

R228/209

**DUBLIN INSTITUTE OF TECHNOLOGY
KEVIN STREET, DUBLIN 8.**

BSc Computer Science

Year 2

SUPPLEMENTAL EXAMINATIONS 2007

WEB DEVELOPMENT II

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SEPTEMBER 2007, 1.5 HOURS

ATTEMPT **QUESTION 1** AND ANY **ONE** OTHER QUESTION

ALL QUESTIONS CARRY EQUAL MARKS.

Section A Compulsory

1. Attempt any 5 of parts (a), (b), (c), (d), (e) and (f).
- (a) (i) Briefly outline three strong advantages of using CSS in designing and implementing modern websites. **(3 marks)**
- (ii) Using sample code snippets, show how *CSS Layers* can be used to organise the layout of a webpage. **(7 marks)**
- (b) (i) What role does XML play in modern web design? **(3 marks)**
- (ii) Create a simple XML format which can store information about library books (title, author, shelf number etc). Provide a DTD for the XML format and a sample document according to the DTD. **(7 marks)**
- (c) (i) To what degree can JavaScript be considered an *Object Oriented* language? **(3 marks)**
- (ii) Provide a JavaScript which will automatically generate a table when the user provides the number of rows and columns. **(7 marks)**
- (d) (i) What is the primary difference between HTTP GET and HTTP POST in terms of how the query string is submitted to the server side script? **(3 marks)**
- (ii) Given the following query string:

`user=Timothy&hobby [] =Reading&hobby [] =Walking`

provide the PHP code necessary to produce the output shown below

Hello Timothy

Your hobbies are:

1. Reading
2. Walking

(7 marks)

(e) (i) Describe clearly, using diagrams, what is meant by the term *Three Tier Architecture*.

(3 marks)

(ii) Given the following simple database table named `people`:

people			
person_id	person_name	hobby1	hobby2
1	Timothy	Reading	Walking
2	Mary	Running	Jumping
0			

provide the PHP code necessary to produce the output shown below (you may assume that the database is registered with the ODBC name `people_db`):

The people in the database are named

1. Timothy
2. Mary

(7 marks)

(f) (i) Explain what is meant by the term *cookie* in terms of web applications.

(3 marks)

(ii) Given the form below:

Name

Hobby

provide the PHP code required to save the name (in this case “Timothy”) to a cookie, so that the next time the page is loaded, the name “Timothy” will be displayed in the name box again, as shown below:

Name

Hobby

(7 marks)

Section B

Attempt EITHER Question 2 OR Question 3

2. (a) Discuss the importance of accessibility in web design, and provide five design rules that should be adhered to by web authors when creating HTML pages. (12 marks)
- (b) Consider the form shown below:

Online Journal Membership

Membership: 1 month 6 months 1 year

eMail Address

Password

Credit Card Number

When this form is submitted, the page must check that the following is true:

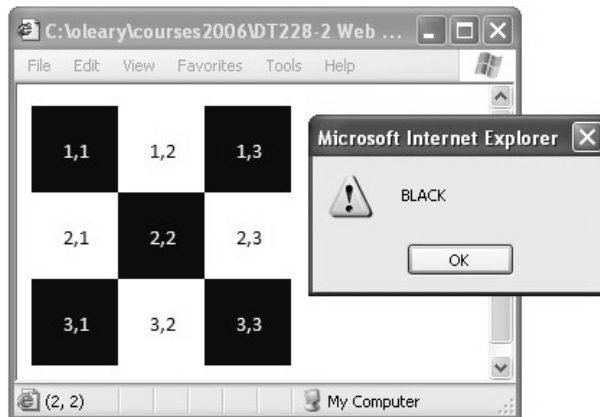
- One of the membership radio buttons is selected.
- The e-mail address contains the @ symbol.
- The password is at least 8 characters long
- The credit card number is 16 characters long.

If any of the above are not true, the form must not submit.

Provide the HTML and JavaScript code required for this web page. State any assumptions you make, and note that you do not need to provide the code for the table layout.

(18 marks)

(c) Consider the webpage shown below:



The page contains a square image of width 180 pixels. When the user's mouse moves over a cell in the image, the status bar at the bottom of the window displays the coordinates of the cell. When the user clicks in the image, the user is alerted about the colour of the cell.

Provide the HTML and JavaScript code required for this page. (State any assumptions you make.)

(20 marks)

3. (a) Illustrate clearly, using diagrams where necessary, the role of the following in a standard web request:

- The Internet Protocol (IP)
- The Transmission Control Protocol (TCP)
- The Hypertext Transfer Protocol (HTTP)

(15 marks)

(b) Describe in detail the role that Java Applets play in the modern web. In your answer you must clearly describe the following:

- The Java Virtual Machine
- Bytecode
- The role of HTTP

(15 marks)

- (c) AJAX represents an interesting shift from the standard operation of the World-Wide-Web.

Discuss the above statement, and provide all the code required for the following word guessing application:

The goal of the application is to get the user to guess the word which has been selected at random by the PHP script on the server. As the user types letters on the client side, they are informed about the number of letters that are correct in the word. In the example below, the random word selected by the server is *marmalade*. As the user types in the letters, they are informed about the number of letters that are correct.

State all assumptions that you make.

Word:
You currently have 3 correct letters.

Word:
You currently have 6 correct letters.

Word:
You currently have 9 correct letters.

(20 marks)