

CT 310 Midterm 2
April 5, 2007

Name _____ **ANSWERS** _____

EID _____

Question	Point Value	Cum Value	Points
1	10	10	
2	10	20	
3	10	30	
4	10	40	
5	30	70	
6	20	90	
7	10	100	
TOTAL	100		

Question 1: Short Answer (10 Points)

1. Concisely explain why the following PHP code is placed at the head of many of our in class examples?

```
1 <?php echo '<?xml version="1.0" encoding="iso-8859-1"?>' ?>
2 <?php "/n"?>
3 <?php echo '<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
4 "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">' ?>
```

Generates a header which indicates and xhtml file and which will pass W3C validation – provided what follows is also value xhtml.

2. What is the purpose of the <fieldset></fieldset> tag?
Used to group a set of submission form tags, for example name and address.
3. What does the PHP operator “.=” do ?
Combines assignment and string concatenation.
`$str = "dog";`
`$str .= " food.";`
`print $str; // prints "dog food."`
4. Give a simple example of a common tool that exemplifies a flat database structure.
A spreadsheet.
5. Give a simple example of a common tool that exemplifies a hierarchical database.
Nested directories in a file system.
6. Must a MySQL Primary Key be an integer?
No, strings are fine. The essential feature is uniqueness.
7. How long will a web page with this tag remain visible?

```
<meta http-equiv="refresh" content="5;url=nextpage.html">
```

For 5 seconds.

8. During in class demonstrations of MySQL, where was the MySQL server running?
On the laptop being used in class.
9. How many blocks of PHP code can you have interspersed with HTML code in a PHP source file?
There is no hard limit.
10. Write down the html generated by the following PHP.

```
<?php $name = 'Ross' ; print 'Hello $name'; ?>
```

Note the use of the single quote, so the answer is: Hello \$name

Question 2: HTML Forms (10 Points)

On this page six distinct small web pages display six forms numbered one through six. On the following page html source for six forms are shown. Write the form number from this page under the appropriate code on the next page.

1

Things to do in Fort Collins

- Full Moon Program
- Chamber Music Program
- Two Cities Matchup
- Order Dinner In

Done

2

Things to do in Fort Collins

- Full Moon Program
- Chamber Music Program
- Two Cities Matchup
- Order Dinner In

Done

3

Things to do in Fort Collins

Full Moon Program
Chamber Music Program
Two Cities Matchup
Order Dinner In

Done

4

Things to do in Fort Collins

Full Moon Program
Chamber Music Program
Two Cities Matchup
Order Dinner In

Done

5

Things to do in Fort Collins

- Full Moon Program
- Chamber Music Program
- Two Cities Matchup
- Order Dinner In

Done

6

Things to do in Fort Collins

- Moon Full Moon Program
- Music Chamber Music Program
- Match Two Cities Matchup
- Menu Order Dinner In

Done

Question 2 Continued.

<pre> <form method="get"> <p>Things to do in Fort Collins</p> <select name="todo" size=4> <option value="Moon"> Full Moon Program </option> <option value="Music"> Chamber Music Program </option> <option value="Match"> Two Cities Matchup </option> <option value="Menu"> Order Dinner In </option> </select><p> <input type="submit" value="Just do it!"> </p> </form> </pre>
Form 4
<pre> <form method="get"> <p>Things to do in Fort Collins</p> <input type="radio" name="do"> Moon Full Moon Program
 <input type="radio" name="do"> Music Chamber Music Program
 <input type="radio" name="do"> Match Two Cities Matchup
 <input type="radio" name="do"> Menu Order Dinner In

 <input type="submit" value="Just do it!"> </form> </pre>
Form 6
<pre> <form method="get"> <p>Things to do in Fort Collins</p> <select name="todo" size=4> <option value="Moon"> Full Moon Program </option> <option value="Music"> Chamber Music Program </option> <option value="Match"> Two Cities Matchup </option> <option value="Menu"> Order Dinner In </option> </select> <input type="submit" value="Just do it!"> </form> </pre>
Form 3
<pre> <form method="get"> <p>Things to do in Fort Collins</p> <input type="checkbox" name="Moon"> Full Moon Program
 <input type="checkbox" name="Music"> Chamber Music Program
 <input type="checkbox" name="Match"> Two Cities Matchup
 <input type="checkbox" name="Menu"> Order Dinner In

 <input type="submit" value="Just do it!"> </form> </pre>
Form 1
<pre> <form method="get"> <p>Things to do in Fort Collins</p> <input type="radio" name="Moon"> Full Moon Program
 <input type="radio" name="Music"> Chamber Music Program
 <input type="radio" name="Match"> Two Cities Matchup
 <input type="radio" name="Menu"> Order Dinner In

 <input type="submit" value="Just do it!"> </form> </pre>
Form 2
<pre> <form method="get"> <p>Things to do in Fort Collins</p> <input type="radio" name="todo"> Full Moon Program
 <input type="radio" name="todo"> Chamber Music Program
 <input type="radio" name="todo"> Two Cities Matchup
 <input type="radio" name="todo"> Order Dinner In

 <input type="submit" value="Just do it!"> </form> </pre>
Form 5

Question 3: Dynamic generation of web content. (10 Points)

Part 1: In the context of dynamic web pages, describe in one or two concise sentences what it means to run code ...

a) On the client.

Code run on the client is code sent from the server to the client and then interpreted as code by the browser, a browser plug in such as Flash or a call out mechanism such as a connection to the Java Virtual Machine.

b) On the server.

Code on the server side is run dynamically behind the web server. This can include almost any type of code connected to the server through either a server plug in or a CGI call out from the server. Ultimately the server side code generates HTML (or HTML plus client side scripting) that is then passed to the client.

Part 2: Name one ...

a) Common client side language.

There are several good answers, including JavaScript and Java. Giving HTML as an answer was marked as half correct. Certainly HTML is a formatting language used by the client. However, it has nothing to do with dynamic generation of web content.

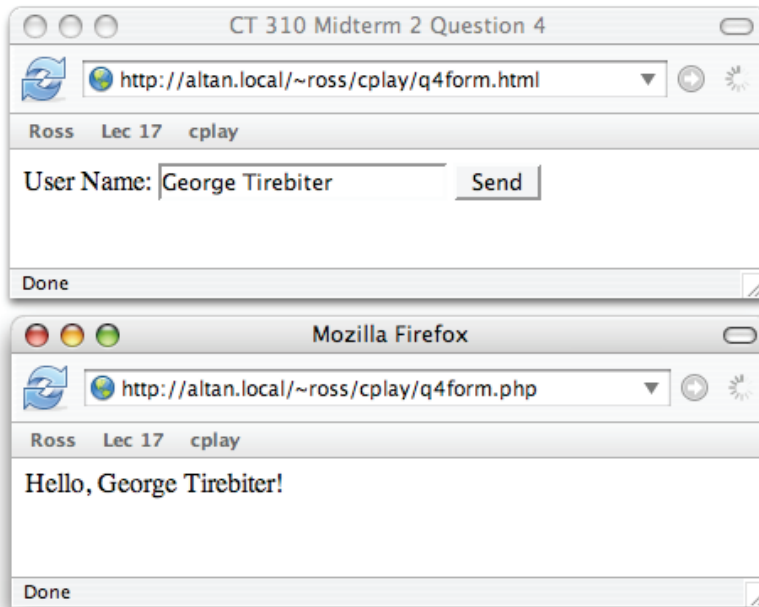
b) Common server side language.

Almost any language may be given as an answer since CGI can connect up programs writing in most all common languages. So, this was a fairly open ended question. Good answers include: PHP, Perl, Coldfusion, ...

Question 4: Simple PHP Forms Handling. (10 Points)

Write PHP file `q4form.php` to go along with `q4form.html` as shown and demonstrated below. Keep it simple, and do not worry about such things as W3C validation.

```
4 <html xmlns="http://www.w3.org/1999/xhtml">
5 <head>
6   <title>CT 310 Midterm 2 Question 4</title>
7   <meta http-equiv="Content-Type"
8     content="text/html; charset=iso-8859-1" />
9 </head>
10 <body>
11 <form action="q4form.php" method="post">
12   User Name: <input name="user" type="text">
13   <input type="submit" value="Send">
14 </form>
15 </body>
16 </html>
```



```
<html>
<body>
<?php
  $name = $_POST['user'];
  echo "Hello, ". $name ."!";
?>
</body>
</html>
```

`q4form.php` (write your PHP code above).

Note the line assigning `$name` may also be written:

```
$name = q4form.html.name;
```

Question 5: An Extended PHP Example – Tic Tac Toe. (40 Points)

On this page and the next is a complete PHP file/program and associated CSS file. On the following pages you will be asked a series of questions. They all concern behavior of the webpage. There are no known bugs in the code.

```
1 body
2 {
3     font-family: Georgia, Serif;
4     font-size: 12pt;
5     line-height: 18pt;
6     margin: 0;
7     width: 75%;
8     max-width: 800px;
9     padding: 1em 0 10px 100px;
10 }
11
12 table
13 {
14     font-family : Arial;
15     font-size : 42pt;
16     border : 5px solid #222222;
17 }
18 td
19 {
20     border : 3px solid #005500;
21     width : 50pt;
22     height : 50pt;
23     padding : 12pt;
24     text-align : center;
25 }
26 td.win
27 {
28     color : #2AA22A;
29 }
```

tictactow.css

```
1 <?php echo '<?xml version="1.0" encoding="iso-8859-1"?>' ?>
2 <?php echo '<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
3 "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">' ?>
4 <html>
5 <head>
6     <title>Tic Tac Toe Anyone?</title>
7     <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
8     <style type="text/css"> @import url('tictactoe.css'); </style>
9 </head>
10
```

Header from tictactoe.php

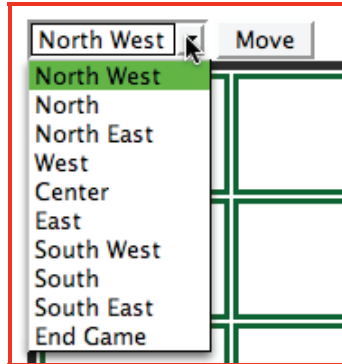
```

11 <body>
12 <h2>Tic Tac Toe</h2>
13 <?php // Establish important variables and update from previous game move.
14     $snames = array("North West", "North", "North East", "West",
15                     "Center", "East", "South West", "South", "South East");
16     if (isset($_POST['move'])) { $next = $_POST['move']; } else { $next = -1; }
17     if ($next == -1) { // For board: 3 -> empty, 1-> player 1, 2 -> player 2.
18         $board = array(3,3,3, 3,3,3, 3,3,3);
19         $run    = array(0,0,0, 0,0,0, 0,0,0);
20         $player = 1;
21     } else {
22         $board = array($_POST['s0'], $_POST['s1'], $_POST['s2'],
23                         $_POST['s3'], $_POST['s4'], $_POST['s5'],
24                         $_POST['s6'], $_POST['s7'], $_POST['s8']);
25         $player = $_POST['p'];
26         $board[$next] = $player; // Make move selected by submit
27         if ($player == 1) { $player = 2; } else { $player = 1; }
28     }
29     print "<p>Player $player, your turn ...</p> \n";
30     print "<form action=\"tictactoe.php\" method=\"post\"> \n";
31     print "<select name=\"move\" size=\"1\">\n";
32     for ($i = 0; $i < 9; $i++) {
33         if ($board[$i] == 3) {
34             print "<option value=$i>$snames[$i]</option>\n";
35         }
36     }
37     print "<option value=-1>End Game</option> \n </select>";
38     for ($i = 0; $i < 9; $i++) {
39         $val = $board[$i];
40         print "<input type=\"hidden\" name=\"s$i\" value=$val >\n";
41     }
42     print "<input type=\"hidden\" name=\"p\" value=$player >\n";
43     print "<input type=\"submit\" value=\"Move\" >\n";
44     print "</form> \n <table> \n";
45     $runs = array(0,1,2, 3,4,5, 6,7,8, 0,3,6, 1,4,7, 2,5,8, 0,4,8, 2,4,6);
46     $winner = 0;
47     for ($r = 0; $r < 8; $r++) {
48         $rb = $r * 3;
49         for ($p = 1; $p <= 2; $p++) {
50             $bp1 = $runs[$r*3]; $bp2 = $runs[($r*3)+1]; $bp3 = $runs[($r*3)+2];
51             if ($board[$bp1] == $p and $board[$bp2] == $p and $board[$bp3] == $p){
52                 $winner = $p;
53                 $run[$bp1] = 1; $run[$bp2] = 1; $run[$bp3] = 1;
54             }
55         }
56     }
57     $k = 0; // Tic Tac Toe square counter
58     for ($x = 1; $x <= 3; $x++) {
59         print "<tr>";
60         for ($y = 1; $y <= 3; $y++) {
61             switch ($board[$k]) {
62                 case "1" : $mark = "X"; break;
63                 case "2" : $mark = "O"; break;
64                 case "3" : $mark = "&nbsp;"; }
65             if ($run[$k] == 1) { $tds = "<td class=\"win\">"; } else { $tds = "<td>"; }
66             print $tds.$mark."</td>";
67             $k++;
68         }
69         print "</tr>\n";
70     }
71     print "</table>\n";
72     if ($winner > 0) { print "<p>Player $winner has won the game !</p> \n"; }
73 ?>
74 </body>

```

Question 5 Continued.

- 1) At the start of a new game, list every option made available through the selection portion of the form. Give your answer precisely and as it appears when making a selection. In other words, attempt to draw faithfully the way the options are presented.



- 2) Explain as precisely as you can what hidden form variables are defined and concisely describe their purpose?

There are nine hidden form variables to carry forward the state of the tic tac toe board from one move to the next. These are: s_0 , s_1 , s_2 , s_3 , s_4 , s_5 , s_6 , s_7 , and s_8 . The value 3 indicates an empty square. Values 1 and 2 indicate a square occupied by player 1 (the X) and player 2 (the O) respectively. The only other hidden variable is p , and it alternates between 1 and 2 indicating which player is taking a turn.

For the next three questions, consider the sequence of moves:

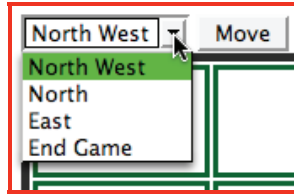
Player 1	Center
Player 2	South East
Player 1	North East
Player 2	South West
Player 1	South
Player 2	West

- 3) Write into the table below the values for the array $\$board$ after this sequence of moves.

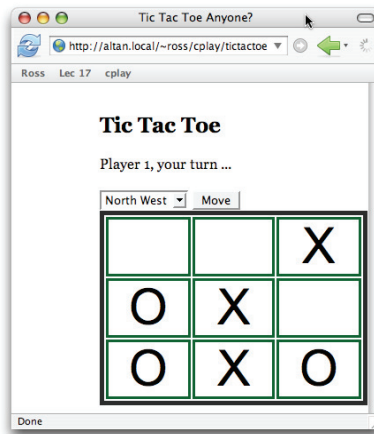
Index	0	1	2	3	4	5	6	7	8
Value	3	3	1	2	1	3	2	1	2

Question 5 Continued.

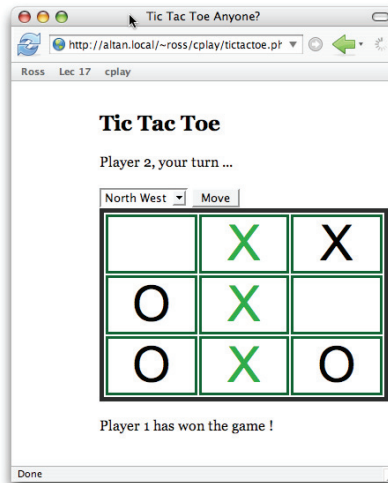
- 4) After the same sequence of moves, list precisely the options made available through the selection portion of the form.



- 5) Sketch the appearance of the game board after the same sequence of moves. Use the following picture as a start.



- 6) Describe the appearance of the displayed web page after one additional move beyond those listed above; Player 1 selects North. Be as precise and as complete as you can. The win for player 1, squares North, Center and South, is highlighted in green.



Question 6: MySQL Tables and Relations (20 Points)

Consider the following database representing the 12 largest cities and town in the Republic of Ireland along with their associated county.

```
use ireland;

DROP TABLE IF EXISTS town;
DROP TABLE IF EXISTS county;

CREATE TABLE county (
  county_id int(5) NOT NULL,
  county_name varchar(50),
  PRIMARY KEY (county_id)
);

CREATE TABLE town (
  town_id int(5) NOT NULL,
  town_name varchar(50),
  county_id int(5) NOT NULL,
  population int(7),
  PRIMARY KEY (town_id),
  KEY county (county_id)
);

INSERT INTO county VALUES
(3, 'County Clare'),
(4, 'County Cork'),
(6, 'County Dublin'),
(7, 'County Fingal'),
(8, 'County Galway'),
(9, 'County Kerry'),
(11, 'County Kilkenny'),
(13, 'County Limerick'),
(15, 'County Louth'),
(23, 'County Waterford');

INSERT INTO town VALUES
(1, 'Dublin', 6, 1004614),
(2, 'Cork', 4, 186239),
(3, 'Limerick', 13, 86998),
(4, 'Galway', 8, 66163),
(5, 'Waterford', 23, 46736),
(6, 'Dundalk', 15, 32505),
(7, 'Drogheda', 15, 31020),
(8, 'Bray', 6, 30951),
(9, 'Swords', 7, 27175),
(10, 'Ennis', 3, 22051),
(11, 'Tralee', 9, 21987),
(12, 'Kilkenny', 11, 20735);
```

Question 6: MySQL Tables and Relations Continued.

Part 1: Circle above the field in the table definitions establishing the relationship between county(s) and town(s). (4 Points) **The line circled above is the single most important. It is OK to circle the county_id fields in county and town as well, but not necessary.**

Part 2: Write a precise MySQL command, a query, generating the following. (4 Points)

population	town_name	county_name
1004614	Dublin	County Dublin
186239	Cork	County Cork
86998	Limerick	County Limerick
66163	Galway	County Galway
46736	Waterford	County Waterford
32505	Dundalk	County Louth
31020	Drogheda	County Louth
30951	Bray	County Dublin
27175	Swords	County Fingal
22051	Ennis	County Clare
21987	Tralee	County Kerry
20735	Kilkenny	County Kilkenny

12 rows in set (0.00 sec)

SELECT population, town_name, county_name FROM town NATURAL JOIN county; (The order of town and county may be reversed).

Part 3: Modify your query to generate the following output. (4 Points)

population	town_name	county_name
1004614	Dublin	County Dublin
186239	Cork	County Cork
86998	Limerick	County Limerick
66163	Galway	County Galway

4 rows in set (0.00 sec)

SELECT population, town_name, county_name FROM town NATURAL JOIN county WHERE population > 50000;

Part 4: It turns out there is a new population number for the city of Dublin, 1045800. Write the precise MySQL command required to make this correction. (4 Points)

UPDATE town SET population = 1045800 WHERE town_id = 1;

Part 5: How many rows are returned by the following MySQL command/query?

(The query was omitted by mistake, so students were instructed leaving this blank was worth 4 points)

Question 7: MySQL access through PHP. (10 Points)


The following is a short list of PHP commands used to manipulate MySQL data.

<code>mysql_connect</code>
<code>mysql_select_db</code>
<code>mysql_query</code>
<code>mysql_fetch_array</code>

Below is a screenshot of a PHP file with the Firefox display of the same page. This window was carefully

placed to obscure the PHP code responsible for displaying the county data from the previous (Question 6) MySQL example.

```
1 <?php echo '<?xml version="1.0" encoding="iso-8859-1"?>' ?>
2 <?php echo '<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
3 "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">' ?>
4 <html>
5 <head>
6 <title>A Bit of Ireland</title>
7 <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
8 </head>
9 <body>
10 <p>
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25 ?>
26 </b>
```



Please write PHP code in the blank box on the next page that would create the page being displayed. You may find the listing of commands above helpful, but note it is your task to use the commands correctly in the context of a full PHP program to generate the page.

Question 7: MySQL access through PHP Continued

```
<?php
mysql_connect('localhost', "root", "rosssql");
mysql_select_db('ireland');

$query = "SELECT * FROM county";
$result = mysql_query($query);

print '<table border=1>';
print '<tr> <th> Id. </th> <th> County </th></tr>';
while($row = mysql_fetch_array($result)){
    $id = $row['county_id'];
    $nm = $row['county_name'];
    print "<tr> <td> $id </td> <td> $nm</td></tr>";
}
print '</table>';
?>
```

Write your PHP code in the box above.