BENG HONS / BSC(ENG) HONS / BN631IE / BSC HONS / MSCI HONS / MENG HONS
Examination by course unit

Tuesday, 12 May 2015 10:00 am

ECS522U Graphical User Interfaces   *Duration: 2 hours 30 minutes*

YOU ARE NOT PERMITTED TO READ THE CONTENTS OF THIS QUESTION PAPER UNTIL INSTRUCTED TO DO SO BY AN INVIGILATOR

Answer ALL FOUR questions

Calculators are permitted in this examination. Please state on your answer book the name and type of machine used.

Complete all rough workings in the answer book and cross through any work that is not to be assessed.

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Examiners:

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Hatice Gunes

Question 1

A company has been asked to design and create a <u>graphical</u> emotion-sensitive robotic system called *GraphicRoboOrange* (Figure 1(a)) that will be a GUI version of the robot in Figure 1(b) below.
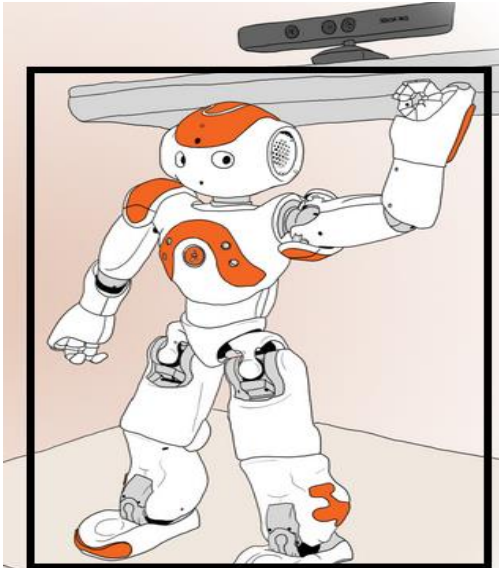

Figure 1:   (a)   (b)

a) Describe what 'anthropomorphism' is in the context of graphical user interface design and explain how this will be achieved when creating *GraphicRoboOrange*.

[3 marks]

b) (i) Describe what the two emotion-related (affective) aspects that have an impact on graphical user interface design are, and explain how each aspect impacts GUI design. (ii) Use *GraphicRoboOrange* as an example to outline how each emotion-related aspects will impact the design and implementation of *GraphicRoboOrange*. Provide examples for positive and negative impact.

[9 marks]

c) Create a task model for the user in Figure 1 to make *GraphicRoboOrange* say 'would you like me to dance for you?', and make *GraphicRoboOrange* play music and dance. Explain any sequential dependencies you identify.

[8 marks]

d) Describe two limitations of Task Analysis.

[2 marks]

e) Attention is defined as selecting things to concentrate on from the mass around us, at a point in time. Describe three design considerations that should be taken into account when designing user interfaces that are sensitive to 'human attention'.

[3 marks]

Turn Over

Question 2 (*continues on Page 4*)

a) Describe the five different interaction spaces (beyond the desktop) as classified by Winograd. Discuss which one(s) would be more appropriate to use for creating the RoboOrange system shown in Figure 1, and why.

[7 marks]

b) Describe what conceptual design and physical design is. Give details of the conceptual design and the physical design for an ATM (cash machine).

[4 marks]

c) For each screenshot provided in Figure 2 below, name and describe the Heuristic that has been applied, and explain how it has been applied.
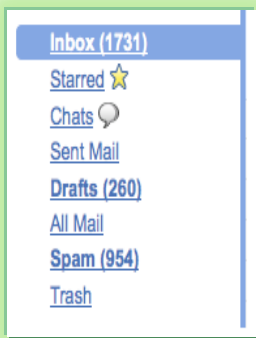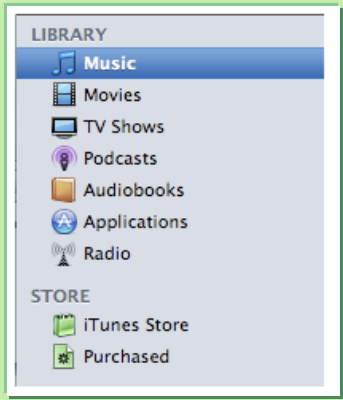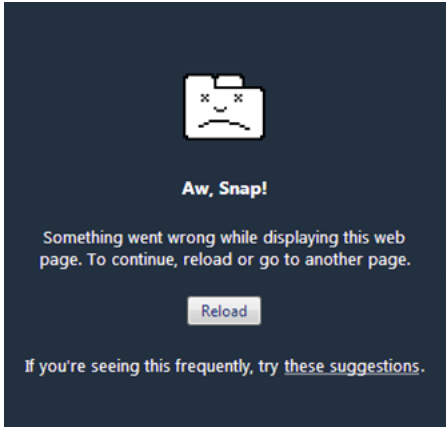
[8 marks]

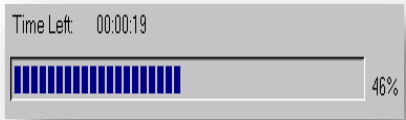|			
1	Inbox (1731) Starred ☆ Chats 💬 Sent Mail **Drafts (260)** All Mail **Spam (954)** Trash	3	Google Bitt bittersweet bitters bittersweet symphony bittersweet symphony lyrics bitter melon bitter end yacht club bittornado bitter end bitter taste in mouth bittersweet lyrics Google Search I'm Feeling Lucky
2	LIBRARY 🎵 Music 🎬 Movies 🖥 TV Shows 🎙 Podcasts 📙 Audiobooks ⊛ Applications 📡 Radio STORE 📓 iTunes Store ⚙ Purchased	4	**Aw, Snap!** Something went wrong while displaying this web page. To continue, reload or go to another page. Reload If you're seeing this frequently, try these suggestions.
5	Time Left: 00:00:19 ▐▐▐▐▐▐▐▐▐▐▐▐ 46%		

Figure 2

d) For the screenshot provided in Figure 3 below, describe how each of the six Gestalt laws have been applied.

[6 marks]

Figure 3

Question 3

A company wants to develop a new application which provides users with tourist information about locations of interest - a Tourist Information App. For example, information about restaurants, museums, galleries, historical landmarks, etc. at a specific location such as London or Paris.

a) Explain the difference between Functional requirements, Non-Functional requirements, and Data requirements. Use the Tourist Information App to give an example for each category of requirements.

[6 marks]

b) A Custom Analysis involves identifying four kinds of stakeholder. Describe the four different kinds of stakeholders and identify them for the Tourist Information App.

[8 marks]

c) Explain the differences between Custom Analysis, Soft Systems Methodology, and Task Analysis. Use the example of the Tourist Information App to explain the differences.

[6 marks]

d) Describe four data collection techniques that could be used to gather requirements for the design of the Tourist Information App. Explain which technique you think would be best to inform the design of the Tourist Information App.

[5 marks]
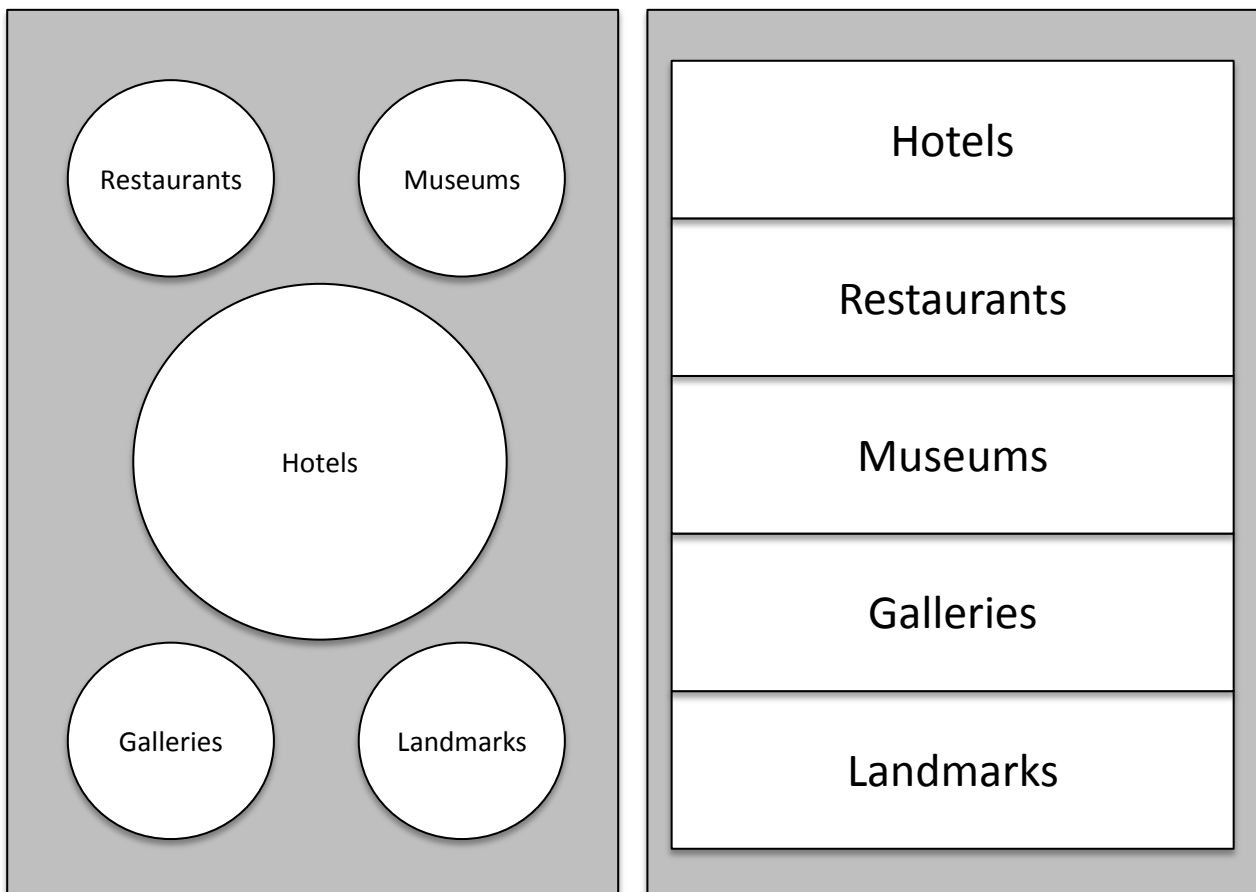
Turn Over

Question 4 (*continues on Page 6*)

a) Describe the steps involved in a GOMS analysis, what the KLM is, and what rules are applied in a GOMS analysis. Explain what GOMS is used to predict, and what its limitations are.

[8 marks]

b) Hick's Law and Fitt's Law can be used to improve the accuracy of a GOMS analysis. Explain what Hick's Law and Fitt's Law predict, and how they can be used to improve the accuracy of a GOMS analysis.

[4 marks]

c) A company has designed two screen layouts for the home page of a Tourist Information App illustrated in Figure 4 (Layout A and Layout B). Use Hick's Law and Fitt's Law to compare the two screen layouts (Layout A and Layout B), and explain which layout you think would be faster for users to use.

[4 marks]

Figure 4: Layout A **Layout B**

d) Discuss what aspects of User Interface Design are not considered by GOMS, Hick's Law, and Fitt's Law. Illustrate your answer with examples from the comparison of layouts in Figure 4.

[4 marks]

e) A company wants to get user feedback on the two layouts in Figure 4. Explain how you would conduct empirical studies (experiments) to compare the two layouts. Describe the advantages and disadvantages of empirical studies in comparison to GOMS.

[5 marks]

End of Paper