CO323/2021

COMP3230/COMP3231

UNIVERSITY OF KENT

DIVISION OF COMPUTING, ENGINEERING AND MATHEMATICAL SCIENCES

LEVEL 4 EXAMINATION

Databases and the Web

Friday, 14 May 2021

Paper Instructions
The paper contains FOUR questions. Answer THREE questions. This examination is designed to take 2 hours but you can take longer if you wish. Please ensure that you submit your answer booklet within 24 hours of the exam release time.
Notes to Candidates
This is an open book examination to be completed and submitted within 24 hours.
As you will have access to resources to complete your assessment, any content you use from external source materials should be cited. Full academic referencing is not required.
You are reminded of your responsibility to act with honesty, integrity and fairness in completing assessment requirements for your course, and to demonstrate good academic practice when undertaking this assessment.
This is an individual piece of work and collusion with others is strictly prohibited.
Plagiarism detection software will be in use.
Breaches of academic integrity will be considered to be academic misconduct.
Where the University believes that academic misconduct has taken place the University will investigate the case and apply academic penalties as published in Annex 10 of the Credit Framework.

1. Inspect the following HTML code.

```
Line 1   <html>
Line 2   <head>
Line 3   <title>Good Writing Style</title>
Line 4   </head>
Line 5   <body>
Line 6   <div style="background:yellow; width:20% height:100px;">
Line 7   <p style="color:green">CO323 Main Exam
Line 8   <span style="color:black">Question 1</span>
Line 9   </p>
Line 10  </div>
Line 11  <br><br/>
Line 12  <div style="background:yellow; width:20%; height:300;">
Line 13  <p style="color:green">CO323 Resit Exam
Line 14  <ul>
Line 15  <li><span style="color:blue">Question 1<li></span>
Line 16  </li><span style="color:blue">Question 2</span></li>
Line 17  </ul>
Line 18  </p>
Line 19  </div>
Line 20  </body>
Line 21  </html>
```

(a) What are the problems with the above code? Consider the syntax, structure, and writing style. [8 marks]

(b) Write CSS code that tidies up the above code. Your code should minimise the use of inline style. [8 marks]

(c) Add a CSS selector for all paragraphs (p elements) under div elements with class “exam” to make their background colour blue. [4 marks]

2. Inspect the following HTML code for displaying the result of the "Wimbledon 2008 Men's Final".

```
Line 1   <html>
Line 2   <head>
Line 3   <title>Wimbledon 2008 Men's Final</title>
Line 4   </head>
Line 5   <body>
Line 6   <table>
Line 7   <tr id="players">
Line 8   <th>Federer</th><th>Sets</th><th>Nadal</th>
Line 9   </tr>
Line 10  <tr id="set1"><td>4</td><td>1</td><td>6</td></tr>
Line 11  <tr id="set2"><td>4</td><td>2</td><td>6</td></tr>
Line 12  <tr id="set3"><td>7</td><td>3</td><td>6</td></tr>
Line 13  <tr id="set4"><td>7</td><td>4</td><td>6</td></tr>
Line 14  <tr id="set5"><td>7</td><td>5</td><td>9</td></tr>
Line 15  </table>
Line 16  <p id="result"></p>
Line 17  </body>
Line 18  </html>
```

Write a JavaScript function to print "`X won Y-Z in W sets`" onto the HTML element with id "result", where `X` is the winning player, `Y-Z` is the score in sets, and `W` is the total number of sets played. Also, explain where the function should be written within the HTML structure by referring to the line number. Note that your code should work for any result displayed in this way (not only for the above result).

[20 marks]

3. (a) Here is the definition of a PHP function:

```
function test($arr) {
   if ($arr[1]) {
     echo "Blue";
   }
   else {
      for ($k=0; $k <= $arr[2]; $k++) {
         echo $arr[3][k];
         }
      }
    }
```

Recall that array `$arr` can be defined using a statement of the form:
`$arr = array(…);`

(i) Give an array `$arr` such that `test($arr)` would print

```
Blue
```

[2 marks]

(ii) Give an array `$arr` such that `test($arr)` would print [3 marks]

```
Green
```

(iii) Give an array `$arr` such that `test($arr)` would print [4 marks]

```
Pink Purple Violet
```

Note: the for loop must do three iterations in case (iii).

(b) Consider the following code fragment in a file *index.php*

```
<?php session_start();
     $_SESSION['name'] = 'Alice';
      setcookie('name','Bob',strtotime("+1 month"));
?>
<form action="next_page.php" method="post">
  <input type="text" name="trainer">  <br>
  <input type="radio" name="s1" value="Jog"> Jog <br>
  <input type="radio" name="s1" value="Sleep"> Sleep <br>
  <input type="submit">
</form>
```

Answer the following questions:

(i) State which of the superglobal variables are certainly set in *next_page.php,* and which may be set or not depending on the user's behaviour in *index.php*. Justify your answer.

[6 marks]

(ii) Assume that all the superglobal variable(s) you mentioned in your answer to (i) are passed to *next_page.php.* Complete the code fragment below (i.e., to be included in *next_page.php*) so that all values of the superglobal variables are printed as a sequence of "echo" statements. Give a possible solution of printing all these variables using the sequence of echo statements you have given.

```
session_start();
echo ...;
echo ...;
...
```

[3 marks]

(iii) Is method post the best method to be used in *index.php*? Justify your answer. [2 marks]

4. A database includes information on people and clubs. Each person is identified by an integer and has their name, and phone number recorded. Each club is identified by a name and the city it is located in. The relationship between club and person is 1:N. A person must be a member of only one club. A club may include zero or more people.

   (a) Write SQL CREATE TABLE statements for the tables in the problem statement above. Justify your choices of primary and foreign keys. [8 marks]

   (b) Write SQL statements to perform the following tasks:

      (i) Insert a new person as a member of a club. [2 marks]

      (ii) Retrieve the name, phone number and club name of all people whose club is located in any city ending by “don”. [4 marks]

      (iii) Retrieve the number of members of each city (all in one query) and return only the clubs with at least 1 member. [6 marks]