NUI Galway
OÉ Gaillimh

Autumn Examinations 2012/ 2013

Exam Code(s)	3BCT121; 3BA1; 4BA1;1MF1; 1SD1
Exam(s)	B.Sc. in Computer Science and Information Technology B.A. MSc in Software Design and Development Higher Diploma in Software Design and Development
Module Code(s)	CT318 CT865
Module(s)	Human Computer Interaction
Paper No. Repeat Paper	1
External Examiner(s) Internal Examiner(s)	Prof. Michael O'Boyle Prof. Gerard Lyons Dr. Michael Madden Ms. Karen Young
Instructions:	Candidates should answer **Question 1** and **two other** questions. All questions carry equal marks.
Duration	2 hours
No. of Pages	3

Requirements:
MCQ
Handout
Statistical/ Log Tables
Cambridge Tables
Graph Paper
Log Graph Paper
Other Materials

Release to Library: Yes ☐ ☐

Q.1 You have been asked to design an interactive web-based ***maths learning environment*** for children to support their development of effective maths skills. The system must be appealing and fun to use, engage the children, and enable navigation by a variety of means (e.g. by topic, or through sequential lessons, or by activity).

The site must also store the children's details, greet them when they enter, store a record of their performance on various games and tasks, and recommend areas for further attention. The system is competing against a variety of commercial gaming platforms and so must be very well designed to appeal to its audience.

The company has indicated that they want an initial design submission from you to include the following:

(a) A PACT analysis for this application.

[6]

(b) A paper prototype of three of the interface screens, representing the system's functional organisation and overall "look and feel". Clearly outline your rationale for each of the design choices you make (e.g. interaction styles).

[9]

(c) An evaluation plan, clearly outlining what activities, when, how and by whom the evaluation activities will be undertaken, for the system which will support comprehensive testing of your design.

[5]

2. **(a)** *Anthropomorphism has no place in interactive software design and is best left to advertising*. Do you agree? Explore the role of anthropomorphism in effective interactive software development, supporting your answer with relevant examples.

[6]

(b) You have been asked to design a *remote control* device that can be used to control the lighting, heating, curtains/blinds for both domestic and public settings. Prepare a prototype design, outlining the *design principles* you found relevant in solving this problem.

[8]

(c) Which interaction style would you apply to the design of each of the following and why?

- A blood glucose Monitoring Device
- A high-tech interactive refrigerator which will alert users when they need to purchase stock, when stock is out of date and analyse overall efficiency of energy usage.
- A Web-based project management application for project management professionals.

[6]

Q. 3. (a) (i) Distinguish between a *conceptual* model and a *physical* model in design.

(ii) You have been tasked with developing a website for a chain of gyms. Outline the progression from Conceptual to Physical Design in this context, clearly identifying the inputs and outputs for each design phase.

[8]

(b) Your company has commissioned a number of evaluation studies which have shown that your users find your software products consistently "difficult to use". Write a one-page memo to your colleagues in your company on the importance of ***prototyping*** to the success of the interactive systems designed by your company and identify suitable ***prototyping tools***.

[6]

(c) In designing an interactive application discuss the role of *world* and *head* vectors in enabling effective progression from novice to expert use, illustrating your response with appropriate examples.

[6]

Q. 4. (a) Effective interaction design is ultimately about the correct assignment of responsibilities to the parties participating in the interaction, i.e. the human and the computer.

(i) From your study of the various theories, models, processes, and techniques of interaction design, comment on the validity of the above statement.

[6]

(ii) Discuss issues of the allocation of functions between people and software specifically in the context of a Web-based project management application for project management professionals.

[4]

(b) Using appropriate examples, explain Norman's *gulf of execution* and *gulf of evaluation* as they relate to successful interaction design.

[5]

(c) Good design requires good designers, not expensive *tools*. Comment on the validity of this statement and what it means for interaction design education. Support your answer with relevant examples.

[5]