Good Questions for the Final Exam  
CIS 443/543 - User Interfaces  
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The Final Exam will cover:
1. Rosson and Carroll Chapters 1, 2, 5, 6, and 7. Please read the chapters and the instructor’s lecture notes.
2. Kieras slides on "An Information-Processing Theory of Human Cognition and Performance"
3. Kieras slides on "Some Properties of Human Performance Relevant to Interface Design"
5. The basic ideas from the slides on KLM and GOMS (two documents), available on the Canvas website.
6. All materials covered in lectures, quizzes, and projects.

When taking the exam, please...
1. Define all acronyms at their first occurrence in your answer.
   For example, given the question: “What is HCI?”
   Good: “Human-computer interaction (HCI) is a field of study that examines how people...”
   Bad: “HCI is how humans interact...”
2. Do not use a term in its definition.
   Good: “Interaction design is the process of evaluating alternatives for the dynamic aspects ...”
   Bad: “Interaction design is the process of designing how a person will interact ...”
3. When defining terms, be sure to say what something is before providing additional details.
   Good: “HCI is a field of research and practice that examines how people ...”
   Bad: “HCI is how humans interact...”

A general suggestion for studying: You should be able to take any two random ideas, concepts, or terms from the materials, and explain how they relate. Midterm questions will likely require you to do this.

All questions from the midterm review sheet are good questions. These are more good questions from material covered since the midterm, which includes Chapters 6 & 7, and Kieras “Human Performance.”

“Prototyping” - Rosson & Carroll Chapter 6
1. What is a prototype? What is a user interface prototype?
2. Name and describe three different types of user interface prototypes.
3. What are high-fidelity prototypes and what are low-fidelity prototypes? Give an example of each? What are the advantages (+) and disadvantages (–) of each?
4. What is the value in generating numerous designs that do not get implemented?
5. What is a “Wizard of Oz” prototype?
6. Does a user interface (UI) prototype generally require computer programming? Explain.

“Usability Evaluation” - Rosson & Carroll Chapter 7
1. What is the best way to test the usability of a user interface?
2. What is the difference between formative and summative evaluation?
3. What is the difference between empirical and analytical evaluation?
4. What are the ten guidelines of the “heuristic evaluation”?
5. When conducting a “cognitive walkthrough”, what four questions do you ask as you step through the interface?
6. What are the two classic objective measures in human performance studies?
7. What is the “think aloud” protocol? When would you use it? When would you specifically not use it?
8. What is “storefront testing”? Give an example of a specific system that would be good to test in this manner, and a specific system that would not be good to test in this manner.

9. A user observation study generally looks for a cause and effect relationship between A and B, to measure the extent to which A causes B. What are A and B?

10. What are common independent and dependent variables in a user observation study?

11. You present a user with two interfaces, A and B. The user takes 32 sec to do a task using Interface A and 98 sec to do the same task using Interface B. Which interface is better? Explain your answer.

12. A study reports that people complete tasks faster with Interface A than with Interface B. The study presents accurate statistics that show the difference is real. Is Interface A better than Interface B? Explain?

13. Why might you care about how quickly people can do a task using a user interface?

14. Does task time matter for activities like online social networking or listening to music? Why or why not?

15. In an experiment, how do you get people to perform as quickly as possible while maintaining 97% accuracy?

16. Why do you want your participants to maintain a 97% accuracy? Explain using a graph.

17. What are “within-subject” and “between-subject” designs? What are the benefits and drawbacks of each?

18. Why do psychology experiments explain (a) how participants were recruited, (b) the instructions that they received, and (c) how they were compensated for their time in the experiment?

19. In the context of experimental design, what is validity? Internal validity? External validity?

20. Discuss threats to validity that should be considered when conducting a user observation study (a) in a lab (b) in the real world.

21. How do you quantitatively measure the validity of an experiment?

22. What is “informed consent”? What must be communicated when getting informed consent?

23. What should you do if you are participating in an experiment and the experimenter instructs you to perform a task as quickly and as accurately as possible? Draw the curve that explains your actions.

Kieras slides on "Some Properties of Human Performance Relevant to Interface Design"

1. Why do the eyeballs rotate in their sockets? In other words, why do people move their eyes?

2. Name and briefly describe (including with approximate timings) the two activities that the eyes alternate between when a person studies a visual display that has no moving objects. (Hint: In one of the two activities, the eyes are moving, and in the other activity the eyes are not moving.)

3. How is human vision like a flashlight?

4. What does Fitts’ law predict? What is the equation for Fitts’ law? How does Fitts’ law predict the apparent ease of hitting the edge of a display with the mouse cursor?

5. Explain, in terms of human information processing, the benefit of physical keyboards over touchscreen keyboards.