

**Athlone Institute of Technology**

**School of Engineering**

**Semester 1 Examinations 2017**

**December Session**



**BACHELOR OF SCIENCE IN SOFTWARE DESIGN**

**(CLOUD DEVELOPMENT) - YEAR 3**

**SERVER-SIDE WEB DEVELOPMENT**

**External Examiner(s): Dr. Steven Davy, Mr. Jerh O'Connor**

**Internal Examiner(s): Dr. Paul Jacob**

**Instructions to candidates:**

Read **all** questions carefully.

All questions carry equal marks.

Answer **Three** out of **Four** questions.

**Time Allowed: 2 hours.**

**No. of pages including cover sheet: 3**

**Q1.**

- (a) Write a HTML document with a form containing a text field, a password field and a submit button. What will the form data set look like when the form is submitted?

(4 marks)

- (b) Briefly outline the format of HTTP messages. Give an example of both a HTTP request and a HTTP response.

(7 marks)

- (c) Compare and contrast how HTTP request parameters are passed to the server in the cases where a GET and where a POST is used.

(3 marks)

- (d) Outline the structure of a Web application developed using Servlets.

(6 marks)  
**[20 marks]**

**Q2.**

- (c) Write a Servlet that processes the request

**GET .....?name=paul&address=athlone HTTP/1.1**

The Servlet should return the message Hello <name> from <address> to the user.

(6 marks)

- (b) Assuming the existence of a model class called User with properties name and address, write a Servlet and JSP that does the same as in part (a), that is it returns the message Hello <name> from <address> to the client. This time the Servlet should create a model object and pass it to the view.

(8 marks)

- (c) What are the four scopes of variables in JSP? Explain the relevance of each.

(6 marks)  
**[20 marks]**

**Q3.**

(a) Give an overview of the Model View Controller pattern as applied to Web applications. Explain with reference to a query that returns a list of books.

(8 marks)

(b) Write JSP to iterate over a list of books and to print out the title and author of each book. Use the <c:Each and <c:out tags in the JSTL core library.

(4 marks)

(c) What is a Data Access Object (DAO) and what is it used for? Outline a pattern for implementing a DAO as a singleton object in Java using an enum. What methods would you expect to see in the class? Give pseudo-code for two of these methods.

(8 marks)  
**[20 marks]**

**Q4.**

(a) What is a HttpSession object and how is it used? What is a cookie? Explain how the HttpSession object could be implemented internally in J2EE using cookies.

(8 marks)

(b) Write JSP to conditionally print out the name of the currently logged in user if the attribute user is set in the current Http session. (If the attribute is not set, nothing is printed out.) Use the <c:if and <c:out tags in the JSTL core library.

(4 marks)

(c) Outline a domain model for a shopping cart. [Give the classes and relations between the classes.] The cart should be able to store both the item and the number of that item added to the cart.

(4 marks)

(d) Outline options regarding access to the current users's shopping cart in the two cases where the shopping cart disappears when the session is over, and when it needs to persist over a number of sessions.

(4 marks)  
**[20 marks]**