DUBLIN INSTITUTE OF TECHNOLOGY

DT211C/4 BSc. (Honours) Degree in Computer Science (Infrastructure)

DT228/4 BSc. (Honours) Degree in Computer Science

DT282/4 BSc. (Honours) Degree in Computer Science (International)

DT8900/1 International Pre-Masters for MSc in Computing

WINTER EXAMINATIONS 2017/2018

RICH WEB APPLICATION TECHNOLOGY [CMPU4043]

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THURSDAY 4TH JANUARY   9.30 A.M – 11.30 A.M.

TWO HOURS

INSTRUCTIONS TO CANDIDATES
Question 1 is **compulsory**. Answer question 1 **and** any two of the other three questions.
Question 1 is worth 40 marks, all other questions are worth 30 marks

1 (a) Explain how the <u>web component</u> abstraction follows the separation-of-concerns design principle, illustrating your answer with an example.

(8 Marks)

(b) What is the Document Object Model (DOM)? Using example code to illustrate your answer, show how the developer can interact with DOM API to capture an input event

(8 Marks)

(c) In Javascript the Array data type is said to be functor. What is a functor? Give an example of a functor's use in code.

(8 Marks)

(d) Describe the Javascript Object Notation (JSON) standard using an example to illustrate your answer. Briefly compare JSON with XML as data serialisation format in rich web application development

(8 Marks)

(e) Explain how the fetch API is used in browser networking. Illustrate your answer with example code in Javascript

(8 Marks)

2 (a) Basic, attribute and relational are all types of Cascading Style Sheets (CSS) selectors. WIth the aid of example code, describe each of these and show they can be used to target DOM elements.

(12 Marks)

(b) Describe in detail, with code examples, how code reuse across a complex Rich Web Application can be achieved.

(18 Marks)

3 (a)   Describe the Promise API in Javascript, briefly illustrating using code how a function can return
        a promise and how a consumer uses a returned promise object

        (12 Marks)

  (b)   Describe, with examples, each of the following concepts in asynchronous program execution in
        Javascript.

        - Callback functions
        - Concurrent request processing with promises
        - Streams

        (18 Marks)

4 (a)   Using an example of your choice, describe the JSX markup language from the React JS
        framework

        (10 Marks)

  (b)   Javascript and Elm support a functional programming paradigm. Explain what is meant by
        functional programming, mentioning the important features that a language must support in
        order to be considered functional. In your opinion, why do you think this style has become so
        popular in rich web application development in recent years?

        (20 Marks)