Computer Science 571 Exam #1
Prof. Papa
Thursday, February 26, 2015, 5:30pm – 6:40pm

Name:_____   Student Id Number: _____

1. This is a closed book exam.
2. Please answer all questions.
3. Place all answers on the exam and return the entire exam.

PHP QUESTIONS [20 PTS]

Below are two screenshots of a web page, an initial screenshot, and then another screenshot after some fields have been filled in and the Submit button is clicked. Below is the PHP code that was used. Some lines have missing code Provide the missing code.

PHP Form Validation Example

* required field.

Name: [_____] *

E-mail: [_____] *

Website: [_____]

Comment: [_____]

Gender: ○Female ○Male *

[Submit]

Your Input:

PHP Form Validation Example

* required field.

Name: [_____] * Name is required

E-mail: [papa@usc.edu] *

Website: [_____]

Comment: [_____]

Gender: ○Female ●Male *

[Submit]

Your Input:

papa@usc.edu

male

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

<?php
```

```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 (upper and
lowercase) 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"]);
     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"]) ;
   }
}
```

```php
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>";
```
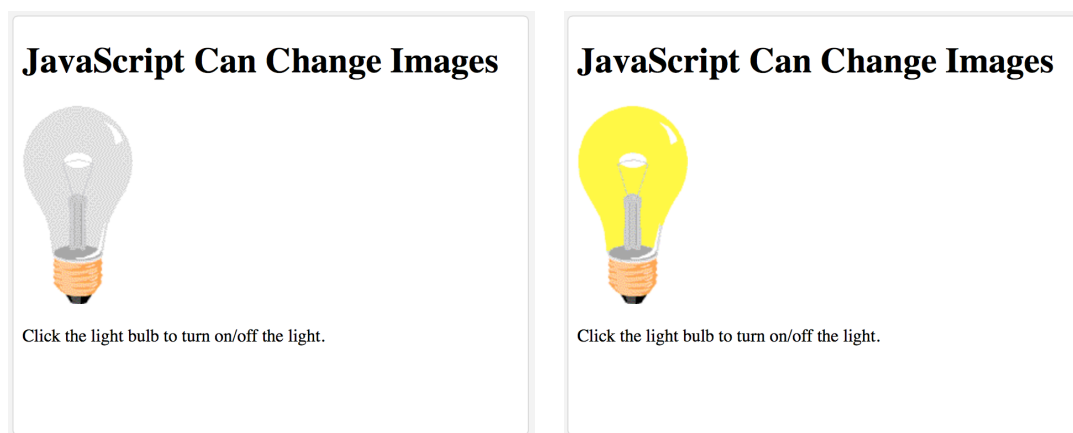
```php
echo $comment;
echo "<br>";
echo $gender;
?>

</body>
</html>
```

DOM / JAVASCRIPT QUESTIONS [20 PTS]

Below is an outline for a JavaScript program using DOM functions and "dot" notation that turns on and off the image of a bulb, when clicked, as shown in the before and after pictures below.

Your task is to fill in the missing JavaScript code so that the program works correctly. Notice that there are two images: `pic_bulboff.gif` and `pic_bulbon.gif`.

```html
<h1>JavaScript Can Change Images</h1>

<img id="myImage" onclick="changeImage()"
src="pic_bulboff.gif" width="100" height="180">

<p>Click the light bulb to turn on/off the light.</p>

<script>
function changeImage() {
    var image = document.getElementById('myImage');
    if (image.src.match("bulbon")) {
        image.src = "pic_bulboff.gif";
    } else {
        image.src = "pic_bulbon.gif";
    }
}
</script>
```
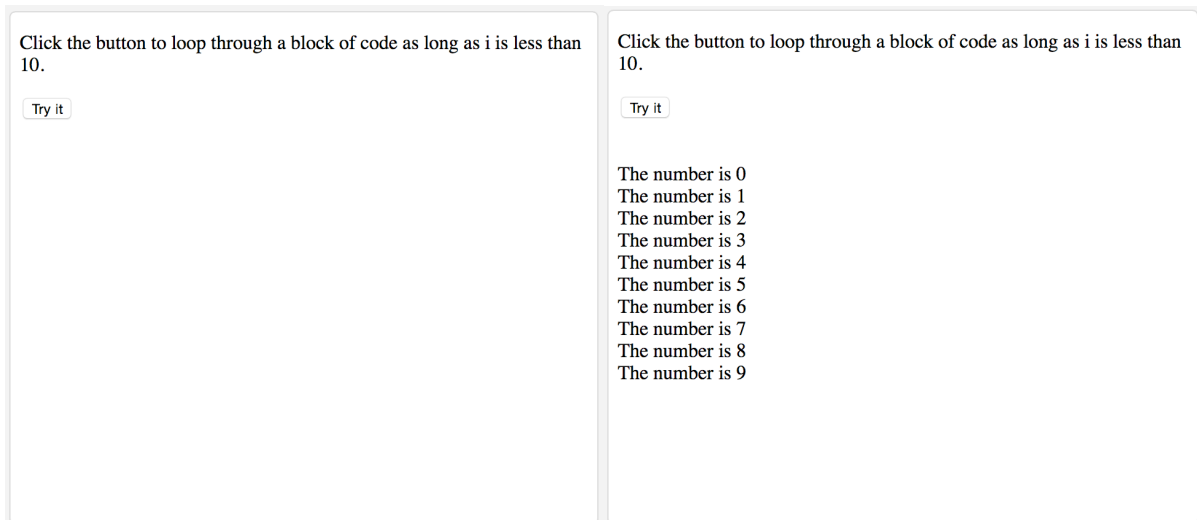
```
</body>
</html>
```

Below is an outline for a JavaScript program using DOM functions and "dot" notation, with a "Try it" button that, when clicked, produces the output as shown in the before and after pictures below.

Click the button to loop through a block of code as long as i is less than 10.

Try it

Click the button to loop through a block of code as long as i is less than 10.

Try it

The number is 0
The number is 1
The number is 2
The number is 3
The number is 4
The number is 5
The number is 6
The number is 7
The number is 8
The number is 9

Your task is to fill in the missing JavaScript code so that the program works correctly. You must use a "while" loop statement, as indicated.

```
<!DOCTYPE html>
<html>
<body>
<p>Click the button to loop through a block of code as long
as i is less than 10.</p>

<button onclick="myFunction()">Try it</button>

<p id="demo"></p>

<script>
function myFunction() {
    var text = "";
    var i = 0;
    while (i < 10) {
        text += "<br>The number is " + i;
        i++;
    }
    document.getElementById("demo").innerHTML = text;
}
```

```
</script>

</body>
</html>
```

CSS QUESTIONS [16 PTS]

Below are lines extracted from the CSS style sheet of cbsnews.com. For each line answer the question. Each question is worth 2 points.

Q1. Give an HTML example usage of the declaration below:

```
.contentWrap #contentMain .centerColumn
      {width:380px;
      float:left;
      margin:0;}
```

A1.

```
<div class="contentWrap">
      <strong id="contentMain">
            <h1 class="centerColumn"> This is centered</h1>
      </strong>
</div>
```

Q2. What does this declaration do?

```
.isGeneric .contentWrap{margin:20px 20px 0;}
```

A2. Declares two classes that, when BOTH applied, reset the margins.

Q3. Give one (1) HTML example of usage of the declaration below:

```
a img,:link img,:visited img{border:0;}
```

A3.

```
<a href="http://mycompany.com">
      <img src=http://anyimage.png>Image </img>
</a>
```

Q4. Give an HTML example usage of the declaration below, with 4 nested elements:

```
.showNav ul {
      height:16px;
      padding:5px 0 0;
      float:left;
```

```
      width:620px;
      margin:0 20px 0 0;
}

.showNav ul li {
      display:block;
      float:left;
      padding: 1px 8px 0 8px;
}

.showNav ul li a:hover{color:#202022;}
```

A4.

```
<div class="showNav">
      <ul>
            <li>
                  <a href="abc.html">Some navigation</a>
            </li>
      </ul>
</div>
```

WEB SERVER QUESTIONS [10 PTS]

Suppose you are a small startup company in the United States selling imported tennis balls from Indonesia. Your company is called IndoTennis and you have 3 employees. You intend to sell the imported tennis balls to any and all customers who visit your website and wish to purchase them. Unfortunately your company has little money to spare and you can only afford one computer to host your website. You have no budget for software and OS purchase. **Provide short answers to each question below.**

1. What operating system will the computer likely run?

Linux/Fedora/Debian/Ubuntu (Any Linux flavour)

2. What web server will the computer likely run?

Apache or NgiNX

3. How do you get a static IP address to associate to your website?

From the ISP or the service provider you are getting services from.

4. How do you sign up for a domain name, say www.indotennis.com?

You register the domain name with an ICANN approved registrar

7

5. Name two critical features of your web server you will need to configure in order to host the website?

Any two of Server Root, Document Root, Location of Server cgi scripts

6. What features of your web server will you need to configure in order to process secure transactions of purchases of tennis balls?

Configure SSL (HTTPS), Obtain certificate from a CA

7. How would you arrange to have your content developers use a separate web server to develop new web pages without affecting the existing website?

Run a web server on a different port or virtually hosting another web site on the same server

8. How will you keep track of how many people visit your website?

By looking at the access log entries or using Google Analytics

9. How will you keep track of each and every purchase that is made?

By using a database in which all purchases can be recorded and an inventory can be maintained

10. What file or file(s) have to be created/set in order to establish a secure directory, accessible with Basic Authentication?

.htaccess and .htpasswd

WEB SERVER/HTTP QUESTIONS [14 PTS]

Below is a portion of an Apache web server access_log file.

```
64.221.222.142 - - [29/Sep/2006:16:12:23 -0700] "GET /cgi-bin/logscribe/makelog\
.pl?CSCI351=CGI=Demo,http://nunki.usc.edu:8088/cgisample.html HTTP/1.1" 200
55
64.221.222.142 - - [29/Sep/2006:16:12:23 -0700] "GET /cgi-bin/thanks-counter/co\
unter.cgi?position=5 HTTP/1.1" 200 1339
64.221.222.142 - - [29/Sep/2006:16:12:23 -0700] "GET /cgi-bin/thanks-counter/co\
unter.cgi?position=3 HTTP/1.1" 200 1353
64.221.222.142 - - [29/Sep/2006:16:12:23 -0700] "GET /cgi-bin/thanks-counter/co\
unter.cgi?position=2 HTTP/1.1" 200 1171
64.221.222.142 - - [29/Sep/2006:16:12:23 -0700] "GET /cgi-bin/thanks-counter/co\
unter.cgi?position=1 HTTP/1.1" 200 1339
64.221.222.142 - - [29/Sep/2006:16:12:23 -0700] "GET /cgi-bin/esclock/clock.cgi\
?0 HTTP/1.1" 200 157
64.221.222.142 - - [29/Sep/2006:16:12:23 -0700] "GET /cgi-bin/esclock/clock.cgi\
?1 HTTP/1.1" 200 154
64.221.222.142 - - [29/Sep/2006:16:12:23 -0700] "GET /cgi-bin/esclock/clock.cgi\
?2 HTTP/1.1" 200 65
64.221.222.142 - - [29/Sep/2006:16:12:23 -0700] "GET /cgi-bin/esclock/clock.cgi\
?3 HTTP/1.1" 200 157
```

24.126.88.149 - - [29/Sep/2006:16:12:38 -0700] "GET /cgi-bin/showcgi.pl?name=ka\
ndarp&street=rrrr&city=lsl&state=California&amount=5000&home=on&family=Pleas
e+d\
escribe+here+the+names+and+ages+of+%0D%0Apeople+in+your+family+and+the
+number+o\
f+cards+%0D%0Ayou+are+requesting.+ HTTP/1.1" 200 1756
64.221.222.142 - - [29/Sep/2006:16:12:42 -0700] "POST /cgi-bin/mailform.cgi HTT\
P/1.1" 302 299
64.221.222.142 - - [29/Sep/2006:16:12:42 -0700] "GET /done.html HTTP/1.1" 200 1\
05
(Note: the backslash (\) denotes that the text continues on the next line)

1. [2 pts] Name the clients that are making requests of this server:

64.221.222.142 , 24.126.88.149

2. [2 pts] Name the different methods that are being used:

GET , POST

3. [2 pts] Name the programs that are being invoked:

counter.cgi, clock.cgi, showcgi.pl, mailform.cgi

4. [2 pts] Retype below the line that will result in a redirect.

64.221.222.142 - - [29/Sep/2006:16:12:42 -0700] "POST /cgi-bin/mailform.cgi HTT\
P/1.1" 302 299

Below is a portion of an Apache web server error_log file.

[Fri Sep 29 11:19:23 2006] [error] [client 147.21.16.3] File does not exist: /a\
uto/home-scf-22/csci571/WebServer/Apache_1.3.36/htdocs//refresh.html
[Fri Sep 29 11:36:23 2006] [error] [client 72.30.132.30] File does not exist: /\
auto/home-scf-22/csci571/WebServer/Apache_1.3.36/htdocs/robots.txt
[Fri Sep 29 12:23:08 2006] [error] [client 72.30.132.30] File does not exist: /\
auto/home-scf-22/csci571/WebServer/Apache_1.3.36/htdocs/robots.txt
[Fri Sep 29 12:23:10 2006] [error] [client 72.30.110.35] File does not exist: /\
auto/home-scf-
22/csci571/WebServer/Apache_1.3.36/htdocs/ftp/template_files/temp\
lates/assignments.html
Can't create /home/scf-03/csci571/server/cgi-bin/logscribe/access.log: No such \
file or directory
Can't find string terminator "END_OF_TEXT" anywhere before EOF at
/auto/home-sc\
f-22/csci571/WebServer/Apache_1.3.36/cgi-bin/cgipm/test6.pl line 7.
[Fri Sep 29 12:39:27 2006] [error] [client 66.229.27.185] Premature end of scri\
pt headers: /auto/home-scf-22/csci571/WebServer/Apache_1.3.36/cgi-
bin/cgipm/tes\
t6.pl
[Fri Sep 29 13:38:28 2006] [error] [client 72.30.132.30] File does not exist: /\
auto/home-scf-22/csci571/WebServer/Apache_1.3.36/htdocs/robots.txt
[Fri Sep 29 13:38:28 2006] [error] [client 72.30.252.95] File does not exist: /\

auto/home-scf-
22/csci571/WebServer/Apache_1.3.36/htdocs/ftp/template_files/scol\
ds/
(Note: the backslash (\) denotes that the text continues on the next line)

5. [2 pts] The first entry says "File does not exist". What exactly is the error?

Double forward slash in URL

6. [2 pts] What exactly is the error in the second entry?

There is no file named robots.txt in htdocs

7. [2 pts] Is the second entry a "real" error?

No, since search engines look in the root of a website for "robots.txt" for special instructions to index and/or follow local hyperlinks. The "robots.txt" file is optional on websites.

JAVASCRIPT / REGULAR EXPRESSIONS QUESTIONS [20 PTS]

Consider the following assignment (each question worth 5 points):

```
var re = /(?:\d{3}|\(\d{3}\))([-\/\.])\d{3}\1\d{4}/;
```

Q1. What are we trying to match with the regular expression?

A1. A US Phone number.

Q2-Q4. Display 3 examples of the three types of matching expressions?

A2. `213-555-3212`

A3. `213/555/3212`

A4. `213.555.3212`

`Also (213)-678-3456, etc.  Full definition is this:`

Within non-capturing parentheses $(?:$, the regular expression looks for three numeric characters $\d\{3\}$ OR $|$ a left parenthesis $\($ followed by three digits $\d\{3\}$, followed by a close parenthesis $\)$, (end non-capturing parenthesis $)$), followed by one dash, forward slash, or decimal point and when found, remember the character $([-\/\.])$, followed by three digits $\d\{3\}$, followed by the remembered match of a dash, forward slash, or decimal point $\1$, followed by four digits $\d\{4\}$.