DUBLIN INSTITUTE OF TECHNOLOGY

BSc. (Honours) Degree in Computer Science

Year 2

WINTER EXAMINATIONS 2015/2016

WEB DEVELOPMENT 2 [CMPU2022]

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Wednesday 6th January 1.00 p.m. – 3.00 p.m.

Answer Question 1 and any <u>two</u> of the three remaining questions

Question (1) is worth 40 marks
Questions (2), (3) and (4) are worth 30 marks each.

Question 1

(a) Define and describe the Multi-Tier Application Architecture

(10 marks)

(b) Describe the differences between client-side and server-side technologies for web applications. In your answer, explain whether each of the following supports processing at the client-side or server-side or both:

i. JSP
ii. Python
iii. Java Applets
iv. CSS

(10 marks)

(c) What is the output of the following?

```
<?php

$a = 011;
$b = 0xA;
$c = 2;

print $a + $b + $c;

?>
```

i. 21

ii. 22

iii. 18

iv. $a is an invalid value

v. 13

(4 marks)

(d) There is a user table that contains some data in a MySQL database, there are six columns (UserID, UserName, Password, FirstName, LastName, Address). Write code for a PHP Page login function, that does the following:

- Login page contains two input fields: *UserName, Password.*
- Login page contains a submit button that when clicked, checks if values of *UserName* and *Password* matching records of the table, then displays "Welcome (value of *FirstName)*, your address is (value of *Address*)", otherwise display "That user does not exist in our database. Click Here to Register".
- Includes appropriate error processing.

(16 marks)

(16 marks)

Question 2

(a) List **seven** stages of "Web Life Cycle Model" and provide a brief discussion on each of them.

(14 marks)

(b) Consider the following script:

```
<?php
try {
  $dbh = new PDO("sqlite::memory:");
} catch(PDOException $e) {
  print $e->getMessage();
}

$dbh->query("CREATE TABLE foo(id INT)");
$stmt = $dbh->prepare("INSERT INTO foo VALUES(:value)");
$value = null;
$data = array(1,2,3,4,5);
$stmt->bindParam(":value", $value);

/* ?????? */
try {
  foreach($data as $value) {
    /* ????? */
  }
} catch(PDOException $e) {
  /* ??????? */
}

/* ?????? */
?>
```

What lines of code need to go into the missing places above in order for this script to function properly and insert the data into the database safely?

i. `$dbh -> beginTransaction();`

ii. `$dbh -> commit();`

iii. `$stmt -> execute();`

iv. `$dbh -> rollback();`

v. `$dbh -> query($stmt);`

(8 marks)

(c) Write a well-formed XML document, that represents the data shown in Figure 1

(8 marks)

Service bill for Steven Murphy

Date of Service	Service	ID	Price
20/05/2015	Kitchen Flooring	122837	800
21/05/2015	Install Kitchen	129281	2000
Total Charge			2800

Figure 1

Question 3

(a) A company has decided to develop their web applications using a *server-side scripting* technology. They have limited their choice to one of PHP or ASP (Active Server Pages). Explain *six* differences between PHP and ASP that they should consider in their decision.

(12 marks)

(b) What is the correct way to open the file "time.txt" as readable?

i. `open("time.txt","read");`

ii. `fopen("time.txt","r");`

iii. `fopen("time.txt","r+");`

iv. `open("time.txt");`

(4 marks)

(c) A *Product* table contains four columns: *ProductID, Product, Description* and *Price*. Write code for a PHP Page that selects all the rows from the Product table with Price more than 20.00 and displays the rows as a table on a HTML page.

(14 marks)

Question 4

(a) web designer is developing a web application and is attempting to determine whether to use *client* or *server* based validation or *both* in the following web pages:

- User registration page that will capture user details for entry on a database
- Search screen, allowing users to enter search parameters that will query a database

Recommend a type of validation that should be used by the designer in *each* of the two pages, providing reasons for your recommendation.

(10 marks)

(b) Which functions would be needed to translate the following string:

```
I love PHP
```

to the following?

```
PHP EVOL I
```

i. `mirror()`

ii. `strtoupper()`

iii. `toupper()`

iv. `str_reverse()`

v. `strrev ()`

(4 marks)

(c) The PHP syntax is most similar to:

i. JavaScript

ii. Perl and C

iii. VBScript

(4 marks)

(d) Figure 2 shows the web page used for a "A Simple Rating System in PHP". Before we begin, the MySQL database has been created and some data have been added by the code below:

```
CREATE TABLE vote (id INT(4) NOT NULL AUTO_INCREMENT PRIMARY KEY,
name VARCHAR(30), total INTEGER, votes INTEGER)

INSERT INTO vote (name, total, votes) VALUES ( "First item", 45, 10 ),
( "Second item", 15, 4 ), ( "Third thing", 25, 7 ), ( "The Forth", 20,
5 ), ( "Fifth Thing", 0, 0 )
```

Please read the code below carefully and identify **twelve** errors in the code that will prevent the page from compiling and/or running successfully.

(12 marks)

Name: First item
Current Rating: 4.2
Rank Me: Vote 1 | Vote 2 | Vote 3 | Vote 4 | Vote 5

Name: Second item
Current Rating: 3.4
Rank Me: Vote 1 | Vote 2 | Vote 3 | Vote 4 | Vote 5

Name: Third thing
Current Rating: 3.3
Rank Me: Vote 1 | Vote 2 | Vote 3 | Vote 4 | Vote 5

Name: The Forth
Current Rating: 3.7
Rank Me: Vote 1 | Vote 2 | Vote 3 | Vote 4 | Vote 5

Figure 2

```
<php?
 // Connects to your Database
 mysqliconnect("your.hostaddress.com", "username", "password") or
die(mysqlierror());

 //We only run this code if the user has just clicked a voting link
 if ( $mode="vote")
 {

 //If the user has already voted on the particular thing,
 //we do not allow them to vote again      $cookie = "Mysite$id";
      if(iset($_COOKIE[$cookie]))
            {
            Echo "Sorry You have already ranked that site <p>";
            }

 //Otherwise, we set a cooking telling us they have now voted
      else
            {
            $month = 259 + time();
            setcookie(Mysite.$id, Voted, $year);

      //Then we update the voting information by adding 1 to the total votes
      //and adding their vote (1,2,3,etc) to the total rating
 mysqliquery ("UPDATE vote PUT total = total+$voted, votes = votes+1 WHERE
id = $id");
            Echo "Your vote has been cast <p>";
            }
 }

 //Puts SQL Data into an array
 $data = mysqliquery("SELECT * FROM vote") or die(mysqlierror());

 //Now we loop through all the data
 while($ratings = mysqli_fetch_array( $data ))
 {

 //This outputs the sites name
 Echo "Name: " .$ratings['names']."<br>";

 //This calculates the sites ranking and then outputs it - rounded to 1
decimal
 $current = $ratings[total] / $ratings[votes];
 Echo "Current Rating: " . round($current, 1) . "<br>";

 //This creates 5 links to vote a 1, 2, 3, 4, or 5 rating for each
particular item
 Echo "Rank Me: ";
 Echo "<a
href=".$_SERVER['PHP']."?mode=vote&voted=1&id=".$ratings[id]."">Vote 1</a> |
";
 Echo "<a
href=".$_SERVER['PHP_SELF']."?mode=vote&voted=2&id=".$ratings[id]."">Vote
2</a> | ";
 Echo "<a
href=".$_SERVER['PHP_SELF']."?mode=time&voted=3&id=".$ratings[id]."">Vote
3</a> | ";
 Echo "<a
href=".$_SERVER['PHP']."?mode=vote&voted=4&id=".$ratings[id]."">Vote 4</a> |
";
 Echo "<a
href=".$_SERVER['PHP_SELF']."?mode=vote&voted=5&id=".$ratings[id]."">Vote
5</a><p>";

 ?>
```