

S210/115

DUBLIN INSTITUTE OF TECHNOLOGY
KEVIN STREET, DUBLIN 8.

MSc Computing (Information Technology)

Stage 2

SEMESTER 2 EXAMINATIONS 2009

UNIVERSAL DESIGN

MR. C. O'LEARY
DR. D. LILLIS
MS. J. HURNE

FRIDAY 22ND MAY 2009, 1:00PM

ATTEMPT
QUESTION 1 AND
ONE OTHER QUESTION

ALL QUESTIONS CARRY EQUAL MARKS

1. (a) Provide a definition for the term *Universal Design*.

What, if anything, distinguishes *Universal Design* (according to your definition) from each of the terms below?

- i. Assistive Technology
- ii. User-Centred Design
- iii. *Good Design*

(10 marks)

- (b) Identify each of the *Seven Principles of Universal Design*, and provide a brief overview of the guidelines which accompany these principles.

Use an example of your choosing to illustrate how a specific product, service or environment meets, or fails to meet, some or all of the seven principles.

Based on your example, evaluate the seven principles in terms of their *appropriateness* and *completeness* as a cross-domain set of principles.

(20 marks)

- (c) Present and evaluate a means through which legislators could enforce a cross-domain adherence to the philosophy of *Universal Design*.

Discuss in detail the main inhibitors to the successful implementation of such legislation.

Support your argument with reference to existing legislation.

(20 marks)

2. (a) *Accessibility and Universal Design were rarely (if ever) a concern for software developers until the late 1990s, and even then, poor understanding has led to a world where the vast majority of Information and Communications Technology (ICT) resources are largely unusable for a minority of potential users.*

Present an argument supporting or opposing the above statement. Support your argument with reference to the *reasons* for the current and past levels of software usability and accessibility.

(10 marks)

- (b) In the United States, *Section 508 of the Amendment to the Rehabilitation Act (1998)* requires that public agencies give disabled employees and members of the public access to information that is comparable to the access available to others.

Identify and discuss five means through which a web designer can attempt to make a website more accessible by adhering to the *Web Content Accessibility Guidelines 2.0* from the World-Wide-Web Consortium.

Assess the *Web Content Accessibility Guidelines 2.0* in relation to the philosophy and principles of *Universal Design*.

(20 marks)

- (c) Alan Cooper of *Cooper Consulting* argues that well designed software should be *considerate software*, and as such, it should:

- i. Take an interest
- ii. Be deferential
- iii. Be forthcoming
- iv. Use common sense
- v. Anticipate needs
- vi. Be conscientious
- vii. Not burden with other problems
- viii. Keep informed
- ix. Be perceptive
- x. Be self confident
- xi. Not ask lots of questions
- xii. Fail gracefully
- xiii. Know when to bend the rules
- xiv. Take responsibility

Is it sufficient, in your opinion, to educate software developers and interaction designers on these guidelines for *considerate software*, in order to ensure that software is *Universally Designed*?

Support your argument with reference to software products with which you are familiar.

(20 marks)

3. (a) *Arriving at a Universal Design for software is hindered by the processes which are traditionally employed by software engineers.*

Discuss the above statement making reference to the limitations, if any, of traditional software design processes with respect to *Universal Design*.

(10 marks)

- (b) *Personas* are user models which can be used effectively to inform and direct the design process.

Explain clearly how personas are constructed and demonstrate how they can be used in a design process.

What, in your opinion, are the strengths and weaknesses of personas in the context of Universal Design? Justify your opinion.

(20 marks)

- (c) Explain, using examples, the meaning and role of *design patterns* in the context of software design.

Demonstrate how *pattern libraries* could better facilitate *Universal Design*, if employed during the design process.

How, in your opinion, could the *library* approach to pattern collection apply to the construction and collection of *personas* for the benefit of *Universal Design*?

(20 marks)