NUI Galway OÉ Gaillimh

Autumn Examinations 2017/ 2018

Exam Code(s)	3BCT121; 3BA1; 4BA1
Exam(s)	B.Sc. in Computer Science and Information Technology
	B.A.
Module Code(s)	CT318
Module(s)	Human Computer Interaction
Paper No.	1
Repeat Paper	
External Examiner(s)	Professor Jacob Howe
Internal Examiner(s)	Prof. Michael Madden
	Ms. Karen Young*

Instructions:	Candidates should answer **Question 1** and **any two other** questions.
	All questions carry equal marks.
Duration	2 Hours
No. of Pages	3

<u>Requirements</u>:

Release in Exam Venue	Yes	X	No
MCQ	Yes		No X
Handout	None		
Statistical/ Log Tables	None		
Cambridge Tables	None		
Graph Paper	None		
Log Graph Paper	None		
Other Materials	None		
Graphic material in colour	Yes		No x

Q.1 You have been asked to contribute to the design of a **new mobile application** to enable users to manage and organise their **travel plans** or commitments easily in advance of any trips. This application will enable users to schedule their travel arrangements by preferred day, time, and cost (comparing train, bus, taxi, air & boat), select accommodation by cost and location, view and select events of interest during their visit as well as select restaurants or bars, shopping locations etc. while there. Your company is open to other functional possibilities including automatic logging of expenses / costs and other time saving factors for users.

Your company has indicated that they want an initial, early 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 for the system which will support comprehensive testing of your design, clearly outlining what activities, when, how and by whom the evaluation activities will be undertaken.

(5)

Q. 2. **(a) Design principles** are intended to cover all interactive systems. Their generalisability is both their strength and weakness. Discuss the role of design principles in developing good interactive systems, illustrating your response with examples as appropriate. In your answer consider the use of these principles in all designs: how important is **context** in the application of these principles?

(9)

(b) What makes something easy to use? What are the properties of an interactive system that make it easy to use for the elderly? And for children?

(5)

(c) 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 short **memo** to your colleagues in your company on the importance of **mental models** to the success of the interactive systems designed by your company   .

(6)

Q. 3. (a) Effective interaction design involves achieving a balance between *divergent* and *convergent* design thinking.

(i) Compare these two thought processes, explaining the design stages each are suited to, and the importance of each to a successful design outcome using examples to illustrate your answer.

(5)

(ii) **Laseau's** Design Funnel clearly integrates these two processes. Using this funnel elaborate on the different activities involved during the elaboration and reduction design phases for the travel management mobile application described in Q.1 above.

(5)

(b) Choose an appropriate **evaluation strategy** for each of the following situations. In each case identify: the participants, the technique to be used, and the representative tasks to be examined.

(i) You are designing a new on-line shopping and home delivery system for a new supermarket chain.

(ii) You have been asked to design 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.

(iii) You are tasked with designing a new interactive game application for mobile phones.

(6)

(c) Given that good design is dependent on good designers, not expensive tools, comment on the role of **software tools** in interaction design. Support your answer with relevant examples.

(4)

Q.4 (a) Since the advent of the Graphical User Interface (GUI), User Interface design has been overly reliant on vision as a means of communicating with users. Discuss the advantages and disadvantages of augmenting the User Interface with (a) **sound** and (b) **haptics**, illustrating your answer with specific examples.

(7)

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

(4)

(c) The choice of **interaction style** is one of the most importance decisions in Interaction Design. What factors should be considered in making this choice? Use examples to illustrate your answer.

(3)

(d) 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 mobile scheduling application for an international design consultancy.

(6)