

DUBLIN INSTITUTE OF TECHNOLOGY

COLLEGE OF BUSINESS

AUNGIER STREET

Programme: BSc Business Computing

DT354 Year 3

Semester 1 Examination

January 2018

Module: Web Development 1

Module Code: INFS3031

Internal Examiner: Dr J Munnelly

External Examiner: Dr Eoin Whelan

Exam Duration: 2 hours

Instructions: Answer any 4 questions.

5th January 2018

14.00 - 16.00

Courtyard

1.

- a. Outline a chat application built using Java Sockets that allows two users (you can refer to them as Client and Server) to send and receive String messages. The chat should continue until one user enters "Exit". Use pointers to explain each line so as to demonstrate your understanding of the code.

(12 marks)

- b. Several different implementations of Java Sockets are available, depending on the type of Sockets and transport protocols used. Outline the objects used in the three different implementation covered in the coursework. Describe exactly how each works and in what circumstances it might be used over other Socket implementations.

(13 marks)

[Total: 25 marks]

2.

- a. A market research company requires an online system to allow users to review a particular product. The system requires the user to input their email, product name and satisfaction level (number between 1 and 10). This information should be processed by a Servlet, returning a confirmation of the submission by displaying the data submitted by the user. Outline all of code required for the web application in question including all classes, webpages and configuration files required. Use pointers to explain the code in detail.

(22 marks)

- b. Outline the lifecycle methods of a Servlet and explain what each one does.

(3 marks)

[Total: 25 marks]

3.

- a. Using JDBC, outline an application that connects to a database named “Library” that has one table “Book” as per below. Add functionality that allows adding a book (show adding a new book of your choice), and functionality to display all the books in the table. Explain all of the code in detail to demonstrate your knowledge of the objects and methods in the JDBC API.

ISBN	Title	Author
978-0544003415	The Lord of the Rings	J.R.R. Tolkien
978-1259589331	Java: The Complete Reference	Herbert Schildt
978-0141439600	A Tale of Two Cities	Charles Dickens

(20 marks)

- b. Explain the various ways the JDBC API allows SQL operations to be carried out including details of how the operations can be outlined and executed, comparing the differing techniques.

(5 marks)

[Total: 25 marks]

4.

- a. Tag Libraries are used as a way of extending the functionality of JSP. Outline a full code example of the use of tag libraries in JSP from a web framework of your choice. Explain each line of the code to demonstrate your understanding. Include any classes that interact with the JSP.

(13 marks)

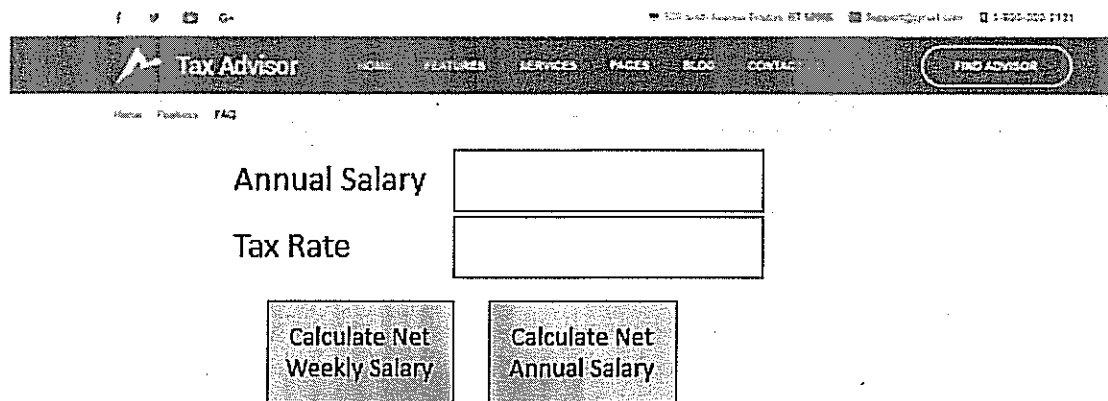
- b. As HTTP is a stateless protocol, developers must use state management techniques in their applications. Describe one such technique you have used in your coursework and outline a full code example of its use, detailing how/where state is stored, accessed etc.

(12 marks)

[Total: 25 marks]

5.

- a. The website below illustrates functionality to calculate Net Annual and Weekly Salary given user input Gross Annual Salary and Tax Rate (you can assume that tax is calculated at that tax rate on the entire salary amount). Show, using the Struts2 framework, an implementation for the functionality below. Show full code enabling user input, processing of that input, resulting response and all required configuration code. Include explanation pointers in your code to demonstrate your understanding.



The screenshot shows the 'Tax Advisor' website. At the top, there is a navigation bar with links for HOME, FEATURES, SERVICES, PAGES, BLOG, and CONTACT. A 'FIND ADVISOR' button is also present. Below the navigation bar, there are two input fields: 'Annual Salary' and 'Tax Rate'. Below these fields are two buttons: 'Calculate Net Weekly Salary' and 'Calculate Net Annual Salary'.

[Total: 25 marks]