

RS249/417

DUBLIN INSTITUTE OF TECHNOLOGY
KEVIN STREET, DUBLIN 8.

BSc Information Systems / Information Technology

Stage 4

SUPPLEMENTAL EXAMINATIONS 2009

ADVANCED INTERNET DEVELOPMENT

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2 HOURS

ATTEMPT 3 QUESTIONS

ALL QUESTIONS CARRY EQUAL MARKS

1. (a) Distinguish between *Rich Internet Applications* and traditional web applications. **(8 marks)**
(b) Clearly demonstrate how the *Model-View-Controller* design pattern guides the development of web applications. Use examples from a technology of your choice. **(10 marks)**
(c) *BigBank Ltd* wishes to implement a web application which allows its customers monitor their bank balances and carry out transactions through the web. Provide a design for such a web application, and demonstrate how this design could be realised using a technology, or set of technologies, of your choosing. **(15 marks)**

2. (a) Distinguish between the role of the *Java SE* (Standard Edition) and *Java EE* (Enterprise Edition) in the development of applications. **(8 marks)**
(b) Describe *two* ways in which persistence can be handled in Java EE web applications. What are the advantages and disadvantages of each? **(10 marks)**
(c) *BigBank Ltd* wishes to implement a web application which allows its subsidiaries and partners interface directly with their systems. Provide a design for such a web application, and demonstrate how this design could be realised using a technology, or set of technologies, of your choosing. **(15 marks)**

3. (a) Provide a brief outline of *three* ways to improve the accessibility of a web page. **(8 marks)**
(b) With reference to XML, clearly explain the terms *validity* and *well-formedness*. Use examples to help illustrate your answer.
Briefly compare and contrast *DTD* and *XML Schema* as validation languages. **(10 marks)**
(c) Illustrate the operation of AJAX applications, and explain clearly, using examples and diagrams, how AJAX compares to, and contrasts with, the standard web model. **(15 marks)**

4. (a) Clearly demonstrate how *SQL Injections* are implemented by hackers, and describe the steps that can be taken by web developers to ensure that their web sites are not susceptible to such attacks.

(8 marks)

- (b) Clearly demonstrate how *Cross Site Scripting* is implemented by hackers, and describe the steps that can be taken by web developers to ensure that their web sites are not susceptible to such attacks.

(10 marks)

- (c) *BigBank Ltd* wishes to implement a web application which allows its subsidiaries and partners interface directly with their systems. They are concerned, however, that their site will not be secure, and are unsure of the security that is provided by the *https* protocol.

Write a clear description of how *https* is implemented through the *Secure Socket Layer* protocol, demonstrating to the company the level of security provided.

(15 marks)