

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

BSc Computer Science

Year 2

SUMMER EXAMINATIONS 2007

WEB DEVELOPMENT II

MR. C. O'LEARY
DR. B. O'SHEA
DR. K. BECHKOU

21ST MAY 2007, 16:00 – 17:30

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 distinguish between the operation of Java Applets and embedded JavaScript in web pages. **(3 marks)**
 - (ii) Using sample HTML, show how to embed an applet in a web page and pass parameters to the applet code. Also show how these parameters are accessed from within the applet code. **(7 marks)**
 - (b) (i) Briefly explain the role of CSS in web design. **(3 marks)**
 - (ii) Using sample code and diagrams where necessary, show how CSS code can be applied to *individual elements*, to *a set of elements in a page* and to *a set of elements in a website*. **(7 marks)**
 - (c) (i) Explain what is meant by *well-formedness* in terms of XML. **(3 marks)**
 - (ii) Use sample code and diagrams where necessary to show how XSL can be used to convert between XML formats. **(7 marks)**
 - (d) (i) What does the acronym *AJAX* stand for? Provide briefly your understanding of the first word in the acronym. **(3 marks)**
 - (ii) Using sample code and diagrams, explain clearly how AJAX represents a shift from the traditional interaction model on the World-Wide-Web. **(7 marks)**
 - (e) (i) Briefly distinguish between *client-side* and *server-side* processing on the web. **(3 marks)**
 - (ii) Identify *three* members of the `_SERVER` global array, which are accessible through a standard PHP script, and briefly identify their function. **(7 marks)**
 - (f) (i) Explain the role of layering in the Internet architecture. **(3 marks)**
 - (ii) Using diagrams where necessary, demonstrate the role and function of IP. **(7 marks)**

Section B

Attempt EITHER Question 2 OR Question 3

2. (a) Jakob Nielsen identified, in 2007, the following top ten mistakes in web design:

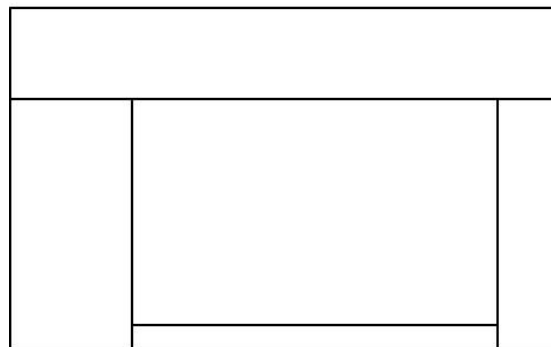
- i. Bad Search
- ii. PDF Files for Online Reading
- iii. Not Changing the Colour of Visited Links
- iv. Non-Scannable Text
- v. Fixed Font Size
- vi. Page Titles With Low Search Engine Visibility
- vii. Anything That Looks Like an Advertisement
- viii. Violating Design Conventions
- ix. Opening New Browser Windows
- x. Not Answering Users' Questions

Using any website of your choice (example DIT *or* School of Computing *or* Ciarán O'Leary), provide a brief critique of its usability referring to the above mistakes. Identify and briefly discuss one other mistake you encounter while using the web.

(12 marks)

(b) Nested tables, nested layers and frames are three competing approaches to organising the layout of web pages. Provide the HTML code necessary to implement the layout shown below using each of the three approaches, and then clearly compare and contrast each approach under the following headings:

- i. Usability
- ii. Code complexity
- iii. Modifiability
- iv. Anything else



(18 marks)

(c) Explain clearly what is meant by the term *Document Object Model (DOM)* in terms of JavaScript and HTML/XML. Provide the code necessary to implement the following functionality in a web page using DOM methods:

- Prompt the user for number of rows (`nrows`)
- Prompt the user for number of cells per row (`ncells`)
- Build a table with these dimensions
- As each new cell is being added, prompt the user for the text for the cell
- As each new cell is being added, prompt the user for the alignment of the text in the cell (left, right, centre)

(20 marks)

3. (a) Provide and clearly describe a sample HTTPv1.0 request and response. Briefly describe any changes to these messages due to HTTPv1.1.

(12 marks)

(b) Provide the code necessary to construct the HTML form shown below (assume it is being submitted to `q3c.php`). Explain the relevance of the `method` attribute in the `form` element. Show what the HTTPv1.0 request would look like using two different types of `method`.

The image shows a web form with the following elements:

- Name:** A single-line text input field.
- Age:** A dropdown menu with five options: "Under 25", "25 - 34", "35 - 44", "45 - 35", and "Over 55".
- Gender:** Two radio buttons labeled "Male" and "Female".
- Address:** A multi-line text area with a vertical scrollbar on the right.
- Buttons:** Two buttons at the bottom labeled "Send" and "Clear".

(18 marks)

(c) Compare and contrast the role and operation of *sessions* and *cookies* in PHP applications. Rewrite the page from part (b) above as a PHP script with the following functionality:

- i. When the page is loaded for the first time the form is displayed as shown.
- ii. When the form is submitted the contents are written to a database table and the name is written to a cookie.
- iii. When the page is loaded subsequently, the name is read from the cookie and used to read the age, gender and address from the database – which are then displayed in the form.

(20 marks)