



Semester 2 Examinations 2021-22

Course Instance 2BCT
Code(s)
Exam(s) B.Sc. in Comp Science & Information Technology

Module Code(s) CT216
Module(s) Software Engineering 1

Paper No. 1
Repeat Paper No

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Instructions: Answer any three questions, all questions carry equal marks.

Duration 2 hours
No. of Pages 4
Discipline(s) Computer Science
Course Co-ordinator(s) Dr. Colm O’Riordan

Requirements:

Release in Exam Venue	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
MCQ	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Handout	None			
Statistical/ Log Tables	None			
Cambridge Tables	None			
Graph Paper	None			
Log Graph Paper	None			
Other Materials	None			
Graphic material in colour	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>

Question 1:

a) With the aid of examples outline the meaning and define the following terms:

- a. SCRUM
- b. The Waterfall Model
- c. Pair Programming
- d. Test Driven Development

[12 marks]

b) In the context of Software Testing, describe the following

- a. Black box testing
- b. White box testing

[4 marks]

c) In the context of Software Testing, explain what Code Coverage is? In your answer please include an explanation of branch and line (statement) coverage

[4 marks]

Question 2:

a) Write HTML to recreate the following form (see Figure 1 below). The form is to enable users to submit a query to a website via its ticketing system. Each text box is spaced 5px apart from each other, please make sure when creating your HTML that you also maintain this spacing between input elements. The dropdown list contains fields for Technical Support, Sales, Accounts and Investors.

Submit your query and we'll be in contact as soon as possible

Email Address

Technical Support ▼

Submit Ticket

Figure 1 Contact us form

[4 marks]

b) In HTML what is the difference (if any) between a tag and an element?

[4 marks]

c) Explain how the grid system in Bootstrap works. In your answer discuss the purpose of rows and columns and describe how the grid facilitates responsive design.

[4 marks]

- d) Write HTML for a login form which contains a dropdown list (options for gender), two text boxes (one for username and one for password), a checkbox for “remember me”, a submit and a reset button.

[4 marks]

- e) What are style classes? Give an example of a class and an id-based CSS selector.

[4 marks]

Question 3:

- a) Using JavaScript, write a function which accepts two arrays as arguments. The arrays both contain sequences of numbers such as [1,2,4] and [2,4,6]. Each array will contain the same number of elements but expect different values. Write code to iterate through the array and return a Boolean as to whether the sum of the values in the first array are greater than the second.

[5 marks]

- b) Write JavaScript code that upon button click reads 3 numbers from 3 text boxes and doubles each number before saving it in the text box it came from.

[7 marks]

- c) VueJS supports a concept known as 2-way data binding. Explain what this is.

[4 marks]

- d) In VueJS explain what Single File Components are.

[4 marks]

PTO

Question 4:

You have been asked to build a server backend for a web app using Firebase. This comprises a collection of RESTful APIs built using Firebase functions and a Firestore database. The backend is designed to support an Instagram style application. Each image shared by the users of the application should contain a description of the image, the upload time and date, the number of likes and the number of re-shares.

- a) Provide a sample JSON document which contains data for a single image shared on the platform.
[4 marks]
- b) Write the JavaScript (NodeJS) code to create a server-side API using Firebase Functions which returns all image documents in the collection, sorted in **descending** order by upload time.
[5 marks]
- c) Write the JavaScript (NodeJS) code to create a server-side API using Firebase Functions which is used for accepting the image data sent via POST to the server. Assume that the request body contains JSON data. Provide code to save the data in the request body to the Firestore database. However, prior to saving in the database, check the request body to see if there is a description. If no description is provided then the response to the user should be *image not saved* and no data should be saved in the database. If a description is provided then the data should be saved and the response to the user should be *image saved successfully*.
[6 marks]
- d) Write the JavaScript (NodeJS) code to create a server-side API using Firebase functions which deletes individual documents from the collection by parsing the query string, extracting the id and removing the document found.
[5 marks]

END

