option>
    <option value="other">Other</option>
  </select>
</li>

<!-- ETHNICITY (checkbox input) -->
<li class="shade">
  <label for="ethnicity">Ethnicity</label>
  <ul class="checkboxgroup" id="ethnicity">
    <li><input name="euro" id="euro" type="checkbox" />

```

```

        <label for="euro">European</label></li>
    <li><input name="easian" id="easian" type="checkbox" />
        <label for="easian">East Asian</label></li>
    <li><input name="wasian" id="wasian" type="checkbox" />
        <label for="wasian">West Asian</label></li>
    <li><input name="african" id="african" type="checkbox" />
        <label for="african">African</label></li>
</ul>
</li>

<!-- PICTURE (file upload input) -->
<li>
    <label for="picture">Upload your picture</label>
    <input name="picture" id="picture" type="file" />
</li>
</ul>

<!-- (submit and reset buttons) -->
<div class="buttons">
    <input value="Submit" type="submit" />
    <input value="Clear" type="reset" />
</div>
</form>

```

1.3 CSS

Cascading Style Sheets (CSS) are a way to organise what your webpage looks like in a way that is easy to edit and saves on loading time of your pages.

You can put general CSS commands in a file that is referenced in every webpage on your site and you can put more specialised commands that may only be used on one page in the header of that page.

1.3.1 Without CSS

Here is an excerpt from the Chronicle of Higher Education's advice page. Notice how the same style is applied over and over again, wasting time, bandwidth, and making it very difficult to change.

```

<TD colspan=2 valign=top style="padding-right: 3px;
border-right: 1px solid #989A9E; border-bottom: 1px solid #989A9E;
background: #E0DFD4;">
    <DIV style="padding-bottom: 3px; margin-bottom: 5px;" ID="newsList">
        <A HREF="/news/" style="display: block;
font: 8pt arial, helvetica, sans-serif;
color: #294F83; margin: 3px 3px 6px 9px; padding: 0 0 3px 0;
border-bottom: 1px dashed #ADABA1; text-decoration: none;">

```

```

    Today"s news</A>
<A HREF="/chronicle/" style="display: block;
font: 8pt arial,Helvetica,sans-serif;
color: #294F83; margin: 3px 3px 6px 9px; padding: 0 0 3px 0;
border-bottom: 1px dashed #ADABA1; text-decoration: none;">
    Current issue</A>
<A HREF="/special/" style="display: block;
font: 8pt arial,Helvetica,sans-serif;
color: #294F83; margin: 3px 3px 6px 9px; padding: 0 0 3px 0;
border-bottom: 1px dashed #ADABA1; text-decoration: none;">
    Special issues</A>
<A HREF="/faculty/" style="display: block;
font: 8pt arial,Helvetica,sans-serif;
color: #294F83; margin: 3px 3px 6px 9px; padding: 0 0 3px 0;
border-bottom: 1px dashed #ADABA1; text-decoration: none;">
    The Faculty</A>
    ... (this goes on for a page) ...
</DIV>
</TD>

```

1.3.2 With CSS

Instead, you can turn each different style into a rule and only write it once in a separate file that will apply to every webpage on your site. Then, if you want to change the fonts for all your news list items, you just have to edit one line.

```

/* Sample CSS for the Chronicle of Higher Education */
td.nL {
    padding-right: 3px;
    border-right: 1px solid #989A9E;
    border-bottom: 1px solid #989A9E;
    background: #E0DFD4;
}
#newsList { padding-bottom: 3px; margin-bottom: 5px; }
#newsList a {
    display: block;
    font: 8pt arial,Helvetica,sans-serif;
    color: #294F83;
    margin: 3px 3px 6px 9px;
    padding: 0 0 3px 0;
    border-bottom: 1px dashed #ADABA1;
    text-decoration: none;
}

```

This is the same excerpt after converting it to use CSS.

```
<TD colspan=2 valign=top class="nL">
```

```

<DIV id="newsList">
  <A HREF="/news/" >Today"s news</A>
  <A HREF="/chronicle/">Current issue</A>
  <A HREF="/special/">Special issues</A>
  <A HREF="/faculty/">The Faculty</A>
  ... (this goes on for a few more lines) ...
</DIV>
</TD>

```

1.3.3 CSS Template

The online CSS Reference is the best source for learning about CSS. You should be able to modify the basic template below to suit your needs.

```

/*-----
CSS for all pages in my php_practice webpage

PAGE COLORS
  background: #FFF (white)
  text: #151515 (very dark grey)
  titles: #900 (dark red)
  highlights: #C00 (red)
  shading: #999 (med grey)
-----*/

/*-----
PAGE BODY
-----*/

/* zero the margins, paddings and borders for all elements */
* {
  margin: 0;
  padding: 0;
  border: 0;
}
body {
  font-family: "Lucida Grande", Helvetica, Arial, sans-serif;
  font-size: medium;
  color: #151515;
  background-color: #FFF;
  margin: 0px 10% 0px 10%;
}
h1 {
  font-size: 3em;
  font-weight: bold;
  text-align: center;

```

```

        color: #900;
    }
    p {
        text-align: left;
        padding: 3px;
    }
    hr {
        clear: both;
        width: 100%;
    }

/***** TEXT LINKS *****/
a:link, a:visited, a:hover, a:active {
    text-decoration: none;
    border-bottom: 1px dotted #C00;
}
a:link { color: #C00; }
a:visited { color: #900; }
a:hover, a:active { color: #FFF; background-color: #C00; }

/***** IMAGE LINKS *****/
a img {
    background-color: #FFF;
    border: 1px solid white;
}
a:hover img { border: 1px solid #999; }

/***** BASIC LISTS *****/
ul {
    list-style: none;
    padding: 0;
    margin: .5em;
}
li {
    background-repeat: no-repeat;
    background-position: 0 5px;
    padding: 2px 10px 2px 20px;
}

/***** MENU *****/
#menu li { display: inline; }
#menu a { padding: 2px 3px; }
#menu a:link, #menu a:visited {
    border: 1px dashed #C00;
    background-color: #FFF;
    color: #C00;
}

```

```

}
#menu a:hover, #menu a:active, #menu a.current {
    background-color: #C00;
    color: #FFF;
}

/***** BUTTONS *****/
.buttons {
    padding: 6px;
    text-align: center;
    clear: both;
}
.buttons input, .buttons a {
    border: 2px solid #999;
    background-color: #FFF;
    color: #000;
    text-align: center;
    padding: 3px;
}
.buttons input:hover, .buttons a:hover, .buttons a:active {
    border-color: #C00;
    background-color: #DDD;
    color: #000;
}

/***** FORMS *****/
form {
    width: 450px;
    margin: 1em auto;
    border: 3px solid #999;
    background-color: #EEE;
    color: #151515;
    padding: 10px;
}
input, select {
    border: 1px dotted #C00;
}
.shade { background-color: #EEE; }
label .note { font-size: 9px; }

.formlist {
    clear: both;
}
.formlist li {
    clear: both;
    padding: 3px;
}

```

```

}
.formlist li>label:first-child {
    float: left;
    text-align: right;
    width: 35%;
}
.formlist li input, .formlist li select, .formlist li ul {
    float: right;
    text-align: left;
    width: 60%;
    margin: 0;
    padding: 0;
}

.radiogroup, .checkboxgroup { list-style: none; }
.formlist li .checkboxgroup *, .formlist li .radiogroup * {
    float: none;
}

```

1.4 JavaScript

JavaScript (technically called ECMAScript) is a way to get the users' computers to do work for you. While PHP is server-side scripting (your local webserver does all the work), JS is client-side scripting. Some people turn off the JS capabilities of their browser because of security issues, but most people can use sites with JS. I am not going to teach you much about JS, but we may use it in conjunction with PHP to make some things easier for users with JS turned on.

I use JS in experiments to reduce the work load on the server. Without JS, participants had to run a script to generate a new webpage and download it for every trial and the server had to keep track of the random order of trials for each participant. With JS, each user's computer randomises the order of trials and just downloads the new images for each trial, instead of running a script to generate a new webpage. JS can also allow you to collect more accurate timing information for trials.

1.5 References

- XHTML Reference - <http://www.w3schools.com/xhtml>
- Web Forms - <http://www.webstandards.org/learn/tutorials/accessible-forms>
- CSS Reference - <http://www.w3schools.com/css>
- CSS Zen Garden - <http://www.csszengarden.com>
- Colour Scheme Generator - <http://wellstyled.com/tools/colourscheme2>
- JavaScript Tutorial - <http://www.w3schools.com/js>

2 PHP

2.1 Accessing PHP

2.1.1 On the University Server

2.1.2 On Your Own Computer

2.2 Basic PHP

2.3 Iteration

2.4 Functions

2.5 Exercises

2.5.1 Publication List

2.5.2 Questionnaire

2.6 References

- PHP Reference Manual - <http://uk.php.net/manual/en/>
- PHP Function Index (for Mac OS X) - <http://www.artissoftware.com/phpfi/>

3 MySQL

3.1 Accessing MySQL

3.1.1 On the University Server

3.2 Helper Files

3.2.1 .login

Add the following text to your .login file:

```
## My Settings ##  
source .alias  
set no beep  
setenv EDITOR pico
```

3.2.2 .alias

A .alias file holds all of the shortcuts you would rather not type repeatedly. Add a line that reads "alias shortname command" for any aliases you want to make. Make a .alias file with the following text:

```
setenv PATH /local/bin/mysql:$PATH
```

```
alias dbname mysql -h mysql.abdn.ac.uk -u psy###_dbname -p***** psy###_dbname
alias dump_dbname mysqldump -h mysql.abdn.ac.uk -u psy###_dbname -p***** psy###_dbname
```

3.2.3 On Your Own Computer

3.3 Basic SQL

3.4 SQL Templates

3.5 Backing Up Your Data

3.6 Exercises

3.6.1 Make a Publication Database

3.6.2 Make an Experiment Database

3.7 References

- MySQL Reference Manual - <http://dev.mysql.com/doc/mysql/en/index.html>

4 Integrating

4.0.1 Tracking Publications

4.0.2 Creating a Publication Database

4.0.3 Displaying database entries on your Webpage

4.0.4 Web form for editing Publication Information

4.1 Login and Registration

4.1.1 Creating a Participant Database Table

4.1.2 Checking Passwords

4.1.3 Recording Logins

4.2 Questionnaires

4.2.1 Creating a Questionnaire Database Table

4.2.2 PHP Functions for Questionnaires

4.2.3 Recording Data

4.3 Image Preference Experiments

4.3.1 Creating an Experiment Database Table

4.3.2 PHP Functions for Experiments

4.3.3 JavaScript for Reaction Time

4.3.4 Recording Data