



DUBLIN INSTITUTE OF TECHNOLOGY
KEVIN STREET, DUBLIN 8.

DT228 BSc (Honours) Degree in Computer Science

Year 2

WINTER EXAMINATIONS 2017/2018

WEB DEVELOPMENT 2 [CMPU2022]

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FRIDAY 19TH JANUARY

2.00 P.M. – 4.00 P.M.

Time Allowed: 2 hours

Answer Question 1 and any two 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) A development team is selecting an appropriate web server to support their suite of web applications. List *six* selection criteria that they should consider in their selection. In your answer, name *three* market leading web servers that they may use in their selection.

(10 marks)

(c) What will be the output of the following code?

```
<?php

function a()
{
    function b()
    {
        echo 'I am b';
    }
    echo 'I am a';
}
b();
a();
?>
```

- i. I am bI am a
- ii. I am b
- iii. error
- iv. I am error

(4 marks)

(d) There is a student table in a MySQL database, in which there are four columns (StudentNo, StudentName, Address, AverageResult). There are approximately 100 rows in this table.

Write code for a PHP Page login program, that does the following:

- Login page contains two input fields: *StudentName*, *Password*.
- Login page contains a submit button so that when clicked, it checks if the values of *StudentName* and *Password* are both matching records of the table (StudentName, StudentNo). It displays Welcome (value of *StudentName*), your average result is (value of *AverageResult*) or otherwise displays "That student does not exist in our database. [Click Here to Register](#)".
- Includes appropriate error processing.

(16 marks)

Question 2

(a) What are the main error types in PHP and how do they differ?

(10 marks)

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

- i. `fopen("time.txt", "r");`
- ii. `open("time.txt");`
- iii. `fopen("time.txt", "r+");`
- iv. `open("time.txt", "read");`

(4 marks)

(c) What is the output of the following code?

```
function oranges(&$oranges = 17)
{
    $oranges .= 1;
}
$apples = 5;
oranges($apples);
echo $apples++;
```

- i. 16
- ii. 51
- i. 6
- ii. 5

(4 marks)

(d) The value of the variable input is a string 1,2,3,4,5,6,7. How would you get the sum of the integers contained inside input?

(4 marks)

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

(8 marks)

Car Service Invoice				
S/No Parts and Services		Qty	Unit Price	Amount
1	Engine Oil SAE 30	4 litres	\$7.00	\$28.00
2	Spark Plugs	4Ea	\$4.00	\$16.00
3	Air Filter	1 Sets	\$25.00	\$25.00
4	Coolant	14L	\$16.00	\$16.00
Labour Charges				\$65.00
Total				\$150.00

Figure 1

Question 3

(a) Why would you use `===` instead of `==`?

(6 marks)

(b) Which key will not be displayed from the following code block?

```
<?php
$array = array('a' => 'John',
               'b' => 'Coggeshall',
               'c' => array('d' => 'John',
                           'e' => 'Smith'));

function display($item, $key) {
    print "$key => $item\n";
}

array_walk_recursive($array, "display");

?>
```

- i. d
- ii. c
- iii. b
- iv. a
- v. they will all displayed

(4 marks)

(c) Suppose you receive a form submitted by a post to subscribe to a newsletter. This form has only one field, an input text field named email. How would you validate whether the field is empty? Print a message "The email cannot be empty" in this case.

(4 marks)

(d) A *Recruit* table contains four columns: *StudentID*, *DepartmentID*, *StudentName* and *CAOPoints*. Write code for a PHP Page that selects all the rows from the *Recruit* table with *CAOPoints* more than 400 and displays the rows as a table on a HTML page.

(16 marks)

Question 4

(a) 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 to 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) How would you declare a function that receives one parameter name hello?

If hello is true, then the function must print hello, but if the function doesn't receive hello or hello is false the function must print bye.

(4 marks)

(c) Create a form like Figure 2, and write PHP code to insert the "First Name, Last Name and Special delivery instructions" collected from the form into an order table.

(16 marks)

A bike order form

What type of bike do you want to purchase?

☒ Street bike ☐ Mountain bike ☐ dirt bike

What accessories do you need? ☐ Gloves ☒ Helmet ☐ Camel water bag

Where do you go biking?

Shipping information

First Name Last Name Address City State Zip code

Special delivery instructions

Payment information

Credit card number Expires

Figure 2