

DEPARTMENT OF COMPUTER SCIENCE
University of Toronto

CSC 318S

THE DESIGN OF INTERACTIVE COMPUTATIONAL MEDIA

FINAL EXAM

22 April 1999, 7:00-9:00 p.m

CLOSED BOOK, CLOSED NOTES

Write all your work in this booklet (36 pages in total).

Score _____ out of 100 points

Name _____

Project Team Name _____

Carefully read and answer the following questions, while thinking about the course notes, readings, guest lectures, and your work on the term project and other assignments.

Your answers should be as terse and crisp as possible.

Excess verbiage won't help. In fact, it may hurt.

If you do need extra space to write, pages 15 and 16 have been left intentionally blank for this purpose. If you use any of this extra space, please note this fact beside any question that overflows to one of those pages.

There are nine (9) questions. The value of each question is indicated.

You may want to skim the entire exam right away.

Do not spend too much time on any one question.

Good luck.

1. (8 points, 2 points for each part)

For each question below, circle **all** answers (0, 1, 2, 3, 4, 5, and/or 6) that are correct.

a) In this class, we have learned and used a design process that involves elements of:

- 1) User-centred design
- 2) Participatory design
- 3) Iterative design
- 4) Multidisciplinary design
- 5) Ethnographic design
- 6) Prototyping

b) The appearance of a Web site can be controlled by varying the typeset text using the typographic parameters of

- 1) Weight
- 2) A grid system
- 3) Slant
- 4) Rule width
- 5) Grey tone
- 6) Icons

c) Tufte stresses that effective displays of complex information need to:

- 1) Be as simple as possible
- 2) Be as colourful as possible
- 3) Have the data adorned with attractive pictures
- 4) Use 3D graphics
- 5) Be as truthful as possible
- 6) Present many numbers in a small space

d) Products discussed in class or readings whose design made heavy use of metaphors include:

- 1) The CHI'89 Information Kiosk
- 2) Web browsers
- 3) The Xerox Star
- 4) The spreadsheet
- 5) The SonicFinder
- 6) CineKit (the Movie Authoring and Design system)

2. (6 points, 2 points for each part)

In not more than 10-25 words each, finish each of the following incomplete statements.

a) "Active listening," which Blume asserted in her guest lecture is important to successful group work, is

b) Co-Discovery Learning, described by Kennedy in a paper entitled "Using Video in the BNR Usability Lab," is a process in which.....

c) Lewis and Norman, in their paper entitled "Designing for Error," assert that people make both *slips* and *mistakes*, and that mistakes are more serious because.....

3. (6 points, 3 points for part a, 3 points for part b)

Menus are computer displays of alternatives to be selected by a user. Typical menus are lists of words or sets of icons on a computer screen. Large lists or sets of menus typically are organized hierarchically, with top-level menus being used to access groups of lower-level menus, and these lower-level menus sometimes being used to access even lower-level menus, and so on.

We have stated in the class that the literature suggests that menu hierarchies should tend to favor breadth over depth.

a) Why is this? (Your answer can be stated in 10-15 words).

b) Now consider the design of a hand-held device which displays its outputs, including its menus, with a spoken voice. Would you expect that these spoken menus should also best be designed favoring breadth over depth? Why or why not?

4. (10 points, 2 points for parts a-c, 4 points for part d)

In not more than 10-25 words each, answer each of the following questions:

a) In discussing methods of evaluation, McGrath (BGBG, Chapter 2, p. 80) says: "Results depend on methods. All methods have limitations. Hence, any set of results is limited." Would McGrath react positively or negatively to the User Testing methods presented in the long Gould paper "How to Design Usable Systems" reprinted in BGBG? Why?

b) We have described a number of uses for animation at the interface. Could video generally be employed to achieve the same effects? Why or why not?

c) In the Freestyle system video shown by lecturer Fraser Shein, a user demonstrated inter-action with a spreadsheet. What was unique and especially interesting about this interaction?

d) Four of Shein's five basic principles of accessible design are (1-10 words each):

1)

2)

3)

4)

5. (8 points, 3 points each for parts a and b, 2 points for part c)

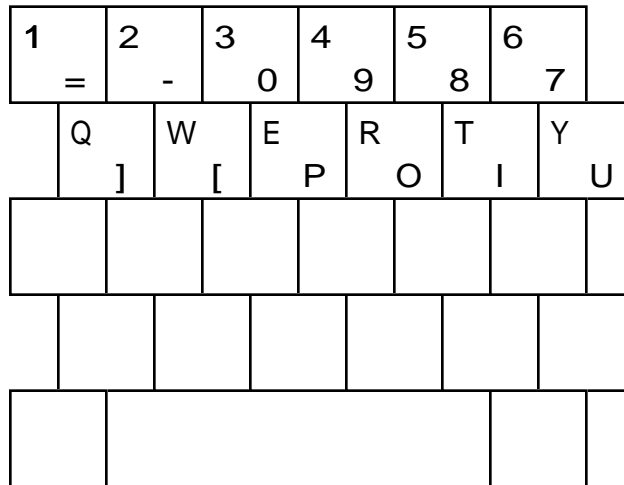
a) Describe three key features of a direct manipulation interface that provide the user with a feeling of "directness."

b) Describe two different approaches to non-speech audio in a user interface and give examples of their use.

c) Does incorporating non-speech audio cues in graphical user interfaces increase the feeling of directness? Why or why not?

6. (16 points, 2 points for part a, 6 points for part b, and 8 points for part c)

A U of T graduate has invented a novel half-size keyboard that allows a touch typist to type with one hand. Half of the keys (for example, “Q, W, E, R, T, and Y”) appear in their usual position. The other half of the keys (e.g., “U, I, O, P, [, and]”) appear in positions defined by reflecting the right hand of the keyboard around the central vertical axis (see diagram below, which only shows some of the key assignments). The user shifts from the “left set” of keys to the “right set” through the use of a special shift key accessed with the thumb.



a) Describe two kinds of users who might find such a device interesting.

1)

2)

b) Assume that the price of the device is attractive and its weight would permit its use in highly portable machines. Assume that you are the designer of such a machine and that the inventor is trying to convince you to adopt this new technology. What are three of the most salient questions that you might ask the inventor about the new technology’s effectiveness? **Each question can be stated in a very few words.**

1)

2)

3)

c) 1) Name and describe in a very few words one kind of **field strategy** (McGrath's term) that you might apply to this device.

2) Name and describe in a very few words one kind of **experimental strategy** (McGrath's term) that you might apply to this device.

3) Name and describe in a very few words one kind of **respondent strategy** (McGrath's term) that you might apply to this device.

4) Name and describe in a very few words one kind of **theoretical strategy** (McGrath's term) that you might apply to this device.

7. (12 points, 2 points for each answer)

Don Norman and Ron Baecker have counseled you that interfaces may be found everywhere and that you can always learn from these. Here is an example.

The Zagat Surveys are Restaurant Guides available for roughly 40 cities in North America. A similar guide for London, England, is Harden's London Restaurants. Comparing the 1998 San Francisco Zagat's and the 1999 London Harden's, one notices that they both:

- are roughly 4" X 8"
- are roughly 200 pages
- evaluate restaurants based on the opinions of a few thousand restaurant-goers

The Appendix (pages 17-36) to the exam excerpts sample pages from the two guides. State six ways in which one or the other of the guides has a better interface, using brief phrases of 5-10 words each:

_____ is better because

_____ is better because

_____ is better because

_____ is better because

_____ is better because

_____ is better because

8. (20 points, 10 points for part a, 6 points for part b, and 4 points for part c)

Consider the design of a hand-held electronic restaurant guide.

a) In a few words each, list 5 major functions that the electronic restaurant guide should provide:

1)

2)

3)

4)

5)

b) List 3 metaphors that could be used to determine graphical interface representations and methods for interacting with the electronic restaurant guide. (For example, Quicken used the metaphor of the checkbook and interface methods of filling out checks and entering deposit information into a check register.)

1)

2)

3)

c) If you had to choose one metaphor and graphical interface representation and method to be the dominant interface for the guide, which would you choose and why?

9. (14 points, 8 points for part a, 6 points for part b)

a) Consider the usefulness and usability of WebCT. Suggest four ways in which these can be improved:

1)

2)

3)

4)

b) Briefly describe, using whatever combination of words and sketches seem appropriate, how you would redesign the WebCT interface to solve **one or more** of the usability problems you mention in part a).

Extra Space

Extra Space

**THIS IS THE END OF THE FINAL EXAM. PLEASE CHECK YOUR WORK.
WE HOPE THAT YOU HAVE ENJOYED AND PROFITED FROM THIS COURSE.**

Appendix: Pages from Zagat's Survey to San Francisco

Appendix: Pages from Harden's Guide to London