Midterm Exam

Eric Paulos 30 October 2014

Your name (please print): ____________________________________________________

This is a closed book, individual test.

You are not allowed to use your notes, texts, or any electronic devices including laptop computers, calculators, mobile phones, smartwatches, or google glass.

You have 80 minutes for this exam

There are a total of 42 questions with 105 points and one extra credit question worth 4 points

Use your time accordingly. Before you begin, write your name on every page! You will lose 1 point if you do not do this.

If you find a question ambiguous, document the ambiguity. Indicate the way you interpreted the question in a set of separate sentences next to the question. The questions on the exam are not intended to be ambiguous, but sometimes another meaning is interpreted by the examinee that we did not take into consideration.

Good Luck!
1. Did you write your name on every sheet? (1 point)

2. Below are two examples of scroll bars for Mac (pre OSX Lion) on the left and Windows on the right. The two operating systems take a different approach to the placement of the up and down buttons on the scroll bar. What HCI principle is guiding each of the below design choices for the up and down button placement? Consider only the up and down buttons not the sliding scroll bar. (4 points)
3. List three reasons why simplicity and elegance are good design principles. (3 points)

4. What is the role of an Institutional Review Board in HCI? (2 points)

5. In the below image what type of graph technique is being used to communicate the results? (2 points)
6. Draw a diagram of the three stage design cycle. Label each of the stages. (3 points).

7. List at least one typical activity you would perform during each labeled stage in the above diagram. (3 points)
8. List two ways that a critique is different than a brainstorm. (2 points)

9. In the graph below (duplicated twice for clarity) what are element A and element B and what role do they perform (i.e. what are they communicating)? (4 points)
10. What is a skeuomorphism? List at least one way it can be beneficial and one way it can be detrimental to a design. (3 points)

11. What is a mode? Why are quasimodes preferable to modes? (2 points)
12. What are interaction effects and what role do they play in user studies? (2 points)

13. What is a persona and how is it used in the design process? (3 points)
14. What are the two gulfs in user interaction? Describe the problem that each gulf is addressing. (4 points)

15. List two advantages of User Testing compared to Heuristic Evaluation. (2 points)
16. The screenshot below represents a design improvement made after a Heuristic Evaluation has been performed. Which heuristic is being most clearly illustrated in the improved design? Use heuristic name not number. (2 points)

![Google search history](image1.png)

17. The screenshot below represents a design improvement made after a Heuristic Evaluation has been performed. Which heuristic is being most clearly illustrated in the improved design? Use heuristic name not number. (2 points)

![Edit menu](image2.png)
18. The screenshot below represents a design improvement made after a Heuristic Evaluation has been performed. Which heuristic is being most clearly illustrated in the improved design? Use heuristic name not number. (2 points)

19. List at least two differences between a Contextual Inquiry and a Heuristic Evaluation. (2 points)

20. List at least two properties of Direct Manipulation in UI design? (2 points)
21. List two disadvantages of using high fidelity prototypes in the design process? (2 points)

22. List two “discount” methods for evaluating a user interface. Why are they called “discount” methods? (3 points)

23. In the screenshot below, perform a Heuristic Evaluation by listing the primary heuristic violated. Use heuristic name not number. (2 points)
24. In the screenshot below, perform a Heuristic Evaluation by listing the primary heuristic violated. Use heuristic name not number. (2 points)

25. What are severity ratings and how are they used in Heuristic Evaluations? (2 points)
26. How many and what type of evaluators are ideal for performing most Heuristic Evaluations? 
   (2 points)

27. In a task analysis one question is “Who is going to use the system?” List at least three different factors you might consider when you explore this question. (3 points)

28. In a task analysis one question is “Where is the task performed?” List at least three different factors you might consider when you explore this question. (3 points)
29. Describe two ways to establish visual hierarchy with typography. (2 points)

30. Where should a Contextual Inquiry take place and why? (2 points)

31. Your client has just asked your design team to complete a user study of a potential interface feature. They need a quick answer and you're not going to be able to recruit many subjects in a short time. Do you use a between subjects or within subjects design? List one advantage and one disadvantage of the design you've chosen. (3 points)
32. Name one advantage of using a “Grid Layout” in your graphic design? (2 points)

33. List three attributes of “Working Memory” in the Model Human Processor. (3 points)
34. Using the figure below, label the five parts (Part A - Part E). (5 points)

Part A:

Part B:

Part C:

Part D:

Part E:
35. In the image below, which Gestalt Principle of graphic design is primarily being employed? List the name only. (1 points)

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39. List three challenges facing smart watch design. (3 points)
BackTap Smart Watch Interface Study

Your design team has been asked to develop a novel way to capture input for a new Smart Watch your company is planning to release next year. A very promising concept is to use the back strap of the watch as a touch sensor for dismissing alert notifications rather than the front touch screen. Your hypothesis is that it will be quicker for users to tap the back of the strap than the front to dismiss notifications. A brief concept sketch is shown below.

To test your hypothesis you setup a notification dismissal test application on a working smart watch prototype and recruit users.

In one version you provide a standard front notification tap dismissal technique. In this front tap version a user dismisses a visual alert shown on the screen of the smart watch by a single tap on the front face of the watch.

In the back tap version a user dismisses a visual alert shown on the screen of the smart watch by a single tap on the back strap of the watch.

Each user wears your smart watch prototype system and is presented with an alert visually shown on the watch face. You want to determine if the front or back tap is faster for users for dismissing alert notifications.
40. What is/are the independent variable(s) of this experiment? (4 points)

41. What is/are the dependent variable(s) of this experiment? (4 points)
42. Expand the details of the “BackTap Smart Watch Interface Study” to include a description of at least two control variables and one random variable in this experiment? (4 points)

Extra credit (4 points): Who coined the term “ubiquitous computing” and founded that field?

(The End)