

UNIVERSITY OF KENT

**DIVISION OF COMPUTING, ENGINEERING
AND MATHEMATICAL SCIENCES**

LEVEL 4 EXAMINATION

Databases and the Web

Tuesday, 09 May 2023 : 14.00 - 16.00 (2 hours)

Paper Instructions
The paper contains FOUR questions. Answer THREE questions.
Calculators are not permitted.
Answer each question in a separate book.
Students are not permitted to remove this question paper from the examination venue

1.

(a) Answer the following based on the below HTML/CSS code.

```
<html>
<head>
<meta charset="UTF-8"/>
<title>HTML example</title>
<style>
p {font-style: italic;}
div {width: 50vw;}
div.b {margin-left: auto;}
</style>
</head>
<body>
<span>
<div class="a">A</div>
<div class="b">B
<div class="c">C</div>
<div class="d">D</div>
</div>
<div class="e">E</div>
</span>
<div class="container">
<p>COMP3230</p> <p>Exam</p>
</div>
</body>
</html>
```

- (i) Show the output of this code as you would see on a web browser.

[12 marks]

- (ii) Write a CSS rule to change the colour of all paragraph (<p>) descendants of div with class "container" to blue.

[2 marks]

- (b) Briefly explain the difference between inline and block-level HTML elements, and show an example of each.

[6 marks]

2.

- (a) JavaScript variables can have global or local scope. Briefly explain what each one of these two means.

[4 marks]

- (b) You have the following JavaScript function:

```
function checkSpeed(temp) {  
    if (temp > 70)  
        speed = "over the limit";  
    if (temp > 40)  
        speed = "slow down";  
    if (temp > 0)  
        speed = "tortoise";  
    else speed = "stuck in traffic";  
  
    return speed;  
}
```

What would the above function return in the following three cases:

- (i) `checkSpeed(80);`

[2 marks]

- (ii) `checkSpeed(55);`

[2 marks]

- (iii) `checkSpeed(0);`

[2 marks]

- (c) Function `showResult` takes input `mark`, and shows an alert box with message `Pass` if the mark is at least 40, otherwise `Fail`. If the mark is negative or greater than 100, the message is `Not a valid mark`.

Someone attempted to implement the function `showResult` in JavaScript, as shown below:

```
Line 1      function showResult(){  
Line 2          if (mark<0 OR mark >100){  
Line 3              alert("Not a valid mark");  
Line 4          } else if ( >=40){  
Line 5              alert("Pass");  
Line 6          else {  
Line 7              alert (Fail);  
Line 8          }  
Line 9      }
```

However, there are 5 errors in the above code. For each error you identify, write down the line number and the correct version.

[10 marks]

turn over

3

- (a) An associated array named `scores` is used to record the team and score on a Sunday rugby match as given below:

```
$scores = array("Exeter"=>42, "Gloucester"=>76, "Sale"=>34,  
               "Bristol"=>67, "Leicester"=>52, "Bath"=>28,  
               "Newcastle"=>84, "Worcester"=>61);
```

- (i) Here is a section of PHP code to list on a web page the teams in the array `$scores` who have obtained a score over 40:

```
foreach (scores as $team and $score) {  
    IF ($score = 40) {  
        echo "<p>$name</p>",  
    }  
}
```

However, there are errors in the code. Identify the errors and write down the correct version.

[6 marks]

- (ii) Write a PHP statement to record in the array `$score` the score 58 of the team Northampton.

[2 marks]

- (iii) Write a PHP statement to print out the total number of teams in the array `$scores`.

[2 marks]

- (b) A PHP script on the site www.travel.com, named `script.php` outputs a specific journey on request. The script is accessed after the user has entered a ID number and destination letter on a form. The user's browser requests the script using a URL similar to the one below:

<http://www.travel.com/script.php?ID=3&destination=b>

- (i) Is this an example of passing data to the PHP script using the HTTP GET or the HTTP POST method?

[2 marks]

- (ii) What single line of PHP code, if contained within `script.php` would place the ID number into a PHP variable named `$ID_number`?

[2 marks]

- (c) What is a cookie? Explain how could a web site use a cookie to track whether or not a user is logged in.

[6 marks]

4.

- (a) Consider the SQL code below. You need to understand what the queries are doing and write down the results. Be aware that not all queries written here are correct.

```
CREATE TABLE Author(  
  authorID INT PRIMARY KEY,  
  surname CHAR(255),  
  firstName CHAR(255));
```

```
CREATE TABLE Presentations(  
  presentationID INT PRIMARY KEY,  
  date DATE NOT NULL,  
  location CHAR(255),  
  authorID INT,  
  FOREIGN KEY (authorID) REFERENCES Author(authorID));
```

```
INSERT INTO Author VALUES(1,'Novikova','Julia');  
INSERT INTO Author VALUES(2,'Netrebko','Anna');  
INSERT INTO Author VALUES(3,'Terfel','Bryn');  
INSERT INTO Author VALUES(4,'Terfel','Bryn');  
INSERT INTO Author VALUES(2,'Kauffmann','Jonas');
```

```
INSERT INTO Presentations VALUES (3, '2023-01-04','Salzburg',1);  
INSERT INTO Presentations VALUES (30, '2023-01-04','London',2);  
INSERT INTO Presentations VALUES (31, '2023-01-01','Salzburg',1);
```

- (i) Write down the contents of the two tables that have just been created.

[10 marks]

- (ii) How many presentations by Julia Novikova are recorded in the database?

[1 mark]

- (iii) Write the output from the following query:

```
SELECT COUNT(*) FROM Author WHERE firstName='Anna';
```

[2 marks]

- (iv) Write down the output from the following query:

```
SELECT location FROM Presentations;
```

[2 marks]

- (v) Assume you issue the following command:

```
INSERT INTO Presentations VALUES (39, '2023-02-02','London',3);
```

Now write down the result from the following query.

```
SELECT * FROM Author a WHERE EXISTS(SELECT authorID FROM  
Presentations WHERE authorID=a.authorID AND location='London' );
```

[5 marks]