



Autumn Examinations 2014/ 2015

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. 1
Repeat Paper

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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

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- Q.1** You have been asked to design an interactive web-based *foreign language learning environment* for children to support their development of effective language 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]

- Q. 2. (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.*
From your study of the various theories, models, processes, and techniques of interaction design, comment on the validity of the above statement, illustrating your response with appropriate examples as necessary.

[12]

- (b)** The primary purpose of **design principles** is to optimise users' experience (UE) with the designed product and minimise users' work. Discuss the contribution of design principles to reducing users' workload (cognitive, memory, visual and physical) and whether there are situations where designers may intentionally increase user workload to increase user engagement. Support your answer with examples where appropriate.

[8]

Q. 3. (a) Laseau's *Design Funnel* presents a simple model of the design process. The expanding and contracting funnels correspond to distinct design activities with their associated approaches and methods. Using the example of an educational game being developed to support mathematics education in second level schools (i.e. for 12-18 year old students) compare the focus and design activities of both funnels and elaborate on the relationship between the two.

[10]

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

[4]

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

[6]

Q. 4. (a) 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 *user considerations* you found relevant in solving this problem.

[8]

(b) "*Perfection is attained not when there is no longer anything to add, but when there is no longer anything to take away*" (Antoine de Saint Exupery, 1954)

Analyse the above statement in light of your study of effective **visual design**, including consideration of its application to a **computer system of your choice** in your answer.

[7]

(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.

[5]